NOAA USER SERVICES

NOAA RESOURCE GUIDE

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
Office of Public and Constituent Affairs

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The information contained in this publication is intended for general background on a variety of NOAA issues. The material is believed to be accurate as of July 1, 1995. Some information may later become out of date as a result of the passage of time. Please check with NOAA's Office of Public and Constituent Affairs, as necessary, to stay abreast of new developments.

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NOAA is home to a legion of experts on almost every environmental issue. From severe storm warnings to fisheries management, from coastal zone management and El Niño to charting for safe navigation, it is our mission to observe, assess and protect the oceans and atmosphere around us.

Another part of our job is supplying that information to the American public. In order to do that, we've developed this *NOAA Resource Guide,* a compendium of nearly 1,000 definitions and explanations of terms and issues that we deal with every day. Further, at the end of most entries, you'll find contact information to help you get your information quickly and accurately.

I hope you'll find the *NOAA Resource Guide* to be useful and that you'll consult it regularly. We plan to update the Guide annually, and we'd be interested in your comments on it. And please feel free to call our Office of Public and Constituent Affairs with any questions you may have.

Sincerely,

D. James Baker

Under Secretary of Commerce for Oceans and Atmosphere
Administrator, National Oceanic and Atmospheric Administration

a

ACE (Ashepoo-Combahee-Edisto) Basin National Estuarine Research Reserve, South Carolina

Located about 45 miles south of Charleston, S.C., this reserve is one of the most diverse and pristine on the East Coast of the United States. Maritime forests, tidal swamps, marshes and associated uplands provide valuable habitat for 17 rare or endangered species and over 500 species of birds, mammals, reptiles, amphibians and plants. The area is used mainly for wildlife and forest management, limited farming, and commercial and recreational fishing. Cooperation among landowners and private and public agencies has resulted in a multifaceted initiative to protect and enhance critical wetlands and uplands here. (Contact NOAA/NOS PA at 301-713-3145 ext. 153.)

Acid Precipitation Interagency Task Force (Comprehensive Program [42 USC 8902])

Established a comprehensive 10-year program to carry out the provisions of this subtitle. To implement this program, it formed an Acid Precipitation Task Force, of which the Secretary of Agriculture, the Environmental Protection Agency Administrator, and the NOAA Administrator are joint chairmen. Designated the NOAA Administrator as the director of the research program established by this subtitle. (Contact NOAA/OAR PA at 301-713-2483.)

Acid Rain

Precipitation containing acidic substances that form when atmospheric gases (primarily carbon dioxide, sulfur, and nitrogen oxides) come in contact with water in the atmosphere or on the ground. Principal natural causes include emissions from volcanoes and biological processes. Principal human sources include industrial and power-generating plants and transportation vehicles. (Contact NOAA/OAR PA at 301-713-2483.) See also National Acid Precipitation Assessment Program

Acoustic Doppler Current Profiler (ADCP)

An instrument that uses wide-band acoustic signal and digital signal processing to measure the speed of water at various levels in the water simultaneously. ADCPs are an important component of NOAA's Physical Oceanographic Real Time System that provides real time transmission of currents and water levels in major U.S. harbors. NOAA has used ADCP in the Chesapeake Bay to promote a safer "Great Chesapeake Bay Swim" which raises money for charities. See also Physical Oceanographic Real Time System (PORTS)

Advanced Chart Automation System (ANCSII)

As the United States makes the transition to a fully digital charting and mapping environment, NOAA is converting its huge nautical chart data banks, accumulated over more than 150 years of surveys, into digital formats. The ANCSII project will lead to the automated production and maintenance of our nation's entire suite of nautical charts. ANCSII will include three primary databases: the Navigation Information Data Base, the Chart Graphics Data Base and the Production Control Data Base. (Contact NOAA/NOS PA at 301-713-3066.)

Advanced Geodetic Sciences Program

Develops and maintains the nation's geodetic networks required for scientific, surveying, and engineering activities. The program accounts for changes in geodetic coordinates caused by instability of the Earth's crust and calculates models for the United States on both regional and national scales. See also Geodesy

Advanced Geosciences Technology Program

Carries out research and development on new types of geodetic data to improve the determination of locations, polar motion, time, and configuration and distribution of the Earth's mass on regional and global scales. (Contact NOAA/NOS PA at 301-713-3066.)

Advanced Very High Resolution Radiometer (AVHRR)

A five-channel scanning instrument that quantitatively measures electromagnetic radiation, flown on NOAA polar-orbiting environmental satellites. AVHRR remotely determines cloud cover and surface temperature. Visible and infrared detectors observe vegetation, clouds, lakes, shorelines, snow and ice. Polar-orbiting Automatic Picture Transmissions are derived from this instrument. (Contact NOAA/NESDIS PA at 301-457-5005.) See also **Automatic Picture Transmission**

Advanced Weather Interactive Processing System (AWIPS)

This new high-speed computer work station and communication network is the centerpiece of the modernization of the National Weather Service. AWIPS will help to improve the accuracy and timeliness of warnings and forecasts by permitting forecasters to analyze fast-breaking storms and speed the communication of warnings and forecasts to users.

AWIPS will be the nerve center of operations at all of the modernized Weather Forecast Offices and Regional River Forecast Centers. The AWIPS work stations will be capable of receiving, processing, and helping the forecasters analyze the huge volume of weather data from the network of Doppler Weather Radars; Geostationary Operational Environmental Satellites; hundreds of new Automatic Surface Observing Systems; and other data sources such as river gauges, and forecast guidance produced at the National Centers for Environmental Prediction, the Tropical Prediction Center/National Hurricane Center and the Storm Prediction Center.

A communications network will feed data to each AWIPS site and distribute information among AWIPS sites. A one-way, point-to-multi-point satellite broadcast service called NOAAPORT will be used to distribute the large amounts of data products which are collected or produced at NOAA central facilities. (Contact NOAA/NWS PA at 301-713-0622.)

See also **Automated Surface Observing System, Automation of Field Operations and Services (AFOS), Geostationary Operational Environmental Satellite, Doppler Weather Radar, NOAAPORT, River Forecast Center, RiverGauge, and Weather Forecast Office**

Advisory

Highlights special hazardous weather conditions that are less serious than those described by a warning. Used for a weather

event that may cause significant inconvenience and, if caution is not exercised, could lead to threatening life and/or property.

Aerial Photography

Prints of aerial photographs dating from 1927 to the present that comprise part of NOAA's chart compilation holdings are available to the public. They include color, black-and-white and infrared images. Most of the coastlines represented on NOAA charts are covered. The information is particularly useful for coastal resource managers and planners. (Contact NOAA/NOS PA at 301-713-3066.)

Aeronautical Chart Products

Instrument Navigation Charts

Enroute Low Altitude Charts cover the conterminous United States and Alaska and provide aeronautical information for navigation under instrument flight rules (IFR) below 18,000 feet. Revised every 56 days.

Enroute Low Altitude Area Charts, similar to the above, show congested terminal areas at a larger scale. Revised every 56 days.

IFR High Altitude Charts are designed for navigation at or above 18,000 feet. This four-color chart series includes Jet Route airway structure, VHF radio aids to navigation, selected airports and reporting points. Revised every 56 days.

Visual Navigation Charts

Helicopter Route Charts provide aeronautical information useful to helicopter pilots navigating in areas with high concentrations of helicopter activity. These three-color charts include helicopter routes and four classes of heliports.

Sectional Aeronautical Charts aredesigned for use by slow to medium speed aircraft. The topographic information consists of the relief and a selection of visual checkpoints used for flight under Visual Flight Rules conditions. Checkpoints include populated places, drainage patterns, roads, railroads, and other distinctive landmarks. Also included are visual and radio aids to navigation, airports, controlled airspace, restricted areas, obstructions and related data.

Terminal Area Charts depict the airspace designated as Class B airspace. Similar to Sectional Aeronautical Charts but much more detailed because of the larger scale. For use by pilots operating from airfields within or near Class B or Class C airspace.

World Aeronautical Charts cover land areas at a standard size and scale, and are designed for use by moderate speed aircraft and aircraft operating at high altitudes. Topographical information includes city tints, principal roads,railroads, distinctive landmarks, drainage patterns and relief. Aeronautical information includes visual and radio aids to navigation, airports, airways, restricted areas and obstructions.

Terminal Procedures Publication

Terminal Procedures Publication consists of sixteen loose-leaf volumes covering the conterminous United States, Puerto Rico and the Virgin Islands. Included are charts for: Instrument Approach Procedures, Standard Instrument Departures, Standard Ter minal Arrivals, Profile Descents, Charted Visual Flight Procedures and Airport Diagrams. Revised every 56 days.

Supplementary Aeronautical Publications

Airport Facility Directory contains data on airports, seaplane bases, heliports, communications and operational procedures. Seven volumes cover the conterminous United States, Puerto Rico and the Virgin Islands. The directory includes data not readily depicted in graphic form, such as airport hours of operation, types of fuel available, runway widths, lighting codes, etc. Published every 56 days.

North Atlantic Route Chart is a five-color chart designed for Federal Aviation Administration (FAA) Air Traffic Controllers' use in monitoring transatlantic flights. Oceanic control areas, coastal navigation aids, major coastal airports and ocean reporting points are depicted. Revised every 24 weeks.

North Pacific Route Charts are designed for use by FAA Air Traffic Controllers in monitoring transoceanic air traffic. Information includes established intercontinental air routes, including all reporting points with geographic positions. Revised every 24 weeks. (Contact NOAA/NOS PA at 301-713-3066.)

Aeronautical Charting Division

Each year, NOAA's Aeronautical Charting Division publishes approximately 15,000 different aeronautical charts and publications to support recreational, military and commercial aviation in the United States and its territories. Products include Visual Flight Rules charts, Instrument Flight Rules charts, Terminal Procedures Publications, supplementary and special use aeronautical publications and digital aeronautical data. Close coordination with the Federal Aviation Administration, the Department of Defense and other agencies is required. Many charts are revised and published every 28 days. Each year, thousands of changes in information affecting the safety of navigable airspace are made with the sole purpose of maintaining certified and safe airspace. (Contact NOAA/NOS PA at 301-713-3066.)

Aeronautical Enroute Navigation Branch

This branch plans and directs the construction and maintenance of enroute navigation and associated charts used in Instrument Flight Rules conditions, including: Enroute Low and Enroute High Altitude charts, Low Altitude IFR/VFR Planning Chart, Radar Flight Support maps, Low Controller and High Controller charts, Area Navigation charts, Air Traffic Control Systems Command Center charts and other special purpose charts. (Contact NOAA/NOS PA at 301-713-3066.)

Aeronautical Information Branch

This branch acquires aeronautical information needed for the construction and maintenance of aeronautical charts. It maintains extensive files on aeronautical navigation information, obstacles, airway fixes, navigational aids, airports and terrain elevations. (Contact NOAA/NOS PA at 301-713-3066.)

Aeronautical Instrument Approach Procedure Chart Branch

This branch plans and directs the construction and maintenance of: Instrument Approach Procedure charts, Standard Instrument Departure charts, Standard Terminal Arrival charts, Profile Desc ent charts, Charted Visual Flight Procedures, Airport Taxi charts and Airport Diagrams. This branch coordinates with the Federal Aviation Administration to make sure that safe and accurate data are available for landings and takeoffs from airports under Instrument Flight Rules conditions. (Contact NOAA/NOS PA at 301-713-3066.)

Aeronautical Visual Chart Branch

This branch plans and directs the construction and maintenance of charts used in Visual Flight Rules conditions, including: Terminal Area charts, Sectional Aeronautical charts, World Aeronautical charts, Helicopter Route charts and special area charts. (Contact NOAA/NOS PA at 301-713-3066.)

Aeronomy Laboratory

Located in Boulder, Colo., the Aeronomy Laboratory studies atmospheric physics, chemistry, and dynamics and how they affect air quality and climate change. The laboratory addresses the major environmental issues such as stratospheric ozone depletion, particularly over the polar regions of the Earth; greenhouse processes and global warming; tropospheric ozone production by pollutants, especially in agricultural and

forest areas; and acid rain. (Contact NOAA/ERL PA at 303-497-6286.)

Aerosols

Microscopic particles suspended in the atmosphere, originating from both natural sources, such as volcanoes, and human activities, such as coal burning.

AFOS

See **Automation of Field Operations and Services**

Aids to Navigation

Features such as navigation buoys, visual landmarks, and radio beacons, indicated on nautical and aeronautical charts, that assist mariners and aviators in their navigation tasks.

Air Resources Laboratory (ARL)

Headquartered in Silver Spring, Md., and primarily supports research focused on the transport, dispersion, and wet and dry deposition of trace gases and particles in the air, and how these substances affect air quality and climate change. ARL conducts field and theoretical studies, and develops instruments and models. It is also the official federal source of information on atmospheric transport and diffusion, which is used to guide responses to emergencies affecting air quality, such as the eruption of Mount Redoubt and the oil fires in Kuwait. (Contact NOAA/OAR PA at 301-713-2483.)

Airborne Laser Hydrography

New technologies are being developed that are enabling airborne sensors to determine the depth of coastal waters under certain conditions. This new capability promises to greatly increase the efficiency of hydrographic surveys.

Aircraft Operations Center (AOC)

Located at MacDill Air Force Base, Tampa, Florida, AOC manages NOAA aircraft, personnel, budget facilities and the charter of aircraft and other activities that support NOAA aircraft programs. In the course of a year, AOC aircraft may be involved in studying global climate change, acid rain, counting sea turtles, and marine mammals, surveying the coastline, investigating oil spills, flight-checking aeronautical charts, and improving our ability to predict hurricanes. (Contact Tropical Prediction Center/National Hurricane Center Public Affairs, 305-229-4470.)

Alaska Region Headquarters (ARH)

ARH is the supervisory office for the Alaska region of the National Weather Service. ARH provides supervisory direction; technical, program and equipment support and serves as coordinator for National Weather Service policy to field offices, including Weather Service Forecast Offices, Weather Service Offices, Center Weather Service Units located at the Federal Aviation Administration's and Air Route Traffic Control Center. (Contact NOAA/NWS PA, 301-713-0622).

Alaska Tsunami Warning Center (ATWC)

The ATWC in Palmer, Alaska, is responsible for releasing public watches and warnings of tsunamis for the protection of Alaska and the Aleutian Island Chain. Watches and warnings are disseminated to Weather Service Forecast Offices, state civil defense agencies, the Federal Emergency Management Agency, military organizations and others who, in turn, furnish the information to users. Seismographic stations, participating in the system, detect earthquakes and submit reports to ATWC, where the earthquake location and magnitude are determined. Tide stations in the system detect the tsunami and furnish the information on the nature of the local wave to the ATWC. (Contact NOAA/NWS PA at 301-713-0622.) See also **International Tsunami Information Center (ITIC), Pacific Tsunami Warning Center (PTWC), Tsunami**

Altimeter

An instrument, which may be part of satellite Earth- sensing systems, used to precisely determine the altitude at the surface of the earth. Used to determine small changes in sea level and measure the

height of waves. Satellite altimetry is also the only source of truly global sea level data. Currently, NOAA is analyzing Topex/Poseidon altimetry data to provide reliable measurements of global sea level change, believed to be about 0.2 cm per year in response to global warming. See also Sea Level Rise

American Meteorological Society (AMS)

The American Meteorological Society, headquartered in Boston, Mass., is the country's primary professional organization of meteorologists. (Contact AMS PA at 202-466-6070, or AMS Headquarters at 617-227-2425.)

Anadromous Species

These are species of fish that mature in the ocean, and then ascend rivers and streams to spawn in freshwater. In the Magnuson Act, these species include, but are not limited to, Atlantic and Pacific salmons, steelhead trout, and striped bass.

Analog Products

These include imitation and simulated crab, lobster, shrimp, scallops, and other fish and shellfish products fabricated from processed fish meat. See also **Surimi**

ANICA

See **Atmospheric Nutrient Inputs to Coastal Areas**

Anomaly

(1) The deviation of a parameter such as temperature or precipitation in a given region over a specified period from the normal value for the same region. (2) The angular distance of an Earth satellite from its perigee as seen from the center of the Earth.

Apalachicola Bay National Estuarine Research Reserve, Florida

The reserve and surrounding drainage basin contain barrier islands, as well as estuarine, riverine, floodplain, and upland environments. Among the habitats within these environments are beaches, oyster bars, salt and fresh marshes, forested floodplains, and sandhills. More than 1,300 species occur in the Apalachicola drainage basin including 315 species of birds, 87 species of reptiles, and 57 species of mammals, including the threatened Florida black bear, endangered West Indian manatee, and Indiana and gray bats. This remarkable species diversity makes the reserve one of the most productive estuaries in the Northern Hemisphere. Over 90 percent of all oysters harvested in Florida, and over 10 percent of the nation's crop, come from waters within the reserve. (Contact NOAA/NOS PA at 301-713-3145 ext. 153.)

Apogee

On an elliptical orbit path, point at which a satellite is farthest from the Earth.

APT

See **Automatic Picture Transmission**

Aquaculture

The farming of aquatic organisms in marine, brackish or freshwater. Farming implies private or corporate ownership of the organism and enhancement of production by stocking, feeding, providing protection from predators or other management measures.

(1) Aquaculture production is reported as the weight and value of cultured organisms at their point of final sale. (Contact NOAA/NMFS PA at 301-713-2370.)

(2) Both the National Sea Grant College Program and the National Marine Fisheries Program have provided assistance to the U.S. aquaculture industry, which is becoming increasingly important with the decline of wild fish stocks. (Contact NOAA/OAR PA at 301-713-2483.)

Aquarius

The world's most advanced underwater laboratory, located at Conch Reef in the Florida Keys National Marine Sanctuary. *Aquarius,* owned by NOAA and operated by the National Undersea Research Center of the University of North Carolina at Wilmington, is the centerpiece of a comprehensive research program aimed at

understanding and preserving the Florida Keys coral reef ecosystem. University scientists focus on how corals cleanse themselves of sediment, planning ecologically sound coastal development and the effects of global change and pollution on coral reef ecosystems. (Contact NOAA/OAR PA at 301-713-2483.)

ARGOS

ARGOS is a global satellite-based data collection and location program jointly operated by the United States and France. Operational since 1978, ARGOS was established between NESDIS, NASA, and the French Space Agency: Centre National d'Estudes Spatiales (CNES).

The ARGOS Data Collection System collects environmental and other data from fixed and moving platforms. The system consists of platforms (equipped with sensors and transmitters), ARGOS instruments (carried aboard NOAA polar orbiters), ground processing systems, and three telemetry ground stations. At present, agreements ensure the ARGOS program will continue through the launch of NOAA-N. (Contact NOAA/NESDIS at 301-457-5005.)

ASOS

See Automated Surface Observing System.

Atlantic Marine Center

Located in Norfolk, Virginia, AMC is headquarters to NOAA's Atlantic Fleet, which consists of 11 vessels. AMC serves as home port to NOAA Ships *Mt. Mitchell,* Class II, *Whiting,* Class III, *Relentless,* Class III, *Ferrel,* Class IV, *Rude* and *Heck* both Class Vs. AMC also provides support to NOAA Ships *Malcolm Baldrige,* Class I, based in Miami, Florida, *Albatross IV,* Class III, and *Delaware,* Class IV, based in Woods Hole, Massachusetts, and *Oregon* II, Class III and *Chapman* Class IV, based in Pascagoula, Mississippi. The vessels *Mt.. Mitchell, Whiting, Rude* and *Heck* are equipped to perform hydrographic and bathymetric surveys, which provide the bottom configuration and obstruction, and water depth information that is needed for preparing nautical charts and bathymetric maps. The NOAA Ship *Ferrel* is used to collect fish and bottom sediment samples, which are prepared and stored on board so they can later be analyzed for pollutants. The *Relentless* is mainly used as a training vessel but it has also conducted some fisheries research cruises. (Contact NOAA PA at 202-482-6090.)

Atlantic Oceanographic and Meteorological Laboratory (AOML)

Located in Miami, Fl., the laboratory conducts basic and applied research in oceanography, marine biogeochemistry, and tropical meteorology. AOML's meteorological research is conducted to improve the description, understanding, and prediction of hurricanes. AOML research has made significant progress in understanding ocean heat transport and storage in relation to interannual and longer term variations of weather and climate, the analysis and prediction of hurricane intensity, pathways, and points of landfall; and the establishment of a network to measure sea level and meteorological variables. (Contact NOAA/OAR PA at 301-713-2483.)

Atmosphere

The air surrounding the Earth, described as a series of shells or layers of different characteristics. The atmosphere, composed mainly of nitrogen and oxygen with traces of carbon dioxide, water vapor and other gases, acts as a buffer between Earth and the sun. The layers, troposphere, stratosphere, mesosphere, thermosphere, and the exosphere, vary around the globe and in response to seasonal change.

Atmospheric Modeling

Atmospheric modeling is the use of high-speed, large-memory computers to forecast the state of the atmosphere by solving complex equations. (Contact NOAA/NWS PA at 301-713-0622.) See also Cray C90 Supercomputer

Atmospheric Nutrient Inputs to Coastal Areas (ANICA)

ANICA combines monitoring and modeling to quantify the contribution of atmospheric nitrate to coastal areas and to estimate the impacts of increased nitrogen oxide emissions. Early development of ANICA has focused on the Chesapeake Bay, assessing the contribution of wet and dry deposition, and developing models of atmospheric deposition that can be applied to other coastal areas. (Contact NOAA/NOS at 301-713-3066.) See also **Coastal Ocean Program**

ATWC

See **Alaska Tsunami Warning Center**

Automated Surface Observing System (ASOS)

New Automated Surface Observing Systems are currently being installed at hundreds of locations throughout the United States. The ASOS program is a joint effort of the National Weather Service, the Federal Aviation Administration, and the Department of Defense. The ASOS systems will serve as the nation's primary surface weather observing network. ASOS is designed to support weather forecast activities and aviation operations and, at the same time, support the needs of the meteorological, hydrological, and climatological research communities. The ASOS network will more than double the number of full-time surface weather observing locations. ASOS works nonstop, updating observations every minute, 24 hours a day, every day of the year. ASOS sensors include: cloud height, visibility, precipitation identification, freezing rain, pressure, temperature/dew point, wind direction and speed, and precipitation accumulation. (Contact NOAA/NWS PA at 301-713-0622.) See also **Modernization and Associated Restructuring**

Automated Wreck and Obstruction Information System (AWOIS)

Information on submerged wrecks and obstructions found by NOAA surveys in U.S. coastal waters is maintained in the AWOIS database. Latitude, longitude, survey status and historic descriptive information is keyed to a specific NOAA nautical chart. This information is used by scuba divers, researchers and commercial salvagers and is a source for historical research on shipwrecks. It is also used by commercial and sport fishermen.

Automatic Picture Transmission

NOAA's polar-orbiting satellites provide real-time images at VHF frequencies. Low resolution imagery provided by this system is the only source of satellite data for many areas of the world. It is an important data source to Department of Defense field facilities and to weather services in more than 100 countries worldwide. APT receiving stations the size of a suitcase have been built by recreational boaters, enabling them to collect weather pictures at sea. High schools and colleges build or buy APT systems to help teach engineering and sciences. Commercial APT stations can cost $70,000; amateurs have built them for less than $200. (Contact NOAA/NESDIS at 301-457-5005.) See also **Advanced Very High Resolution Radiometer (AVHRR).**

Automation of Field Operations and Services (AFOS)

This 1970s computerized communications system puts weather information at the fingertips of National Weather Service meteorologists and enables them to transmit weather warnings and forecasts and other information to the user community and other weather offices. (Contact NOAA/NWS PA at 301-713-0622.) See also **Advanced Weather Interactive Processing System, Modernization and Associated Restructuring**

AVHRR

See **Advanced Very High Resolution Radiometer**

Aviation Weather

Weather Service Forecast Offices (WSFOs) prepare and issue terminal forecasts primarily in support of preflight planning.

In addition, they prepare route forecasts that serve inflight user needs. The Aviation Weather Center in Kansas City and selected WSFOs fulfill the critical function of providing inflight advisories of hazardous weather. Controllers and traffic managers in the nation's large Air Route Traffic Control Centers receive advisory support from the National Weather Service's Center Weather Service Units to maintain a safe and efficient flow of aircraft through the National Airspace System. Meteorologists at the National Centers for Environmental Prediction in Camp Springs, Md., provide both analysis and forecast products, that support all phases of flight and all categories of aircraft, both domestically and internationally. (Contact NOAA/NWS PA at 301-713-0622.) See also **Aviation Weather Center, Center Weather Service Unit**

Aviation Weather Center (AWC)

The National Centers for Environmental Prediction's AWC issues analyses and forecasts, as well as warnings of hazardous weather for the domestic and international aviation community. Located in Kansas City, Mo., the center identifies existing or imminent weather hazards to aircraft in flight and creates advisories for the domestic (and soon international) aviation community; AWC will be part of the World Area Forecast Systems (WAFS). The center's primary mission is to save lives, protect property and enhance commerce. (Contact NOAA/NWS PA at 301-713-0622.) See also **Aviation Weather, National Centers for Environmental Prediction (NCEP), World Area Forecast System.**

AWIPS

See **Advanced Weather Interactive Processing System.**

b

Barometric Pressure

Weather maps show atmospheric pressure in millibars, units equal to a thousandth of a bar. The bar is a unit pressure equal to 29.53 inches of mercury in the English system and to one million dynes per square centimeters in the Metric system. Average air pressure at sea level is 14.7 pounds per square inch, 29.92 inches of mercury, or 1013.25 millibars.

Bathymetric Maps

Topographical maps of the seafloor; they do not include navigation information. These maps, produced by NOAA's National Ocean Service, are designed for use in a variety of ocean activities. The maps provide detailed information on the size, shape, and location of significant underwater features.

Bathymetry

The measurement of the contours of the sea floor.

Beaked Whales

Four species of beaked whales live in the northwest Atlantic, however little is known about their distribution, biology, and population structure. Based on cetacean surveys conducted during the early 1980s and 1990s, these species are distributed along the shelf edge, principally along the southern edge of Georges Bank and associated with oceanographic fronts and Gulf Stream meanders. Population estimates for these species are not available. Determination of minimum abundance estimates will require substantial survey effort in shelf-edge waters and waters seaward to at least the Gulf Stream off the northeast U.S. and eastern Canada coasts. (Contact NOAA/NMFS PA at 301-713-2370.) See also Marine Mammal Protection Act

Benthic

Occurring at the bottom of a body of water, usually in the depths of the ocean.

Billfish

Any species of marlin, spearfish, sailfish or swordfish.

Bioeffects Assessment Program

Develops methods for assessing the physiological, biological, and ecological effects of contaminants in our marine and coastal environments. The program identifies new monitoring tools to assess the consequences of contaminant exposure for marine organisms. They conduct regional surveys of the extent of contamination in U.S. coastal areas. (Contact NOAA/NOS PA at 301-713-3066.)

Biogeographic Characterization Program

Collects and analyzes data on the distribution and life history characteristics of ecologically and economically important marine fish, invertebrates, seabirds, water fowl, and marine mammals throughout the U.S. estuarine and coastal area. (Contact NOAA/NOS PA at 301-713-3066.) See also **National Coastal Wetlands Inventory**

Biomass

(1) Estimated total fish weight or population level. (Contact NOAA/NMFS PA at 301-713-2370.)

(2) Technically, the total dry organic matter or stored energy content of living organisms in a given area. Refers to forms of living matter (e.g., grasses, trees) or their derivatives (e.g., ethanol, timber, charcoal) that can be used as fuels.

Blizzard

A severe weather condition characterized by low temperatures, strong winds greater than 35 miles per hour, and a great amount of falling or blowing snow. When these conditions persist after snow has stopped falling, it is called a *ground blizzard.*

Blizzard Warning

Issued for winter storms with sustained winds or frequent gusts to 35 miles per hour or greater and considerable falling and/or blowing snow, reducing visibility to less than ¼-mile. These conditions are expected to last at least three hours.

Boat, Other

Commercial fishing craft not powered by a motor, e.g., rowboat or sailboat, having a capacity of less than five net tons. See also **Motorboat, Factory Trawler, Trawler.**

Bottlenose Dolphin

The number of discrete bottlenose dolphin stocks is unknown. There appear to be offshore and coastal types, possibly forming at least two distinct populations. The 1993 estimate for the mid-Atlantic coastal bottlenose dolphin population is 2,400, while the estimate of the offshore stock of bottlenose dolphins is 12,000. (Contact NOAA/NMFS PA at 301-713-2370.) See also **Marine Mammal Protection Act**

Bowhead Whales

The endangered bowhead whale has ranged as far as the polar ice fields of the Northern Hemisphere. Total pre-whaling abundance is believed to be between 12,000 and 18,000, but by 1900 it was probably in the low thousands. In the U.S. western Arctic, 18,650 bowheads were killed by non-indigenous whalers between 1848 and 1914 from a population estimated at less than 20,000. The take by Alaska Eskimos has averaged between 20 and 40 whales per year since 1914. The present population, 7,500, is about 41 percent of its 1848 carrying capacity. The stock has been increasing since commercial whaling ended and has grown by 3.1 percent per year since 1978. (Contact NOAA/NMFS PA at 301-713-2370.) See also **Marine Mammal Protection Act** (MMPA)

Brackish

A combination of saltwater and freshwater, common to coastal wetlands and estuaries.

British Thermal Unit (Btu)

The amount of heat needed to raise the temperature of one pound of water by one degree Fahrenheit at a temperature of 60 degrees Fahrenheit and a pressure of one atmosphere.

Bus

The basic frame of a satellite system that includes the propulsion and stabilization systems, but not the instruments or data systems.

Bycatch

Fish and other marine life caught incidentally while fishing for something else.

Bypass System

Structure at a dam that provides a route for fish to move through or around the dam without going through the turbines.

C

California Sea Lion

Three subspecies of California sea lion can be found on the U.S. west coast and British Columbia, in the Galapagos Islands, and also in Japan, though these are probably extinct. The breeding range of California sea lions extends from the Channel Islands off the coast of southern California, to Isla Santa Margarita, on the Pacific coast of Baja California, Mexico, and at various islands located in the Gulf of California, Mexico. Annual U.S. pup production during 1990 exceeded 26,700 pups. The U.S. population is currently increasing at a rate of 10.2 percent annually since 1983. In 1990, the U.S. stock had a population size of 111,000. The total population size of the western Baja California stock was estimated at 74,500. (Contact NOAA/NMFS PA at 301-713-2370.)

CAMEO

See **Computer Aided Management of Emergency Operations**

Carbon Budget

The sum of the flows of carbon to and from a carbon reservoir. See also **Carbon Cycle, Carbon Reservoir or Sink**

Carbon Cycle

General term used in reference to the sum of all reservoirs and flows of carbon on Earth. The flows tend to be cyclic in nature; for example, carbon removed from the atmosphere (one reservoir) and converted into plant tissue (another reservoir) is returned back into the atmosphere when the plant is burned. (Contact NOAA/OGP at 301-427-2089 ext. 22.) See also **Carbon Budget**

Carbon Reservoir or Sink

Within the carbon cycle, the physical site at which carbon is stored (e.g., atmosphere, oceans, Earth's vegetation and soils, and fossil fuel deposits). The oceans hold most of the world's carbon mass. (Contact NOAA/OGP at 301-427-2089 ext. 22.) See also **Carbon Budget**

Caribbean Regional Fishery Management Council

One of eight regional councils established by the Magnuson Fishery Conservation and Management Act. The council acts as a steward of the living marine resources off the coasts of the U.S. Virgin Islands and the Commonwealth of Puerto Rico. (Contact NOAA/NMFS PA at 301-713-2370.) See also **Regional Fishery Management Councils**

Cartographic Technology Program

This program develops computer-assisted systems for mapping and keeping NOAA's

vital cartographic operations at the forefront of technology. (Contact NOAA/NOS PA at 301-713-3066.)

C-CAP

See Coastal Change Analysis Program

Center for Coastal Ecosystem Health

The main goal of the center, located in Charleston, S.C., is to contribute to the development of improved management strategies for achieving coastal ecological, cultural, and economic sustainability. It will serve as a focal point for addressing national coastal environmental quality problems, such as nonpoint source pollution, nutrient over enrichment, and habitat loss and degradation. The center provides an opportunity for NOAA to address several of its responsibilities in coastal environmental sciences and management by developing innovative partnerships with federal, state, local, and private institutions. The center will accomplish its mission through cooperative efforts with the science and management communities to provide the technologies, methodologies, and information necessary to assess, predict, and improve the health of the nation's regional coastal ecosystems and their living marine resources.

Center Weather Service Unit

A National Weather Service office located at a Federal Aviation Administration (FAA) Air Route Traffic Control Center that provides general weather and aviation weather information for FAA use. (Contact NOAA/NWS PA at 301-713-0622.) See also Aviation Weather

Central Flow Weather Service Unit

The National Weather Service office located in the Washington, D.C., area that coordinates with and assists the Center Weather Service Units. (Contact NOAA/NWS Public Affairs at 301-713-0622.)

Central Region Headquarters (CRH)

The supervisory office for the 14-state Central Region of the National Weather Service. CRH provides supervisory direction; technical, program and equipment support and serves as coordinator for National Weather Service policy to 90 field offices, including Weather Service Forecast Offices, Weather Service Offices, Weather Service Meteorological Observatories, Center Weather Service Units, and an Agricultural Weather Service Center. CRH serves the states of Colorado, Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Nebraska, North Dakota, South Dakota, Wisconsin and Wyoming. (Contact NOAA/NWS Central Region Headquarters PA, 816-426-7621.)

Cetacean

Marine mammal with a large head, a fishlike, nearly hairless body, and paddle-shaped forelimbs; e.g., a whale or dolphin. (Contact NOAA/NMFS PA at 301-713-2370.)

CFS

See Coastal Forecast System

Channel Islands National Marine Sanctuary, California

Located about 25 miles off the coast of Santa Barbara, California, in the waters surrounding San Miguel, Santa Rosa, Santa Cruz, Anacapa and Santa Barbara Islands, the waters of the sanctuary are a fertile combination of warm and cool currents, providing an exceptional breeding ground for a variety of plants and animals. Large nearshore forests of giant kelp provide a nutrient-rich environment for teeming populations of fish and invertebrates.

Over 27 species of whales and dolphins visit or inhabit the sanctuary at one time of the year or another, and many species of seals, sea lions and birds breed in the sanctuary. The sanctuary waters are a full or part-time home for several endangered species, including blue, humpback and sei whales and southern sea otters.

Lining the sanctuary's ocean floor are a wealth of prehistoric artifacts from the Chumash Indians as well as the remains of over 100 historic shipwrecks. Sanctuary staff provides a wide range of education

programs through a cooperative agreement with the Santa Barbara Museum of Natural History including the Sea Center, an aquarium and marine education facility, and Los Marineros, a marine education program for children. (Contact NOAA/NOS PA at 301-713-3145 ext. 153.)

Chart

As opposed to a map, is a document used in navigation, and often contains specialized data, such as landmarks, location of buoys and radio beacons, useful to navigators.

Charter Boat

A vessel whose operator is licensed by the U.S. Coast Guard to carry six or fewer paying passengers and whose passengers fish for a fee. See also **Party Boat.**

Chesapeake Bay National Estuarine Research Reserve, Maryland and Virginia

The reserve has numerous components located throughout the Bay. Composed of tidal creeks, open estuarine waters, salt marshes and pine forest, the 3,400-acre Monie Bay Component is relatively pristine and isolated.

Monie Bay is a haven for resident and migratory bird populations, including herons, egrets, ibises, and a wide variety of waterfowl species. Blue crabs, white perch, oysters, blue fish and other important aquatic populations are also found in Monie Bay. The 700-acre Otter Point Creek Component is one of the few large freshwater tidal marshes in the Chesapeake Bay region that remains in a comparatively natural, undisturbed state.

The Jug Bay Component covers 700 acres and contains one of the largest stands of wild rice on the East Coast. Jug Bay also provides healthy spawning habitat for striped bass and serves as a haven for over 100 bird species.

In Virginia there are a number of components representing the lower estuarine, the transition and the tidal freshwater zones of each of the major river basins—James, York, Rappahannock, and Potomac—and representing the main stem of the Chesapeake Bay and its embayments. These components contain tidal salt and freshwater marshes, submerged aquatic vegetation, upland forests, beaches, mud flats and open water habitats across a broad range of salinity levels. (Contact NOAA/NOS PA at 301-713-3145 ext. 153.)

Chief Scientist

The Chief Scientist (CS) of NOAA is the principal scientific advisor to NOAA's Administrator and performs such duties as the Under Secretary/Administrator directs.

As NOAA's principal spokesperson on scientific and technological issues, the CS formulates and recommends scientific policy to the Under Secretary/Administrator and provides guidance to NOAA Line and Program Offices on scientific and technological issues. The CS is NOAA's primary point of contact with the National Science Foundation, the National Academy of Sciences, the National Academy of Engineering, and other national and international science and technology organizations. (Contact NOAA PA at 202-482-6090.)

See also **NOAA Line Offices, NOAA Program Offices, NOAA Under Secretary for Oceans and Atmosphere/Administrator**

Chlorofluorocarbons (CFCs)

Compounds containing chlorine, fluorine, and carbon; they generally were used as propellants, refrigerants, blowing agents (for producing foam), and solvents. They are identified with numbered suffixes (e.g., CFC-11, CFC-12) which identify the ratio of these elements in each compound. They are known to deplete stratospheric ozone and also are "greenhouse" gases in that they effectively absorb outgoing infrared radiation in the atmosphere. (Contact NOAA/OGP at 301-427-2089 ext. 22.)

CILER

See **Cooperative Institute for Limnology and Ecosystems Research**

CIMAS

See Cooperative Institute for Marine and Atmospheric Studies

CIMMS

See Cooperative Institute for Mesoscale Meteorology Studies

CIRA

See Cooperative Institute for Research in the Atmosphere

Clean Air Act (45 USC 7453 and 7454)

Directs the NOAA Administrator to establish a continuing program of research and monitoring of the stratosphere for the purposes of early detection of changes in the stratosphere, and climatic effects of such changes. (Contact NOAA/OAR PA at 301-713-2483.)

Climate

The average weather conditions in an area over a period of years.

Climate and Global Change Program

NOAA has the primary responsibility within the U.S. Global Change Research Program to routinely provide climate forecasts and information products to the nation. In order to fulfill this role, NOAA's Climate and Global Change Program is conducting applied research to understand the naturally varying climate and its predictability while implementing the long-term monitoring, data collection and distribution, and climate prediction systems required to generate climate forecast products and reliable climate assessments. (Contact NOAA/OGP at 301-427-2089 ext. 22.)

Climate Anomaly

The deviation of a particular climatic variable from the mean or normal over a specified time. A 30-year average of hourly or daily meteorological observations for 90 or so adjacent days, generally three consecutive calendar months, is the climatology of concern in our seasonal outlooks. It is this climatology that is removed from the outlooks and observations to produce the anomalies of interest. (Contact NOAA/NWS PA at 301-713-0622.)

Climate Change

The long-term fluctuation in temperatures, precipitation, wind and all other aspects of the Earth's climate.

Climate Diagnostics Center

The Climate Diagnostics Center (CDC) is located in Boulder, Colo., and performs climate diagnostic studies on a variety of data sets to provide an understanding of the nature and causes of climate variability on time scales of months to centuries. Among the problems addressed are climate variability on monthly to seasonal time scales including droughts, floods, and cold spells; climate variability on interannual time scales, particularly El Niño-Southern Oscillation (ENSO); and the development of a climate prediction system and detection of climate trends. (Contact NOAA/ERL PA at 303-497-6286.)

Climate Modeling

Climate modeling is the use of high-speed computers to generate combined ocean and atmospheric models for use in predicting monthly, seasonal and other long-term forecasts. (Contact NOAA/NWS PA at 301-713-0622.)

Climate Monitoring and Diagnostics Laboratory

The Climate Monitoring and Diagnostics Laboratory (CMDL), in Boulder, Colo., conducts research to measure atmospheric composition. The Laboratory operates a network of global sites to document changes in methane; carbon dioxide; nitrous oxide; CFCs and other greenhouse gases; near-surface and stratospheric ozone aerosols; and solar and infrared radiation. The data records are used by scientists worldwide as authoritative sources of global chemical information. (Contact NOAA/ERL PA at 303-497-6286.)

Climate Prediction Center (CPC)

The National Centers for Environmental Prediction's CPC provides climate products and services on climate variations, monitor-

ing of climate system and development of databases for determining current global and regional climate anomalies and trends, and analysis of their origins and linkages to the complete climate system. To provide these products, the CPC engages in diagnostic research and studies of observations and forecast model output. (Contact NOAA/NWS PA at 301-713-0622.) See also **National Centers for Environmental Prediction** (NCEP)

Climatology

The science dealing with climate and climate phenomena.

Coast and Geodetic Survey Act

The Secretary of Commerce is authorized to conduct hydrographic and topographic surveys, tide and current observations, geodetic-control surveys, field surveys for aeronautical charts, and geomagnetic, seismological, gravity, and related geophysical measurements to provide charts and other information for safe marine and air navigation. These charts and information have commercial and industrial uses and fulfill engineering and scientific purposes. This information is collected, assimilated, and distributed by NOAA under its authority in the Act. (Contact NOAA/NOS PA at 301-713-3066.)

Coast Pilot

The *Coast Pilot* is a nine-volume series of books covering contiguous stretches of the coastline. These books provide detailed information to supplement nautical charts, particularly for mariners cruising unfamiliar waters. Useful information includes location of fuel piers, repair and haul-out facilities, local navigation regulations including, for example, hours of drawbridge operation, descriptions of natural and cultural shoreline features, tides and tidal currents, local weather conditions and navigational hazards. (Contact NOAA/NOS PA at 301-713-3066.)

Coast Survey, Office of the

The oldest scientific organization in the U.S. Government (founded by Thomas Jefferson in 1807), the Office of the Coast Survey manages the NOAA nautical charting and nautical chart data collection and information programs.

The office collects marine, oceanographic, and navigation coastal data and performs analyses of physical phenomena pertaining to the sea and Great Lakes as they affect shoreline and bottom configuration. The office manages ship- and shore-based hydrographic survey units and develops hydrographic survey and cartographic techniques. It constantly monitors the needs of the nation's mariners and plans new navigational products to meet those needs. (Contact NOAA/NOS PA at 301-713-3066.)

Coastal and Estuarine Oceanography Program

Studies our nation's surface and internal waves, flooding, sediment transport, oxygen distribution, water quality, and fluxes of energy and momentum across the sea surface. The program obtains oceanographic, meteorological, geological and chemical data throughout the U.S. Coastal Zone. Circulation and water level models of the nation's estuaries and coastal ocean are created and used to revise NOAA's tide and current prediction tables, produce circulation and water level forecast atlases, circulation and water level predictions. The program performs applied research on the physical oceanography and related meteorological, chemical, and geological phenomena of the nation's estuaries and coastal ocean. (Contact NOAA/NOS PA at 301-713-3066.)

Coastal Assessment Framework (CAF)

A digital spatial framework developed by NOAA using geographic information systems (GIS) technology, which allows coastal resource managers and analysts to organize and present information on the Nation's coastal and marine resources.

Within NOAA, it is the cornerstone of a series of activities in national estuarine assessment, and many databases are keyed to the CAF. The Framework is composed of 124 Estuarine and Sub-estuarine Drainage Areas (EDAs), 43 Fluvial Drainage Areas (FDAs), 285 Coastal Drainage Areas (CDAs), and 15 Fluvial components of Coastal Drainage Areas (FCDAs), and encompasses 83 percent of the land area within the contiguous United States. The CAF is currently available from NOAA in digital format on disk and via the ORCA Internet Information Service. See also **Geographic Information Systems (GIS)**

Coastal Change Analysis Program (C-CAP)

C-CAP is one of the major programs of National Ocean Service's Coastal Ocean Program (COP). It was designed to facilitate coordination in wetlands policy and was developed to help address the national need to quantify changes in the areal extent of coastal wetlands and adjacent uplands in order to link land-based human activities to coastal ocean productivity. Satellite images (Landsat Thematic Mapper) are used to map emergent wetlands and aerial photography to map submerged rooted vascular plants, e.g., seagrasses. Change detection analyses are then performed.

A significant accomplishment of C-CAP has been leadership in the development of a nationally accepted protocol to be used throughout the United States to develop consistent and reliable coastal-change information regardless of investigator or region. After testing the protocol in two prototype studies—one in the Chesapeake Bay and the other in coastal North Carolina—the protocol is being refined in regional applications, and a national coastal change-detection database is being developed.

Among these regional applications have been the Columbia River Estuary, St. Croix River Estuary, the Texas coast, southern Florida, Massachusetts, and Louisiana. Additionally, COP and the Office of Ocean and Coastal Resource Management have jointly funded a number of regional projects, all of which will use the C-CAP protocol in development of their land cover and change detection databases, which will be useful to managers for a variety of applications.

Some of these projects will be applicable specifically to state nonpoint source pollution monitoring. An operational C-CAP facility is being developed at the NOAA Center for Coastal Ecosystem Health in Charleston, S.C. (Contact NOAA/NOS PA at 301-713-3066.) See also **Coastal Ocean Program (COP)**

Coastal Drainage Area

Generally defined as that component of an entire watershed that is not part of any Estuarine Drainage Area or a corresponding Fluvial Drainage Area and drains directly into an ocean, an estuary, or the Great Lakes.

Coastal Fisheries Ecosystems

The aim of the Coastal Fisheries Ecosystems program is to provide fisheries managers with the kind of scientific information that will be important in increasing the long-term potential yields of commercially important fisheries and other productive fishery resources for the economic benefit of the nation. To do this, NOS funds research by NOAA/academic partnerships to understand the fundamental processes that affect fisheries productivity. Current CFE projects include those relating to cod, haddock, and flounder on Georges Bank; menhaden in the South Atlantic Bight; and pollock in the Bering Sea. (Contact NOAA/NOS PA at 301-713-3066.) See also **Coastal Ocean Program**

Coastal Forecast System (CFS)

A NOAA-wide effort is underway to improve its coastal forecasting capabilities. Specific forecasts will include, for example, winds, waves, water-levels, sea-surface temperatures, currents, and fog.

The approach will be regional to accommo-

date the unique attributes of the highly variable U.S. coasts. CFS will integrate the interests and needs of residential, commercial, and recreational users of coastal resources with special emphasis on the utility of the forecasts for daily operational management applications.

NOAA has funded a number of projects which will lead to the development of the system, including the Great Lakes Forecast System and an East Coast Feasibility Study. The Great Lakes system, operating in Lake Erie, is the first regional prototype. The East Coast study is testing the feasibility of running a large ocean model in an operational National Weather Service (NWS) environment.

Ultimately, it will be used to set the offshore boundary conditions for the nearshore regional models to be developed. The CFS will improve existing products and add new products to the NWS Family of Services. (Contact NOAA/NOS PA at 301-713-3066.) See also **Coastal Ocean Program (COP)**, **Family of Services**

Coastal Monitoring and Bioeffects Assessment Program

Conducts a comprehensive monitoring and research program to assess the environmental quality of U.S. coastal, estuarine, and oceanic areas and the biological consequences of activities in these areas. The program provides a national focal point for U.S. coastal and marine monitoring activities. It carries out intensive surveys in areas with elevated contaminant levels, and conducts a nationwide program to monitor chemical and biological conditions at representative coastal sites. (Contact NOAA/NOS PA at 301-713-3066.)

Coastal Monitoring Program

Carries out a comprehensive, national environmental monitoring program—NOAA's *National Status and Trends Program*. The program measures chemical contaminants, indicators of biological effects, and related properties at sites around the U.S. coasts, developing from these data national and regional assessments of the environmental quality of U.S. coastal and oceanic waters. (Contact NOAA/NOS PA at 301-713-3066.)

Coastal Ocean

The coastal ocean includes the oceans within the limit of our Exclusive Economic Zone, our coasts, our bays and estuaries, and the Great Lakes. This diverse environment includes resources that represent the world's most biologically productive ecosystems, unmeasured reserves of strategic minerals and other nonliving resources, and unparalleled opportunities for recreation and tourism. This area is an economically, politically, and socially critical part of our nation. More than half of the U.S. population lives in coastal counties.

Coastal Ocean Management, Planning and Assessment System

See COMPAS.

Coastal Ocean Program (COP)

The Coastal Ocean Program, part of NOAA's National Ocean Service, was established to focus NOAA's scientific efforts on longstanding as well as emerging problems in the coastal ocean. Because coastal problems are complex and because NOAA has many missions in the oceans, COP was created to coordinate and leverage existing NOAA and academic expertise to bring the best science to bear on coastal problems.

In doing this, COP builds multi-organizational teams across NOAA programs; responds rapidly to emerging problems; increases external involvement by building NOAA-university partnerships; and provides cost-effective problem solving. COP delivers timely, high-quality science for important coastal policy decisions.

Decision-makers need a comprehensive, proactive approach to managing coastal resources, which must include the ability to

predict environmental responses to human and natural forces. Coastal resource management based on an improved predictive capability can generate significant benefits.

COP projects and products are designed to help coastal managers find answers that will allow for continued economic growth while preserving the environment. COP has a number of specific themes and programs through which it carries out its goals.

Also see **Atmospheric Nutrient Inputs to Coastal Areas, Coastal Change Analysis Program, Coastal Fisheries Ecosystems, Coastal Forecast System, CoastWatch Program, Coral Reef Initiative, Decision Analysis Series, Environmental Valuation Workshops, Estuarine Habitat Program, Interagency Coastal Ocean Science, Nutrient Enhanced Coastal Ocean Productivity, Ocean Color, Patuxent River Cumulative Effects Study, South Florida Cumulative Effects Study, South Florida Restoration, and Toxic Chemical Contaminants Program.** (Contact NOAA/NOS PA at 301-713-3066.)

Coastal Programs Division

Growing human demands on our nation's coastal zone create increasing conflict among coastal resource users and the needs of the coast itself. To resolve these conflicting demands, this division implements the Coastal Zone Management Act (CZMA), enacted by Congress in 1972.

The CZMA seeks to harmonize human demands while optimizing social, economic and environmental value of the shoreline. To manage the coasts, the division relies on a federal and state partnership in which federal funding and resources are provided to coastal states to implement federally approved management plans. The Coastal Zone Management (CZM) partnership protects coastal resources, manages growth along the coast, saves lives and property in hazard-prone areas, provides more public access to the coast, streamlines the process for development permits, and reduces litigation.

Thirty-six coastal states and territories, including the Great Lakes states, can participate in the partnership; currently, 29 of these coastal states and territories, covering 94 percent of the U.S. shoreline, implement federally approved CZM programs. Five additional states (Georgia, Ohio, Texas, Minnesota, and Indiana) are working with NOAA to develop approved programs. (Contact NOAA/NOS PA at 301-713-3145 ext. 153.) See also **Coastal Zone, Coastal Zone Management, Coastal Zone Management Act of 1972, as amended**

Coastal Zone

The area where the land meets the water. Over 50 percent of the U.S, population lives in coastal counties, although they make up only 10 percent of the nation's land area. See also **Coastal Programs Division**

Coastal Zone Management

The process by which many pressures affecting the quality of the Coastal Zone are brought together, including development/land management, natural resource protection, legislative and regulatory requirements. NOAA provides technical assistance and Federal matching funds to coastal states to help them develop comprehensive coastal zone management programs that will protect coastal environments and serve sustainable development along the coasts. See also **Coastal Programs Office, Sea Level Rise**

Coastal Zone Management Act of 1972, as amended (CZMA)

The CZMA strives to protect the nation's coastal zone resources. Through the CZMA, states are encouraged to develop coastal zone management programs (CZMPs) that allow economic growth that is compatible with the protection of natural resources, the reduction of coastal hazards, the improvement of water quality, and

sensible coastal development. The CZMA provides financial and technical incentives for coastal states to do this. The CZMA also establishes the National Estuarine Research Reserve (NERR) System. States may seek federal approval and designation of certain areas as national estuarine research reserves if the areas qualify as biogeographic and typological representations of estuarine ecosystems and are suitable for long-term research and conservation. Once an area is designated as a NERR, federal financial assistance is available for activities related to it. (Contact NOAA/NOS PA at 301-713-3066.) See also **Coastal Programs Office, National Estuarine Research Reserve System**

CoastWatch Program

Designed to provide satellite data and in situ environmental data and information to federal and state decision-makers and researchers in a timely and readily accessible manner. Early development and management of CoastWatch was initiated by NESDIS with support from the NOAA Coastal Ocean Program. CoastWatch focuses on regional and national priorities, such as unusual environmental events and tracking algal biomass that contribute to toxic phytoplankton blooms. The NESDIS Office of Satellite Data Processing and Distribution has the responsibility for managing the NOAA CoastWatch program. NOAA will continue to develop regional scientific applications of the data that will be useful for coastal monitoring and management. (Contact NOAA/NESDIS PA at 301-457-5005.) See also **Coastal Ocean Program; Satellite Data Processing and Distribution, Office of**

Command and Data Acquisition Stations

NOAA operates two Command and Data Acquisition Stations, one in Wallops, Va., the other in Fairbanks, Ak. (Contact NOAA/NESDIS PA at 301-457-5005.)

Commissioned Personnel Center (CPC)

Located in Silver Spring, Md., CPC is responsible for the uniformed officer corps of the U.S. Department of Commerce. The NOAA Corps operates and manages NOAA's fleet of hydrographic, oceanographic, and fisheries research ships, and supports NOAA's programs. (Contact NOAA PA at 202-482-6090.)

Committee on Environment and Natural Resources (CENR)

In 1993, the President established the National Science and Technology Council (NSTC) to reinvent how research and development is conducted in the United States. The NSTC Committee on Environment and Natural Resoruces (CENR) is making significant changes in how the federal government plans and supports research on the environment and natural resources.

The Administration is committed to maintaining economic growth that creates jobs, protects human and ecological health, and promotes conservation of natural resources for existing and future generations. Scientific research and technological development are the key for sustainable economic development—maintaining and enhancing environmental quality while continuing to strengthen our nation's economic security. To reach these goals, federal R&D investments must be concentrated in areas where benefits will be optimized—toward our greatest challenges and where payback will be largest.

CENR has started coordinating the previously fragmented environmental research programs across federal agencies. This approach replaces the traditional single issue, single agency, and single discipline approach to solving environmental issues with an integrated, interagency research program. This process brings together researchers and policymakers from a range of disciplines and agencies. CENR is also identifying opportunities to reduce redundances in federal programs, fill critical gaps in research to understand important environmental issues, and anticipate environmental problems of the

future and prevent them, rather than respond to them after the fact. This strategy holds the promise of unprecedented benefits from integrated planning and budgeting to reduce overlap in federal programs while solving issues in a policy-relevant and cost-effective manner. (Contact NOAA PA at 202-482-6090.) See Interagency Coastal Ocean Science

Compact Disc-Read Only Memory (CD-ROM)

A method of storing large amounts of computer data so they can be read but not overwritten or erased. One CD-ROM holds the equivalent of 450 computer diskettes. Creating CD-ROMs is a cost-effective method for distributing large files, such as electronic navigation charts and satellite data.

COMPAS (Coastal Ocean Management, Planning and Assessment System)

Two problems with effectively managing conflicting uses of the U.S. coastal zone are not having the ability to easily access resource information, and poorly applying this information to specific management problems. COMPAS provides states with a process to organize this information for management needs using a combination of commercial and public domain software for Macintosh computers. COMPAS systems have been developed thus far for Texas, Florida and Oregon. A COMPAS system for Delaware is in development. A wide array of kinds of coastal resource information is available in these systems and the software allows users to add and delete data, construct both logical and spatial data queries, and create custom data screens for access to routinely needed information. Future COMPAS applications will be based on commercial software that is compatible with both PC and Macintosh computers. (Contact NOAA/NOS PA at 301-713-3066.)

Computer Aided Management of Emergency Operations (CAMEO)

A computer software system that assists emergency response team staff in planning for, and responding to, chemical accidents. CAMEO contains response information and recommendation for 2,629 commonly transported chemicals; an air dispersion model to assist in evaluating release scenarios and evacuation options; and several easily adaptable databases and computational programs that address emergency planning. CAMEO is a joint NOAA/Environmental Protection Agency project. (Contact NOAA/NOS PA at 301-713-3066.)

Conductivity/Temperature/Depth

One of the main parameters measured in oceanography. The conductivity of sea water is directly related to its salinity, which in turn tends to vary with its temperature and depth, with colder, saltier, water tending to be found at greater depths. This measurement is important to determine the movement of ocean currents which may affect climate, and is especially important in estuaries where the salinity levels are key environmental factors in the health of the ecosystem. (Contact NOAA/NOS PA at 301-713-3066.)

Console Replacement System

A new automatic weather broadcast console being developed which will provide a more efficient means of disseminating severe weather watches, warnings and emergency information over NOAA Weather Radio. Manually operated broadcast consoles currently are used by weather service forecasters in more than 300 locations to air live and taped messages over the NOAA Weather Radio network. The replacement consoles will provide automated broadcast programs for up to 10 NOAA Weather Radio transmitters serving different geographic areas within a weather office's local area. The new, personal computer-based consoles will allow forecasters to broadcast warnings and emergency information as soon as possible through live voice or from text along with the current NOAA Weather Radio tone-alert and Weather Radio Specific Area Message Encoder codes. (Contact NOAA/NWS PA at 301-713-0622.) See also NOAA

Weather Radio, Specific Area Message Encoder

Consumption of Edible Fishery Products

Estimated amount of commercially landed fish, shellfish, and other aquatic animals consumed by the civilian population of the United States. Estimates are on an edible weight basis and have been adjusted for beginning and ending inventories of edible fishery products. Consumption includes U.S. production of fishery products from both domestically caught and imported fish, shellfish, other edible aquatic plants, animals, and imported products and excludes exports and purchases by the U.S. Armed Forces.

Contiguous Zone

Area between 12 and 24 miles from the coast in which a host country has rights to control immigration, customs and pollution regulations.

Continental Shelf Fishery Resources

Living organisms of any sedentary species that at the harvestable stage are either (a) immobile on or under the seabed, (b) unable to move except in instant physical contact with the seabed or subsoil of the continental shelf. The Magnuson Act now lists them as certain abalones, surf clam and ocean quahog, queen conch, Atlantic deep-sea red crab, dungeness crab, stone crab, king crabs, snow (tanner) crabs, American lobster, certain corals, and sponges. (Contact NOAA/NMFS PA at 301-713-2370.) See also Magnuson Fishery Conservation and Management Act

Continuously Operated GPS Reference Stations (CORS)

A series of extremely high-precision reference stations that will provide local users a tie to the National Spatial Reference System (NSRS). The horizontal and vertical position of the CORS sites will be maintained to millimeter accuracy and will bring navigation and engineering applications unprecedented flexibility. (Contact NOAA/NOS PA at 301-713-3066.) See also National Spatial Reference System, Global Positioning System

Convergence

The Departments of Commerce (DOC) and Defense (DOD) operate and maintain a suite of polar-orbiting environmental satellites. In 1994, the President directed that DOC and DOD converge their programs and develop a single national polar-orbiting operational environmental satellite system to satisfy both civil and national security requirements.

This has resulted in the creation of the National Polar-orbiting Operational Environmental Satellite System (NPOESS), a triagency program of DOC, DOD and the National Aeronautics and Space Administration. The first converged NPOESS satellite will be launched in 2004. Plans for implementation of a combined satellite operational control center to operate both the existing defense meteorological satellite system and the NOAA polar-orbiting operational environmental satellite system under NOAA are being considered for as early as 1998.

It is estimated that this integrated effort will result in direct savings to the taxpayer of over $1 billion over the life of the program with no degradation of services as redundant systems and planning will be eliminated. (Contact NOAA/NESDIS PA at 301-457-5005.)

Cooperative Institute for Limnology and Ecosystems Research (CILER)

Located in Ann Arbor, Mich., CILER is one of eight joint institutes administered by the Environmental Research Laboratories. CILER is a cooperative institute of NOAA and the University of Michigan with formal links to Michigan State and other universities in the Great Lakes Basin. CILER research focuses on climate and global change, coastal and near-shore processes, and large-lake ecosystem structure and function. (Contact NOAA/OAR PA at 301-713-2483.)

Cooperative Institute for Marine and Atmospheric Studies (CIMAS)

Located in Miami, Fla., it is one of the eight cooperative institutes administered by the Environmental Research Laboratories. CIMAS is a cooperative institute of NOAA and the University of Miami's Rosenstiel School of Marine and Atmospheric Sciences. CIMAS research focuses on climate variability and ecosystem dynamics. (Contact NOAA/OAR PA at 301-713-2483.)

Cooperative Institute for Mesoscale Meteorology Studies

One of eigh joint institutes administered by the Environmental Research Laboratories, it is a cooperative institute of NOAA and the University of Oklahoma. Research includes convective and mesoscale meteorology, forecast improvements, and climatic effects of mesoscale processes. (Contact NOAA/OAR PA at 301-713-2483.)

Cooperative Institute for Research in Environmental Sciences

One of eight joint institutes administered by the Environmental Research Laboratories, it is a cooperative institute of NOAA and the University of Colorado in Boulder, Colo. The institute conducts research in environmental chemistry and biology, and in atmospheric and climate dynamics, and supports the National Snow and Ice Data Center and the Center for the Study of Earth from Space. (Contact NOAA/ERL PA at 303-497-6286.)

Cooperative Institute for Research in the Atmosphere

One of eight joint institutes administered by the Environmental Research Laboratories, it is a cooperative institute of NOAA and Colorado State University, located in Fort Collins, Colo. The institute conducts research in satellite cloud climatology, severe weather, numerical modeling, and air quality. The Regional and Mesoscale Meteorology Laboratory, a NESDIS research laboratory, is collocated with CIRA. (Contact NOAA/ERL PA at 303-497-6286.)

COP

See Coastal Ocean Program

Coral Bleaching

An indicator of coral stress that occurs when corals expel their zooxanthellae, turning from brown or green to almost white. Although coral bleaching occurs naturally in some limited areas, it is alarming when whole reefs or regions are affected, as in the Caribbean in 1987 and 1990. Although corals may recover by replacing lost zooxanthellae without substantial damage, catastrophic mortality may also occur, completely changing the structure of the coral reef ecosystem. This occurred during the 1982-'83 El Niños. Pollution and eutrophication are suspected causes, although bleaching also occurs in areas of little human impact. Global warming may also play a role, as coral bleaching has also been linked to long periods of elevated water temperatures. (Contact NOAA/OAR PA at 301-713-2483.)

Coral Reef

A coral reef is an integrated community containing the most varied forms of life found any place on earth. The exquisite beauty and breathtaking colors of an underwater coral garden make them one of the earth's outstanding natural treasures. Unlike the vegetation of land communities where plants outnumber animals, very few of the things growing on a coral reef are true plants.

The builders of the reefs are billions of tiny organisms called polyps, some no larger than a pinhead. They secrete a limy skeleton that is the basic structure of the reef. Almost one hundred different species create a variety of shaped and colored coral structures.

These "buildings" serve as underwater housing for a dazzling array of marine life. The coral provide a safe nursery for juvenile fish and a shelter for lobsters, crabs, and shellfish. Intermixed and surrounding the

hard corals are plant-like gorgonians, soft corals with graceful shapes of sea fans, sea plumes, and sea whips. Rainbow-hued reef fish move among the corals creating changing patterns of moving color.

Microscopic organisms and a host of other animals find refuge in crevices and crannies. Giant predators such as sharks, barracuda, and grouper prowl the reef in search of food. Reefs are extremely delicate and intensive exposure to human beings is damaging. The coral reef system in the Florida Keys, one of the principal tourist attractions in south Florida, is the third largest in the world. (Contact NOAA/NOS PA at 301-713-3066.) See also Florida Keys National Marine Sanctuary

Coral Reef Initiative, International

A new partnership among the United States and other countries to provide for the protection, restoration, sustainable use, and understanding of coral reefs and related ecosystems. The U.S. component of the Coral Reef Initiative, in which a number of federal agencies, including NOAA, are participating, supports these objectives and recognizes that effective management of coral reefs should be integrated with coastal development efforts and urban development planning. (Contact NOAA/NOS PA at 301-713-3066.)

Cordell Bank National Marine Sanctuary, California

Located at the edge of the continental shelf, 20 nautical miles west of Point Reys, California, the 9½-mile Cordell Bank is roughly elliptical in shape, covering an area of 18-square nautical miles. The sanctuary includes the bank and surrounding 380-square nautical miles, encompassing a combination of oceanic conditions and undersea topography that provides a highly productive marine environment. The bank rises to 115 feet below the surface of the sea, yet only a few miles away water depths reach over 6,000 feet.

These conditions have led to a unique association of subtidal and oceanic species, including an exceptional assortment of algae, invertebrates, fishes, marine mammals and seabirds. Many of the marine mammals found here are endangered or threatened: right, blue, fin, sei, humpback and sperm whales, Stellar sea lions, and green, leatherback, Pacific Ridley, and loggerhead sea turtles. Many species of seabirds forage on the marine organisms in the waters above Cordell Bank. The area is a paradise for fishermen and advanced divers. (Contact NOAA/NOS PA at 301-713-3145 ext. 153.)

COSPAS/SARSAT (Space System for Search of Vessels in Distress/Search and Rescue Satellite-Aided Tracking)

An international search and rescue program that uses NOAA environmental satellites equipped with Canadian and French search and rescue instruments, Russian satellites, and a network of Earth stations to pick up emergency signals from maritime, aviation, and land-based users in distress. Since the inception of the program 10 years ago, more than 4,400 lives have been saved. The COSPAS-SARSAT program was formed as a joint effort by the United States, Canada, France, and the former Soviet Union. The first satellite was launched by the Soviet Union in 1982, followed by additional Russian and U.S. satellites. Today there are six operational satellites involved in the program: NOAA-9, -10, -11, and -14, and COSPAS-4, -5, and -6. (Contact NOAA/NESDIS PA at 301-457-5005.) See also U.S. Satellite Search and Rescue Program

County Warning and Forecast Area

The area for which a National Weather Service office is responsible for general weather forecast products. (Contact NOAA/NWS PA at 301-713-0622.) See also County Warning Area

County Warning Area (CWA)

A weather office's area of responsibility broken down into individual counties, for which severe weather watches and warnings

are issued. (Contact NOAA/NWS PA at 301-713-0622.) See also **County Warning and Forecast Area**

Cray C90 Supercomputer

The powerful Cray C90 is the supercomputer that, along with atmospheric modeling techniques, enables the National Centers for Environmental Prediction to produce weather forecast and climate prediction products. The Cray C90 is a prime element in the National Weather Service Modernization Program. Operating at speeds in excess of 15 GigaFlops (15 billion operations per second), the supercomputer delivers a five-fold increase over the NCEP's previous computing speed.

At that speed, the Cray takes four hours to run a representation of the global atmosphere used for assemble daily mid-range (6- to 10-day) forecasts. NOAA scientists use the Cray C90 to serve a wide range of weather data needs. The Cray processes a number of sophisticated atmospheric models, producing daily weather analyses and Long-Lead Climate Outlooks for weather service field offices and a host of private-sector weather data services. (Contact NOAA/NWS PA at 301-713-0622.) See also **Long-Lead Climate Outlook, National Centers for Environmental Prediction, Atmospheric Modeling, Modernization and Associated Restructuring**

Crustacean

Invertebrate with segmented body, such as shrimp and crabs.

CTD

See **Conductivity/Temperature/Depth**

Current Potential Yield (CPY)

Catch that can be taken, which is dependent on the current abundance of fish and the prevailing production rate. It is usually estimated by applying the fishing mortality rate associated with Long-Term Potential Yield (LTPY) (e.g., target fishing effort) to the current population size. This yield may be either greater than or less than LTPY. CPY is the amount of catch that will maintain the present population level (biomass) or, for overutilized stocks, stimulate a trend toward recovery to a population size that will produce the LTPY. For underutilized stocks at high biomass levels, the CPY may be larger than the LTPY. In this circumstance, a large fishery harvest would not be sustainable in the long run, but it would bring the stock down to the level supporting LTPY. (Contact NOAA/NMFS PA at 301-713-2370.) See also **Long-Term Potential Yield, Production Function**

Customs Territory

Unless otherwise noted, the foreign trade information presented is based on Bureau of the Census data for the Customs territory of the United States. The territory includes the 50 States, District of Columbia, Puerto Rico, and the U.S. Virgin Islands.

d

Damage Assessment Center (DAC)

Established in 1989 when the *Exxon Valdez* oil spill demonstrated the need for a professionally staffed office to plan and conduct natural resource damage assessments. The center's mission is to act on behalf of the public to assess and claim damages for injuries to NOAA trust resources from discharges of oil or releases of hazardous materials.

Damages paid by those responsible for releasing a hazardous material are used to restore, replace, rehabilitate or acquire the equivalent of the injured resources. NOAA trust resources include: U.S. fishery resources; endangered and threatened marine species; marine mammals; tidal wetlands and other critical habitats; and resources of national marine sanctuaries and estuarine research reserves. DAC also advances the state-of-the-art in environmental science and natural resource economics. (Contact NOAA/NOS PA at 301-713-3066.)

Data Buoys

See National Data Buoy Center

Data Collection System (DCS)

DCS units are flown on both geostationary operational environmental satellites and NOAA polar-orbiting spacecraft. They gather and relay data from both mobile and stationary platforms at various locations. DCS units on NOAA satellites can also determine the precise location of moving platforms at the same time the data were acquired.

Decision Analysis Series

A series of publications geared to a coastal management audience for practical assistance in decision-making. Topics for which documents already are published include summer flounder habitat and salt marsh restoration. A bibliography of selected synthesis documents on coastal ocean issues has also been published. Future documents will address the following topics: eutrophication and phytoplankton blooms, seagrass restoration technology, analysis of cumulative coastal environmental impacts, coastal watershed restoration information, and the use of buffer zones in restoring streams and anadromous fish habitat. (Contact NOAA/NOS PA at 301-713-3066.) See also **Coastal Ocean Program**

Deep Seabed Hard Mineral Resources Act

Provides the regulatory framework for the exploration and commercial recovery of hard minerals like nickel, copper, cobalt, and manganese from the deep seabed. The Act's goals are to stimulate commercial recovery of these resources in an environ-

mentally protective manner. To this end, NOAA issues licenses for exploration and permits for commercial recovery containing environmental safeguards and monitoring systems. NOAA is directed generally to require the use of best available technologies for the protection of health, safety, and the environment when the exploration or recovery activities will have a significant effect on health, safety, and the environment. Criminal and civil penalties may be used to enforce the Act. (Contact NOAA/NOS PA at 301-713-3066.)

Deep Seabed Hard Minerals Program

Addresses legal issues related to deep seabed hard minerals development for U.S. corporations. It also coordinates with other federal agencies to develop and carry out an overall national policy on the development of ocean mineral resources of potential strategic significance. (Contact NOAA/NOS PA at 301-713-3066.)

Defense Meteorological Satellite Program (DMSP)

A U.S. Air Force-managed meteorological satellite program with satellites circling in sun-synchronous orbit. Imagery is collected in the visible- to near-infrared band and in the thermal-infrared band at a resolution of about three kilometers. DMSP data are taken directly from the satellite for local use aboard ships and at military deployment locations, but are also usually available to civilian users. The DMSP and NOAA polar-orbiting satellite programs will be converged into the National Polar-orbiting Operational Environmental Satellite System. See also Convergence.

Degree-Day

Gauges the amount of heating or cooling needed for a building, using 65 degrees Fahrenheit as a baseline. To compute heating/cooling degree-days, the average temperature for a day is taken and referenced to 65 degrees. An average temperature of 50 yields 15 heating degree-days, while an average of 75 would yield 10 cooling degree-days. Electrical, natural gas, power, and heating, and air conditioning industries use heating and cooling degree information to calculate their needs. To compute growing degree-days, one would use a reference of 50 degrees. Every degree that the average temperature is above 50 becomes a growing degree-day. Agricultural-related interests use growing degree-days to determine planting times. (Contact NOAA/NWS PA at 301-713-0622.)

Delaware National Estuarine Research Reserve

This reserve consists of two components. The Lower St. Jones River component in Kent County is only six miles from downtown Dover. It encompasses 699 acres of tidal marshes, tidal creeks, open water and uplands. The Upper Blackbird Creek component is in New Castle County, about 26 miles from Wilmington. Its 212 acres consist primarily of brackish tidal wetlands, open water and wooded uplands.

The reserve features full-range tidal wetlands, including saltmarsh cordgrass and salt hay and the open water of creek, river, and bay areas. It is buffered by a freshwater wooded area, farmlands and meadows. The reserve has a rich prehistory and an historic 18th-century plantation setting. Numerous species of birds, reptiles and mammals make their home at the reserve, including the snowy egret and great blue heron, bald eagle and slack duck, white perch, weakfish, and killifish. The St. Jones River segment also contains spawning horseshoe crabs relished by migratory shorebirds. A pair of nesting bald eagles has taken up residence in the Upper Blackbird Creek segment of the reserve. (Contact NOAA/NOS PA at 301-713-3145 ext. 153.)

Demersal

Ocean-bottom dwelling species.

Depleted

Characteristic of a marine mammal population when its size is below the level of maximum net production. Often referred to as a marine mammal's optimum sustainable population level. (Contact

NOAA/NMFS PA at 301-713-2370.) See also **Optimum Sustainable Population Level and Marine Mammal Protection Act**

Desktop Information Systems

Recent developments in computer technology have made it possible to bring a wide range of information and analysis capabilities to personal computer platforms. These systems combine extensive databases with graphic interfaces and analysis tools. NOAA has developed several specific systems for ocean and coastal resource issues, including The Gulf of Mexico Shrimp Harvest Desktop Information System; The West Coast of North America Colonial Seabirds Desktop Information System; The Bering, Chukchi, and Beaufort Seas Biogeography Information System; the Mid-Atlantic Coastal Mapping and Information System; and the Coastal Ocean Management, Planning and Assessment Systems for the states of Texas, Oregon, Delaware and Florida. (Contact NOAA/NOS PA at 301-713-3066.)

Digital Aids to Navigation

NOAA/NOS maintains a database of aids to navigation information as part of its nautical chart production procedure. Included are fixed and floating aids to navigation, landmarks, and some marine hazards. (Contact NOAA/NOS PA at 301-713-3066.)

Digital Oil Spill Response Tools

Effective oil spill response requires knowing significant amounts of information. Knowing the properties of spilled oil, the removal options, the spill's trajectory, the biological and human resources likely to be affected, the availability of cleanup supplies, and how to contact industry and government officials are just some of the requirements for effectively managing an oil spill. NOAA is at the forefront in developing integrated computer information tools to allow spill response managers access to rapidly changing information integrated with specialized analysis tools for effective decision-making. (Contact NOAA/NOS PA at 301-713-3066.)

Direct Discharge

Any intentional release of wastes into water ecosystems through direct dumping or direct pipeline discharge. See also **Point Source**

Direct Readout

The capability to acquire data directly from environmental satellites via an Earth station. Through direct readout services, weather satellite pictures can be received by organizations or by private citizens in their own homes. Thousands of receiving stations have been built or bought by organizations, colleges, ham radio operators, and many others to obtain real-time images of the atmosphere, land, and oceans. These images are transmitted by polar-orbiting or geostationary satellites. Direct readout services from NOAA's satellites include: Automatic Picture Transmission; High Resolution Picture Transmission; Weather Facsimile; and Visible and Infrared Spin Scan Radiometer. See also each of these entries. (Contact NOAA/NESDIS PA at 301-763-5005.)

Disaster Survey Report

The written summary of a given disaster including deaths, injuries, property damage, weather and atmospheric conditions, specific findings and recommendations for future actions, and the rationale associated with such recommendations. The report is compiled from interviews with appropriate emergency management officials on the local, state and federal levels, media, witnesses, and more. For example, in a flood disaster, interviews may be conducted with the Corps of Engineers; the U.S. Bureau of Reclamation; River Basin Commissions and River Authorities; the U.S. Geological Survey; the Soil Conservation Service; and local flood warning groups. For a weather disaster, survey activities may be coordinated with the local, state and federal emergency managers, the U.S. Forest Service, the U.S. Department of Agriculture, etc., as appropriate. (Contact NOAA/NWS PA at 301-713-0622.)

DMSP

See Defense Meteorological Satellite Program

Dobson Unit

The standard way to express ozone amounts in the atmosphere. One Dobson Unit is 2.7 x 1016 ozone molecules per square centimeter. One Dobson Unit refers to a layer of ozone that would be 000.1 centimeters thick under conditions of standard temperature (zero degrees Centigrade) and pressure (the average pressure at the surface of the Earth). For example, 300 Dobson Units of ozone brought down to the surface of the Earth at zero degrees Centigrade would occupy a layer only 0.3 centimeters thick in a column. Dobson was a researcher at Oxford University who, in the 1920s, built the first instrument (now called the Dobson meter) to measure total ozone from the ground.

Doppler Effect

Named for German scientist Christian Doppler who discovered the effect in the 19th century, the Doppler effect enables weather service radars to detect motion within storms. Doppler found that an object moving toward you will compress light, sound, or radio waves, while an object moving away will elongate them. This change is the frequency change heard with passing planes, trains, etc. Radar equipment using microwave signals can gauge motion within a storm by noting the changes in the signals as they are reflected by the storm. See also **Doppler Weather Surveillance Radar, and Modernization and Associated Restructuring**

Doppler Weather Surveillance Radar (Model WSR-88D)

A major element of the National Weather Service modernization program. The WSR-88D radar excels in detecting severe weather events that threaten life and property, from early detection of damaging winds to estimating rainfall amounts for use in river and flood forecasting. The WSR-88D radar can increase advance warnings and the specificity of those warnings for short-lived, often catastrophic events such as tornadoes, flash floods, squall lines, wind, wind shear and precipitation. Using Doppler technology, the WSR-88D calculates both the speed and direction of motion of severe storms. This data allows the radar to identify severe weather conditions. Installation of the new Doppler radar is a cooperative effort between the National Oceanic and Atmospheric Administration, the Department of Defense and the Federal Aviation Administration. (Contact NOAA/NWS PA at 301-713-0622.) See **Modernization and Associated Restructuring**

Doppler Weather Surveillance Radar Products

Users of radar data have access to Doppler Weather Surveillance Radar products via NEXRAD Information Dissemination Service vendors. The following products are available: Reflectivity, Composite Reflectivity, Layer Composite Reflectivity, Mean Radial Velocity, Echo Tops, One-Hour Rainfall Accumulation, Three-Hour Rainfall Accumulation, Storm Total Rainfall Accumulation, Hourly Digital Rainfall Array, Vertically Integrated Liquid Water, and Velocity Azimuth Display Wind Profile. (Contact NOAA/NWS PA at 301-713-0622.) See also **NEXRAD Information Dissemination Service**

Downburst

A strong downdraft, initiated by a thunderstorm, that induces an outburst of damaging straight-line winds on or near the ground. Downbursts may last from a few minutes in small scale microburst on up to 20 minutes in larger, longer living macrobursts. Wind speeds in downbursts can reach 150 miles per hour, and faster.

Dredge

Metal, rectangular sled, surrounded by mesh, which is towed behind a boat along the ocean bottom to collect bottom-dwelling marine life.

Dressed Weight
The weight of a fish after it has been gilled, gutted, beheaded and definned.

Drift Net (or Drift Gillnet)
A long flat net which is allowed to drift in the open ocean; it can be more than 30 miles long.

Drifting Buoys
Ocean data collection buoys that are permitted to drift with the ocean currents, providing information about current dynamics, as well as other information. (Contact NOAA/NOS PA at 301-713-3066.)

DX-90 Digital Exchange Format
Developed by the International Hydrographic Organization, DX-90 is an international standard for the development of electronic nautical chart information. (Contact NOAA/NOS PA at 301-713-3066.)

Estuary

A water body where freshwater empties into and mixes with saltwater. Estuaries have distinct chemical, biological and hydrological properties that make them the most productive ecosystems on Earth. They provide food, shelter, migratory pathways, and nursery areas for 75 percent of the nation's and commercial fisheries. Unfortunately, these areas with their wetlands and seagrasses are threatened by coastal development, pollution, erosion, freshwater diversion, and potential changes in sea level. More than half the coastal wetlands that existed in the late 1700s, during the period when the nation was being formed, were destroyed by 1980. (Contact NOAA/NOS PA at 301-713-3066.)

EUMETSAT

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European Organisation for the Exploitation of Meteorology Satellites (EUMETSAT)

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Development of a joint polar-orbiting satellite system will continue with the converged military and civilian system in the United States. The United States and Europe have a long-term agreement for mutual backup of their geostationary weather satellites. It becomes effective when both parties have baseline systems in place, expected by late 1995. NOAA's baseline system will consist of two geostationary operational satellites (GOES) positioned 22,000 miles (36,00 kilometers) above the equator at 75 degrees west and 135 degrees west longitude. EUMETSAT's system will consist of one operational Meteosat satellite operated at 0 degrees longitude and an operable spare in orbit. (Contact NOAA/NESDIS PA at 301-457-5005.) See also **Meteosat**

Eutrophication

The enrichment of waters by nutrients either by natural means or by human pollution. An overabundance of nutrients can stimulate massive "blooms" of algae which can deplete oxygen in water, leading to the death of aquatic plants, mass fish and shellfish deaths, and even human health problems. (Contact NOAA/NOS PA at 301-713-3066.) See also **Nutrients**

Excessive Heat Advisory

An advisory issued by the National Weather Service when a heat index above 105 degrees Fahrenheit is anticipated. See also **Excessive Heat Watch, Excessive Heat Warning**

Excessive Heat Warning

A warning issued by the National Weather Service when the heat index equals or exceeds 120 degrees Fahrenheit for three hours or longer. In those cases, the heat becomes dangerous for a large portion of the population.

Excessive Heat Watch

A watch issued by the National Weather Service when conditions are favorable for the development of heat indices in excess of 105 degrees during the daytime hours in combination with nighttime low temperatures of 80 degrees or higher, for two consecutive days.

Exclusive Economic Zone (EEZ)

The Magnuson Act defines this zone as contiguous to the territorial sea of the United States and extending seaward 200 nautical miles measured from the baseline from which the territorial sea is measured. This area was formerly referred to as the Fishery Conservation Zone. (Contact NOAA/NMFS PA at 301-713-2370 or

connection fees and annual maintenance fees to recover costs to the government for operating the system. (Contact NOAA/NWS PA at 301-713-0622.) See also **Coastal Forecast System, NEXRAD Information Dissemination Service**

FIG

See **Fishing Industry Grant**

Fin Whale

Listed as endangered under the Endangered Species Act, fin whales are probably the most numerous large cetaceans in temperate waters of the western North Atlantic Ocean. They range widely throughout the continental shelf in all seasons, but most sightings occur from the Great South Channel on Cape Cod north, throughout the southwest Gulf of Maine. Stock structure and total abundance are unknown. An estimate of abundance off the northeast coast in 1979-82 was 5,200 in spring and 1,500 in winter. Important research and management questions are whether separate stocks exist, where calving grounds and annual calf production are located, and where the wintering grounds for the northwest Atlantic population are located. See also **Marine Mammal Protection Act**

Finfish

A fish with fins, as opposed to a shellfish.

Fire Weather Services

The National Weather Service plays a vital role supporting land management agencies' efforts to control and extinguish wildfires. Specially trained forecasters monitor meteorological conditions continuously during the fire season. Knowledge of the weather and land/agriculture characteristics is a critical element in fire control and in effective daily management of activities aimed at protecting valuable renewable resources. Fire weather services are located at offices across the country. Most of the specialized effort of these offices is focused on the local weather season. (Contact NOAA/NWS PA at 301-713-0622.) See also **Air Transporeable Mobile Units**

Fish Abundance

Or population size can be expressed as either the estimated number of fish or estimated total fish weight. Increases in the amount of fish are determined by body growth of individual fish in the population, and the addition, or recruitment, of new generations of young fish (i.e., "recruits"). Those gains must then be balanced against the proportion of the population removed by harvesting and other losses due, for example, to predation, starvation, or disease. See also **Biomass, Fishing Mortality, Natural Mortality, Stock Assessment**

Fish Ladders

A series of ascending pools constructed to enable salmon or other fish to swim upstream around or over a dam.

Fish Meal

A high-protein animal feed supplement made by cooking, pressing, drying, and grinding fish or shellfish.

Fish Oil

An oil extracted from the bodies (body oil) or livers (liver oil) of fish and marine mammals; mostly a byproduct of fish meal production.

Fish Passage Facilities

Features of a dam that enable fish to move around, through, or over without harm; generally, an upstream fish ladder or a downstream bypass conduit.

Fisheries Obligation Guarantee (FOG)

This program allows the fisheries and aquacultural industries to refinance the cost of their production equipment. The program provides a 100 percent federal guarantee that this debt will be repaid. Guaranteed debt is sold into the normal private market for long-term debt. Interest rates are marginally higher than those for U.S. Treasury securities of comparable maturity (plus a one percent guarantee fee as compensation for the program's exposure).

The debt holders' sole security is the program's guarantee. The program holds in

Emergency Alert System (EAS)

A digitally based communications system organized by the Federal Communications Commission (FCC) to replace the Emergency Broadcast System. (Contact NOAA/NWS PA at 301-713-0622.) See also **NOAA Weather Radio, Specific Area Message Encoder**

Emissions

Flows of gases, liquid droplets or solid particles into the atmosphere. Gross emissions from a specific source are the total quantity released. Net emissions are gross emissions minus flows back to the original source. Plants, for example, take carbon from the atmosphere and store it as biomass during photosynthesis, and they release it during respiration, when they decompose, or when they are burned. (Contact NOAA/OGP at 301-427-2089 ext. 22.)

Endangered Species

Marine life protected under the Endangered Species Act in danger of extinction throughout a significant portion of its range. See also **Threatened Species and Endangered Species Act**

Endangered Species Act (ESA)

Established in 1973, the Act requires federal agencies to use all reasonable methods available to conserve endangered and threatened species, to facilitate an increase in their populations, and to improve the quality of their habitats. Under the ESA, the National Marine Fisheries Service (NMFS) is responsible for the listing, protection, and recovery of threatened and endangered marine, estuarine, and anadromous species. If NMFS has information that a marine species may need protection, it must first determine whether the species qualifies for listing, and, if so, whether it should be listed as endangered or threatened. NMFS also determines the extent of critical habitat necessary to sustain the survival of each species and to provide for its recovery. After a species is listed, NMFS coordinates the development and implementation of a plan to recover the species to sustainable population levels. (Contact NOAA/NMFS PA at 301-713-2370.) See also **Endangered Species and Threatened Species**

Environmental Modeling Center (EMC)

The National Centers for Environmental Prediction's EMC develops, improves and monitors data assimilation systems and models of the atmosphere, oceans and coupled system, through a broad program of applied research. Working with scientists from universities, the international scientific community, NOAA laboratories and other government agencies, the center is able to conduct research on current prediction methods and develop new and improved forecast models and objective analysis methods. (Contact NOAA/NWS PA at 301-713-0622.) See also **National Centers for Environmental Prediction**

Environmental Monitoring and Assessment Program

An ambitious long-term, multi-agency national effort, administered by the Environmental Protection Agency, this program is designed to assess and document the status and trends in the condition of the nation's forests, wetlands, estuaries, coastal waters, lakes, rivers and streams, Great Lakes agricultural lands, and arid lands on an integrated and continuing basis. NOAA has been particularly active in the near-coast component of the project focusing on the nation's estuarine and coastal environments. (Contact NOAA/NOS PA at 301-713-3066.)

Environmental Research Laboratories (ERL)

There are 11 NOAA Environmental Research Laboratories (ERL) located across the United States that conduct fundamental research to improve our understanding and prediction of the Earth's geophysical environment, i.e., the oceans and inland waters, the lower and upper atmosphere, and the space environment. This research is the basis for NOAA's contribution to major national environmental programs, includ-

ing climate and global change, coastal oceans, and severe weather. (Contact NOAA/OAR PA at 301-713-2483 or NOAA/ERL PA at 303-497-6286.)

See also **Oceanic and Atmospheric Research; Aeronomy Laboratory; Climate Monitoring and Diagnostic Laboratory; Environmental Technology Laboratory; Forecast Systems Laboratory; Space Environment Laboratory; Climate Diagnostics Center; Air Resources Laboratory; Atlantic Oceanographic and Meteorological Laboratory; Geophysical Fluid Dynamics Laboratory; Great Lakes Environmental Research Laboratory; National Severe Storms Laboratory; and the Pacific Marine Environmental Laboratory**

Environmental Sensitivity Index Maps

NOAA maps produced to highlight habitats particularly sensitive to oil spills for various coastal areas. (Contact NOAA/NOS PA at 301-713-3066.)

Environmental Technology Laboratory (ETL)

Located in Boulder, Colo., its mission is to improve the nation's geophysical research and services through the development, demonstration, and transfer of cost-effective remote measurement systems. ETL conducts studies of the interactions of acoustic and electromagnetic waves with the atmosphere or ocean, develops and experimentally evaluates new geophysical remote-sensing concepts and systems, and transfers remote-sensing technology to government and industry. (Contact NOAA/ERL PA at 303-497-6286.)

Environmental Valuation Workshops

The Coastal Ocean Program has developed a curriculum for its regional workshops that train coastal managers in the methods, assumptions, and applications of environmental valuation techniques for coastal decision-making. (Contact NOAA/NOS PA at 301-713-3066.) See also **Coastal Ocean Program**

EPIRB

Emergency Position Indicating Radio Beacon. See **U.S. Satellite Search and Rescue Program**

Escapement

The number of salmon that actually return to a stream to spawn.

Estuarine Drainage Areas (EDA)

A component of an estuary's entire watershed that empties directly into the estuary and is affected by tides. Every EDA has both a land and water component, with the land component composed of a mainland component and, for certain EDAs, an island component. Size and characteristics of EDAs vary greatly; for example, the Chesapeake Bay EDA covers over 38,000 square miles, while several EDAs along the Pacific coast cover 100 square miles or less. (Contact NOAA/NOS PA at 301-713-3066.)

Estuarine Habitat Program (EHP)

EHP was designed to fund research that will bring about a better understanding of the functions, interactions, and dynamics of salt marsh and seagrass habitats. Particular emphases of this research have been the understanding of the mechanisms and impacts of coastal habitat alteration, the ability of these habitats to support living marine resources, linkages among habitats, and methods of restoring destroyed or degraded habitats. (Contact NOAA/NOS PA at 301-713-3066.) See also **Coastal Ocean Program**

Estuarine Living Marine Resource Program (ELMR)

This program is developing a consistent database on the distribution, abundance, and life history characteristics of over 400 important fishes and invertebrates in the estuaries of the United States. A series of regional ELMR distribution and abundance reports have been completed, and life history summary reports for each region are under development. A nationwide ELMR report will also be produced. (Contact NOAA/NOS PA at 301-713-3066.)

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European Organisation for the Exploitation of Meteorology Satellites (EUMETSAT)

Founded in 1986, EUMETSAT has 17 member states from Austria to the United Kingdom. It has its headquarters in Darmstadt, Germany, and operates Europe's weather satellites. Currently, EUMETSAT operates the METEOSAT series of geostationary satellites, but development of a polar-orbiting satellite series, METOP, should be completed by the year 2000. METOP-1 and METOP-2 will carry U.S. sensors on board, and EUMETSAT will provide sensors for flight on NOAA-N and -N prime.

Development of a joint polar-orbiting satellite system will continue with the converged military and civilian system in the United States. The United States and Europe have a long-term agreement for mutual backup of their geostationary weather satellites. It becomes effective when both parties have baseline systems in place, expected by late 1995. NOAA's baseline system will consist of two geostationary operational satellites (GOES) positioned 22,000 miles (36,00 kilometers) above the equator at 75 degrees west and 135 degrees west longitude. EUMETSAT's system will consist of one operational Meteosat satellite operated at 0 degrees longitude and an operable spare in orbit. (Contact NOAA/NESDIS PA at 301-457-5005.) See also **Meteosat**

Eutrophication

The enrichment of waters by nutrients either by natural means or by human pollution. An overabundance of nutrients can stimulate massive "blooms" of algae which can deplete oxygen in water, leading to the death of aquatic plants, mass fish and shellfish deaths, and even human health problems. (Contact NOAA/NOS PA at 301-713-3066.) See also **Nutrients**

Excessive Heat Advisory

An advisory issued by the National Weather Service when a heat index above 105 degrees Fahrenheit is anticipated. See also **Excessive Heat Watch, Excessive Heat Warning**

Excessive Heat Warning

A warning issued by the National Weather Service when the heat index equals or exceeds 120 degrees Fahrenheit for three hours or longer. In those cases, the heat becomes dangerous for a large portion of the population.

Excessive Heat Watch

A watch issued by the National Weather Service when conditions are favorable for the development of heat indices in excess of 105 degrees during the daytime hours in combination with nighttime low temperatures of 80 degrees or higher, for two consecutive days.

Exclusive Economic Zone (EEZ)

The Magnuson Act defines this zone as contiguous to the territorial sea of the United States and extending seaward 200 nautical miles measured from the baseline from which the territorial sea is measured. This area was formerly referred to as the Fishery Conservation Zone. (Contact NOAA/NMFS PA at 301-713-2370 or

NOAA/NOS PA at 301-713-3066.) See also **Magnuson Fishery Conservation and Management Act (MMPA)**

Exploitation Rate

The proportion of a fish stock removed each year due to fishing activities.

Export Value

The value reported is generally equivalent to f.a.s. (free alongside ship) value at the U.S. port of export, based on the transaction price, including inland freight, insurance, and other charges incurred in placing the merchandise alongside the carrier at the U.S. port of exportation. The value excludes the cost of loading, freight, insurance and other charges or transportation cost beyond the port of exportation.

Export Weight

The weight of individual products as exported, i.e., fillets, steaks, whole, breaded, etc. Includes both domestic and foreign re-exports data. See also **Re-exports**

Ex-Vessel Revenue

The quantity of fish landed by commercial fishermen multiplied by the average price received by them at the first point of sale. As such, ex-vessel revenue captures the immediate value of the commercial harvest, but does not reflect subsequent revenues earned by seafood processors, distributors, or retailers. (Contact NOAA/NMFS PA at 301-713-2370.) See also **Long-Term Potential Yield**

Exxon Valdez

Early on the morning of March 24, 1989, the tanker *Exxon Valdez,* carrying approximately 60 million gallons of North Slope crude oil, ran aground and ruptured its tanks on Bligh Reef in Prince William Sound, Alaska. It spilled an estimated 10.5 million gallons into the Sound. NOAA provided the initial scientific evaluations of the nature of the spill, and has continued to be a principal source of scientific field studies of the effects of the spill. (Contact NOAA/NOS PA at 301-713-3066.)

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Factory Trawler

Typically, a large self-contained fishing vessel capable of fishing by bottom- and or midwater-trawl nets and processing its catch on board. These vessels operate over long distances at sea, for extended periods of time. See also **Boat, Other**

Fagatele Bay National Marine Sanctuary, American Samoa

Protects the waters surrounded by an eroded volcanic crater on the island of Tutuila in the territory of American Samoa. The embayment opens to the southern Pacific Ocean and is home to a fringing reef system. Nearly 200 species of coral are recovering slowly from a devastating attack by the crown-of-thorns starfish in the late 1970s that destroyed over 90 percent of Fagatele Bay's coral. Coral provides the backbone for a vibrant marine environment fueled by the tropical sun and enriched by nutrients from the eroding island. Gliding along the reef tops are schools of surgeonfish, parrotfish, damselfish, and brightly colored butterfly fish. Lobsters, crabs, octopus, squid, sharks, and sea turtles live in or frequent the bay. For four months of the year, humpback whales and their newborn calves, as well as courting males, may visit the bay. Several species of dolphin include Fagatele Bay in their range. Within the inner bay, sanctuary regulations permit only traditional fishing methods, and prohibit the taking of invertebrates. Historical artifacts found in the bay are fully protected. The sanctuary sponsors educational programs that include marine science summer camps, a summer student intern program, school and media presentations. (Contact NOAA/NOS PA at 301-713-3145 ext. 153.)

Family of Services

A communications link to the National Weather Service (NWS) for external users to provide access to near real-time weather and flood data. Family of Services is divided into seven services: (1) the Public Product Service, (2) the Domestic Data Service, (3) the International Data Service, (4) the Numerical Service, (5) the Direct Connect Service, (6) the Digital Facsimile Service and (7) the AFOS Graphics. Each service provides a variety of forecast and warnings in numerous formats for audiences ranging from the general public to universities and private organizations. An external user may choose to be a direct subscriber to one or more of the Family of Services or contract with one of the weather information service companies that are already connected to the Family of Services. The NWS charges a user fee for one-time

connection fees and annual maintenance fees to recover costs to the government for operating the system. (Contact NOAA/NWS PA at 301-713-0622.) See also **Coastal Forecast System, NEXRAD Information Dissemination Service**

FIG

See **Fishing Industry Grant**

Fin Whale

Listed as endangered under the Endangered Species Act, fin whales are probably the most numerous large cetaceans in temperate waters of the western North Atlantic Ocean. They range widely throughout the continental shelf in all seasons, but most sightings occur from the Great South Channel on Cape Cod north, throughout the southwest Gulf of Maine. Stock structure and total abundance are unknown. An estimate of abundance off the northeast coast in 1979-82 was 5,200 in spring and 1,500 in winter. Important research and management questions are whether separate stocks exist, where calving grounds and annual calf production are located, and where the wintering grounds for the northwest Atlantic population are located. See also **Marine Mammal Protection Act**

Finfish

A fish with fins, as opposed to a shellfish.

Fire Weather Services

The National Weather Service plays a vital role supporting land management agencies' efforts to control and extinguish wildfires. Specially trained forecasters monitor meteorological conditions continuously during the fire season. Knowledge of the weather and land/agriculture characteristics is a critical element in fire control and in effective daily management of activities aimed at protecting valuable renewable resources. Fire weather services are located at offices across the country. Most of the specialized effort of these offices is focused on the local weather season. (Contact NOAA/NWS PA at 301-713-0622.) See also **Air Transporeable Mobile Units**

Fish Abundance

Or population size can be expressed as either the estimated number of fish or estimated total fish weight. Increases in the amount of fish are determined by body growth of individual fish in the population, and the addition, or recruitment, of new generations of young fish (i.e., "recruits"). Those gains must then be balanced against the proportion of the population removed by harvesting and other losses due, for example, to predation, starvation, or disease. See also **Biomass, Fishing Mortality, Natural Mortality, Stock Assessment**

Fish Ladders

A series of ascending pools constructed to enable salmon or other fish to swim upstream around or over a dam.

Fish Meal

A high-protein animal feed supplement made by cooking, pressing, drying, and grinding fish or shellfish.

Fish Oil

An oil extracted from the bodies (body oil) or livers (liver oil) of fish and marine mammals; mostly a byproduct of fish meal production.

Fish Passage Facilities

Features of a dam that enable fish to move around, through, or over without harm; generally, an upstream fish ladder or a downstream bypass conduit.

Fisheries Obligation Guarantee (FOG)

This program allows the fisheries and aquacultural industries to refinance the cost of their production equipment. The program provides a 100 percent federal guarantee that this debt will be repaid. Guaranteed debt is sold into the normal private market for long-term debt. Interest rates are marginally higher than those for U.S. Treasury securities of comparable maturity (plus a one percent guarantee fee as compensation for the program's exposure).

The debt holders' sole security is the program's guarantee. The program holds in

its own name, and services, all collateral needed to secure its exposure. Title XI of the Merchant Marine Act, 1936, allows the program to finance or refinance up to 80 percent of the cost of constructing, reconstructing, reconditioning, or purchasing fishing vessels, fisheries shoreplants, and aquacultural facilities.

Under current credit policy, however, virtually all credits, except those for aquaculture, are limited to refinancing eligible debt on vessels or shoreplants that already exist. This policy's purpose is to ensure that the program does not contribute to further fisheries capitalization. For aquacultural facilities, the program will also provide financing for facilities that do not yet exist. Debt maturities may not exceed 25 years or the credit property's economically useful life (whichever is less). (Contact NOAA/NMFS PA at 301-713-2370.)

Fisheries of The United States

Annual report on commercial and recreational fishery catches in the U.S. and foreign Exclusive Economic Zones. (Contact NOAA/NMFS PA at 301-713-2370.)

Fishery

The operation involved in harvesting a living marine resource.

Fishery Management Plan

A plan developed by a Regional Fishery Management Council, or under certain circumstances the Secretary of Commerce, to manage a fishery resource in the U.S. Exclusive Economic Zone pursuant to the Magnuson Act. (Contact NOAA/NMFS PA at 301-713-2370.) See also **Exclusive Economic Zone, Magnuson Fishery Conservation & Management Act (MMPA)**

Fishing Craft, Commercial

Boats and vessels engaged in capturing fish, shellfish, and other aquatic plants and animals for sale.

Fishing Effort

The amount, type, and effectiveness of fishing gear and the time spent fishing.

Fishing Family Assistance Centers (FFAC)

Collaborative effort between the Departments of Labor (DOL) and Commerce (DOC) to establish "one-stop shops" where displaced fishermen in the Northeast could seek assistance in applying for DOL and DOC emergency assistance programs. Assistance includes loans, grants, training/retraining, business counseling, financial planning, and social services. (Contact NOAA PA at 202-482-6090.)

Fishing Industry Grant (FIG)

A $9 million grant program developed as part of the $30 million Northeast Fisheries Assistance Program established by Commerce Secretary Brown in March 1994 to help the groundfish and sea scallop fishing industries there. The FIG program consists of two rounds of $4.5 million grants that seek to fund proposals that (1) develop commercial fisheries and markets for finfish and shellfish species for which harvestable surpluses exist; (2) restore overfished New England groundfish stocks through aquaculture or hatchery programs; (3) develop projects or conduct activities to provide alternate employment or new business opportunities for fishermen who have been affected by the decline of traditional Northeast species. The first round of grants worth $4.5 million was awarded in March 1995 to 28 participants. NOAA/NMFS is accepting proposals for the second $4.5 million through April 1995. (Contact NOAA/NMFS PA at 301-713-2370.)

Fishing Mortality

Direct and indirect mortality caused by fishing.

Fishing Mortality Rate

The instantaneous rate of mortality (direct and indirect) caused by fishing.

Flash Flood

A flood that rises quite rapidly with little or no advance warning, usually as a result of an intense rainfall over a small area or, possibly, an ice jam, a dam failure, etc. See also **Flash Flood Watch, Flash Flood Warning, Flood**

Flash Flood Warning

Indicates that flash flooding is imminent, according to the National Weather Service. Those in the affected area are urged to take action if a flash flood warning is issued or if flooding is observed. See also **Flood, Flash Flood, Flash Flood Watch**

Flash Flood Watch

A watch issued by the National Weather Service, which means that flash flood conditions *are possible* in or near the designated watch; individuals should be alert and be ready to take action. See also **Flood, Flash Flood, Flash Flood Warning**

Flood

Any overflow or inundation by water which causes or threatens damage.

Flood of Record

The highest observed river stage of discharge at a given site during the period of record keeping (not necessarily the highest known stage). See also **Flood**

Flood Plain

The portion of a river valley that has been inundated by the river during historic floods. See also **Flood**

Flood Stage

An established gauge height within a given river reach, above which a rise in water surface level is defined as a flood. Based on historic data and usually set at a level where the river begins to overflow its banks or a potential hazard begins to occur due to high water. See also **Flood**

Flood Warning

An advance notice that a flood is imminent or has been reported at a certain station or in a certain river basin. Usually, floods take 12 hours or more to develop, whereas flash floods take less than six hours to develop. See also **Flood**

Flood Watch

A watch issued by the National Weather Service indicating that flooding is possible in the specified area. See also **Flood, Flood Warning**

Flood Wave

A rise in streamflow to a crest and its subsequent recession, caused by precipitation, snowmelt, dam failure, or reservoir releases. See also **Flood**

Florida Keys National Marine Sanctuary

The U.S. Congress designated this sanctuary to provide comprehensive management of and protection to the marine ecosystem surrounding the Florida Keys. The Keys marine ecosystem supports one of the most diverse assemblages of plants and animals in North America.

The sanctuary boundary includes the productive waters of Florida Bay, interwoven by marine communities of mangrove-fringed shorelines and islands, sand flats, seagrass meadows, patch reefs, and bank reefs. Together, these habitats support the life cycles of a rich array of tropical marine and estuarine organisms, endangered and protected species. This complex marine ecosystem supports the commercial fishing and tourism-based economy so important to Florida.

The proximity of the coral reefs to centuries-old shipping routes has resulted in a high concentration of shipwrecks within sanctuary boundaries and a series of historic lighthouses along the reef tract. The alluring beauty, biological diversity and productivity of the Florida Keys results in intense commercial and recreational use of its marine resources. (Contact NOAA/NOS PA at 301-713-3145 ext. 153.) See also **Coral Reef**

Florida Keys National Marine Sanctuary and Protection Act (Florida Keys Act)

On November 16, 1990, the U.S. Congress designated an area of the marine environment surrounding the Florida Keys as a National Marine Sanctuary in order to protect its unique, nationally significant natural resources including seagrass meadows, mangrove islands, and coral reefs.

In the Florida Keys Act, Congress directed the federal government and the state of Florida to jointly develop and implement a comprehensive program to reduce pollution in Florida's offshore waters and to protect and restore the water quality, coral reefs, and other living marine resources. The Act explicitly states that its purpose is to protect sanctuary resources, educate the public, and manage human uses of the sanctuary that are consistent with its statutory mandate. (Contact NOAA/NOS PA at 301-713-3145 ext. 153.)

Flower Garden Banks National Marine Sanctuary, Texas/Louisiana

One hundred miles off the coast of Texas and Louisiana, a pair of underwater gardens emerges from the depths of the Gulf of Mexico. Here are butterfly fish, brightly colored corals, manta rays, orange sponges, spiny black sea urchins, leafy green algae, goldentail moray eels, and stoplight parrotfish.

All are part of the Flower Garden Banks, the northernmost coral reefs on the continental shelf of North America. The reefs sit atop huge seabed outcroppings 50 feet from the surface. Further north, environmental conditions are not suitable for coral reef development; one travels more than 600 miles southeast to the Florida Keys and more than 400 miles south to Mexico's Gulf of Campeche to find the nearest coral reef. As a marine resource, the reefs serve as a regional reservoir of shallow-water Caribbean reef fishes and invertebrates. They are home to at least 80 species of algae, 253 macroinvertebrate species, and more than 175 fish species. The Gardens are significant habitat for lobster, snapper, and grouper. Loggerhead turtles, whale sharks, and spotted dolphins are also frequent visitors. (Contact NOAA/NOS PA at 301-713-3145 ext. 153.)

Fluorocarbon

A compound containing flourine and carbon; among these are chlorinated fluorocarbons (CFCs) and brominated fluorocarbons (halons). (Contact NOAA/OAR PA at 301-713-2483.)

Fluvial Drainage Area (FDA)

The component of an estuary's entire watershed upstream of its Estuarine Drainage Area. Many estuaries have no corresponding FDAs, while the huge 1,131,700 square-mile Mississippi River FDA dwarfs all others. (Contact NOAA/NOS PA at 301-713-3066.) See also **Estuarine Drainage Area**

Fog

A cloud on the ground that reduces visibility.

Fog Advisory

Used when dense fog covers a widespread area and reduces visibility to ¼-mile or less. May be called a *Dense Fog Advisory*. See also **Fog**

Fisheries Obligation Guarantee

This Program allows the fisheries and aquacultural industries to refinance the cost of their production equipment. The program provides a 100 percent federal guarantee that this debt will be repaid. Guaranteed debt is sold into the normal private market for long-term debt. Interest rates are marginally higher than those for U.S. Treasury securities of comparable maturity (plus a one percent guarantee fee as compensation for the Program's exposure). The debt holders' sole security is the Program's Guarantee.

The Program holds in its own name, and services, all collateral needed to secure its exposure. Title XI of the Merchant Marine Act, 1936, allows the Program to finance or

refinance up to 80 percent of the cost of constructing, reconstructing, reconditioning, or purchasing fishing vessels, fisheries shoreplants, and aquacultural facilities. Under current credit policy, however, virtually all credits, except those for aquaculture, are limited to refinancing eligible debt on vessels or shoreplants that already exist.

This policy's purpose is to assure that the Program does not contribute to further fisheries capitalization. For aquacultural facilities, the Program will also provide financing for factilities that do not yet exist. Debt maturities may not exceed 25 years or the credit property's economically useful live (whichever is less). (Contact NOAA/NMFS PA at 301-713-2370)

Forecast

A forecast is a prediction of the atmospheric conditions for a given time period. The National Weather Service issues short-term and long-term forecasts in an effort to save lives and protect property and contribute to economic development. Short-term forecasts range 12 hours to seven days. Long-term forecasts begin from day eight up to 14 days. Weather forecasting entails predicting how the present state of the atmosphere will change. Meteorologists use several tools, including the weather satellites, Doppler Weather Surveillance Radar, computer models, and more to prepare forecasts. (Contact NOAA/NWS PA at 301-713-0622.) See also **Long-Lead Climate Outlook**

Forecast Crest

The highest elevation of river level, or stage, expected during a specific storm event.

Forecast Systems Laboratory

Located in Boulder, Colo., this laboratory develops and applies advances in atmospheric research and technology to forecast and data systems, and transfers these systems to operational services, primarily the National Weather Service and the Federal Aviation Administration (FAA). Laboratory programs focus on developing information systems to satisfy NOAA operational services, such as the pre-AWIPS weather analysis and display system in operation in the Denver Weather Service Forecast Office; the testing of technology, such as the Wind Profiler Demonstration Network; and the development of an aviation gridded forecast system for the FAA. (Contact NOAA/ERL PA at 303-497-6286.)

Freeze

A condition occurring over a widespread area when the surface air temperature remains below freezing (32 degrees Fahrenheit) for a time sufficient to cause damage to certain agricultural crops. A freeze most often occurs as cold air is advected into a region, causing freezing conditions to exist in a deep layer of surface air.

Freeze Advisory

Issued by the National Weather Service during the growing season when temperatures are expected to drop well below freezing over a large area, regardless of whether frost forms or not. See also **Freeze**

Freezing Rain/Freezing Drizzle

Rain or drizzle that falls in liquid form and then freezes upon striking a cold object or the ground. Both can produce a coating of ice on objects which is called "glaze." See also **Freeze, Frost**

Freezing Rain or Freezing Drizzle Advisory

Issued by the National Weather Service with discretion and only during times when the intensity of freezing rain or drizzle is light and ice does not form on all exposed surfaces.

Frost

A covering of ice produced by water condensation occurring on surfaces below freezing. See also **Freeze, Freezing Rain/Freezing Drizzle**

Frost Advisory

Issued by the National Weather Service in growing season to indicate formation of widespread frost. See also **Frost**

Full-Time Commercial Fisherman

An individual who receives more than 50 percent of his or her annual income from commercial fishing activities, including port activity, such as vessel repair and re-rigging.

Fully Utilized

When the amount of fishing effort used is about equal to the amount needed to achieve Long-term Potential Yield (LTPY) and where the resource is near its LTPY stock level. For fully utilized fisheries, the Recent Average Yield and Current Potential Yield (CPY) are usually about equal. In most cases, LTPY and CPY are also about equal, but they may differ as a result of production variability. (Contact NOAA/ NMFS PA at 301-713-2370.) See also **Long-Term Potential Yield, Current Potential Yield, Recent Average Yield**

Funnel Cloud

A rapidly rotating column of air that does not touch the ground.

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Geodesy

The science of determining precise positions. Starting with high-precision astronomical observations to fix the Earth's position in space, geodesy incorporates sophisticated measurements of variations in the Earth's location, gravitational field, crustal motion and other factors. This allows the establishment of a highly reliable reference system to which all other measurements can be tied. NOAA's National Geodetic Survey is responsible for the maintenance and continuous upgrading of this reference system, which is the fundamental basis of all surveying and mapping and critical for many engineering applications. (Contact NOAA/NOS PA at 301-713-3066.) See also **Advanced Geodetic Sciences Program**

Geodynamics Program

Develops programs and methodologies for obtaining extremely accurate control point positions throughout the United States, which are closely monitored for variations to serve as a long-range foundation for regional and global geodetic networks. It models crustal motion and analyzes positional variations and motions of the Earth. It converts relative sea level data to absolute sea level using radio interferometry, VLBI (Very Long Based Interferometry), GPS data, and other geodetic or tectonic data to determine changes in land elevation. (Contact NOAA/NOS PA at 301-713-3066.)

Geographic Information Systems

A new generation of computer programs displaying a wide variety of geographically related information in a coordinated display. The types of information may include: political boundaries (from state boundaries to school districts to police precincts); power, water and sewer line locations; types of vegetation; and population distribution. The ability to easily cross-reference many categories of data brings powerful analysis capability to planners, including natural resource managers and development officials. (Contact NOAA/NOS PA at 301-713-3066.) See also **Coastal Assessment Framework**

Geoid

A mathematical model of the Earth's gravitational field. More than any other data set of the Earth, the Geoid reveals the dynamic structure of the Earth's deep interior. The most dramatic feature of the Geoid of North America is the Yellowstone Hot Spot, believed to be a plume structure rising through the mantle and the main contributor to a Geoid high over Montana. Precise readings of gravity are vital for

many engineering and aerospace activities. Calculation of the Geoid for the United States is a responsibility of NOAA's National Geodetic Survey. (Contact NOAA/NOS PA at 301-713-3066.) See also Gravimetry

Geophysical Fluid Dynamics Laboratory (GFDL)

Located in Princeton, N.J., the laboratory focuses its research on improving our understanding of weather on large and small scales; climate on global and regional scales; the Earth's atmospheric general circulation; and the interactions of the atmosphere and oceans and of various trace constituents with the atmosphere and oceans. GFDL pioneered the use of general circulation models of atmospheric circulation and contributes to the nation's programs geared to increasing understanding of climate and global change and improving meteorological forecasting. (Contact NOAA/OAR PA at 301-713-2483.)

Geosciences Laboratory

Conducts research and development in geophysics including oceanography and geodesy and involving the allied fields of radio-astronomy and computer science. It carries out theoretical studies, data analyses, and engineering development to improve NOAA operations and procedures and to extend the limits of geoscience knowledge and techniques. The laboratory studies Earth orientation, geodetic positioning, ocean circulation, climate and global change, marine geophysics, ocean and coastal resource management, and related fields. (Contact NOAA/NOS PA at 301-713-3066.)

Geostationary Operational Environmental Satellite (GOES)

A satellite that observes the United States and adjacent ocean areas from vantage points 22,233 miles above the equator. NOAA's normal configuration is two satellites positioned above the equator, one at 75 degrees West longitude, the other at 135 degrees West longitude. GOES satellites have an equatorial Earth-synchronous orbit with a 24-hour period.

GOES satellites: provide continuous day and night weather observations; monitor severe weather events such as hurricanes, thunderstorms, and flash floods; relay environmental data from surface collection platforms to a processing center; perform facsimile transmissions of processed weather data to low-cost receiving stations; monitor the Earth's magnetic field, the energetic particle flux in the satellite's vicinity, and x-ray emissions from the sun; and detect emergency signals from aircraft, ships, and land-based users in distress. (Contact NOAA/NESDIS PA at 301-457-5005 for information on satellite operations. Contact NOAA/NWS PA at 301-713-0622 for information on how GOES data are used in weather forecasting.) See also **Modernization and Associated Restructuring (MAR)**

Gillnet

Rectangular net that is suspended with floats and weights to form a wall in the water in which fish become entangled.

Global Ocean Observing System (GOOS)

An ongoing international effort to build an operating observation system that will enable scientists and forecasters around the world to use observation of ocean dynamics (which have a profound and continuous influence on the atmosphere) to make better and more accurate climate and weather forecasts. The GOOS will also be used to monitor the health of the ocean, the state of world fisheries, and the health of coastal ecosystems. (Contact NOAA/NOS PA at 301-713-3066.) See also **U.S. Global Ocean Observing System Office**

Global Positioning System (GPS)

Originally established by the Department of Defense, the GPS system is a series of satellite-based transmitters that allow land-based receivers to determine their precise location, to as close as a few centimeters. GPS is in the process of revolutionizing the

entire fields of surveying and navigation and holds the promise of a whole new dimension of safe, efficient transportation. (Contact NOAA/NOS PA at 301-713-3066.) See also **Continuously Operated GPS Reference Stations (CORS)**

Global Programs, Office of (OGP)

NOAA's Office of Global Programs (OGP) supports global change research both internally and externally via its peer-reviewed grants process. Each year, OGP issues a program announcement soliciting proposals in critical research areas. With both internal and external advisory panel review and peer-review, projects are awarded in several program areas.

OGP maintains a program of observations, analytical studies, climate prediction and information management through ongoing efforts in operational *in situ* and satellite observations, with an emphasis on oceanic and atmospheric dynamics (including sea level), circulation and chemistry; the development of new measurement techniques; focused research on ocean-atmospheric interactions; the global hydrological cycle; the role of oceanic circulation and biogeochemical dynamics in climate change; atmospheric trace gas/climate interactions; the response of marine ecosystems and living resources to climate change and related stresses; improvements in climate modeling, prediction and information management capabilities; global change economics and human dimensions research; and archival, management and dissemination of data useful for global change research. (Contact NOAA/OGP at 301-427-2089 ext. 22.) See also **Climate and Global Change Program**

GLOBE Program

GLobal Observations to Benefit the Environment is an international environmental science and education program that will bring schoolchildren, educators and scientists together. Students in grades K-12 will carry out scientific experiments and make scientific observations, transmitting their findings to a central processing site through personal computers connected to the Internet or other computer or satellite networks.

The students' data will support the ongoing research of environmental scientists throughout the world. NOAA is the lead federal agency, with participation by the Environmental Protection Agency, the National Aeronautics and Space Administration, the National Science Foundation, and the Departments of State, Interior, Education, and Agriculture. (Contact NOAA PA at 202-482-6090.)

GOES I-M

A series of five next-generation geostationary operational environmental satellites. They are three-axis stabilized, rather than spin-stabilized, like older geostationary satellites. This characteristic gives them the ability to constantly stare at the Earth, rather than observing the Earth only five percent of the time. These satellites will provide better advanced warnings of thunderstorms, flash floods, hurricanes, and other severe weather and weather-related events.

Satellites are given a letter designator before they are launched and a number once achieving orbit (GOES-8 was GOES-I, for example). (Contact NOAA/NESDIS PA at 301-457-5005 for information on satellite operations and the GOES I-M program. Contact NOAA/NWS PA at 301-713-0622 for information on how data from GOES satellites are used in weather forecasting.)

GOES Data Collection System (DCS)

The National Environmental Satellite, Data, and Information Service manages the GOES DCS, a program for collecting and transmitting environmental data from remote platforms via NOAA's GOES satellites since 1975. Customers include federal, state, and local agencies that monitor environmental or Earth resources. Applications include reservoir management, river forecasting, meteorological analysis, forecasting, and other phenomena where

observations must be collected frequently and quickly.

GOES-7

A geostationary operational environmental satellite that was launched on February 26, 1987. GOES-7 will be replaced by a second updated model, GOES-9. The next three satellites in the advanced GOES series will be launched as required to support NOAA's dual-satellite geostationary observing system.

GOES-8

This geostationary operational environmental satellite is the country's first advanced, next-generation weather satellite. It was launched on April 13, 1994. After reaching geostationary orbit at 22,500 miles above the equator, it was positioned at 90 degrees West longitude, or close to the longitude of the central United States, for engineering checkout and testing. With the testing completed, the satellite was moved to 75 degrees West longitude—overlooking the East Coast of the United States and well into the Atlantic Ocean. (Contact NOAA/ NESDIS PA at 301-457-5005.)

GOES-9

This geostationary operational environnmental satellite was launched on May 23, 1995. It is the second advanced, next-generation weather satellite to be placed in orbit. GOES-9 is currently in a test mode and is expected to become operational in late 1995. (Contact NOAA/ NESDIS PA at 301-457-5005.)

Gravimetry

The study of the Earth's gravitational field. High-precision gravity values are important elements in today's geophysical technologies and sciences. They are used to improve tidal models; measure the response of the Earth to tidal forces and the gravity effects due to ocean loading, local and regional atmospheric attraction; and detect vertical crustal motion. Measurements of post-glacial rebound are used to correct the measurements of long-term tidal trends. Vertical motion may be caused by human-induced effects, such as petroleum or water withdrawal from the ground; by global, plate tectonism-related effects; or by post-glacial rebound. If the vertical land motion approaches several centimeters in a decade, it can have significant effects on port facilities, levees, dams, and other structures, and could seriously threaten commerce and human life. It is also possible to use high-precision gravimetry to detect minute density variations, such as those that would accompany the emptying or recharge of aquifers, and to monitor motion of magma near volcanoes. (Contact NOAA/NOS PA at 301-713-3066.)

Gravity and Geoid Program

Maintains the National Gravity Reference Network, Gravimeter Calibration Lines, and Gravimeter Calibration Ranges. It supports the Vertical Control Reference Network and investigates methods for the processing of observed gravity. It analyzes data used to understand crustal deformation and subsidence and maintains terrestrial gravity data.

The program develops a detailed continental geoid model; conducts geophysical studies of the crust and mantle; contributes to studies related to tectonophysics; and helps other government agencies, the public, and the international geodetic and geophysical community use gravity control and develop, test, and use advanced and prototype instruments. (Contact NOAA/ NOS PA at 301-713-3066.)

Gray Whale

The eastern North Pacific or "California" stock was heavily exploited by American whalers in the last half of the 19th century. The 1987-'88 stock size, 20,869, is believed to be equal to or larger than the estimated size of the 1846 population of between 15,000 and 20,000, but below estimates for a carrying capacity of 24,000. The population growth rate was 3.3 percent per year between 1967 and 1988, despite a subsistence catch of 167 whales per year by the

former Soviet Union. In light of this recovery, the California Gray Whale was removed from the Endangered Species Act's list of endangered and threatened wildlife on June 15, 1994. (Contact NOAA/NMFS PA at 301-713-2370.) See also **Marine Mammal Protection Act**

Gray's Reef National Marine Sanctuary, Georgia

One of the largest nearshore limestone reefs in the southeastern United States, the sanctuary lies just off the coast of Georgia, in waters 50 to 70 feet deep. To protect this environment, the area was designated Gray's Reef National Marine Sanctuary in 1981. The reef consists of limestone outcroppings and ledges up to six feet in height, with sandy, flat-bottomed troughs between.

The limestone not only provides vertical relief, but also a solid base for the abundant invertebrates to attach to and grow. This rocky platform with its carpet of attached organisms is known as a "live bottom." Because such an environment attracts numerous species of fish, including black sea bass, snapper, grouper, and mackerel, this sanctuary is one of the most popular recreational fishing and sport diving destinations along the Georgia Coast.

The reef is also a foraging ground for the threatened loggerhead sea turtle and is part of the only known calving ground for the highly endangered right whale. The headquarters and interpretive center for the sanctuary is located at the Georgia Marine Science Center on Skidaway Island. Various exhibits and a live reef touch tank depicting the sanctuary environment are on display at the University of Georgia Aquarium on Skidaway. (Contact NOAA/NOS PA at 301-713-3145 ext. 153.)

Great Bay National Estuarine Research Reserve, New Hampshire

Stretching 15 miles from the coast at New Castle, New Hampshire, to the upper Great Bay in southeastern New Hampshire, the Great Bay estuary mixes tidal ocean waters with the freshwater inflow of the Winnicut, Sqamscott and Lamprey Rivers. The Great Bay reserve itself protects nearly 4,500 acres of tidal waters and mudflats and about 48 miles of shoreline. Within the 550 acres of upland in the reserve, the estuary's environment ranges from salt marsh and tidal creeks to islands, woodlands, and open fields. Nearly one-half of Great Bay is exposed at low tide, with most of the intertidal being mudflat. Typical of northern New England estuaries, the bay hosts a variety of marine plant communities, 18 rare or endangered plant species, and five rare or endangered animal species. New Hampshire's Department of Fish and Game manages the reserve. (Contact NOAA/NOS PA at 301-713-3145 ext. 153.)

Great Lakes Environmental Research Laboratory (GLERL)

Located in Ann Arbor, Mich., this laboratory conducts integrated, interdisciplinary environmental research in support of resource management and environmental services in coastal and estuarine waters, with special emphasis on the Great Lakes. GLERL's research provides federal, state, and international decision- and policy-makers with scientific understanding of the sources, pathways, fates, and effects of toxicants in the Great Lakes; natural hazards such as severe waves, storm surges, and ice; ecosystems and their interactions, including the implications of invasion by nuisance species (zebra mussels, for example); the hydrology and water levels of the Great Lakes; and regional effects of global climate change. (Contact NOAA/OAR PA at 301-713-2483.)

Greenhouse Effect

(1) The heating effect exerted by the atmosphere upon the Earth by virtue of the fact that the atmosphere (mainly, its water vapor) absorbs and re-emits infrared radiation. (From *the American Meteorological Society Glossary of Meteorology)*

(2) The effect produced as certain atmospheric gases allow incoming solar radiation to pass through to the Earth's surface, but prevent the outgoing (infrared) radiation, which is reradiated from Earth, from escaping into outer space. The effect is responsible for warming the planet. (Contact NOAA/ERL PA at 303-497-6286 or NOAA/OGP at 301-427-2089 ext. 22.)

Greenhouse Gas

A gaseous component of the atmosphere contributing to the greenhouse effect. Greenhouse gases are transparent to certain wavelengths of the sun's radiant energy, allowing them to penetrate the Earth's surface. Greenhouse gases and clouds prevent some of the infrared radiation from escaping, trapping the heat near the Earth's surface where it warms the lower atmosphere. Alteration of this natural barrier of atmospheric gases can raise or lower the mean global temperature of the Earth. Greenhouse gases include carbon dioxide, methane, nitrous oxide, chlorofluorocarbons, and water vapor. See also **Sounder**

Gross Registered Tonnage (GRT)

The internal cubic capacity of all space in and on the vessel that is permanently enclosed, with the exception of certain permissible exemptions. GRT is expressed in tons of 100 cubic feet.

Groundfish

Broadly, fish that are caught on or near the sea floor. The term includes a wide variety of bottomfishes, rockfishes, and flatfishes. However, the National Marine Fisheries Service sometimes uses the term in a narrower sense, applying to the following species: Atlantic and Pacific cod, hake, ocean perch, and pollock; cusk; and haddock.

Grounding

Every year there are hundreds of ships that go aground in U.S. coastal waters. Some of these are only a disaster for the ship owner, but many cause serious environmental damage either through the spill of hazardous materials or damage to sensitive sea bottom habitats. With the steadily increasing size of tankers and cargo vessels, and the relatively imprecise charts that exist in many coastal and port areas, the danger to the coastal zone is increasing. (Contact NOAA/NOS PA at 301-713-3066.)

Gulf Marine Support Facility

This support facility is located in Pascagoula, Miss., and is home port to NOAA Ships *Oregon* II and *Chapman.* These vessels conduct fisheries research similar to that conducted by the *Albatross* IV and *Delaware* II. Most of their research is performed on the southeast coast of the United States and the Gulf of Mexico. (Contact the Port Captain at 601-762-4591.)

Gulf of Mexico Regional Fishery Management Council

One of eight regional councils established by the Magnuson Fishery Conservation and Management Act. The council acts as a steward of the living marine resources off the coasts of Texas, Louisiana, Mississippi, Alabama, and off the Gulf coast of Florida. (Contact NOAA/NMFS PA at 301-713-2370.) See also **Regional Fishery Management Councils**

Gulf of the Farallones National Marine Sanctuary, California

In this sanctuary, gusting winds, ocean currents and the rotation of the Earth combine each spring and summer to produce an explosion of marine life. The sanctuary, which includes the area surrounding the Farallon Islands northwest of San Francisco, extends from the coast to 40 nautical miles offshore. The waters just beyond California's famous Golden Gate Bridge are home to a wide variety of sea life. California's largest breeding population of harbor seals lives there along with California sea lions and elephant seals. Twenty-seven species of whales and dolphins, including nine endangered and

three threatened species, live or migrate through the sanctuary. The Farallon Islands are home to the largest concentration of breeding seabirds in the continental United States. Within the sanctuary are nurseries and spawning grounds for commercially valuable species such as Dungeness crab, Pacific herring, sole, and rockfish. (Contact NOAA/ NOS PA at 301-713-3145 ext. 153.)

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Habitat

The environment in which an animal or plant can normally be found or normally grows.

Hail

Precipitation in the form of balls or clumps of ice, produced by thunderstorms. Severe storms with intense updrafts are the most common large hail producers.

Halocarbon

An organic chemical containing carbon and at least one halogen. This is the most general term used to refer to ozone-depleting halogenated compounds. (Contact NOAA/OGP at 301-427-2089 ext. 22.)

Halogen

A class of non-metallic elements consisting of the elements Fluorine, Chlorine, Bromine, and Iodine. (Contact NOAA/OGP at 301-427-2089 ext. 22.)

Halogenated

A compound containing a halogen. A fully halogenated CFC is one in which all hydrogen has been replaced with chlorine and/or fluorine. A partially halogenated CFC is one in which some hydrogen remains. (Contact NOAA/OGP at 301-427-2089 ext. 22.)

Harbor Porpoise (Atlantic)

The northwestern Atlantic harbor porpoise is found in the waters from Newfoundland, Canada, to Florida. It is hypothesized that there are three populations: Newfoundland, Gulf of St. Lawrence, and Gulf of Maine-Bay of Fundy. However, there is not enough evidence to test this hypothesis against the alternative of a single population. Summer aggregations occur in the Gulf of Maine, Gulf of St. Lawrence, and the east coast of Newfoundland. The winter distribution is poorly understood. The 1991-92 population estimate of the Gulf of Maine population is 47,200. No useful estimates of abundance for the other populations exist. The average estimate of annual mortality by the U.S. Gulf of Maine sink gillnet fishery from 1990 and 1992 is about 1,700. These estimates do not include bycatch from fisheries south of Cape Cod or north of the U.S. border. The estimated bycatch of the other two populations is largely unknown, although some new data do exist for the Bay of Fundy, which are currently being analyzed. (Contact NOAA/NMFS PA at 301-713-2370.)

Harbor Porpoise (Pacific)

Harbor porpoises appear to have more restricted movements along the western U.S. coast than along the eastern U.S.

coast. Studies have shown some indication that harbor porpoises do not mix freely between California, Oregon, and Washington. Regional differences have also been seen within California; therefore, it has been recommended that animals inhabiting central California be treated as a separate stock for management purposes.

The current estimate for the central California stock is 3,806. The combined estimate for northern California, Oregon, and Washington outer coast is 45,713, and for the waters of Puget Sound is 3,352. The species was once abundant in Washington's inland waters, especially southern Puget Sound, but its abundance is very low there now. Harbor porpoises tend to concentrate at the mouth of the Columbia River and in many other bays.

The kill of harbor porpoise is largely limited to set gillnet fisheries for halibut and rockfish in central California (coastal setnets are not allowed in northern California, and harbor porpoises do not inhabit southern California). In recent years, the kill has decreased primarily as a result of decreased fishing effort in areas of high harbor porpoise concentrations. (Contact NOAA/NMFS PA at 301-713-2370.)

Harbor Seals (Atlantic)

Year-round residents of Maine and eastern Canada, they are seasonal-winter residents in southern New England. Harbor seal numbers have apparently increased in recent years, due primarily to protection under the Marine Mammal Protection Act. Recent surveys suggest that 26,000 harbor seals live in the Gulf of Maine, and the number is increasing. Bycatch levels are relatively low, and major concerns are competition with fisheries and periodic disease outbreaks.

Harbor Seals (Pacific)

They range along the west coast of North America from Cedros Island, Baja California, Mexico northward to western Alaska. In a recent count of harbor seals during their molting period (which is considered to be the time of peak abundance on shore), approximately 23,000 harbor seals were estimated to reside in the Channel Islands and along the California mainland. The population size of harbor seals in Oregon and Washington have been estimated at 45,700. Harbor seals in the Gulf of Alaska have declined significantly during the past two decades.

Hawaiian Islands Humpback Whale National Marine Sanctuary

With their gregarious behavior, humpback whales *(Megaptera novaeangliae)* are one of the more easily recognized species in Hawaiian waters. The waters around Maui, Lanai, Molokai and Kauai also provide habitat for numerous other marine species, including pilot whales, false killer whales, Pacific bottlenose dolphins, spinner dolphins, green sea turtles, the endangered hawksbill sea turtle, many species of commercially important fish, and a diverse assemblage of coral reef inhabitants.

The U.S. Congress designated this sanctuary primarily to protect the endangered humpback whales and their habitat. During the winter, humpback whales migrate to the shallow Hawaiian waters for breeding and calving purposes. Prior to commercial whaling, the worldwide population of humpback whales is thought to have exceeded 125,000. In the North Pacific, the current humpback whale population is estimated to be 2,000, considerably less than the estimated 15,000 to 20,000 animals that existed prior to commercial whaling. (Contact NOAA/NOS PA at 301-713-3145 ext. 153.)

Hawaiian Monk Seal

This seal's range is limited to the small islands and atolls of the 1,100-mile northwest portion of the Hawaiian Archipelago. The species is listed as endangered under the Endangered Species Act, due to a decline of approximately 50-60 percent between the late 1950s and the late 1970s. The largest population, located

at French Frigate Shoals, has declined by 25 to 40 percent since 1989. At present, the total population is approximately 1,550. Since 1985, average counts (including pups) at the five main breeding sites peaked at 656 in 1986, but have generally declined since then to a low of 480 in 1991. Pup production during the same period has been highly variable, increasing from 1985 to 1988, declining 35 percent in 1990, and increasing again in 1991 and 1992.

Hazardous Materials Response and Assessment (HAZMAT) Program

This program coordinates a comprehensive program of hazardous materials response research, evaluation, and planning to minimize the environmental effects of hazardous materials spills and hazardous waste sites in the nation's coastal areas. In the event of a spill, the program supervises the flow of technical advice from the scientific community for overseeing cleanup operations. The program also develops and applies modeling techniques to address the movement of pollutants, both in the atmosphere and marine environment, and is constantly evaluating new technologies for spill response. (Contact NOAA/NOS PA at 301-713-3066.) See also HAZMAT Coastal Resources Coordination Program

HAZMAT Coastal Resources Coordination Program

Determines the severity of risks posed to natural resources from oil and hazardous materials releases and evaluates cleanup requirements. It provides technical support to the Environmental Protection Agency under Superfund, identifies hazardous waste sites that pose a threat to coastal resources, and provides technical support in evaluating resource risks at hazardous waste sites. The program coordinates its activities at hazardous waste sites with other federal and state natural resource trustees. (Contact NOAA/NOS PA at 301-713-3066.) See also Hazardous Materials Response and Assessment HAZMAT (Program)

HAZMAT Modeling and Simulation Studies Program

Develops user-friendly computer models to predict the movement of pollutants, both in the atmosphere and marine environment. It also works with other HAZMAT groups to integrate modeling techniques into planning and decision processes. (Contact NOAA/NOS PA at 301-713-3066.)

HAZMAT Scientific Coordination Office

Whenever there is a significant oil (or other hazardous material) spill in U.S. waters, the NOAA HAZMAT group provides scientific support to the Federal On-Scene Coordinator (U.S. Coast Guard). The Scientific Support Coordinators travel quickly to the scene. They are responsible for environmental characterization, hazard evaluation, and spill trajectory modeling, all of which are used to minimize environmental damages from spills. This group also develops databases from which to update spill contingency plans, designs automated spill analysis tools and decision protocols, coordinates information exchange with public agencies and industry, and conducts related research. (Contact NOAA/NOS PA at 301-713-3066.)

Health of the Atmosphere

A program that supports research to better understand the causes of high ozone levels in rural areas. The program will study the rural ozone problem in the Southeastern United States during the summer of 1995. It will look at the effects of rural ozone on crops, forests, health, and the economy. It will also indicate how state-by-state implementation of Clean Air Act emission reductions could be tailored. (Contact NOAA/ERL PA at 303-497-6286.) See also Ozone, Tropospheric

Heat Advisory

Issued by the National Weather Service when daytime heat indices of 105 degrees Fahrenheit or above are expected along with a nighttime low of 80 or above for two or more consecutive days. This advisory would be issued when the heat

becomes an inconvenience, and a problem for only a minor portion of the population.

Heat Index

Sometimes referred to as the "apparent temperature." Given in degrees Fahrenheit, the Heat Index is an accurate measure of how hot it really feels when relative humidity is added to the actual air temperature. (Contact NOAA/NWS PA at 301-713-0622.) See also **Relative Humidity**

High-resolution Infrared Sounder

Instrument carried by NOAA polar-orbiting satellites that detects and measures energy emitted by the atmosphere to construct a vertical temperature profile from the Earth's surface to an altitude of about 40 kilometers. Measurements are made in 20 spectral regions in the infrared band.

High Resolution Picture Transmission (HRPT)

Real-time, high resolution (1.1 kilometer) digital images provided by NOAA's polar-orbiting operational environmental satellites. The signals are transmitted on L-Band frequencies. Many users prefer to convert the digital signal to an analog (picture) form for analysis. HRPT observations, in addition to supporting weather forecasting, are being used today for many purposes, including forest fire detection, river and flood forecasting, watershed and range management, and supporting marine transportation, exploration, and even fishing in some areas of the world.

They are also used to observe vegetation health, as one step in helping assess the world's food supplies. Most HRPT stations are operated by government agencies. Some universities and radio amateurs have built their own stations. (Contact NOAA/NESDIS PA at 301-457-5005.) See also **Direct Readout**

High Seas

Open waters of an ocean or sea beyond the limits of national jurisdiction.

High Wind Warning

Issued by the National Weather Service, this warning means sustained winds of 40 miles per hour or greater are expected to last for one hour or longer. Also used if winds of 58 miles per hour or greater are anticipated for any duration.

Highly Migratory Species

Any species of fish which, in the course of its life cycle, spawns and migrates over great distances in the waters of the open ocean. Tuna, marlin, oceanic sharks, sailfishes and swordfishes are all considered highly migratory species.

Honolulu Port Office

This facility is located in Honolulu, Hawaii, and is the support office for the vessel *Townsend Cromwell.* The *Townsend Cromwell* engages in fisheries research similar to that of the *Miller Freeman, John N. Cobb, and David Starr Jordan.*. (Contact NOAA PA at 202-482-6090.)

Horizontal Networks Program

Responsible for maintaining the National Geodetic Reference System, which is fundamental to determining precise positions throughout the United States. This is the foundation technology beneath all modern surveying and position-determining systems. The program monitors the system to detect areas requiring resurveys. It establishes national, state, and local coordinate reference systems to be used in surveying and mapping.

The program provides information and assistance, including the preparation of computer programs and training, to federal, state, and local government agencies, and the public geodetic surveying community regarding the theory and application of geodetic surveys. (Contact NOAA/NOS PA at 301-713-3066.)

Hudson River National Estuarine Research Reserve, New York

This reserve includes four natural areas that span 100 miles of the tidal Hudson's 152-mile length, representing the estuary's wide

range of salinity conditions and habitats. Tidal freshwater wetlands are the reserve's most unusual habitat. Emergent marshes and submerged shallows provide habitat for fish, turtles, crustaceans, waterfowl, and wading birds.

Piermont Marsh, a brackish tidal wetland, is located 25 river miles north of Manhattan. Iona Island, located at the southern gate to the Hudson Highlands, is composed of rocky, forested uplands surrounding tidal marshes that vary in salinity from fresh to brackish. The Tivoli Bays is a large complex of freshwater tidal marshes, swamps, and vegetated shallows, occupying two large coves bordered by mixed deciduous forests on islands and uplands. Stockport Flats features mudflats, subtidal shallows, emergent freshwater tidal marshes, and vegetated dredge spoil islands. The reserve's shallows also serve as spawning and nursery grounds for many species of fish. (Contact NOAA/NOS PA at 301-713-3145 ext. 153.)

Human Activities Assessment Program

Collects, synthesizes, and analyzes data and information nationwide on the distribution and characteristics of human use activities throughout estuarine and coastal areas. It produces NOAA's coastal trend series on development and resource use in the nation's estuarine and coastal areas, prepares the Shellfish Register of the United States on the status of shellfishing waters, and conducts the National Outdoor Marine Recreation Inventory program. (Contact NOAA/NOS PA at 301-713-3066.)

Humidity

The amount of water vapor in the air. The higher the temperature, the greater the number of water molecules the air can hold. See also **Relative Humidity**

Humiture

See **Heat Index**

Humpback Whale (Atlantic)

Reasonably discrete summer stocks of Atlantic Humpback Whales occur in the Gulf of Maine, Gulf of St. Lawrence, and the waters of Newfoundland and Labrador, west Greenland, Iceland, and Norway. The estimated total population is about 5,100. The species is listed as endangered. Along the northeast coast, humpbacks frequent the Great South Channel, Georges Bank, Stellwagen Bank, and Jeffreys Ledge during summer. A minimum estimate of the population prior to commercial whaling (about 1865) was between 4,400 and 4,700. Entanglement with fishing gear and sporadic toxin-induced die-offs are problems for the species. In recent years, the number of sightings of young humpbacks in the Mid-Atlantic region has increased, generally in the areas of the Chesapeake and Delaware bays. (Contact NOAA/NMFS PA at 301-713-2370.) See also **Marine Mammal Protection Act, Endangered Species Act**

Humpback Whale (Pacific)

The endangered humpbacks in the eastern North Pacific Ocean migrate between the subtropical waters of Hawaii and coastal Mexico during the calving season and the temperate and subarctic waters of northern California and Alaska where they feed. Previously, these whales were estimated to be at 13 percent of their pre-whaling population size estimate of 15,000 (circa 1850). A more recent preliminary analysis of photographic identification of individual whales in the North Pacific suggests that the total population may exceed the current estimate of 1,398-2,040. Detailed analyses of the available data may provide a better understanding of the status of these whales. (Contact NOAA/NMFS PA at 301-713-2370.) See also **Marine Mammal Protection Act, Endangered Species Act**

Hurricane

A warm-core tropical cyclone with minimum surface wind of 74 miles per hour or greater (hurricane force wind) in the North Atlantic, the Caribbean, the Gulf of Mexico, and the Eastern North Pacific Ocean. See also **Tropical Cyclone, Typhoon**

Hurricane Research

See Tropical Cyclone Research

Hurricane Tracking

Determining the position of a hurricane at successive times, by radar, satellite or airborne reconnaissance, in order to draw its trajectory on a chart and forecast its probable positions. See also Hurricane

Hurricane Warning

A meteorological message issued by the National Weather Service intended to warn a specified coastal area that dangerous effects of a hurricane with a wind of 74 miles per hour (or greater) and/or dangerously high water, or a combination of dangerously high water and exceptionally high waves, can be expected within 36 hours. See also Hurricane, Hurricane Watch

Hurricane Watch

An announcement that hurricane conditions pose a possible threat to a specified coastal area within 36 hours. See also Hurricane, Hurricane Warning

Hydrocarbon

A large class of organic chemicals made up of carbon atoms linked to hydrogen and, sometimes, oxygen. Hydrocarbons are used for fuel and other economically important materials. Hydrocarbons can be altered by the addition of other chemicals, such as halogens. (Contact NOAA/OGP at 301-427-2089 ext. 22.)

Hydrograph

A graph showing the stage, discharge, or other property of a river with respect to time.

Hydrographic Survey

The process of determining the depth of waters for navigational chart purposes. (Contact NOAA/NOS PA at 301-713-3066.)

Hydrographic Survey Program

Coordinates NOAA's hydrographic, bathymetric, and oceanographic survey activities and maintains a quality control program for hydrographic data collection and processing. (Contact NOAA/NOS PA at 301-713-3066.)

Hydrographic Technology Program

Researches and implements computer-assisted systems for acquiring, storing, and displaying hydrographic data. The program performs all phases of computer program and computer systems software development, documents for quality control and trains hydrographic personnel in the operation of computer-assisted systems. (Contact NOAA/NOS PA at 301-713-3066.)

Hydrologic Service Area

A geographic area assigned to Weather Service Forecast Offices, Weather Service Offices, and River Forecast Centers that embraces one or more river basins.

Hydrology

The science dealing with the waters of the Earth, their distribution on the surface and underground, and the cycle involving evaporation, precipitation, flow to seas, etc.

Hydrometeorological Prediction Center (HPC)

The National Centers for Environmental Prediction's HPC supports the hydrometeorological forecast functions of the National Weather Service using the latest technology to maintain an up-to-the-minute monitoring of all precipitation-related events across the contiguous United States. The HPC coordinates monitoring and forecast efforts to produce forecasts of rainfall and snowfall amounts to 72 hours, and makes basic weather forecasts out to seven days. Using radar, satellite, and conventional data and model predictions, the HPC forecasts alert field offices to potential flash floods and heavy snow. The HPC is located in Silver Spring, Md. (Contact NOAA/NWS PA at 301-713-0622.)

See also National Centers for Environmental Prediction

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Ice Analysis Program

A component of the NOAA/Navy Joint Ice Center, collocated with the Navy's Polar Oceanography Center. The program prepares analyses and forecasts of sea ice for the polar regions, regional ice analyses and forecasts for Alaska and the Great Lakes, and tailored local support, as required, that affects U.S. marine transportation, industry, and coastal habitats. The program's responsibilities include: improved and interactive analyses and forecasts of sea ice coverage, concentration, thickness, and age; development and operation of state-of-the-art analysis systems to integrate conventional polar ice observations with aircraft and satellite data; and evaluation and verification of analyses and forecasts. (Contact NOAA/NOS PA at 301-713-3066.)

Ice Storm

Damaging accumulations of ice occur during freezing rain conditions. While significant ice accumulation is generally defined as ¼-inch or more, criteria vary for different regions of the country—higher thresholds for regions that are accustomed to ice events and lower thresholds for areas where lesser amounts can cause major problems. See also **Freezing Rain/Freezing Drizzle**

Ice Storm Warning

Issued by the National Weather Service when damaging accumulations of ice are expected during freezing rain conditions, with walking and driving becoming extremely dangerous. Significant ice accumulations are usually ¼-inch or greater. See also **Ice Storm**

Imager

A satellite instrument that measures and maps the Earth and its atmosphere. Imager data are converted by computer into pictures.

Import Value

Value of imports as appraised by the U.S. Customs Service according to the Tariff Act of 1930, as amended. It may be based on foreign market value, constructed value, American selling price, etc. It generally represents a value in a foreign country, and therefore excludes U.S. import duties, freight, insurance, and other charges incurred in bringing the merchandise to the United States.

Import Weight

The weight of an individual product as received, e.g., a fish fillet, a steak, whole, headed, etc.

Industrial Fishery Products

Items processed from fish, shellfish, or other aquatic plants and animals that are not consumed directly by humans. These items contain products from seaweeds, fish meal, fish oils, fish solubles, pearl essence, shark and other aquatic animal skins, and shells.

Integrated Flood Observing and Warning System (IFLOWS)

A system of remotely located precipitation gauges that report rainfall data to a base computer; used for flood warning and forecast operations. A cooperative project between federal and state governments, the system is located primarily in the states of Kentucky, Pennsylvania, Virginia, and West Virginia. (Contact NOAA/NWS PA at 301-713-0622.)

Integrated Program Office

The office that will manage the nation's polar-orbiting environmental satellite program was established on October 1, 1994. The Integrated Program Office for the National Polar-orbiting Operational Environmental Satellite System (NPOESS) will oversee operation of the country's civilian and military polar-orbiting environmental satellite programs, which will be merged into one system over the next several years. The office will be part of NOAA and staffed by personnel from three agencies: NOAA, the Department of Defense, and the National Aeronautics and Space Administration. (Contact NOAA/NESDIS PA at 301-457-5005.) See also Convergence

Interagency Coastal Ocean Science

NOAA is participating in efforts to improve the federal coordination of environmental and natural resource research and development. The Under Secretary for Oceans and Atmosphere/NOAA Administrator serves as co-chairperson of the Committee on Environment and Natural Resources (CENR) under the National Science and Technology Council. Subcommittees of CENR include water resources and coastal and marine environments, biodiversity and ecosystem dynamics, air quality, toxic substances, natural disasters, global change, resource use, socioeconomics, risk assessment, and technology. (Contact NOAA/NOA PA at 301-713-3066.)

Interjurisdictional Fisheries Act of 1986 (Public Law 99-659)

Authorizes the Secretary of Commerce to apportion money to the states for use in developing research programs to enhance the management of interjurisdictional fisheries. (Contact NOAA/NMFS PA at 301-713-2370.)

Interjurisdictional Fishery

A fishery that spans the boundary between political entities, such as state and federal waters or U.S. and Canadian waters.

Internal Water Processing

An operation in which a foreign vessel is authorized by the governor of a state to receive and process fish in the internal waters of a state. The Magnuson Act refers to internal waters as all waters within the boundaries of a state except those seaward of the baseline from which the territorial sea is measured. (Contact NOAA/NMFS PA at 301-713-2370.) See also Magnuson Fishery Conservation and Management Act

International Dolphin Conservation Act of 1992 (Public Law 102-523)

The importation or sale in the United States of any tuna or tuna product that is not dolphin safe was Prohibited after June 1, 1994, establishing the U.S. tuna market as dolphin safe. The Act also prohibits, with some exemptions, any person or vessel that is subject to the jurisdiction of the United States to intentionally set a purse seine on or to encircle any marine mammal during tuna fishing operation after February 1994. (Contact NOAA/NMFS PA at 301-713-2370.)

International Tsunami Information Center (ITIC)

The ITIC, operated by the National Weather Service for UNESCO's Intergovernmental Oceanographic Commission

(IOC), reviews the international tsunami activities and recommends improvements with regard to communications, data networks, data acquisition, and information dissemination. The ITIC promotes the exchange of scientific and technical personnel among nations participating in the IOC's International Coordination Group for the Tsunami Warning System. (Contact NOAA/NWS PA at 301-713-0622.) See also **Alaska Tsunami Warning Center, Pacific Tsunami Warning Center, Tsunami**

Invertebrates

Animals such as shrimp and oysters that do not have a backbone.

j

Jobos Bay National Estuarine Research Reserve, Puerto Rico

This reserve includes 15 offshore islets known as Cayos Caribe, and the mangrove forest of Mar Negro, with its complex system of lagoons, mud salt flats, and channels. The reserve also includes sand beaches, coral reefs, seagrass beds and territorial waters. It is believed that about 50 West Indian Manatees that forage within Jobos Bay and the Mar Negro and Caribe Islets represent the second largest manatee population in Puerto Rico. Hawk's bill sea turtles are also indigenous to the seagrass beds of Jobos Bay. (Contact NOAA/NOS PA at 301-713-3145 ext. 153.)

Joint Institute for Marine and Atmospheric Research (JIMAR)

Located in Honolulu, Hawaii, this cooperative institute is one of eight administered by the Environmental Research Laboratories (ERL). JIMAR is a cooperative institute of NOAA and the University of Hawaii. It conducts research in the areas of equatorial oceanography, climate and global change, tsunamis, and fisheries oceanography that complements research conducted by the ERL. (Contact NOAA/OAR PA at 301-713-2483.)

Joint Institute for Study of the Atmosphere and Ocean (JISAO)

Located in Seattle, Wash., this cooperative institute is one of eight administered by the Environmental Research Laboratories. JISAO is a cooperative institute of NOAA and the University of Washington. It conducts research that complements the research conducted by the NOAA Pacific Marine Environmental Laboratory in the areas of climate, environmental chemistry, and estuaries. (Contact NOAA/OAR PA at 301-713-2483.)

Joint Institutes

The Environmental Research Laboratories (ERL) have established formal collaborative research agreements with eight participating universities to form cooperative (joint) institutes that combine the resources of ERL with those of research-oriented universities, with the intent of developing centers of excellence in research on the Earth's oceans, inland waters, the atmosphere, and the solar-terrestrial environment. The institutes increase the effectiveness of research and the quality of education in the environmental sciences and are a mechanism for technology development and technology transfer to the private sector.

The eight cooperative institutes and associated universities are:

(1) Cooperative Institute for Research in Environmental Sciences (CIRES), and the University of Colorado; (2) Cooperative Institute for Research in the Atmosphere (CIRA), and Colorado State University; (3) Cooperative Institute for Mesoscale Meteorological Studies (CIMMS), and the University of Oklahoma; (4) Cooperative Institute for Limnology and Ecosystems Research (CILER), and the University of Michigan; (5) Cooperative Institute for Marine and Atmospheric Studies (CIMAS), and the University of Miami; (6) Joint Institute for Study of the Atmosphere and Ocean (JISAO), and the University of Washington; (7) Joint Institute for Marine and Atmospheric Research (JIMAR), and the University of Hawaii; and (8) Cooperative Institute for Arctic Research (CIFAR), and the University of Alaska at Fairbanks. (Contact NOAA/OAR PA at 301-713-2483 or NOAA/ERL PA at 303-497-6286.)

Joint System Program Office (JSPO)

A JSPO within the National Weather Service manages the Doppler Weather Surveillance Radar program for acquiring meteorological Doppler radars for the national network. The NEXRAD program is funded by the Departments of Commerce (DOC), Transportation, and Defense, with the DOC (National Oceanic and Atmospheric Administration) as the lead agency. The JSPO is staffed by personnel from the three participating agencies. (Contact NOAA/NWS PA at 301-713-0622.) See also **Doppler Weather Surveillance Radar**

Joint Venture

An operation authorized under the Magnuson Act in which a foreign vessel is authorized to receive fish from U.S. fishermen in the U.S. Exclusive Economic Zone. The fish received from the U.S. vessel are part of the U.S. harvest. (Contact NOAA/NMFS PA at 301-713-2370.) See also **Magnuson Fishery Conservation and Management Act**

k

Knot

A unit of speed equal to one nautical mile per hour or 1.15 miles per hour. See also Nautical Mile

1

Landings, Commercial

Quantities of fish, shellfish, and other aquatic plants and animals brought ashore and sold. Landings of fish may be in terms of round (live) weight or dressed weight. Landings of crustaceans are generally on a live-weight basis, except for shrimp, which may be on a heads-on or heads-off basis. Mollusks are generally landed with the shell on, but, for some species, only the meats are landed, such as sea scallops. Data for all mollusks are published on a meat-weight basis. (Contact NOAA/NMFS PA at 301-713-2370.)

Landsat

Land Remote Sensing Satellite, currently operated by the U.S. Earth Observation Satellite Company, with NOAA oversight. Commercialized under the Land Remote Sensing Commercialization Act of 1984.

Landsat is a series of satellites formerly called ERTS, designed to gather data on the Earth's resources in a regular and systematic manner. Objectives of the Landsat mission are: land use inventory, geological/mineralogical exploration, crops and forestry assessment, and cartography. Restructured federal agency responsibilities for the Landsat program are effective for Landsat 7.

New operating policy specifies that NOAA will be responsible for satellites after they are placed in orbit; NASA will be responsible for the development and launch of Landsat 7; and the U.S. government will provide unenhanced data to users at no cost beyond the cost of fulfilling their data requests. The following is a Landsat chronology: Landsat 1—July 1972 to January 1978 (previously ERTS 1—Earth Resources Technology Satellite); Landsat 2—January 1975 to February 1982; Landsat 3—March 1978 to March 1983; Landsat 4—July 16, 1982, to present, but in standby mode; Landsat 5—March 1, 1984, to present; Landsat 6—October 5, 1993; failed to achieve orbit. (Contact NOAA/NESDIS PA at 301-457-5005.)

Landsat Remote Sensing Commercialization Act of 1984 (P.L. 98-365)

Officially authorized the transition of the Landsat program to the private sector. The U.S. Earth Observation Satellite Company (EOSAT) won the competitive bid and was awarded a contract on September 27, 1985. EOSAT's contract included operating Landsats 4 and 5 and designing, developing, launching, and operating the follow-on system.

Landsat Remote Sensing Policy Act of 1992

In February 1992, the President issued a Space Policy Directive recommended by the National Space Council, which transferred responsibility of the Landsat program to a joint Department of Defense/National Aeronautics and Space Administration program office. The U.S. Congress passed legislation supporting the President's policy in October 1992. The Act authorizes development of Landsat 7 and directs the Landsat Program Management to develop and implement a new data policy for the Landsat System. It also provides for licensing private remote sensing system operators, and directs the administration to establish a new technology program that will develop options for continuing U.S. land remote sensing beyond Landsat 7. (Contact NOAA/NESDIS PA at 301-457-5005.)

Library, NOAA Central

Maintains a collection of more than one million books, journals, technical reports, microfiche, microfilm, compact discs, and databases that supports research in the atmospheric sciences, fisheries, marine biology, oceanography, and related disciplines. The library currently receives 300 active journals, 125 technical report series, and 150 publications through international agreements. The library is open to the general public for on-site use. (Contact NOAA/NESDIS PA at 301-457-5005.)

Limited Automated Remote Collector

A device used by the National Weather Service to collect hydrometeorological data, river and rainfall gauge readings. (Contact NOAA/NWS PA at 301-713-0622.)

Limited Aviation Weather Reporting Station

An air traffic control tower operated by the Federal Aviation Administration where weather reports are certified and supervised by the National Weather Service. (Contact NOAA/NWS PA at 301-713-0622).

Living Marine Resource

Any living marine flora and fauna found in a marine and coastal environment that is under U.S. management jurisdiction.

Longlining

A method of fishing in which a long fishing line is set horizontally with shorter lines to which hooks are attached. The line is used to fish at the surface or at or near the bottom of the ocean, and may be anchored, floating, or attached to a vessel.

Long-Lead Climate Outlook

Scientists at the National Weather Service's Climate Prediction Center (CPC) have developed a series of 90-day outlooks that offer a look up to one year in the future. The CPC produces each month a suite of 13 seasonal outlooks, containing maps and/or tables describing the seasonal temperatures and precipitation predictions for the United States, and also contains predictions for tropical Pacific sea-surface temperatures out to one year.

An updated outlook for the same target appears each month at mid-month, reducing the lead time for a target season from 12 months (maximum lead time) to just two weeks before the season occurs. The Climate Outlook appears on the Internet through the CPC Home Page on the Internet's World Wide Web *(http://nic.fb4.noaa.gov)*, and also over National Weather Service Automation of Field Operations and Services and Family of Services networks. Six Regional Climate Centers serve as clearinghouses for questions about the new Long-Lead Climate Outlooks produced by the NCEP's CPC. (Contact NOAA/NWS PA at 301-713-0622.)

See also **Automation of Field Operations and Services, Climate Prediction Center, Cray C90 Supercomputer, El Niño, Family of Services, National Centers for Environmental Prediction, Regional Climate Centers, Sea-Surface Temperature, Seasonal Outlook**

Long-Term Potential Revenue (LTPR)
Estimate for a national or regional fishery generated by multiplying ex-vessel revenue by population Long-Term Potential Yield. LTPR takes both recreational and commercial catches and multiplies them by an average commercial price estimate to arrive at a baseline (relative measure) of economic significance among various user groups. LTPR serves as a useful gauge of the economic benefit generated over many disparate stocks, fisheries, and regions. See also **Ex-Vessel Revenue, Long-Term Potential Yield**

Long-Term Potential Yield (LTPY)
The maximum long-term average yield that can be achieved by means of conscientious stewardship: controlling the fishing mortality rate through regulating fishing effort or total catch. LTPY is a reference point for judging the potential of the resource. See also **Production Function, Stock Level**

Lowland Flooding
Inundation of low areas near a river/stream; often rural, but may also occur in urban areas. See also **Flood**

m

Magnuson Fishery Conservation and Management Act, Public Law 94-265, as amended

The Magnuson Act provides a national program for the conservation and management of fisheries to allow for an optimum yield on a continuing basis and to realize the full potential of the nation's fishery resources. It established the U.S. Exclusive Economics Zone (EEZ) (formerly the Fishery Conservation Zone) and a means to control foreign and certain domestic fisheries through Preliminary Fishery Management Plans and Fishery Management Plans.

Within the U.S. EEZ, the United States has exclusive management authority over fish (meaning finfish, mollusks, crustaceans, and all other forms of marine animal and plant life other than marine mammals and birds). The Magnuson Act provides further exclusive management authority beyond the U.S. EEZ for all continental shelf fishery resources and all anadromous species throughout the migratory range of each such species, except during the time they are found within any foreign nation's territorial sea or fishery conservation zone (or the equivalent), to the extent that such a sea or zone is recognized by the United States. (Contact NOAA/NMFS PA at 301-713-2370.) See also Continental Shelf Fishery Resources, **Optimum Yield, Exclusive Economic Zone, Preliminary Fishery Management Plan, Fishery Management Plan**

Major Flooding

A general term indicating extensive inundation and property damage; usually characterized by the evacuation of people and livestock and the closure of both primary and secondary roads. See also **Flood**

Mangrove

Any of various tropical evergreen trees or shrubs of the genus *Rhizophora*, having stilt-like roots and stems and forming dense thickets along tidal shores. Resistant to the salty waters of estuarine environments, mangroves are often important elements of healthy coastal ecosystems. (Contact NOAA/NOS PA at 301-713-3066.)

Marine

Related to or from the sea, ocean or other body of salt water.

Marine Biotechnology

While marine organisms constitute a major portion of the Earth's genetic resources and are a significant resource for the biotechnology industry, their biochemical and biological properties are relatively unexplored.

Research by the National Sea Grant College Program has yielded promising results, showing great potential for new classes of pharmaceuticals, chemical products, and new industrial processes. Sea Grant research into the application of DNA technology to aquaculture has shown the potential of providing improved strains for commercial production and new methods for detecting and controlling diseases. (Contact NOAA/OAR PA at 301-713-2483.)

Marine Mammal Commission

An independent federal agency charged with developing, reviewing and making recommendations on the actions of all federal agencies with respect to marine mammal protection and conservation. (Contact NOAA/NMFS PA at 301-713-2370.)

Marine Mammal Protection Act (MMPA)

The Marine Mammal Protection Act of 1972 is the principal federal legislation that guides marine mammal species protection and conservation policy. Under the act, NOAA's National Marine Fisheries Service (NMFS) is responsible for protecting and conserving whales, dolphins, porpoises, seals and sea lions.

The MMPA places a moratorium, with few exceptions, on the taking and importing into the United States of marine mammals and their products. NMFS scientists monitor these species to determine whether their populations are at optimum levels. If a population falls below this optimum level, it is designated as "depleted," and a conservation plan is developed to guide research and management actions to restore the population to healthy levels. If a marine mammal population is endangered or threatened, it also receives further protection under the Endangered Species Act. (Contact NOAA/NMFS PA at 301-713-2370.) See also **Beaked Whales, Bottlenose Dolphin, Marine Mammal Protection Act, 1994 Amendments To, Endangered Species Act, Depleted, Optimum Sustainable Population Level**

Marine Mammal Protection Act (MMPA), 1994 Amendments to

Congress amended the MMPA in 1994, changing provisions in the Act that altered the governing of marine mammals caught incidental to commercial fishing, establishing scientific review groups and task forces, and highlighting authority to include effects on the ecosystem in managing marine mammal stocks. Other amendments included virtually eliminating fisheries service jurisdiction over the care and maintenance of captive marine mammals held for public display, streamlining authorizations for non-injurious scientific research on marine mammals, and establishing a new permit category for photographing marine mammals. (Contact NOAA/NMFS PA at 301-713-2370.) See also **Marine Mammal Protection Act, Endangered Species Act**

Marine Mammal Stranding Network

In each U.S. coastal state, NOAA's National Marine Fisheries Service has established a Marine Mammal Stranding Network consisting of volunteers and state and federal employees who respond to live and dead stranded and beached animals. Although stranding is perceived as an unusual occurrence, each year Stranding Network members respond to some 3,000 stranded pinnipeds (sea lions, seals) and cetaceans (whales, dolphins) on the nation's beaches.

Stranding Network members successfully rehabilitate and restore to the wild several hundred marine mammals. While live animals receive more attention from the public, dead animals can provide valuable information. To scientists, stranded animals represent a research opportunity that might not otherwise be available. Much of the professional literature on marine mammals has been the result of information gained from stranded animals analyzed by the network volunteers and researchers. Stranding networks also have been responsible for the detection of serious diseases in our marine mammal populations. (Contact NOAA/NMFS PA at 301-713-2370.)

Marine Mammals, Atlantic

At least 35 species of marine mammals live in the western North Atlantic Ocean and the Gulf of Mexico, including 32 species of whales, dolphins, and porpoises, two seal species (harbor and gray seals), and the West Indian manatee. Simple abundance estimates are known for 20 stocks. Of these, seven species found off the east coast and Gulf of Mexico are listed as endangered under the Endangered Species Act (i.e., sei, sperm, blue, fin, humpback, North Atlantic right whales, and West Indian manatee). Also, following a 1987-'88 mass die-off, there is serious concern about the status of coastal and offshore bottlenose dolphins in the Mid-Atlantic. There are far too few data on other stocks to evaluate their status. Abundance trends are known for only the northeast stocks of harbor seal, gray seal, and the manatee. (Contact NOAA/NMFS PA at 301-713-2370.)

Marine Mammals, Pacific

At least 50 marine mammal species live in U.S. waters of the eastern North Pacific Ocean and eastern tropical Pacific, including 36 species of whales, dolphins, and porpoises; 11 species of seals and sea lions; walrus, polar bear, and sea otter. Simple abundance estimates are known for 73 stocks.

Of these, nine species are listed as endangered or threatened under the Endangered Species Act guidelines. Although the data are incomplete, right whales in the eastern North Pacific are at critically low levels and nearly extinct; only five-to-seven sightings have been made in the past 25 years. The eastern North Pacific or "California" stock of gray whales was removed from the endangered species list in June 1994 and is believed to be near to or surpassing its historical abundance level. Moreover, south of Alaska, some marine mammals have also recovered or are recovering to near-historical abundance levels (i.e., California sea lion and the northern elephant seal).

As with the Atlantic species, data are insufficient to assess the status of most Pacific whales, dolphins, and porpoises, and abundance trends are known for only 16 stocks. (Contact NOAA/NMFS PA at 301-713-2370.)

Marine Prediction Center (MPC)

The National Centers for Environmental Predictions's MPC produces and issues a variety of marine meteorological and oceanographic analyses and forecast products that help ensure the safety of life and property at sea, manage marine natural resources and protect the environment. The center, located in Camp Springs, Md., and eventually to be relocated to Monterey, Calif., forecasts and analyzes conditions such as wind, waves, fog, ice accretion, ocean boundary currents, and sea surface and subsurface temperature, as well as emergency situations identified by National Weather Service offices, the Federal Emergency Management Agency and the U.S. Coast Guard Search and Rescue. (Contact NOAA/NWS PA at 301-713-0622). See also **National Centers for Environmental Prediction**

Marine Recreational Catch

Quantities of finfish, shellfish and other living aquatic organisms caught, but not necessarily brought ashore, by marine recreational fisherman. (Contact NOAA/NMFS PA at 301-713-2370.)

Marine Recreational Fishermen

Any person who harvests fish in marine waters and does not sell or barter all or part of the catch.

Marine Recreational Fishing

Fishing in marine waters that does not result in the sale or barter of all or part of the fish harvested.

Marine Weather

Marine weather warnings and forecasts are provided by the National Weather Service to help the mariner make decisions to protect life and property. Marine weather products include: coastal and offshore

warnings and forecasts; coastal flood watches and warnings; hurricane and tropical storm advisories; and high seas and tsunami watches and warnings. (Contact NOAA/NWS PA at 301-713-0622.)

Mauna Loa Observatory

Located in Mauna Loa, Hawaii, the observatory maintains monitoring programs in greenhouse and other trace gases, atmospheric aerosols, solar radiation variability, stratospheric ozone, and meteorological parameters to support NOAA climate and global change programs. The staff consists of 15 federal employees and a large and variable number of visiting researchers who support NOAA and other agency research programs. (Contact NOAA/ERL PA at 303-497-6286.)

Maximum Sustainable Yield (MSY)

MSY from a fishery is the largest annual catch or yield in terms of weight of fish caught by both commercial and recreational fishermen that can be taken continuously from a stock under existing environmental conditions. A determination of MSY, which should be an estimate based upon the best scientific information available, is a biological measure necessary in the development of optimum yield. See also **Optimum Yield**

Meteorology

Meteorology is the scientific study of the atmosphere and weather.

METEOSAT

Europe's geostationary weather satellite, located at 0 degrees longitude and operated by the European Organisation for the Exploitation of Meteorology Satellites. METEOSAT transmits at 1691 and 1694.5 MegaHertz. See also **EUMETSAT**

Metric Tons

A measure of weight equal to 1,000 kilograms, 0.984 long tons, 1.1023 short tons, or 2,204.6 pounds.

Metsat

Generic term for meteorological (weather) satellites.

Microwave Sounding Unit

This unit detects and measures the energy from the troposphere to construct a vertical temperature profile to an altitude of about 20 kilometers. Measurements are made by radiometric detection of microwave energy divided into four frequency channels. Each measurement is made by comparing the incoming signal from the troposphere with the ambient temperature reference load. Because its data are not seriously affected by clouds, the unit is used along with the HIRS/2I to remove measurement ambiguity when clouds are present. (Call NOAA/NESDIS PA at 301-457-5005.)

Mid-Atlantic Regional Fishery Management Council

One of eight regional councils established by the Magnuson Fishery Conservation and Management Act. The council acts as a steward of the living marine resources off the coasts of New York, New Jersey, Delaware, Pennsylvania, Maryland, and Virginia. (Contact NOAA/NWS PA at 301-713-0622.) See also **Regional Fishery Management Councils**

Mid-Columbia

The section of the Columbia River from Chief Joseph Dam to its junction with the Snake River.

Minor Flooding

A general term indicating minimal or no property damage but possibly some public inconvenience. See also **Flood**

Moderate Flooding

A general term indicating the inundation of secondary roads; transfer to higher elevation is necessary to save property; some evacuation may be required. See also **Flood**

Modernization Act

See **Weather Service Modernization Act**

Modernization and Associated Restructuring

The National Weather Service (NWS) is currently in the midst of a major modernization program that will result in more timely and precise severe weather and flood warnings for the nation. Recent advances in satellites, radar, sophisticated information processing and communication systems, automated weather observing systems and superspeed computers are the foundation of the modernization. The components of the modernization and associated restructuring are: the new Doppler Weather Surveillance Radar, the Automated Surface Observing System, a new generation of Geostationary Operational Environmental Satellites, the Automation of Field Operations and Services system, and the Advanced Weather Interactive Processing System. The modernization also includes a new structure of field offices for the NWS, including Weather Forecast Offices and River Forecast Centers. (Contact NOAA/NWS PA at 301-713-0622.) See also **Advanced Weather Interactive Processing System, Automated Surface Observing System, Automation of Field Operations and Services, Cray C90 Supercomputer, Doppler Weather Surveillance Radar, Geostationary Operational Envionmental Satellites.**

Mollusks

Bottom-dwelling invertebrates with a soft unsegmented body enclosed within a hard shell, such as oysters and snails.

Monitor National Marine Sanctuary, North Carolina

On January 30, 1975, NOAA designated the first national marine sanctuary. The site was the wreckage of the *U.S.S. Monitor*, a Civil War vessel that lay off the coast of North Carolina.

The *Monitor* was the prototype for a class of U.S. Civil War ironclad turreted warship that significantly altered both naval technology and marine architecture in the 19th century. The vessel contained all of the emerging innovations that revolutionized warfare at sea. On December 25, 1862, less than a year after her commissioning, the ironclad was enroute to Beaufort, N.C., when it encountered a great gale and on December 31, 1862, it sank. For over a century, the *Monitor* lay undiscovered in 230 feet of water 16 miles off Cape Hatteras, N.C. In August1973, scientists from Duke University's research vessel *Eastward* located the *Monitor* using sidescan sonar. Since its designation, numerous research expeditions have visited the *Monitor* gathering scientific data.

The anchor and the lantern have been recovered and are on display at the Mariners' Museum in Newport News, Va. Plans are being developed to have additional *Monitor* artifacts and exhibits displayed at other museums and visitor centers. (Contact NOAA/NOS PA at 301-713-3145 ext. 153.)

Monterey Bay National Marine Sanctuary, California

This sanctuary is a haven for sea otters, seals, shorebirds, squid, sardines and thousands of other species, including many that are threatened or endangered. The sanctuary boundaries include nutrient-rich currents that nourish the area and make marine life diverse. Within the sanctuary, scientists study deep-sea life, sightseers enjoy rugged rocky shores, divers explore majestic kelp forests, and fishermen harvest the bounty. The sanctuary contains a submarine canyon larger than the Grand Canyon. (Contact NOAA/NOS PA at 301-713-3145 ext. 153.)

Motorboat

A motor-driven commercial fishing craft having a capacity of less than five net tons, or not officially documented by the U.S. Coast Guard. See also **Boat, Other**

Mullica River Great Bay Proposed National Estuarine Research, New Jersey

In July 1993, the Mullica River Great Bay estuary in New Jersey was nominated for inclusion in the National Estuarine Research Reserve Program. Located in southern New Jersey, the site is regarded as one of the least-disturbed settings in the densely populated urban corridor of the northeastern United States. The proposed reserve encompasses 114,047 acres and incorporates a great variety of terrestrial, wetland, and aquatic habitats, ranging from protected state forests to barrier islands. (Contact NOAA/NOS PA at 301-713-3145 ext. 153.)

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Nanometer

The unit equal to one-billionth of a meter, frequently used to measure wavelengths of electromagnetic radiation in the solar spectrum. (Contact NOAA/OGP PA at 301-427-2089 ext. 22.)

Narragansett Bay National Estuarine Research Reserve, Rhode Island

Spanning 2,200 acres of land on Prudence, Patience, and Hope Islands, and 2,750 acres of water adjoining the islands, this reserve sits in the geographic center of Narragansett Bay, only 12 miles from Newport, R.I. Diverse aquatic and terrestrial habitats provide nesting sites for numerous species of birds. Soft-shell clams, quahogs, lobster, striped bass, black-back flounder and sea trout thrive in the reserve's tidal deepwater; the reserve's exposed offshore rocks provide resting places for harbor seals. On the islands, visitors can use an extensive trail system to reach the reserve's major ecological features. (Contact NOAA/NOS PA at 301-713-3145 ext. 153.)

National Acid Precipitation Assessment Program

An interagency program reauthorized under the 1990 Clean Air Act that is legislatively mandated to:

- develop a comprehensive, coordinated acid precipitation research and monitoring program and unified budget to reduce major uncertainties and provide data and information for assessment activities;
- evaluate the costs, benefits, and effectiveness of the Environmental Protection Agency's (EPA) Acid Deposition Control Program;
- determine the reduction in deposition rates needed to prevent adverse ecological effects; and
- report to Congress on the results of its investigations, analyses, and assessments. EPA has the lead, with participation by NOAA and the Departments of Agriculture, Energy, and Interior.

(Contact NOAA/OAR PA at 301-713-2483.) See also **Acid Rain**

National Centers for Environmental Prediction (NCEP)

Formerly the National Meteorological Center, NCEP is the heart of the National Weather Service's operations. NCEP provides central meteorological and oceanographic guidance to field forecasters to assist them in issuing forecasts and warnings to the public.

Virtually all the meteorological data collected over the globe arrive at NCEP where they are analyzed and used to generate a variety of end products. NCEP has seven centers that generate environmental prediction products and two central support groups that maintain the central computer operations.

The centers are the Storm Prediction Center in Norman, Okla.; the Aviation Weather Center in Kansas City, Mo.; the National Hurricane Center/Tropical Prediction Center in Coral Gables, Fla.; the Marine Prediction Center in Camp Springs, Md, to be relocated to Monterey, Calif.; the Climate Prediction Center in Camp Springs, Md.; the Hydrometeorological Prediction Center in Silver Spring, Md.; and the Environmental Modeling Center and Central Operations Branch in Camp Springs, Md. (Contact NOAA/NWS PA at 301-713-0622.) See also **Aviation Weather Center, Climate Prediction Center, Cray C90 Supercomputer**

National Climatic Data Center (NCDC)

NCDC is the world's largest active archive of weather data. The Weather Bureau, Air Force and Navy Tabulation Units in New Orleans, La., were combined and formed the National Weather Records Center in Asheville, N.C., in November 1951.

Authority to establish the joint Weather Records Center was granted under section 506(c) of the Federal Records Act of 1950 (Public Law 754, 81st Congress). The center was eventually renamed the National Climatic Data Center. Today, Air Force and Navy units are collocated with NCDC and are part of the Federal Climate Complex, making this facility an important natural resource for climate information.

The National Archives and Records Administration has designated NCDC as the Commerce Department's only Agency Records Center. NCDC archives weather data obtained by the National Weather Service, Military Services, Federal Aviation Administration, and the Coast Guard, as well as data from voluntary cooperative observers. As operator of the World Data Center-A for Meteorology, which provides for international data exchange, NCDC also collects data from around the globe. The center has more than 150 years of data on hand; this includes satellite weather images back to 1960, with 55 gigabytes of new information added each day that is equivalent to 18 million pages a day.

Data are received from a wide variety of sources, including satellites, radar, remote sensing systems, NWS cooperative observers, aircraft, ships, radiosonde, wind profiler, rocketsonde, solar radiation networks, and NWS Forecast/Warnings/Analyses Products. NCDC supports many forms of data and information dissemination, such as paper copies of original records, publications, atlases, computer printouts, microfiche, microfilm, movie loops, photographs, magnetic tape, floppy disks, CD-ROM, electronic mail, on-line dial-up, telephone, facsimile and personal visit.

The center, which produces numerous climate publications and responds to requests from all over the world, provides historical perspectives on climate which are vital to studies on global climate change, the greenhouse effect, and other environmental issues. The center stores information essential to industry, science, agriculture, hydrology, transportation, recreation, and engineering. This information can mean tens of millions of dollars to concerned parties. (Contact NOAA/NESDIS PA at 301-457-5005.)

National Coastal Pollutant Discharge Inventory (NCPDI)

A series of database development and analytical activities designed to assess the sources, magnitudes, and impact of pollutant discharges within the nation's coastal and estuarine areas. A major component of the NCPDI is a comprehensive database which contains pollutant estimates for point, nonpoint, and riverine

sources located in coastal counties which discharge into the nation's estuarine, coastal and oceanic waters. (Contact NOAA/NOS PA at 301-713-3066.)

National Coastal Wetlands Inventory

A national database compiled by NOAA that describes the distribution and abundance of coastal wetlands in the coterminous United States. The database includes information on the distribution and abundance (circa early 1990s) of coastal wetlands and information on the trends of coastal wetlands losses and gains. The inventory is part of NOAA's National Estuarine Inventory. (Contact NOAA/NOS PA at 301-713-3066.) See also **Biogeographic Characterization Program**

National Data Buoy Center (NDBC)

A specialized center within NOAA's National Weather Service located at Stennis Space Center, Miss. NDBC operates and maintains a large network of massive automated moored buoys and coastal stations in all seas bordering the United States.

The network provides hourly measurements of wind speed and direction, atmospheric pressure, air and sea surface temperature, and sea state information for operational use by weather forecasters in forecasting and warning and in numerical models. NDBC also deploys stations for other groups and agencies that require high quality *in-situ* data.

NDBC receives logistical support from the U.S. Coast Guard in the form of highly trained personnel, ships, aircraft, boats and shore facilities. Data from NDBC stations are disseminated worldwide within minutes and are stored in the national data archive centers. NDBC's expertise in environmental monitoring is also demonstrated in other activities, such as drifting buoy technology, sensor development and application, wind profilers, and data display systems. (Contact NOAA/NWS PA at 301-713-0622.) See also **Tropical Prediction Center/National Hurricane Center**

National Environmental Satellite, Data, and Information Service (NESDIS)

Manages U.S. civil Earth-observing satellite systems, as well as global databases for meteorology, oceanography, solid-earth geophysics, and solar-terrestrial sciences. From these sources, it develops and provides environmental data and information products and services critical to the protection of life and property, the national economy, energy development and distribution, global food supplies, and the development and management of natural resources. NESDIS was established Dec. 1, 1982. It was formed by the merger of the former National Earth Satellite Service and Environmental Data and Information Service. (Contact NOAA/NESDIS PA at 301-457-5005.)

National Estuarine Inventory (NEI)

Characterizes estuarine freshwater inflow, sediments, salinity, pollution susceptibility, and eutrophication potential of 124 estuaries and sub-estuaries. (Contact NOAA/NOS PA at 301-713-3066.)

National Estuarine Research Reserve System (NERRS)

Protects hundreds of thousands of acres of estuarine waters, marshes, shorelines, and adjacent wetlands throughout the country. Rich and diverse, estuaries are among the most productive natural places on Earth; ecologists have found that estuaries produce more food per acre than the best midwestern farmland.

Estuaries also help maintain water quality, prevent erosion, provide flood control, serve as fish and wildlife habitat, and provide recreational opportunities. The NERRS program, established by the U.S. Congress in 1972, is designed to provide opportunities for long-term estuarine research and monitoring; provide opportunities for education and interpretation; provide a basis for more informed coastal management decisions; and promote public appreciation of estuarine ecosystems.

Reserve sites are chosen to reflect regional differences between ecosystems throughout the United States and to reflect regional variations in the nation's coastal zone. There are now 23 approved sites in the system. Coastal states, with financial assistance through federal matching grants, own or control, and administer NERRS sites. Each site develops research, monitoring, education and outreach programs, and builds and operates visitor centers, interpretive facilities, and other facilities that are appropriate for bringing the public and researchers to the site. (Contact NOAA/NOS PA at 301-713-3086, ext. 100.) See also **Coastal Zone Management Act of 1972, as amended**

National Geodetic Survey, Office of the

Maintains the U.S. Horizontal and Vertical Networks of Geodetic Control, the foundation of all mapping and surveying activities. The office is a leader in the development and improvement of surveying methods and instruments. It conducts photogrammetric surveys for coastal mapping, seaward boundaries, and coastal evacuation maps.

The office conducts satellite geodetic operations, gravimetric and astronomic surveys as well as research and development in support of total, integrated environmental research by special surveys. It publishes geodetic control data, photogrammetric data, and technical publications. It provides extension services to state and local groups through cooperative survey programs, special training activities, and technical assistance. (Contact NOAA/NOS PA at 301-713-3066.) See also **Photogrammetry**

National Geophysical Data Center (NGDC)

The NGDC combines, in a single data center, the fields of seismology, geomagnetism, marine geology and geophysics, solar phenomena, the ionosphere, paleoclimatology, and snow and ice. NGDC collects, organizes, archives, publishes, and disseminates data from worldwide sources. NGDC also operates the World Data Center A for Solid Earth Geophysics, Solar Terrestrial Physics, Marine Geology and Geophysics, and Paleoclimatology. NGDC contracts with the University of Colorado to operate the World Data Center A for Glaciology (Snow and Ice) and the collocated National Snow and Ice Data Center. (Contact NOAA/ERL PA at 303-497-6286.)

National Habitat Program

National Marine Fisheries Service research and management programs that address habitat aspects of fisheries, the protection of species, and other priorities. (Contact NOAA/NMFS PA at 301-713-2370.)

National Historic Preservation Act, as amended (NHPA)

NHPA authorizes the Secretary of the Department of the Interior to maintain a National Register of "districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, and culture." Sites have been listed on the National Register that include, or are composed entirely of, ocean waters and submerged lands within state waters or on the Outer Continental Shelf (OCS), such as the *USS Monitor*. (Contact NOAA/NOS PA at 301-713-3066.)

National Hurricane Center

See **Tropical Prediction Center/National Hurricane Center**

National Logistical Support Center

The NOAA facility in Kansas City, Mo., which stocks brochures, leaflets, and other literature, certain spare parts and other items used at NOAA field offices. (Contact NOAA/NWS PA at 301-713-0622).

National Marine Fisheries Service (NMFS)

The National Marine Fisheries Service (NMFS) is dedicated to the management and conservation of commercial and recreational fisheries. These fisheries provide for the nation an important source of food, as well as thousands of jobs and a traditional way of life for many coastal

communities. From the Gulf of Maine to the Gulf of Alaska, NMFS scientists and managers ensure sustainable fish harvests; they are the stewards of the nation's living marine resources and their habitats.

NMFS recovers protected marine species, such as sea turtles, whales, and dolphins, without unnecessarily impacting economic and recreational opportunities. NMFS supports the development of innovative management strategies and technologies to reduce potential conflicts involving protected species. NMFS develops and implements conservation and recovery plans and works to prevent species from becoming threatened or endangered.

NMFS promotes healthy coastal ecosystems in a way that maintains long-term fisheries productivity and promotes economic growth, recreation and tourism. NMFS manages its activities in an ecosystem-wide approach to maintain a diversity of commercial fish species, and monitors and evaluates coastal areas to provide better information for marine resource managers. (Contact NOAA/NMFS PA at 301-713-2370.) See also **NMFS Offices, NMFS Regional Offices, NMFS Science Centers**

National Marine Sanctuaries Act (NMSA) (Title III of the Marine Protection, Research, and Sanctuaries Act)

The NMSA provides the Secretary of Commerce with the authority to protect and manage the resources of nationally significant marine areas located in the coastal waters of the United States. This authority has been delegated to NOAA.

NOAA's role in administering the marine sanctuary program involves designating marine sanctuaries and adopting management practices to protect the conservation, recreational, ecological, educational, historical, research and aesthetic values of these important marine areas. The marine sanctuary program allows comprehensive and coordinated conservation and management of sanctuaries in a manner that complements existing regulatory authorities.

Because the primary reason for designating an area as a national marine sanctuary is to protect it, the enforcement provisions contained in the NMSA are particularly stringent. NOAA has the authority to, among other things, board, search and seize (consistent with international law) any vessel suspected of being used to violate the NMSA and to execute warrants issued by a court of competent jurisdiction. Any person who destroys, causes the loss of, or injures a sanctuary resource is liable for a maximum fine of $100,000 per violation; response costs; damages including replacement cost, restoration cost, acquisition of an equivalent sanctuary resource, and lost-use value of that resource; and interest. (Contact NOAA/NOS PA at 301-713-3145 ext. 153.)

National Marine Sanctuary Program

In 1972, in response to a growing awareness of the intrinsic environmental and cultural value of our coastal and Great Lakes waters, the U.S. Congress passed the Marine Protection, Research and Sanctuaries Act.

The Act authorizes the Secretary of Commerce to designate discrete areas as National Marine Sanctuaries to promote comprehensive management of their special conservation, educational, research, ecological, historical, recreational and esthetic resources. National marine sanctuaries may be designated in coastal and ocean waters, in submerged lands and in the Great Lakes and their connecting waters. Twelve national marine sanctuaries have been designated since the program began.

They include nearshore coral reefs as well as open ocean, and range in size from less than a square nautical mile to over 4,000-square nautical miles. The sanctuaries contain a fascinating collection of plants and animals, from huge whales to tiny, brightly colored sea snails. These protected waters provide a secure habitat for species close to extinction, and protect historically significant shipwrecks and prehistoric artifacts.

The sanctuaries also support diving, sport fishing, and valuable commercial industries such as fishing and kelp harvesting. Thus, part of the challenge of managing these areas is balancing multiple uses of the resources. Marine sanctuaries are a public trust that we have the right to enjoy and the responsibility of protecting for future generations. (Contact NOAA/NOS PA at 301-713-3145 ext. 153.)

National Mussel Watch Program

Mollusks are collected by NOAA at sites throughout the coastal United States to monitor trends in chemical concentrations over time. Chemical concentrations in mussels and oysters are determined by the extent to which the organisms accumulate chemicals from the food they filter from their surrounding water and from the water itself.

When chemical concentrations increase or decrease in their surroundings, the organisms are capable of increasing or decreasing the corresponding concentrations in their tissues. This capability, along with their immobility, make them ideal for monitoring changes in chemical concentrations at fixed sites. The Mussel Watch Project collects mussels and oysters once a year at over 240 sites nationwide.

These shellfish are analyzed for more than 70 polycyclic aromatic hydrocarbons, polychlorinated biphenyls, chlorinated pesticides, butyltins, and toxic trace elements. Sediments at these sites are regularly analyzed for chemical contaminants, and shellfish from selected locations are analyzed for radionuclides. (Contact NOAA/NOS PA at 301-713-3066.)

National Ocean Service (NOS)

One of NOAA's five major operating units, the National Ocean Service (NOS) coordinates ocean services and coastal zone management programs throughout NOAA, and provides services, predictions and warnings, as well as maps, charts, and publications, to ensure safe use of U.S. marine waters and air space. It maintains the National Geodetic Reference System.

NOS carries out NOAA's responsibilities in marine environmental quality research, development and monitoring. It develops and manages programs in physical, biological, chemical, and geological oceanography required to provide ocean services, to assess the marine environment, and to establish a scientific information base on which to support development of a national policy for oceans and their uses. NOS administers NOAA's coastal zone management, marine sanctuaries and estuarine research reserves, and related programs. It conducts national assessments of the use and health of marine resources, and implements programs for the development of ocean mineral resources and energy. (Contact NOAA/NOS PA at 301-713-3066.)

National Oceanic and Atmospheric Administration (NOAA)

An agency of the Department of Commerce that conducts research and gathers data about the global oceans, atmosphere, space, and sun, and applies this knowledge to science and service that benefits the nation. NOAA provides its services through five major line offices (the National Weather Service, the National Ocean Service, the National Marine Fisheries Service, the National Environmental Satellite, Data, and Information Service; and the Office of Oceanic and Atmospheric Research); its program offices; and the NOAA Corps, a staff office. (Contact NOAA PA at 202-482-6090.)

See also **Coastal Ocean Program; Global Programs, Office of; National Environmental Satellite, Data, and Information Service; National Marine Fisheries Service; National Ocean Service; National Weather Service; NOAA Corps; NOAA Line Offices; NOAA Program Offices; Oceanic and Atmospheric Research, Office of.**

National Oceanographic Data Center (NODC)

NODC is the U.S. national repository and dissemination facility for global oceanographic data. It manages and distributes physical, chemical, and biological oceanographic data collected by organizations and institutions in the United States and dozens of other countries. Under the auspices of the U.S. National Academy of Sciences, the NODC operates World Data Center A, Oceanography. NODC cooperates with university research groups through three joint centers: Joint Environmental Data Analysis Center (with Scripps Institution of Oceanography, University of California at San Diego); Joint Archive for Sea Level (with the University of Hawaii); and Joint Center for Research in the Management of Ocean Data (with the University of Delaware). (Contact NOAA/NESDIS PA at 301-457-5005.)

National Operational Hydrologic Remote Sensing Center (NOHRSC)

The National Weather Service office located in Minneapolis, Minn. Has the primary responsibility of conducting snow depth surveys and recording soil moisture contents and other hydrologic data used by the Office of Hydrology, River Forecast Centers and other offices in preparing spring flood projections and other products. (Contact NWS Central Region PA at 816-426-7621).

National Polar-orbiting Operational Environmental Satellite System

See Convergence

National Research Council (NRC)

Organized by the National Academy of Sciences (NAS) in 1916, the NRC has become the principal operating agency of both the NAS and the National Academy of Engineering in providing services to the government, public, and the scientific and engineering communities. The council is conducting a study for the National Weather Service to review the weather service's modernization effort. (Contact NOAA/NWS PA at 301-713-0622.) See also Modernization and Associated Restructuring (MAR)

National Sea Grant College Program

A national network of over 300 colleges, universities, research institutions, and marine organizations that work in partnership with industry, the federal government, and state governments to support marine and Great Lakes research, education, and extension services. The 29 core colleges and institutions in the network are in the following states: Alaska, California, Connecticut, Delaware, Florida, Georgia, Hawaii, Illinois, Indiana, Louisiana, Maine, Maryland, Massachusetts, Minnesota, Mississippi, Alabama, New Hampshire, New Jersey, New York, North Carolina, Ohio, Oregon, Puerto Rico, Rhode Island, South Carolina, Texas, Virginia, Washington, and Wisconsin. (Contact NOAA/OAR PA at 301-713-2483.)

National Sea Grant College Program Act (33 USC 1121)

Authorizes NOAA to award grants and contracts to initiate and support programs at Sea Grant colleges and other institutions for research, education, and advisory services in any field related to the conservation and development of marine resources.

National Shellfish Register of Classified Estuarine Waters

The National Shellfish Register was first produced in 1966 by the Food and Drug Administration (FDA). It has been published every five years since then as a cooperative effort between the nation's shellfish-producing states and federal agencies such as the FDA and NOAA. It serves as a policy- and decision-making resource for government agencies, researchers and industry. The 1995 edition of the register will include regional maps of estuarine drainage boundaries and classified shellfish growing areas, data tables and graphics on pollution sources and harvests, a discussion of offshore shellfish aquaculture, and shellfish habitat and stock restoration activities now taking place.

(Contact NOAA/NOS PA at 301-713-3066.)

National Spatial Reference System

A network of many thousands of precisely determined points known as geodetic control points. Most of these points are marked by metal disks about three inches in diameter, or by a metal rod under a hinged cover. These points provide the common base of reference to correlate longitude, latitude, height, scale, and orientation throughout the nation, and the changes of these with time, for resource mapping; transportation, communication, and defense systems; boundary and property surveys; land record systems; mapping and charting; public utilities; and a variety of scientific and engineering applications. (Contact NOAA/NOS PA at 301-713-3066.)

National Status and Trends Program

Since 1984, this program has monitored, on a national scale, spatial and temporal trends of chemical contamination in coastal waters and biological responses to that contamination. Temporal trends are being monitored through the Mussel Watch project, which analyzes mussels and oysters collected annually at about 200 sites. Spatial trends have been described on a national scale based on chemical concentrations measured in surface sediments. These samples were collected by both the Mussel Watch and Benthic Surveillance Projects from 240 sites throughout the coastal and estuarine United States. The Benthic Surveillance Project measured chemical concentrations in fish livers and performed histological analyses of fish for evidence of biological responses to chemical contamination. (Contact NOAA/NOS PA at 301-713-3032.)

National Undersea Research Program

A national network of six universities and research institutions that provides access to civilian and military equipment and facilities for scientists to conduct *in situ* undersea research on living and non-living resources using a variety of engineering systems. These include manned submersibles, remotely operated underwater vehicles, air and mixed gas scuba dives, and the undersea research station *Aquarius* deployed in the Florida Keys.

Research focuses on fisheries, coastal processes, ecosystem health, marine lithospheric processes, undersea technology, and diving safety and physiology. There are five National Undersea Research Centers: the Caribbean Marine Research Center, Covington, Va.; Hawaii and other Pacific Islands, University of Hawaii at Manoa, Honolulu, Hawaii; Mid-Atlantic Bight, Rutgers University, New Brunswick, N.J.; Northeastern U.S. and Great Lakes, University of Connecticut at Avery Point, Groton, Conn.; Southeastern U.S. and Gulf of Mexico, University of North Carolina at Wilmington, Wilmington, N.C.; and West Coast and Polar Regions, University of Alaska at Fairbanks. NURP is mandated under Section 21(e) of the 1978 OCS Lands Act Amendment. (Contact NOAA/OAR PA at 301-713-2483.) See also *Aquarius*

National Warning System

The objective of this multi-point interstate and intrastate telephone hotline is to promptly warn the public of tornadoes and other severe local storms. The Federal Emergency Management Agency (FEMA), which leases and operates the system, permits the National Weather Service to use it in the dissemination of meteorological and hydrological warnings. This system connects FEMA's warning points and local municipalities, as well as many Weather Service Offices and Weather Service Forecast Offices within each state and between states. (Contact NOAA/NWS PA at 301-713-0622.)

National Water Level Observing Network (NWLON)

NOAA maintains a network of 189 water level measurement stations distributed along the marine and Great Lakes coasts

and islands of the United States. NWLON stations provide the basic data to determine U.S. coastal and marine boundaries and for nautical charts. The stations also support the National Weather Service tsunami and storm surge warning programs, and are used for vessel navigation, climate monitoring, coastal process studies, and tectonic research. NOAA is currently upgrading water level sensors from mechanical and electromechanical equipment to a fully electronic system containing a self-calibrating acoustic sensor.

Wind speed and direction, barometric pressure, air temperature, water temperature, conductivity, and relative humidity are also collected by the new system. Data are transmitted every three hours via satellite to NOAA for quality control, analysis, and dissemination. (Contact NOAA/NOS PA at 301-713-3066.)

National Weather Association (NWA)

A professional organization concerned primarily with operational meteorology. The NWA holds annual meetings and publishes a monthly newsletter and a quarterly National Weather Digest, which includes weather-related papers and articles. (Contact NWA at 205-213-0388). See also **American Meteorological Society**

National Weather Service (NWS)

A U.S. government agency under NOAA and NOAA's parent organization, the Department of Commerce, the National Weather Service is responsible for providing the nation with accurate and timely weather information for the protection of life and property. This includes severe weather, hurricane and flood watches and warnings, short term weather forecasts and long-lead climate outlooks. The NWS is in the midst of a massive modernization and associated restructuring program based on new technology and knowledge in the sciences of meteorology and hydrology. Recent advances in satellites, radars, sophisticated information processing and communications systems, automated weather observing systems and superspeed computers are the foundation of more timely and precise severe weather and flood warnings. (Contact NOAA/NWS PA at 301-713-0622.)

National Weather Service Regional Offices

The National Weather Service is composed of six regions, each responsible for supervisory direction and technical, program and equipment support for various Weather Service Forecast Offices, River Forecast Centers and other weather-related operations within their region. The regions are the Alaska Region, headquartered in Anchorage, Alaska; the Central Region, headquartered in Kansas City, Mo.; the Eastern Region, headquartered in Bohemia, N.Y.; the Pacific Region, headquartered in Honolulu, Hawaii; the Southern Region, headquartered in Fort Worth, Texas; and the Western Region, headquartered in Salt Lake City, Utah. See also **Alaska Region Headquarters, Central Region Headquarters, Eastern Region Headquarters, Pacific Region Headquarters, Southern Region Headquarters, Western Region Headquarters**

National Weather Service Training Center (NWSTC)

Located in Kansas City, Mo., the center was established in 1955 to provide job-centered training for employees of the National Weather Service (NWS). Its first assignment was to train electronic technicians how to repair and maintain meteorological equipment. Today, the NWSTC offers a suite of over two dozen different residence courses designed to meet the specific needs of the NWS. The residence program is augmented by an extensive remote training curriculum. Materials are on computer disks, video tapes and/or workbooks. NWSTC-produced modules, as well as courses by other government agencies and commercial vendors, are available. (Contact NOAA/NWS Central Region PA at 816-426-7621.)

Natural Mortality

Fish losses due to natural causes, like predation, starvation, or disease.

Nautical Charting Research and Development Laboratory

This laboratory plans and manages the research and development of mapping, charting, hydrographic surveying, and automated data systems for the modernization of the nautical charting program. (Contact NOAA/NOS PA at 301-713-3066.)

Nautical Charts

The oldest scientific enterprise of the federal government (the Coast Survey was established by Thomas Jefferson in 1807). Today these charts show the nature and shape of the coast, depths of water, general configuration and character of the bottom, prominent landmarks, port facilities, cultural details, dredged channels, aids to navigation, marine hazards, magnetic variations, and maritime boundaries. Users include waterborne commerce, commercial fisheries, recreational boaters, planners, and government agencies. There are four types of charts:

Harbor Charts: at 1:50,000 and larger scales. Intended for navigation and anchorage in harbors and small waterways.

Coast Charts: at scales from 1:50,000 to 1:150:000. Designed for navigation inside the offshore reefs and shoals, and in large harbors.

General Charts: at scales from 1:150,000 to 1:6,000. Intended for offshore navigation, but of sufficient detail to fix positions through visual contact with navigational aids or by depth soundings.

Sailing Charts: at 1:600,000 and smaller scales. Used as plotting charts for offshore navigation beyond the areas where visual position fixes are possible.

Several other types of charts are produced by NOAA, including:

Canoe Charts of the Minnesota/Ontario border lakes;

International Nautical Charts of the Northeast Pacific and Bering Sea (designed for international commerce);

Marine Facility Charts overprinted with information important to small-craft operators;

Marine Weather Service Charts, a series of 16 charts showing weather service radio stations;

Nautical Training Charts, used mainly by the U.S. Coast Guard and U.S. Power Squadrons;

Small Craft Charts, designed to be used in small spaces; used primarily by recreational boaters, but useful to coastal planners.

(Contact NOAA/NOS PA at 301-713-3066.)

Nautical Mapping and Charting Program

Manages the national database of nautical charting and marine mapping information. The program directs NOAA's transition from traditional charting technologies to a more fully digital operation. It manages the development of new nautical products and promotes and maintains communication with chart users. (Contact NOAA/NOS PA at 301-713-3066.)

Nautical Mile

A unit of distance equal to 6080.21 feet or 1.15 statute miles. See also **Statute Mile**

NCDC

See **National Climatic Data Center**

NCEP

See **National Centers for Environmental Prediction**

Nearshore Species

Plant and animal species usually found close in to the shoreline, such as in estuarine, river mouth, marsh and shallow coastal habitats. (Contact NOAA/NMFS PA at 301-713-2370.)

Nearshore Waters

The waters extending out to five miles from any shore.

NECOP

See Nutrient Enhanced Coastal Ocean Productivity

New England Regional Fishery Management Council

One of eight regional councils established by the Magnuson Fishery Conservation and Management Act. The council acts as a steward of the living marine resources off the coasts of Maine, New Hampshire, Massachusetts, Rhode Island, and Connecticut. (Contact NOAA/NMFS PA at 301-713-2370.) See also Regional Fishery Management Councils

NEXRAD

See Doppler Weather Service Radar

NEXRAD Information Dissemination Service (NIDS)

To help meet the growing demand for weather information by the business community, the National Weather Service (NWS) in 1989 created NIDS. The weather service selected several companies by competitive bid. These companies are permitted to market data gathered by the NWS's Doppler Weather Radar network, also known as Next Generation Radar, or NEXRAD. (Contact NOAA/NWS PA at 301-713-0622.) See also Doppler Weather Surveillance Radar, Family of Services

Next Generation Radar (NEXRAD)

See Doppler Weather Surveillance Radar

NGDC

See National Geophysical Data Center

NMFS Alaska Fisheries Science Center

The National Marine Fisheries Service's Alaska Science Center, located in Seattle, Wash., with laboratories and programs in Auke Bay and Kodiak, Alaska, is responsible for research in the marine waters and rivers of Alaska and the West Coast of the United States. The North Pacific region of nearly three million square miles, including the eastern Bering Sea, supports some of the most important commercial fisheries in the world—walleye, pollock, Pacific cod, Pacific salmon, halibut and other flatfish, sablefish, and crabs. The region's waters also support major sport fisheries for Pacific salmon, halibut, and steelhead trout, and are home to North America's largest array of marine mammal populations. The mission of the Alaska Science Center is to conduct research designed to produce the scientific information required for the understanding and management of the region's marine resources and their habitat. (Contact NOAA/NMFS PA at 301-713-2370.) See also National Marine Fisheries Service

NMFS Alaska Regional Office

The National Marine Fisheries Service's Alaska Regional Office, located in Juneau, is concerned with Alaskan issues. The regional office works closely with numerous federal and state resource management agencies, including Canadian counterparts, and other public and private conservation interests, as well as participating in or supporting various international commissions, committees and negotiations. A Regional Directorate, including a regional operations staff with a U.S./Canada salmon coordinator and trade and industry services personnel, oversees the operations of two divisions and the Office of Oil Spill and Damage Assessment and Restoration. The office is further divided into Fisheries Management, Protected Resource Management, and Oil Spill and Damage Assessment and Restoration. (Contact NOAA/NMFS PA at 301-713-2370.) See also National Marine Fisheries Service

NMFS National Seafood Inspection Program

The NMFS Fishery Products Inspection Program offers voluntary professional inspection which assures compliance with all applicable food regulations. In addition, product quality evaluation, grading and certification services on a product lot basis are also provided. Benefits include the ability to apply official marks, such as the

U.S. Grade A, Packed Under Federal Inspection, and lot inspection marks, which are recognized domestically and internationally.

The program is available to everyone involved in buying and selling seafood products, including vessel owners, processors, importers and exporters, and consumers. (Contact NOAA/NMFS PA at 301-713-2370.) See also **Seafood Inspection Services**

NMFS Northeast Fisheries Science Center

Located in Woods Hole, Mass., the National Marine Fisheries Service's Northeast Fisheries Science Center plans, develops, and manages a multi-disciplinary program of basic and applied research on the living marine resources and marine environment of the Northeast Continental Shelf Ecosystems. Areas of study include pelagic fisheries, population dynamics, population biology, and fishery-marine mammal interactions. (Contact NOAA/NMFS PA at 301-713-2370.) See also **National Marine Fisheries Service**

NMFS Northeast Region

The National Marine Fisheries Service's Northeast Region encompasses 11 coastal states from Maine to Virginia and manages marlin resources for optimum use. The region is responsible for the management of groundfish and other coastal fisheries, and manages programs related to marine mammals and endangered species. Additionally, the region has the responsibility of administering Saltonstall-Kennedy fisheries grants and the Northeast Fisheries Assistance program. (Contact NOAA/NMFS PA at 301-713-2370.) See also **National Marine Fisheries Service**

NMFS Northwest Fisheries Science Center

Located in Seattle, Wash., the National Marine Fisheries Service's Northwest Fisheries Science Center conducts integrated, multidisciplinary research programs in ecology, mathematics, biochemistry, chemistry, microbiology, toxicology, immunology, genetics, physiology, and biochemistry, and develops state-of-the-art methods for habitat assessment and restoration, conservation of salmon stocks, ensuring seafood safety, and resource utilization.

Major program areas include studying impacts of habitat alteration, such as hydroelectric dams, on status assessments and recovery of endangered salmon species; doing genetic research on salmon in support of the Endangered Species Act and management of mixed stock fisheries; examining the effects of chemical pollutants in coastal ecosystems throughout the United States; developing methods to determine the health effects of pollutants on marine organisms; studying marine mammal health and the stranding response; researching methods for enhancing the safety and value of seafood and for increasing the use and improving the quality of underutilized species; and monitoring and assessing west coast groundfish. (Contact NOAA/NMFS PA at 301-713-2370.) See also **National Marine Fisheries Service**

NMFS Northwest Region

The National Marine Fisheries Service's Northwest Region carries out federal responsibilities for living marine resources and their habitat in the ocean and, primarily, in the states of Idaho, Oregon, and Washington. The region has very limited interaction with the other states it covers: Colorado, Montana, North Dakota, Utah, and Wyoming.

The region's responsibilities include: developing and implementing fishery management and conservation programs; promoting and responding to fishery trade issues and industry services; reviewing proposals on hydro or development projects to determine impacts on fishery habitat and promoting habitat protection; responding to requests for listing endangered species; conducting consultations; preparing biological opinions; and taking actions required to recover threatened or

endangered species. The region administers a variety of cooperative agreements and grant programs related to fishery management, hatchery production of anadromous fish, and research and development projects. (Contact NOAA/NMFS PA at 301-713-2370.) See also **National Marine Fisheries Service**

NMFS Office of Enforcement

The Office of Enforcement's primary mission is the conservation of the nation's living marine resources through the enforcement of federal laws and regulations relating to the protection and management of fish, marine mammals and other marine life. NMFS special agents and enforcement officers inspect fishing vessels, monitor landings and processing plants, investigate complaints of violations and document violations for civil and criminal prosecution. Much work is done in coordination with the states and the U.S. Coast Guard. (Contact NOAA/NMFS PA at 301-713-2370) See also **National Marine Fisheries Service**

NMFS Office of Fisheries Conservation And Management

Within the National Marine Fisheries Service, the Office of Fisheries Conservation and Management is the primary headquarters level source of advice and guidance on fisheries management responsibilities and issues. The office develops legislative initiatives, national guidelines and policies for fisheries management programs while working closely with regional offices to develop and implement fishery management plans and related regulations. The office also is responsible for the development, and implementation of fishery management plans for Atlantic highly migratory species. The office is divided into four divisions: Operations Support and Analysis; Plans and Regulations; Highly Migratory Species Management and Coordination; and Interjurisdictional and Recreational Fisheries. (Contact NOAA/NMFS PA at 301-713-2370.) See also **National Marine Fisheries Service**

NMFS Office of Habitat Conservation

Within the National Marine Fisheries Service, the Office of Habitat Conservation promotes the conservation, protection, management, and restoration of habitats critical to the nation's marine, estuarine, and anadromous fish species. To accomplish these goals, the office oversees the National Habitat Program, develops national guidelines and policies, and works with other agencies and the private sector. Habitat issues are a vital component of NOAA's trustee responsibilities, as typified by the breadth of programs managed by this office: technical assistance, special area management, hazardous waste site restoration, and the full range of associated activities that include research, policy, and outreach. (Contact NOAA/NMFS PA at 301-713-2370.) See also **National Marine Fisheries Service**

NMFS Office of Industry Services

Within the National Marine Fisheries Service, the Office of Industry Services administers financial assistance and seafood inspection programs, and provides guidance and advice on other NOAA programs designed to enhance the safety, quality, production, consumer awareness and acceptability of U.S. fishery products in domestic and world markets.

The office provides advice and guidance on scientific and technical matters regarding product quality, safety and use of marine fisheries; coordinates the development of strategic and technical products for use by industry; coordinates product quality, safety, and utilization research programs; administers the Saltonstall-Kennedy research and development grants program; manages a program for the inspection and grading of seafood through a nationwide voluntary fee-for-service program; manages a nationwide financial assistance program in the form of loan guarantees, a tax-deferral capital construction fund, and vessel and gear loss and damage compensation programs; develops national standards for fishery products and provides advice

and guidance on the development of international standards for fishery products through participation in Codex; and coordinates the surplus commodity and export financing programs with the U.S. Department of Agriculture. (Contact NOAA/NMFS PA at 301-713-2370.) See also National Marine Fisheries Service

NMFS Office of International Affairs

Within the National Marine Fisheries Service, the Office of International Affairs is the principal source of information and advice on international issues concerning living marine resources. The office develops policy positions, acquires and analyzes information on foreign fisheries activities, and participates in international negotiations.

The office has three divisions. The International Organizations and Agreements division reviews foreign and international developments having an impact on living marine resources and coordinates policy in response to those foreign activities. The Trade Services division formulates strategies and positions for and participates in multilateral and bilateral trade negotiations, consultations, and dispute settlement cases while working with the fishing industry and environmental community.

The International Science Development and Foreign Fisheries Analysis division focuses on international science and cooperative programs, maintains a comprehensive information base on global fisheries activities and trends, and analyzes and reports information on foreign fisheries and policies. (Contact NOAA/NMFS PA at 301-713-2370.) See also National Marine Fisheries Service

NMFS Office of Protected Resources

Within the National Marine Fisheries Services, the Office of Protected Resources coordinates agency efforts to recover protected marine species. The agency's authority to carry out its important mission of protection and conservation comes from two pivotal environmental laws passed in the early 1970s: the Endangered Species Act and the Marine Mammal Protection Act.

Office of Protected Resources specialists in marine resources and ecology, fishery biology, and veterinary medicine coordinate protection of endangered species and marine mammals; manage a marine mammal stranding network and a scientific tissue sample bank; monitor scientific research and enhancement of endangered species and marine mammals; monitor public display of marine mammals; and restore marine habitat. The office has three divisions: Permits and Documentation; Marine Mammal; and Endangered Species. (Contact NOAA/NMFS PA at 301-713-2370.) See also National Marine Fisheries Service

NMFS Office of Research and Environmental Information

Within the National Marine Fisheries Service, the Office of Research and Environmental Information is the main source of scientific and technical advice and guidance at the headquarters level. The office manages the collection of basic environmental, biological, economic, and sociological statistics in domestic and foreign fisheries; assists in developing and operating applications of integrated environmental and fisheries data; coordinates policies and guidelines for the operation of national ecological research programs; and reviews and evaluates research programs. The office has three divisions.

The Fisheries Statistics Division designs, surveys, collects, and compiles commercial and recreational fishery statistics nationwide, and provides authoritative advice and counsel on national statistical policies. The Data Management Division manages the agency's data processing and telecommunications security programs and manages the Marine Ecological Database System. The division also publishes two review journals,

the *Marine Fisheries Review* and the *Fisheries Bulletin*, as well as various technical memoranda, and also develops and recommends publication policies for NMFS and establishes procedures for managing the agency's publications. The Prediction, Analysis, and Monitoring Division focuses on collaborative programs with other NOAA offices and other environmental and fishery monitoring and information-gathering programs outside of NOAA. The division coordinates the national status of stocks report, *Our Living Oceans*, which provides a scientific overview of the health of the nation's marine fisheries as well as protected marine mammals and sea turtles. (Contact NOAA/NMFS PA at 301-713-2370.) See also **National Marine Fisheries Service**

NMFS Southeast Fisheries Science Center

Located in Miami, Fl., the National Marine Fisheries Service's Southeast Science Center conducts research in support of federal laws and international agreements related to marine resources. Much of this research is conducted at laboratories located in Beaufort, N.C.; Charleston, S.C.; Miami and Panama City, Fla.; Stennis Space Center and Pascagoula, Miss.; and Galveston, Texas.

Each laboratory is responsible for conducting research in specific subject areas and providing services to facilitate the work of other center units. The center's programs focus on species groupings that support major commercial and recreational fisheries within the region. These include shrimp, reef fish (snapper-grouper), coastal pelagics, highly migratory species (tuna, swordfish, billfish, shark), spiny lobster, red drum, stone crab, coral and coral reefs. Other programs focus on conservation of protected species, statistics, habitat, and product quality and safety. (Contact NOAA/NMFS PA at 301-713-2370.) See also **National Marine Fisheries Service**

NMFS Southeast Region

Located in St. Petersburg, Fla., the National Marine Fisheries Service's Southeast Region covers the eight coastal states of North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, and Texas; the inland states of Arkansas, Iowa, Kansas, Kentucky, Missouri, Nebraska, New Mexico, Oklahoma and Tennessee; and the Commonwealth of Puerto Rico and the U.S. Virgin Islands.

The region works closely with three Regional Fishery Management Councils in the development and implementation of fishery management plans as authorized under the Magnuson Fishery Conservation and Management Act. The region is responsible for a range of activities, involving habitat conservation, grant-in-aid programs, economic and trade analysis, and programs for protecting sea turtles and marine mammals. (Contact NOAA/NMFS PA at 301-713-2370.) See also **National Marine Fisheries Service**

NMFS Southwest Fisheries Science Center

Headquartered in La Jolla, Calif., with laboratories in Tiburon and Monterey, Calif., and Honolulu, Hawaii, the National Marine Fisheries Service Southwest Fisheries Science Center conducts an integrated, multidisciplinary research program in biology, mathematics, oceanography, and economics. Programs focus on pelagic fisheries, fishery-marine mammal interactions, groundfish assessment, coastal fisheries, environmental-fisheries interactions, and Antarctic ecosystem research. (Contact NOAA/NMFS PA at 301-713-2370.) See also **National Marine Fisheries Service**

NMFS Southwest Region

The National Marine Fisheries Service's Southwest Region encompasses more than 1.5 million square miles of Exclusive Economic Zone from California to Hawaii, Guam, the Northern Marianas, American Samoa, and U.S. possessions in the Pacific Islands. The office is responsible for lobster, bottomfish, swordfish, and precious coral,

and, off the coast of California, salmon, groundfish, and anchovy, and conducts programs to protect marine mammals and endangered species. The region also has responsibility for the international programs for tuna, swordfish, and highly migratory species fisheries involving the west coast, the eastern tropical Pacific, the South Pacific Tuna Treaty area, and the North and South Pacific transition zones. Three of the top 10 U.S. ports in value of fish landings are in the Southwest Region. (Contact NOAA/NMFS PA at 301-713-2370.) See also **National Marine Fisheries Service**

NOAA

See **National Oceanic and Atmospheric Administration**

NOAA Administrator

Also the U.S. Department of Commerce Under Secretary for Oceans and Atmosphere. The NOAA Administrator formulates policies and programs for achieving the objectives of NOAA and has the authority for program execution. (Contact NOAA PA at 202-482-6090.) See also **Chief Scientist, Office of the; U.S. Department of Commerce**

NOAA Corps Operations, Office of (ONCO)

The NOAA Corps is made up of 400 commissioned officers who operate NOAA ships and aircraft and serve in scientific and administrative positions. As the nation's seventh uniformed service, the Corps operates and maintains the largest fleet of research and survey ships operated by a federal agency.

The fleet ranges from large oceanographic research vessels capable of surveying the deepest ocean, to smaller ships responsible for charting shallow bays and inlets, such as in the Chesapeake Bay. The fleet supports a wide range of marine activities, including fisheries research, nautical charting/mapping, and long-range ocean and climate studies. Few ships in the United States can conduct joint operations of fishery stock assessment and oceanography as do NOAA's fishery research vessels.

ONCO manages 14 aircraft, three of which are helicopters. These aircraft operate throughout the United States and the world, providing a wide range of research capabilities from hurricane prediction research to coastal mapping and charting. Few aircraft outside of NOAA have the structure necessary to carry instrument packages appropriate for NOAA's missions. There are no comparable aircraft in the commercial fleet to support NOAA's atmospheric and hurricane surveillance/research programs. (Contact NOAA PA at 202-482-6090.)

NOAA Diving Manual

The *NOAA Diving Manual* has been developed for use by NOAA divers and university researchers participating in NOAA-sponsored research missions. The manual focuses on diving to depths shallower than 250 feet (76 meters), the depth in which NOAA divers genarally operate. It is in looseleaf format and contains 20 sections and 5 appendices on all aspects of scientific diving operations. Because of its general utillty for divers, the *NOAA Diving Manual* is available to the public at a cost of $44 through local outlets of the Superintendent of Documents, Government Printing Office; or call 202-512-1800. Checks, MasterCard, and Visa are accepted. The stock number is 003-017-00543-7. (Contact NOAA/OAR PA at 301-713-2483.)

NOAA Global Satellite Data Acquisition Project

Within the National Environmental Satellite, Data, and Information Service, the Office of Satellite Data Processing and Distribution coordinates NOAA efforts to gain near real-time access to global satellite data from non-NOAA polar environmental satellite programs of interest to NOAA, through the NOAA Global Satellite Data Acquisition Project and the NOAA Satellite Ocean Remote Sensing Program. (Contact NOAA/NESDIS PA at 301-457-5005.)

NOAA Line Offices

The National Weather Service; the National Ocean Service; the National Environmental Satellite, Data, and Information Service; the Office of Oceanic and Atmospheric Research; and the National Marine Fisheries Service. (Contact NOAA PA at 202-482-6090.)

NOAA Network Information Center (NIC)

The National Environmental Satellite, Data, and Information Service manages and operates the NIC. The NIC provides NOAA-wide services related to NOAA's Internet access and uses. NESDIS provides the facilities and administrative oversight for the NIC in conjunction with its other computer processing facilities. The NIC manages the "noaa.gov" domain for Internet communications in conjunction with other NOAA line and program offices. The NIC also provides NOAA with Internet-related services, such as Usenet News feed, World Wide Web, and other information-access services, and a Help Desk for questions regarding Internet services.

NOAA Weather Radio

The voice of the National Weather Service (NWS), NOAA Weather Radio provides continuous broadcasts of the latest weather information directly from NWS offices across the United States. NOAA Weather Radio was designed to provide direct warnings into private homes for both natural disaster and nuclear attack.

Taped weather messages are repeated every four to six minutes, and are routinely revised every one to three hours or more frequently if needed. During severe weather situations, forecasters use NOAA Weather Radio to broadcast special warning messages and relay vital post-disaster information. NOAA Weather Radio is also designed to sound an alarm when life-threatening weather is approaching, alerting the listener to turn the receiver up.

The broadcasts are tailored to the weather information needs of the people within the receiving area. NOAA Weather Radio broadcasts from more than 380 locations throughout the United States on seven high-band FM frequencies ranging from 162.40 to 162.55 MegaHertz. A special NOAA Weather Radio receiver, available at consumer electronics stores, is needed to receive the broadcast. (Contact NOAA/NWS PA at 301-713-0622.) See also **Console Replacement System, Emergency Alert System, Specific Area Message Encoder**

NOAA Weather Wire Services (NWWS)

The NWWS, available in all 48 contiguous states, disseminates weather warnings, forecasts, and data to the mass news media and other special users for relay to the public. Nearly 70 percent of the subscribers are mass news disseminators. Other subscribers include federal agencies, state and local governments, private meteorologists and public utility companies. (Contact NOAA/NWS PA at 301-713-0622.)

NOAA/DOD Shared Processing Program

Within the National Environmental Satellite, Data, and Information Service, the Office of Satellite Data Processing and Distribution receives and transmits in near real-time, various operational data and products via the NOAA/Department of Defense (DOD) Shared Processing Program (SPP). The SPP allows NOAA, Air Force and Navy operational processing centers to share data unique to each center, including raw data and derived products from the DOD's Defense Meteorological Satellite Program (DMSP) satellites and NOAA's Polar-orbiting Operational Environmental Satellites (POES). (Contact NOAA/NESDIS PA at 301-457-5005.)

NOAA/NASA EOSDIS Program; NOAA/NASA Pathfinder Data Project

Within the National Environmental Satellite, Data, and Information Service, the Office of Satellite Data Processing and Distribution (OSDPD) leads NOAA participation in activities relating to the NASA Earth Observing System Data and

Information System (EOSDIS) to ensure compatibility, where feasible, between NOAA and National Aeronautics and Space Administration information management systems. ODSPD provides technical liaison and coordination within NESDIS, NOAA line offices, and other federal agencies on matters pertinent to EOSDIS. In support of the NOAA Climate and Global Change Program, OSDPD manages the NOAA component of the NOAA/NASA Pathfinder Data Project, which includes the transfer of certain satellite data to new working storage media; development of Pathfinder products and supporting ancillary data sets; and continuing collaboration and refinement of the Pathfinder project with Pathfinder Science Working Groups. (Contact NOAA/NESDIS PA at 301-457-5005.)

NOAA-11

A polar-orbiting operational satellite launched September 24, 1988. (Contact NOAA/NESDIS PA at 301-457-5005 for information about satellite operations; contact NOAA/NWS PA at 301-713-0622 for information on how satellite data are used in weather forecasting.)

NOAA-12

A polar-orbiting operational satellite launched May 14, 1991. (Contact NOAA/NESDIS PA at 301-457-5005 for information about satellite operations; contact NOAA/NWS PA at 301-713-0622 for information on how satellite data are used in weather forecasting.)

NOAA-13

A polar-orbiting operational satellite launched August 9, 1993; failed on August 21, 1993. (Contact NOAA/NESDIS PA at 301-457-5005 for information about satellite operations; contact NOAA/NWS PA at 301-713-0622 for information on how satellite data are used in weather forecasting.)

NOAA-14

A polar-orbiting operational satellite launched December 30, 1994. (Contact NOAA/NESDIS PA at 301-457-5005 for information about satellite operations; contact NOAA/NWS PA at 301-713-0622 for information on how satellite data are used in weather forecasting.)

NOAAPORT Program

Within the National Environmental Satellite, Data, and Information Service, the Office of Satellite Data Processing and Distribution (OSDPD) is responsible for the NOAAPORT communications capability to provide for the relay of centrally produced NOAA products (particularly satellite-derived products) to NOAA sites throughout the United States. OSDPD's NOAAPORT responsibilities also include the preparation of special satellite-derived products to meet the requirements of the National Weather Service field sites. (Contact NOAA/NESDIS PA at 301-457-5005.)

NODC

See National Oceanographic Data Center

Nonpoint Source Pollution

Sometimes called "runoff pollution," this indicates sources of contamination that do not come from single outlets such as municipal sewer outfalls or industrial sites. Major categories of nonpoint pollution are agricultural runoff (fertilizers and pesticides, sediments); urban/suburban runoff (oil, grease, lead, chromium, bacterial, lawn chemicals and fertilizers, and sediments); excess erosion; construction and mining sites; and airborne pollutants (chemicals, acids). Nonpoint source pollution is being increasingly recognized as the major contributor to coastal water quality degradation. (Contact NOAA/NOS PA at 301-713-3066.)

Nonpoint Sources

Sources of contamination that cannot be directly linked to a specific source of pollution. These include (but are not

restricted to) urban/suburban runoff, agricultural runoff, erosion, construction, and mining sites. (Contact NOAA/NMFS PA at 301-713-2370.)

North Carolina National Estuarine Research Reserve

Four components along North Carolina's coast make up this reserve. The four sites depict an array of habitats and communities with ocean beaches; dunes; grassy flats; maritime shrub thickets and forests; intertidal ponds; salt, brackish and freshwater marshes; intertidal mud and sand flats; oyster bars; submerged aquatic plant beds; and subtidal communities. Several species found in the reserve, including the nesting loggerhead and green sea turtles and seabeach amaranth, are listed as threatened. Contact NOAA/NOS PA at 301-713-3145 ext. 153.)

North Inlet/Winyah Bay National Estuarine Research Reserve, South Carolina

Creatures of two large estuaries live in this Georgetown County, S.C., reserve, with Myrtle Beach 30 miles to the south and Charleston 50 miles to the north. The reserve hosts several threatened and endangered species, from sea turtles to least terns to bald eagle. The high salinity tidal marshes and creeks of the reserve's northern half, the North Inlet estuary, and the brackish waters of Mud Bay, a section of the Winyah Bay estuary in the southern half, create a rich, diverse ecosystem. Reserve resources range from tidal and transitional marshes to oyster reefs and intertidal flats and from coastal island forests to open waterways. The reserve supports the Pumpkinseed Island bird rookery, one of the largest nesting sites for wading birds in the southeastern United States. (Contact NOAA/NOS PA at 301-713-3145 ext. 153.)

North Pacific Regional Fishery Management Council

One of eight regional councils established by the Magnuson Fishery Conservation and Management Act. The council acts as a steward of the living marine resources off the coasts of the states of Alaska, Washington, and Oregon. (Contact NOAA/NMFS PA at 301-713-2370.) See also **Regional Fishery Management Councils**

Northeast Fisheries Emergency Assistance Plan

On March 21, 1994, Commerce Secretary Ronald H. Brown announced a $30 million emergency assistance package for fishermen, their families, and fishing communities affected by the collapse of traditional groundfish stocks in the Northeast. Funding for the program was mandated by the 1994 Urgent Supplemental Appropriations Bill.

The program included $18 million in Economic Development Administration assistance and $12 million in NOAA funds. The assistance includes grants to individual fishermen, loan restructuring initiatives, technical assistance and planning grants to communities, and counseling and retraining assistance. In addition, other federal assistance programs through the Departments of Commerce, Labor, Housing and Urban Development and the Small Business Administration have pushed the total federal commitment to over $60 million. (Contact NOAA PA at 202-482-6090.) See also **Northeast Pilot Demonstration Boat Buyout**

Northeast Marine Support Facility (NEMSF)

Located in Woods Hole, Mass., it is home port to NOAA Ships *Albatross IV* and *Delaware II*. These vessels perform fisheries research, including estimating the populations of various species of fish and assessing the effects of pollution on fish habitats. The *Albatross IV* and *Delaware II* work largely off the east coasts of the United States and Canada. (Contact NOAA/NMFS PA at 301-713-2370.)

Northeast Pilot Demonstration Boat Buyout

On March 3, 1995, Commerce Secretary Brown announced that the Office of Sustainable Development and Intergovernmental Affairs would be developing a $2

million pilot vessel buyout program for fishing vessels in the Northeast as part of the $30 million Northeast Fisheries Emergency Assistance Plan. (Contact NOAA PA at 202-482-6090.) See also **Northeast Fisheries Emergency Assistance Plan**

Northern Fur Seal

This seal of the North Pacific Ocean, considered depleted under the Marine Mammal Protection Act, ranges across subarctic Pacific Rim waters from California to Japan. It numbers 982,000 in U.S. waters. The major U.S. breeding population is on Alaska's Pribilof Islands of St. Paul and St. George. Although production on the Pribilof Islands dropped more than 60 percent between 1955 and 1980, it has been stable since 1980. On St. George Island, production has continued to decline about 6 percent per year since 1970. Small U.S. breeding populations are also found on Alaska's Bogoslof Island (1,500), and California's San Miguel Island (6,000). (Contact NOAA/NMFS PA at 301-713-2370.) See also **Marine Mammal Protection Act, Endangered Species Act**

Northern (Stellar) Sea Lion

The northern or Stellar sea lion, classified as threatened under the Endangered Species Act, ranges in coastal waters of the North Pacific Ocean from California to Japan. The species has declined sharply throughout its range in just the last 20 years, and it is now well below its optimum level. The number of adults and juveniles in U.S. waters declined from 154,000 in 1960 to 40,000 in 1992.

Most of this 73 percent decline occurred in Alaska waters between Kenai and Kiska, where sea lion trend site counts declined from 105,289 in 1959 to about 21,000 in 1992. The decline in Alaska is believed to be caused by a combination of incidental kills in fisheries, illegal shooting, changes in the numbers and/or quality of prey, and possibly unidentified factors. The Steller sea lion population off Washington and Oregon is low but stable at about 3,000. In California, the population has slowly decreased since the 1950s to about 2,000. The 1992 range-wide estimate for this species is 116,000. (Contact NOAA/NMFS PA at 301-713-2370.) See also **Marine Mammal Protection Act, Endangered Species Act**

Northwest Atlantic Fisheries Organization (NAFO)

This convention, which entered into force January 1, 1979, provides a forum for continued multilateral scientific research and investigation of fishery resources that occur beyond the limits of coastal nations' fishery jurisdiction in the northwest Atlantic, and will ensure consistency between NAFO management measures in this area and those adopted by the coastal nations within the limits of their fishery jurisdiction. (Contact NOAA/NMFS PA at 301-713-2370.)

Northwest Fisheries Emergency Assistance Plan (NEAP)

On May 26, 1994, Commerce Secretary Brown and then-Director of the Office of Management and Budget Leon Panetta announced a $15.7 million emergency assistance plan for fishermen, their families, and communities affected by severe salmon fishing restrictions caused primarily by natural disasters. The $15.7 million package included: $12 million in NOAA funds; $700,000 (subsequently increased to $882,000) in Economic Development Administration funds; and $3.0 million in Department of Agriculture Rural Development Administration funds.

The NOAA component of NEAP includes: $6.0 million for a habitat restoration jobs program to be administered through the Department of Agriculture's Natural Resources Conservation Service; $4.0 million to the state of Washington to administer a permit buyout program; and $2.0 million for a data collection jobs program to be administered by the Pacific

States Marine Fisheries Commission. (Contact NOAA PA at 202-482-6090.)

Nutrient Enhanced Coastal Ocean Productivity (NECOP)

NECOP was developed to determine the extent to which land-based nutrients enhance coastal ocean productivity and impact water quality. Through field studies within the shelf waters of Louisiana and Texas affected by the outflows of the Mississippi and Atchafalaya Rivers, NECOP has demonstrated that seasonal hypoxia is driven by river nutrient loads.

NECOP has also found that the area's waters have been increasing in productivity over the past century. A water quality computer model has been developed which allows analyses of the northern Gulf of Mexico and testing of various nutrient control strategies. (Contact NOAA/NOS PA at 301-713-3066.) See also **Coastal Ocean Program**

Notice to Mariners

A weekly publication which notes significant navigational information for deep draft commercial navigators. The notices include important new survey data collected by NOAA between the printing of new Nautical Chart editions. The U.S. Coast Guard distributes the *Local Notice to Mariners* in each of its districts to document new hazards and changes in Aids to Navigation. The notices also provide more detailed inshore navigation information, of interest primarily to recreational boaters. (Contact NOAA/NOS PA at 301-713-3066.)

Nutrients

Chemicals such as nitrogen, (often entering coastal waters through agricultural and urban runoff, or as the result of urban sewage treatment) feed the rapid growth of algae in coastal/estuarine areas. This accelerated algal growth and subsequent decay can lead to significant depletion of oxygen in the water, leading in turn to degradation of habitat, reduced fish and shellfish population. (Contact NOAA/NOS PA at 301-713-3066.)

O

Ocean and Coastal Resource Management, Office of

Within the National Ocean Service, the Office of Ocean and Coastal Resource Management is responsible for administering the Coastal Zone Management Act of 1972; the Marine Sanctuaries Act; the Deep Seabed Hard Mineral Resources Act of 1980; and the Ocean Thermal Energy Conversion Act of 1980.

The office directs the development and funding of state coastal zone management programs, coastal energy impact programs, estuarine research reserves, and related activities under the Coastal Zone Management Act. It oversees development and management of a national system of marine sanctuaries. The office directs all programs and policies designed to fulfill the responsibilities assigned to NOAA by the Deep Seabed Hard Mineral Resources Act and the Ocean Thermal Energy Conversion Act, including the regulation of activities connected with the exploration for and commercial recovery of seabed hard minerals by U.S. citizens.

It is responsible for NOAA-wide coordination of policy related to Outer Continental Shelf oil and gas development, marine transportation, and Superfund activities, and assists state and local governments in minimizing loss of life and property due to coastal hazards. (Contact NOAA/NOS PA at 301-713-3066.)

Ocean and Earth Sciences, Office of

Within the National Ocean Service, this office conducts research and product development in the measurement and analysis of ocean and lake water levels. It also collects, analyzes and distributes coastal and global marine data. The office cooperates with the U.S. Navy in oceanographic activities, coordinates NOAA participation in federal oceanographic programs, and facilitates cooperative projects with the oceanographic research community. The office develops numerical and mechanistic models and produces predictions and analyses of oceanographic and marine weather phenomena for the Great Lakes, coastal estuaries, sea coast and oceans. It collects, analyzes and distributes tide and water-level observations. The office produces and disseminates marine environmental forecasts and guidance on how to use them. It manages and supports ocean climate studies and installs and operates real-time marine data collection systems. (Contact NOAA/NOS PA at 301-713-3066.)

Ocean and Lake Levels Products and Services Program

Provides tide-related products and explains them to the public. It computes tides for the entire United States and determines tidal bench mark elevations for coastal and marine boundaries, hydrography, nautical charting, and tide predictions. The program prepares tide requirements for hydrographic surveys, marine boundary programs, and dredging (in cooperation with the U.S. Army Corps of Engineers). It has primary responsibility for providing tide and coastal water level data and information to the public. The program manages cooperative state marine boundary programs and provides technical assistance and expertise for litigation, especially for the U.S. Department of Justice. (Contact NOAA/NOS PA at 301-713-3066.)

Ocean and Lake Levels Program

Collects, analyzes and disseminates tide and water level observations and associated information, such as wind velocity, barometric pressure, water temperature, salinity and water quality parameters, in the Great Lakes, coastal estuaries, sea coast and oceans. It also maintains a global network of sea level measurement stations at selected continental and island locations. It manages the National Water Level Observation Network. The program disseminates water-level and related information and monitors long-term sea level trends and lake-level fluctuations. (Contact NOAA/NOS PA at 301-713-3066.)

Ocean Applications Program

Collaborates with the U.S. Navy Fleet Numerical Oceanography Center and the NOAA Center for Ocean Analysis and Prediction, both located in Monterey, Calif., in developing new ocean forecast and analysis techniques, as well as in producing tailored ocean products required to support NOAA's Climate and Global Change Program, Coastal Ocean Program, and NOS oceanography programs. The program works to improve both Navy and NOAA ocean prediction capabilities, including developing new classes of data and products and advanced database systems. (Contact NOAA/NOS PA at 301-713-3066.)

Ocean Color

The goal of the Ocean Color Project is making remotely sensed ocean-color data available to coastal managers. The launch of the Sea-Viewing Wide Field-of-View Sensor (SeaWiFS) aboard a National Aeronautics and Space Administration (NASA) satellite late in 1995 will give scientists that capability. To prepare for this event, COP has funded four regional acquisition sites and the development of a Collaborative Data Archive with NASA at Goddard Space Flight Center. Additionally, COP and the National Environmental Satellite, Data, and Information Service are funding researchers to develop the scientific basis for using this data for coastal applications, i.e., algorithm development. (Contact NOAA/NOS PA at 301-713-3066.) See also **Coastal Ocean Program**

Ocean Data Synthesis Program

Integrates various data sets to understand marine processes and to identify the effects of human activity on the marine environment. These data sets include those compiled by the National Oceanographic Data Center, those obtained through the National Environmental Satellite, Data, and Information Service and National Aeronautics and Space Administration remote sensing satellites, and those produced from the increasing network of real-time coastal and oceanic measurement systems. The combination of contemporary and historical data is used to determine natural and anthropogenic variability in marine systems. (Contact NOAA/NOS PA at 301-713-3066.)

Ocean Dumping Act (ODA) Titles I and II of the Marine Protection, Research and Sanctuaries Act of 1972

Title I provides the basic authority for the Environmental Protection Agency to

regulate ocean dumping. While ocean dumping generally is regulated by EPA, dumping of dredged material is regulated by the Army Corps of Engineers with EPA oversight. Title II provides the Department of Commerce, through NOAA, with the authority to carry out research on the effects on ocean systems of ocean dumping and other human-induced changes. NOAA conducts comprehensive and continuing monitoring and research programs on the possible long-range effects of pollution, overfishing, and human-induced changes of ocean ecosystems, including the scientific assessment of natural resource damages from petroleum spills. NOAA also monitors the environmental conditions at certain dumping sites. The Act requires that Commerce present an annual report to the U.S. Congress on these monitoring and research activities. (Contact NOAA/NOS PA at 301-713-3066.)

Ocean Minerals and Energy Program

The focal point of NOAA's mandate to facilitate the nation's economic development and commercialization of the ocean's hard mineral and energy resources in an orderly and environmentally sound manner. As such, the program is responsible for administering the legal frameworks and other actions required by the Deep Seabed Hard Mineral Resources Act and the Act of 1980. It also serves as the NOAA liaison with the private sector, and provides technical information needed for evaluating the commercial mining potential of deep seabed hard minerals generally, and for defining the legal regime needed to facilitate their exploration and development by the private sector. (Contact NOAA/NOS PA at 301-713-3066.)

Ocean Observation Program

Produces marine environmental forecasts and analysis. It is responsible for managing and supporting ocean climate studies and develops and distributes state-of-the-art numerical methods of data assimilation and analysis. It manages the NOAA part of the NOAA/Navy Joint Ice Center that provides ice data, analyses, forecasts and other basic guidance and advisory information to NOAA field forecast programs with sea or lake ice responsibilities, to the research community, and to private consultants. (Contact NOAA/NOS PA at 301-713-3066.)

Ocean Observing Networks

This program collects oceanic and marine atmospheric data in support of NOAA's Climate and Global Change Program, the Coastal Ocean Program and operational forecast activities. The program manages a wide array of programs of real-time ocean observing systems and networks, including volunteer observing ships, drifting and moored buoys, island and coastal sea-level stations, and meteorological platforms.

The data from these ocean-observing systems include subsurface thermal structure and currents, sea surface temperature, air temperature, sea level pressure, wind velocity, etc. The program develops automated biological and chemical sensors on ocean-observing platforms. It provides field services, logistics support, installation, modification, testing, monitoring and operation of ocean-observing networks to improve real-time collection of ocean data. A major effort is to provide technical support for the implementation and maintenance of Shipboard Environmental [Data] Acquisition Systems (SEAS) and similar technology aboard volunteer observing ships. (Contact NOAA/NOS PA at 301-713-3066.)

Ocean Products Office

Disseminates marine analyses and forecasts and conducts real-time environmental monitoring activities. Its products fall into four basic categories: marine weather and boundary layer phenomena; waves and wave dynamics; ocean thermal structure and dynamics; and polar meteorology and ice dynamics. The office produces interactive analyses and forecasts of the marine atmosphere and physical processes of the upper ocean; operates state-of-the-art numerical prediction model output of the marine atmospheric boundary layer, the air-sea interface, and the upper ocean; and

operates the NOAA Ocean Communications Network. (Contact NOAA/NOS PA at 301-713-3066.)

Ocean Resources Conservation and Assessment, Office of (ORCA)

Provides information for decisions affecting the quality of natural resources in the nation's coastal, estuarine, and oceanic areas. This information ranges from strategies for oil spill response and short-term cleanup activities to the long-term effects of national and regional management strategies on marine and coastal environmental quality.

Through its National Status & Trends Program, the office collects samples and analyzes data on coastal environmental quality nationwide and determines the ecological effects of contamination. ORCA also synthesizes information on the physical, chemical, biological, and economic characteristics of the coastal ocean, and conducts comprehensive, strategic assessments of resource use in along U.S. coasts and estuaries.

ORCA's Hazardous Materials Response and Assessment (HAZMAT) program provides critical scientific support to the U.S. Coast Guard during spills of oil or hazardous materials into coastal and estuarine environments, including spill trajectory predictions, chemical hazards analyses, and assessments of the sensitivity of marine and estuarine resources to spills. HAZMAT provides similar support to the Environmental Protection Agency's Superfund Program.

ORCA's Damage Assessment Center provides scientific and economic technical support for natural resource damage assessment and litigation. (Contact NOAA/NOS PA at 301-713-3066.)

Ocean Thermal Energy Conversion (OTEC)

An experimental technology in which the temperature differential between deep, cold ocean water and warmer surface water is exploited to generate power. NOAA is responsible for overseeing the environmental impact of experimental OTEC power installations. (Contact NOAA/NOS PA at 301-713-3066.)

Ocean Thermal Energy Conversion Act of 1980

The Act regulates the construction, location, ownership, and operation of ocean thermal energy conversion (OTEC) plantships, owned by U.S. citizens or documented under U.S. laws, or OTEC facilities connected to the United States by pipeline or cable in the area between the high-water mark and the seaward boundary of the U.S. territorial sea. The Act declares that the federal government will provide for the protection of marine and coastal environments, consider the interests of ocean users, and prevent or minimize adverse effects from OTEC plantships or facilities.

Also, the federal government is directed to protect the rights and responsibilities of adjacent coastal states by ensuring consistency with the state coastal zone management programs and state and local laws. NOAA issues, transfers, amends, and renews the licenses for the ownership, construction, and operation of OTEC plantships or facilities. (Contact NOAA/NOS PA at 301-713-3066.)

Oceanic and Atmospheric Research, Office of (OAR)

One of NOAA's five principal line offices, it is composed of the Environmental Research Laboratories and joint institutes, the National Sea Grant College Program, the National Undersea Research Program, and the U.S. Weather Research Program.

The OAR headquarters office is at NOAA's Silver Spring, Md., Metro Center, campus, with OAR components nationwide.

OAR conducts environmental research and develops technologies needed to improve NOAA services and enable the United States to balance a growing economy with effective management of environmental and natural resources. OAR studies the Earth as a system extending from the surface of the sun to the floor of the ocean;

improves environmental predictions affecting public safety and quality of life by using better observations, assessments, and models; creates economic opportunities from the wise use of marine resources; and provides the scientific basis for sound national and international environmental policy. (Contact NOAA/OAR PA at 301-713-2483.)

Oceans Act of 1992

The Act provides a grant to NOAA to acquire space for the Graveyard of the Atlantic Artifacts; designates Stellwagen Bank National Marine Sanctuary and prohibits sand, gravel, and other mineral mining and exploration there; designates Monterey Bay National Marine Sanctuary and prohibits oil and gas exploration, production and development in that sanctuary; creates a two-year program to enhance funding and support for the national marine sanctuary program; makes technical corrections to the Coastal Zone Management Act; and modifies the Florida Keys National Marine Sanctuary research program and provides funding for the implementation of the water quality program.

In addition, the Act prohibits oil and gas leasing and preleasing in the Olympic Coast National Marine Sanctuary and establishes a center for the culture of marine phytoplankton. In Subtitle C, the Hawaiian Islands National Marine Sanctuary Act, the U.S. Congress designates the area off the main Hawaiian Islands as a national marine sanctuary, because it is an important habitat for endangered humpback whales. (Contact NOAA/NOS PA at 301-713-3066.)

Office of Sustainable Development and Intergovernmental Affairs (OSDIA)

Provides advice and counsel to the Office of the Under Secretary and the Department of Commerce on matters dealing with sustainable development and intergovernmental affairs. The office facilitates new partnerships among governments, private industry, academic institutions, and environmental groups to bring federal, state, and local resources together to find solutions for economic problems aggravated by conflicts over resource management and other environmental issues. OSDIA has served as the focal point for coordinating emergency responses to the fishing crises affecting the Northwest and the Northeast, including policy design and intergovernmental coordination with state and local government officials and other federal agencies. (Contact NOAA PA at 202-482-6090.)

Office of the Under Secretary for Oceans and Atmosphere

See NOAA Administrator

Oil Pollution Act of 1990 (OPA)

OPA created a comprehensive prevention, response, liability, and compensation regime for dealing with oil pollution from vessels and shore facilities. A person who causes an oil spill covered by OPA may be liable for certain costs and penalties. NOAA has been charged with the responsibility of developing the natural resource damage regulations used when oil or hazardous substances are improperly released into the waters of the United States. NOAA is also a federal trustee for natural resources damaged by spills covered by OPA. (Contact NOAA/NOS PA at 301-713-3066.)

Oil Spills

Each year, between 3,000 and 6,000 oil spills in the nation's coastal areas are reported to the U.S. Coast Guard; many others go unreported. Total oil released every year from reported spills ranges from 40,000 to 400,000 barrels. However, more than three-quarters of the oil is released in 20-30 major spills each year. Responding to these major spills and minimizing the damage requires a coordinated effort by numerous federal and state agencies. NOAA, through its Hazardous Materials Response and Assessment division, is

responsible for providing on-site scientific guidance in government spill response efforts. (Contact NOAA/NOS PA at 301-713-3066.)

Old Woman Creek National Estuarine Research Reserve, Ohio

Located at a drowned stream mouth that drains into Lake Erie, this reserve is the smallest in the National Estuarine Research Reserve System, and the system's only example of a Great Lakes freshwater estuary. Habitats within the reserve include remnant embayment marshes, mudflats, swamp/riverine forests, barrier beach, and oak/hickory upland forests that surround the estuary's open waters. Hundreds of species of algae, vascular plants, invertebrates, mammals, fishes, and birds live in these habitats. Several of these species are threatened, endangered, or identified as species of special concern, including the American bald eagle, sharp-shinned hawk, eastern fox snake, and the spotted turtle. The reserve also functions as an important nursery and spawning area for Lake Erie forage fish. (Contact NOAA/NOS PA at 301-713-3145 ext. 153.)

Olympic Coast National Marine Sanctuary, Washington

This sanctuary stretches 135 miles along a pristine rugged coastline, from Cape Flattery, the northwestern most point in the lower 48 states, to a point more than halfway down the Washington coast. This coastline, much of which is accessible only by boat, covers more than 2,500 square nautical miles, an area more than twice the size of Yosemite National Park. The entire sanctuary area is teeming with wildlife, and is important to the continued survival of several ecologically and commercially important species of fish and birds, and over 20 species of marine mammals. California gray whales are also commonly found within the sanctuary boundaries.

Northern sea otters, which were hunted to extinction along the Washington coast because of their thick and commercially valuable fur, have in recent years been successfully reintroduced to the area. Sanctuary waters, also home to steelhead and sea-run cutthroat trout, halibut, flounder, are among the most diverse intertidal ecozones in the world.

The diversity of marine life in the area is also a major resource for migratory bird species that stop in the area and the offshore islands. The sanctuary supports one of the largest concentrations of seabird colonies in the lower 48 states; tens of thousands of seabirds can be seen feeding in sanctuary waters. The area is home to four Native American tribes with a heritage going back over 2,000 years within the region. A major archeological excavation associated with the Ozette tribe is considered to be one of the most significant archeological finds in North America.

Local tribal cultures have strong ties to the coastal waters, including a long tradition of subsistence fishing and whaling in the area. (Contact NOAA/NOS PA at 301-713-3145 ext. 153.)

Optimum Sustainable Population Level

The Marine Mammal Protection Act defines this as a population size between the largest supportable within the ecosystem and the level where productivity is at a maximum. (Contact NOAA/NMFS PA at 301-713-2370.) See also **Marine Mammal Protection Act**

Optimum Yield (OY)

In the Magnuson Fishery Conservation and Management Act, OY, with respect to the yield from a fishery, is the amount of fish that (1) will provide the greatest overall benefit to the United States, with particular reference to food production and recreational opportunities; and (2) is prescribed as such on the basis of maximum sustainable yield from such a fishery, as modified by any relevant ecological, economic, or social factors. (Contact NOAA/NMFS PA at 301-713-2370.) See also **Magnuson Fishery Conservation and Management Act**

Organic Act of 1890

The U.S. statute outlining the federal government's role in providing weather services; it reads as follows: "The Secretary of Commerce shall have charge of the forecasting of weather, the issue of storm warnings, the display of flood signals for the benefit of agriculture, commerce, and navigation, the maintenance and operation of seacoast telegraph lines and the collection and transmission of marine intelligence for the benefit of commerce and navigation, the reporting of temperature and rainfall conditions for the cotton interests, the display of frost and cold wave signals, the distribution of meteorological information in the interest of agriculture and commerce, and the taking of such meteorological observations as may be necessary to establish and record the climatic conditions of the United States, are essential for the proper execution for the foregoing duties." (Contact NOAA/NWS PA at 301-713-0622.)

Our Living Oceans

Annual review of the status and health of U.S. living marine resources. (Contact NOAA/NMFS PA at 301-713-2370.)

Outer Continental Shelf Lands Act, as amended (OCSLA)

The OCSLA establishes policies and procedures for managing and developing the mineral resources of the Outer Continental Shelf (OCS). While the OCSLA focuses on oil, natural gas, and sulphur leasing, it contemplates other types of mineral leases for the OCS. Development of these resources should balance economic and energy goals and the protection of the human, marine, and coastal environments. Federal jurisdiction has been established over the mineral resources of the OCS beyond three nautical miles. Under the OCSLA, the Secretary of Commerce has the responsibility for disbursing payments for oil spill cleanup and fisherman reimbursement payments from trust funds set up in the Act.

The OCSLA recognizes NOAA as a natural resource trustee for resources subject to the U.S. Department of Commerce's management and control. NOAA is authorized to conduct, or enter into contracts or grants to conduct, environmental assessments and monitoring activities as agreed upon with the U.S. Department of Interior. (Contact NOAA/NOS PA at 301-713-3066.)

Overfishing

Occurs when fishing pressure is so high that stock production is far lower than the potential, and/or the long-term viability of the stock is jeopardized.

Overutilized

A level of fishing effort that is greater than that required to achieve the long-term potential yield. (Contact NOAA/NMFS PA at 301-713-2370.) See also **Long-Term Potential Yield (LTPY), Current Potential Yield (CPY), Recent Average Yield (RAY)**

Ozone

An almost colorless, gaseous form of oxygen with an odor similar to weak chlorine. A relatively unstable compound of three atoms of oxygen, ozone constitutes on the average less than one part per million of the gases in the atmosphere. Yet ozone in the stratosphere absorbs nearly all of the biologically damaging solar ultraviolet radiation before it reaches the Earth's surface where it can cause skin cancer, cataracts, and immune deficiencies, and can harm crops and aquatic ecosystems. See also **Dobson Unit**

Ozone Hole

A large area of intense stratospheric ozone depletion over the Antarctic continent that typically occurs annually between late August and early October, generally ending in mid-November. This severe ozone thinning has increased conspicuously since the late 70s and early 80s. The phenomenon has been linked to the use of chlorofluorocarbons (CFCs) by humans. (Contact NOAA/ERL PA at 303-497-6286.)

Ozone Layer

Ozone in the stratosphere where it occurs in its highest concentrations, roughly from one to 10 parts per million. This atmospheric zone lies between 15 and 50 kilometers above Earth's surface, depending upon latitude, season and other factors. (Contact NOAA/ERL PA at 303-497-6286.)

Ozone, Stratospheric

An almost colorless, gaseous form of oxygen with an odor similar to that of weak chlorine. A relatively unstable compound of three atoms of oxygen, ozone constitutes on the average less than one part per million of the gases in the atmosphere. Yet ozone in the stratosphere plays a beneficial role by absorbing nearly all of the biologically damaging solar ultraviolet radiation before it reaches the Earth's surface where it can cause skin cancer, cataracts, and immune deficiencies. (Contact NOAA/ERL PA at 303-497-6286.)

P

Pacific Marine Center (PMC)

Located on Lake Union in Seattle, Wash., PMC serves as headquarters to NOAA's Pacific Fleet, which consists of eight vessels. PMC serves as port to NOAA Ships *Discoverer,* Class I; *Surveyor,* Class I; *Rainer,* Class II; *Miller Freeman,* Class II; *McArthur,* Class III; and *John N. Cobb,* Class V. PMC also provides support to NOAA Ship *Townsend Cromwell,* Class IV; based in Honolulu, Hawaii, and NOAA Ship *David Starr Jordan,* Class IV, based in San Diego, Calif.

The *Discoverer* and *Surveyor,* PMC's largest research vessels, engage in worldwide research, primarily investigating the ocean's physical and chemical properties, air-sea interactions, and marine geology. The NOAA Ship *McArthur* is used to collect fish and bottom sediment samples, which are prepared and stored on board so they can later be analyzed for pollutants.

The *Rainer* is equipped to perform hydrographic and bathymetric surveys, which provide the bottom configuration and obstruction and water depth information that is needed for preparing nautical charts and bathymetric maps. The areas surveyed are along the west and Alaskan coasts. The vessels *Miller Freeman* and *John N. Cobb* are equipped to conduct fisheries research. These vessels estimate populations of various species of fish and determine whether their numbers are increasing or decreasing. Fisheries research also involves assessment of the effects of pollution on fish habitats, examination of fish, and analysis of water. (Contact the NOAA PA at 202-482-6090.) See also **Ships, Classes of**

Pacific Marine Environmental Laboratory (PMEL)

Located in Seattle, Wash., PMEL conducts interdisciplinary scientific investigations in oceanography, marine meteorology, and related subjects. PMEL programs focus on climate, marine observation and prediction, marine resources, and marine environmental assessment. Studies are conducted to improve our understanding of the complex physical and geochemical processes that determine the extent of human effect on the marine environment, and to improve environmental forecasting capabilities and other supporting services for marine commerce and fisheries. (Contact NOAA/OAR PA at 301-713-2483.)

Pacific Region Headquarters (PRH)

The supervisory office for all National Weather Service activities in the Pacific Basin. PRH provides supervisory direction and technical, program and equipment

support, and serves as coordinator for National Weather Service policy, to field offices, including: Weather Service Forecast Offices (WSFOs) Honolulu; the Pacific Tsunami Warning Center; the International Tsunami Information Centre; the Weather Service Offices in Hawaii, U.S. flag territories, and Micronesia; and the Weather Service Meteorological Observatory, Guam.

The WSFOs prepare public and marine forecasts and warnings and a variety of aviation products for their areas of responsibility. Additionally, the Honolulu WSFO provides high seas and aviation forecasts and satellite analyses for extensive areas of the Pacific Ocean. (Contact NOAA/NWS PA at 301-713-0622.)

Pacific Regional Fishery Management Council

One of eight regional councils established by the Magnuson Fishery Conservation and Management Act. The council acts as a steward of the living marine resources off the coasts of California, Washington state, Oregon, and Idaho. See also **Regional Fishery Management Councils**

Pacific Tsunami Warning Center (PTWC)

The PTWC in Ewa Beach, Oahu, Hawaii, is responsible for releasing public watches and warnings of tsunamis for all U.S. territories and states bordering on the Pacific Ocean. Watches and warnings are disseminated to Weather Service Forecast Offices, state civil defense agencies, the Federal Emergency Management Agency, military organizations and others who, in turn, furnish the information to users.

According to bilateral agreements, watch and warning information is also disseminated by the PTWC to countries and territories throughout the Pacific Basin. Seismographic stations, participating in the system, detect earthquakes and submit reports to the PTWC where the earthquake location and magnitude are determined. Tide stations in the system detect the tsunami and furnish the information on the nature of the local wave to the PTWC. (Contact NOAA/NWS PA at 301-713-0622.) See also **Alaska Tsunami Warning Center (ATWC), International Tsunami Information Center (ITIC), Tsunami**

Packaged Fish

A term used in National Marine Fisheries Service publications prior to 1972 to designate fresh or frozen raw fish fillets and steaks.

Padilla Bay National Estuarine Research Reserve, Washington

This reserve encompasses over 10,604 acres of estuarine wetlands and 100 acres of uplands. It contains one of the largest eelgrass concentrations on the Pacific Coast and supports a diverse collection of invertebrates, fish, birds, and marine mammals.

The reserve is uniquely located adjacent to diked agricultural lands, surrounded by small urban centers, and bordering an inland marine system used extensively for commerce and urban recreation. The surroundings make the site ideal for researching impacts of urbanization on an estuarine environment. The reserve implements major programs in research, education and interpretation, using on-site field, laboratory, classroom, and display resources. More than 25,000 citizens participate in these programs each year; outreach efforts reach several thousand more citizens. Cooperative programs involve state and regional universities, 40 regional public school districts, and local, state, and federal agencies. (Contact NOAA/NOS PA at 301-713-3145 ext. 153.)

Part-Time Commercial Fisherman

An individual who receives less than 50 percent of his or her annual income from commercial fishing activities.

Party Boat

A vessel whose operator is licensed by the U.S. Coast Guard to carry seven or more paying passengers and whose passengers fish for a fee.

Pascagoula Port Office

Located in Pascagoula, Miss., this port facility is home port to NOAA Ships *Oregon* II and *Chapman.*

Patuxent River Estuary Cumulative Effects Study

Cumulative effects studies are a new research focus of the Coastal Ocean Program: investigating the cumulative impacts of multiple stressors on coastal ecosystems. Most coastal research on stressors has focused on the impact of a single stressor, either human-induced or natural, on an ecosystem.

This new emphasis is a break with tradition that may provide resource managers with more effective tools for dealing with coastal degradation. One of two initial selections for funding in this new research area is a study of the Patuxent River Estuary of the Chesapeake Bay by a multi-institutional, multidisciplinary team headed by a scientist from the Academy of Natural Sciences' Benedict Estuarine Research Laboratory in Benedict, Md. (Contact NOAA/NOS PA at 301-713-3066.) See also **Coastal Ocean Program**

Pelagic

Related to or living in the open sea, within the water column (not at or near the bottom).

Per Capita Consumption

Consumption of edible fishery products in the United States divided by the total civilian population. In calculating annual per capita consumption, estimates of the civilian resident population of the United States on July 1 of each year are used. These estimates are taken from current population reports, Series P-25, published by the U.S. Bureau of the Census.

Per Capita Use

The use of all fishery products, both edible and nonedible, in the United States, divided by the total population of the United States.

Photogrammetry

The science of creating maps and charts from aerial photographs. The combination of high-precision positioning of aircraft (using the Global Positioning System) and high-definition photography has made photogrammetry the most efficient data collection method for NOAA's coastal mapping and resource evaluation tasks. (Contact NOAA/NOS PA at 301-713-3066.)

Physical Environments Characterization Program

Collects and analyzes data nationwide on physical and hydrologic characteristics of the nation's estuaries and coastal waters. The program maintains NOAA's National Estuarine Inventory. It measures the freshwater inflow and salinity regimes of the nation's estuaries and implements NOAA's Estuarine Eutrophication Assessment. It develops and implements estuarine water quality screening models for supporting state and local decision-making. (Contact NOAA/NOS PA at 301-713-3066.)

Physical Oceanographic Real Time System (PORTS)

A system that collects and integrates data from a variety of instruments measuring real-time currents, water levels, winds, and water temperatures at multiple locations, with a data dissemination system that incorporates telephone voice response as well as computer modem dial-up. PORTS provides much more accurate information than can be expected from the traditional tide and current prediction tables published annually by NOAA.

This information is critical for safe and cost-effective navigation, search and rescue, hazardous material and oil spill prevention and response, and scientific research. The only fully integrated PORTS system presently operating is in Tampa Bay, Fla., with systems being considered for New York, Houston/Galveston, and San Francisco Bay. (Contact NOAA/NOS PA at 301-713-3066.) See also **Acoustic Doppler Current Profiler**

Pilot Whale

Pilot whales are actually large dolphins. There are two species of pilot whales: the shortfin and the longfin pilot whale. The shortfin pilot whale may be subject to a low level of bycatch in several U.S. fisheries. The population structure and general life history of both species are very poorly known. (Contact NOAA/NMFS PA at 301-713-2370.)

Pinniped

Aquatic carnivorous mammal with flippers for all four limbs—sea lions, seals and walruses.

POES

See **Polar-orbiting Operational Environmental Satellite**

Point Barrow Observatory

Located in Point Barrow, Alaska, this observatory carries out continuous monitoring programs for greenhouse and other trace gases, atmospheric aerosols, solar radiation, and meteorological parameters. (Contact NOAA/ERL PA at 303-497-6286.) See also **Climate Monitoring and Diagnostics Laboratory**

Point Source

The intentional release of wastes from pipes into ecosystems. See also **Direct Discharge**

Polar-orbiting Operational Environmental Satellite

These satellites are the current series of TIROS satellites, the third-generation polar-orbiting spacecraft operated by NOAA. Constantly circling the Earth in sun-synchronous orbit (525-mile or 845 kilometer altitude), these satellites support large-scale, long-range forecasts and numerous secondary missions. The satellites circle the Earth in an almost north-south orbit, passing close to both poles. One crosses the equator near 7:30 a.m. local time, the other close to 1:40 p.m. local time. Operating as a pair, these satellites ensure that non-visible data for any region of the Earth are no more than six hours old. (Contact NOAA/NESDIS PA at 301-457-5005.)

Pollution Sources Characterization Program

Collects, synthesizes, and evaluates data and information nationwide on point, nonpoint, and riverine sources of pollutant discharges into the nation's estuarine and coastal waters. The program maintains and updates NOAA's National Coastal Pollutant Discharge Inventory database. It conducts state and regional assessments of the factors affecting, and relative contributions of, various sources of specific pollutants and classes of pollutants to the environment. (Contact NOAA/NOS PA at 301-713-3066.)

Population

A group of animals genetically related because of interbreeding. Ideally, populations should be considered distinct biological groups for fishery management purposes. However, it is often difficult to determine which individuals of a species comprise a population. See also **Stock**

Pound Net

Interlocking net or trap that is usually set in place and held there by poles driven into the ocean bottom and anchored in place.

Precipitation

All types of condensed water vapor, whether liquid, freezing, or frozen, which fall to the Earth's surface.

Preliminary Fishery Management Plan (PMP)

The Secretary of Commerce prepares a PMP whenever a foreign nation with which the United States has made a Governing International Fishery Agreement (GIFA) submits an application to fish in a fishery not managed by a Fishery Management Plan (FMP). A PMP is replaced by an FMP as soon as the latter is implemented. A PMP applies only to foreign fishing. (Contact NOAA/NMFS PA at 301-713-2370.) See also **Fishery Management Plan**

Principal Unit Processor (PUP)

A computer work station that translates Doppler Weather Surveillance Radar data into usable products. (Contact NOAA/

NWS PA at 301-713-0622.) See also **Doppler Weather Surveillance Radar Products**

Production

See **Surplus Production.**

Production Function

The relationship between average production and fishing effort. Production functions are the basis for certain important concepts: Long-Term Potential Yield, Current Potential Yield, and Recent Average Yield. (Contact NOAA/NMFS PA at 301-713-2370.) See also **Long-Term Potential Yield, Current Potential Yield, Recent Average Yield**

Production Rate

A proportion of the population size or biomass. The production rate is highly variable owing to environmental fluctuations, predation and other biological interactions with other populations. On average, production decreases at low and high population sizes. Thus, surplus production tends to be low at the extremes of population size (i.e., where biomass or production rate is low). It is more likely to be high at some intermediate level of population biomass. But, on average, biomass decreases as the amount of fishing effort increases. This means there is a relationship between average production and fishing effort. See also **Production Function**

PTWC

See **Pacific Tsunami Warning Center**

Public Law 102-567

Passed in October 1992, Public law 102-567 governs the National Weather Service certification process for safely closing, consolidating, relocating or automating Weather Service Offices and Weather Service Forecast Offices. (Contact NOAA/NWS PA at 301-713-0622.) See also **Weather Service Modernization Act**

Purse Seine Net

A large deep mesh net, which can be several hundred to several thousand feet long, with floats along the top and weights along the bottom. Purse seine nets are deployed from a larger fishing vessel with a smaller skiff or buoy. The mother vessel encircles the target fish and purses (closes like a drawstring) the net bottom, forming a floating pouch around the fish.

q

Quantitative Precipitation Forecast

Quantitative Precipitation Forecasts are routinely prepared by the National Weather Service for amounts of precipitation that are expected to be ¼-inch or greater within a six- or 24-hour period. Forecasts for heavy precipitation can provide the basis for watches and warnings for snow and flooding. Within the National Centers for Environmental Prediction (NCEP), the National Precipitation Prediction Unit (NPPU) makes such forecasts for the continental United States periodically each day. The NPPU is composed of meteorologists from the Hydrometeorological Prediction Center and the National Environmental Satellite Data and Information Service (NESDIS). NESDIS meteorologists continuously monitor the atmosphere using satellite imagery, and make estimates of the amount of precipitation that has fallen. NWS meteorologists use this information, model forecasts, satellite imagery, radar data, surface and upper air observations and forecaster experience to produce the predictions of rain and snow amounts.

r

Radar

See **Doppler Weather Surveillance Radar**

Radiation

Refers to electromagnetic energy, not to be confused with "radioactivity."

Radiometer

An instrument that quantitatively measures electromagnetic radiation. Environmental satellites carry radiometers to measure radiation from snow, ice, clouds, bodies of water, land surfaces, and the sun.

Rain

Indicates a nearly steady and uniform falloff precipitation over an area for several hours, as opposed to the term "showers," which implies intermittent and scattered rainfall of a more unstable, convective nature. See also **Showers**

Recent Average Yield (RAY)

This is the reported fishery landings figure (commercial and recreational) averaged for the most recent three-year period. RAY is reported in order to allow comparison of the current situation to the long-term potential. See also **Production Function, Long-Term Potential Yield (LTPY)**

Recruits

The addition of new generations of young fish to a population.

Red Tide

A proliferation of a marine plankton that is toxic and often fatal to fish.

Redds

Salmon spawning nests in gravel.

Reef Fish

Fish that are associated with natural or man-made reefs. (Contact NOAA/NMFS PA at 301-713-2370.)

Re-Exports

Commodities that have entered the United States as imports and are subsequently exported in substantially the same condition as when originally imported. (Contact NOAA/NMFS PA at 301-713-2370.)

Regional Climate Centers (RCC)

Six RCCs in the United States operate through a grant from NOAA. These centers work closely with the National Weather Service's National Centers for Environmental Prediction (NCEP) in Camp Springs, Md.

The RCCs serve as clearinghouses for questions about the new Long-Lead Climate Outlooks produced by the NCEP's Climate Prediction Center. The long-lead climate outlook products are widely available through electronic information services. The RCCs provide printed versions of the climate outlooks to users

who cannot access the outlooks via electronic computer transmission. (Contact NOAA/NWS PA at 301-713-0622.) See also **Long-Lead Climate Outlook**

The six RCCs and their coverage areas are:

High Plains Regional Climate Center, Lincoln, Neb. (North Dakota, South Dakota, Nebraska, Kansas, Colorado, Wyoming)
Midwest Regional Climate Center, Champaign, Ill. (Ohio, Kentucky, Indiana, Illinois, Michigan, Wisconsin, Iowa, Minnesota, Missouri)
Northeast Regional Climate Center, Ithaca, NY (Maine, New Hampshire, Vermont, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Rhode Island, Maryland, West Virginia)
Southern Regional Climate Center, Baton Rouge, La. (Tennessee, Mississippi, Arkansas, Louisiana, Oklahoma, Texas)
Southeast Regional Climate Center, Columbia, SC (Virginia, North Carolina, South Carolina, Georgia, Alabama, Florida)
Western Regional Climate Center, Reno, Nev. (Alaska, Hawaii, Washington, Oregon, California, Idaho, Utah, Montana, Nevada, Arizona, New Mexico)

Regional Fishery Management Councils

The eight Regional Fishery Management Councils, established by the Magnuson Fishery Conservation and Management Act, work in partnership with the federal government to manage the nation's fishery resources.

The eight councils prepare fishery management plans for marine fish stocks in their respective geographical areas of responsibility. The plans are submitted to NOAA's National Marine Fisheries Service for review and to the Secretary of Commerce for approval and implementation. The councils represent diverse fisheries interests. They are composed of members whose combined knowledge and experience represent a balance of the commercial and recreational sectors' fisheries interests for each geographical area concerned. (Contact NOAA/NMFS PA at 301-713-2370.) See also separate listings for **Regional Fishery Management Councils (Caribbean, Gulf of Mexico, Mid-Atlantic, New England, North Pacific, Pacific, South Atlantic, Western Pacific)** for specific council descriptions, addresses, and telephone numbers.

Relative Humidity

The amount of water vapor in the air compared with the amount the air can hold at the current temperature. For instance, 50 percent relative humidity means the air holds half the water vapor that it is capable of holding. See also **Humidity**

Remote Sensing

The technology of acquiring data and information about an object or phenomenon by a device that is not in physical contact with it. In other words, remote sensing refers to gathering information about the Earth and its environment from a distance.

Remote Sensing

The use of satellites and aircraft to scan the surface of the Earth for vital environmental data. Scientists and planners increasingly rely on the wide range of precision data and photographic imagery to build images of Earth processes. (Contact NOAA/NOS PA at 301-713-3066.)

Research and Applications, Office of

The Office of Research and Applications (ORA), within the National Environmental Satellite, Data, and Information Service (NESDIS), provides overall guidance and direction for all research and applications activities of NESDIS.

ORA provides scientific advice and expertise on sensor development and design and coordinates the implementation and evaluation of operational satellite data and products. The Satellite Research Laboratory develops satellite-derived data products for use in Earth systems observations. This fundamental research endeavor includes

validating these products against "ground truth" and providing guidance in the calibration of current satellite instruments and the design of future instruments.

The Satellite Applications Laboratory develops new and improved techniques and applications of satellite-derived data products for operational meteorological and oceanographic use. It also works to implement these products and applications into operational activities and train new users of the products. (Contact NOAA/NESDIS PA at 301-457-5005.)

Research Surveys

Research surveys examine fish in a standardized manner over a wide range of locations within the waters inhabited by the stocks to provide a consistent population abundance and distribution index year after year. The survey results are then used in conjunction with commercial and recreational catch data to assess the resource base. The final critical data come from studies on the basic biology of the animals of the sea. Understanding the natural history of the harvested species and the other species with which they interact is crucial to understanding overall resource status. (Contact NOAA/NMFS PA at 301-713-2370.)

Reservoir Elevations

The levels of the water stored behind dams.

Resolution

A measure of the ability to separate observable quantities. In the case of imagery, it describes the area represented by each pixel of an image. The smaller the area represented by a pixel, the more accurate and detailed the image.

Retail Price

The price of fish and shellfish sold to the final consumer by food stores and other retail outlets.

Right Whale

These whales live on the continental shelf from Florida to Nova Scotia. The endangered western North Atlantic stock is the only northern hemisphere right whale population with a significant number of individuals (300 to 350); the other stocks are virtually extinct. The pre-18th century population may have been as high as 10,000, and, if so, the current population is more than 95 percent depleted. Individual identification, satellite tagging, genetic analysis, and the use of video cameras to document behavior are new research methods that have been applied in recent years.

Many questions, however, remain. Among them are the location of summering grounds for 30 percent of the population and wintering grounds for 80 percent of the population. Human impacts (net entanglement and ship strikes) are affecting some 60 percent of the population and may be inhibiting recovery. Two areas important to the northern right whale—the summer feeding grounds off the New England coast and the winter calving area along the Georgia and northern Florida coast—have recently been proposed as critical habitat. (Contact NOAA/NMFS PA at 301-713-2370.) See also **Marine Mammal Protection Act (MMPA)**

Riparian Water Law

The law of water allocation prevalent in the eastern United States, which provides that landowners abutting a stream are the only individuals entitled to water rights; the Riparian doctrine permits those landowners to make reasonable use of the water on their land, as long as the use does not interfere with the needs of the other riparian landowners.

River Basin

The drainage area of a river and its tributaries.

River Forecast

Estimated future stage or flow at a specified point based on existing and forecast hydrological and meteorological conditions.

River Forecast Centers (RFCs)

Thirteen regional River Forecast Centers are the first-echelon offices that prepare river and flood forecasts and warnings for approximately 3,000 communities. The basic product of this service is the flood forecast. This includes forecasts of height of the flood crest, as well as times when the river is expected to overflow its banks (flood stage) and when it will recede within its banks.

Crest forecasts can be made a few hours in advance for communities on rivers draining small areas, but can be made two or more weeks in advance for downstream sites on large rivers. At many points, particularly along larger streams, daily forecasts of river stage and/or discharge are routinely prepared for use by those interested in river-related activities such as navigation and water use management.

Reservoir inflow forecasts help federal, state and local agencies manage their water resources. Forecasts of ice formation and breakup, water temperatures, seasonal snowmelt, and water-year runoff are prepared for a selected number of locations. (Contact NOAA/NWS PA, 301-713-0622.)

The thirteen RFCs are:

Alaska River Forecast Center, Anchorage, Ak.
Arkansas Basin RFC, Tulsa, Okla.
Colorado Basin RFC, Salt Lake City, Utah
California-Nevada RFC, Sacramento, Calif.
Lower Mississippi RFC, Slidell, La.
Middle Atlantic RFC, State College, Pa.
Missouri Basin RFC, Kansas City, Mo.
North Central RFC, Minneapolis, Minn.
Northeast RFC, Taunton, Mass.
Northwest RFC, Portland, Ore.
Ohio River Forecast Center, Wilmington, Ohio
Southeast RFC, Atlanta, Ga.
West Gulf RFC, Fort Worth, Tex.

River Gauge/Stream Gauge

A device for measuring the river stage (elevation).

River Observing Station

An established location along a river designated for observing and measuring properties of the river.

River System

All the streams and channels draining a river basin.

Rookery Bay National Estuarine Research Reserve, Florida

This reserve features forests of red, white and black mangroves surrounding bay waters. The white ibis lives in the forests. The upland buffer consists of pine flatwoods and dry-zone scrub. Bottle-nose dolphin and manatee thrive in the bay's shallow waters. The state has continued to acquire land, increasing the reserve's size. (Contact NOAA/NOS PA at 301-713-3145 ext. 153.)

Round (Live) Weight

The weight of fish, shellfish, or other aquatic plants and animals as taken from the water; the complete or full weight as caught.

Rule Curves

Water levels, represented geographically as curves, that guide reservoir operations.

Run-off

That part of precipitation that flows toward the streams on the surface of the ground or within the soil.

S

Saffir-Simpson Hurricane Scale

A scale developed in the early 1970s by Herbert Saffir, a consulting engineer in Coral Gables, Fla., and Robert Simpson, then-Director of the National Hurricane Center, to describe the way storm surge, wind and other factors combine to determine a hurricane's destructive power. NOAA's hurricane forecasters use a disaster-potential scale to assign storms to five categories. (Contact NOAA/NWS at 301-713-0622.) See also **Hurricane, Storm Surge, Wind Speed**

The five categories:

Category 1: Winds 74 to 95 miles per hour. No real damage to building structures. Damage primarily to unanchored mobile homes, shrubbery, and trees. Also, some coastal road flooding and minor pier damage.

Category 2: Winds 96 to 110 miles per hour. Some roofing material, door, and window damage to buildings. Considerable damage to vegetation, mobile homes, and piers. Coastal and low-lying escape routes flood between two to four hours before arrival of the hurricane's center. Small craft in unprotected anchorages break moorings.

Category 3: Winds 111 to 130 miles per hour. Some structural damage to small residences and utility building with a minor amount of curtain wall failures. Mobile homes are destroyed. Flooding near the coast destroys smaller structures with larger structures damaged by floating debris. Terrain continuously lower than five feet above sea level (ASL) may be flooded inland eight miles or more.

Category 4: Winds 131 to 155 miles per hour. More extensive curtainwall failures with some complete roof structure failure on small residences. Major erosion of beach areas. Major damage to lower floors of structures near the shore. Terrain continuously lower than 10 feet ASL may be flooded, requiring massive evacuation of residential areas inland as far as six miles.

Category 5: Winds greater than 155 miles per hour. Complete roof failure on many residences and industrial buildings. Some complete building failures with small utility buildings blown over or away. Major damage to lower floors of all structures located less than 15 feet ASL and within 500 yards of the shoreline. Massive evacuation of residential areas on lower ground within five to 10 miles of the shoreline may be required.

Samoa Observatory

Located at Cape Matatula, American Samoa, the observatory carries out moni-

toring programs for greenhouse and other trace gases, atmospheric aerosols, solar radiation, and meteorological parameters. The staff consists of two federal employees and several contract personnel. (Contact NOAA/ERL PA at 303-497-6286.) See also **Climate Monitoring and Diagnostics Laboratory**

San Diego Port Office

This port facility is located in La Jolla, Calif., and is home port to NOAA Ship *David Starr Jordan*. This vessel conducts fisheries research similar to that of the *Miller Freeman* and *John N. Cobb*. (Contact NOAA PA at 202-482-6090.)

Sapelo Island National Estuarine Research Reserve, Georgia

The reserve is located in the midst of an estuary where the currents of Doboy Sound and the Duplin River meet. Sapelo Island is the fourth-largest of a string of 13 barrier islands along the Georgia coast. The reserve contains about 2,300 acres of upland forest inhabited predominantly by stands of southern hardwoods (particularly live oak), pure stands of pines (long leaf and loblolly), white-tailed deer, wild turkey and other wildlife.

The reserve also contains a network of oak, cedar and palm upland hammocks scattered throughout the salt marsh and beach areas and a healthy beach and dune system fronting the Atlantic Ocean. The greatest portion of the reserve is composed of extensive belts of salt marsh, which hosts a wealth of inhabitants. Smooth cordgrass (*Spartina alterniflora*) provides some 90 percent of the salt marshes on the reserve. At low tide, members of the diverse salt marsh community come to feed and reproduce in and around the marshes along the exposed river and creek banks. The Duplin River, which flows through the heart of the reserve, serves as a nursery ground for the development of juvenile shrimp, menhaden, Atlantic blue crabs, sea trout, sea bass, oysters, clams and other marine life. (Contact NOAA/NOS PA at 301-713-3145 ext. 153.)

SARSAT

Search and rescue satellite-aided tracking system carried on NOAA satellites. See also **U.S. Satellite Search and Rescue Program**

Satellite Active Archive (SAA)

The Office of Satellite Data Processing and Distribution manages and operates the NOAA Polar Satellite Active Archive. The SAA is a system designed to provide easy access to data from NOAA's satellites.

SAA contains descriptive information about those data sets, and permits users to search inventories of data holdings for availability based upon geographic and date requirements. In addition to providing advanced online data query and product request capabilities, SAA also provides an online graphical browse tool which can assist the user in determining geographic coverage of individual data sets and display online digital representations of those data sets. Once the data requirements have been determined, an order may be placed electronically, and data may be delivered either electronically or through a physical medium. (Contact NOAA/NESDIS PA at 301-457-5005.)

Satellite and Ocean Dynamics Program

The activities of this program are directed at problems of physical oceanography. The program analyzes marine gravity, satellite tracking and other hydrographic data in order to obtain the precise delineation of currents, general ocean circulation, and marine gravity fields. It develops methods for determining more accurate satellite orbits by analyzing the causes of orbital perturbations, and by research in celestial mechanics; investigates methods for combining various types of satellite data with surface observations; conducts research in the theory of the Earth's gravitational field and its determination from available data; and participates in planning for

advanced satellite systems. (Contact NOAA/NOS PA at 301-713-3066.)

Satellite Data Processing and Distribution, Office of (OSDPD)

The Office of Satellite Data Processing and Distribution manages the ingest, processing, and distribution of data and derived products from NOAA's Polar-orbiting Operational Environmental Satellites (POES) and Geostationary-orbiting Operational Environmental Satellites (GOES). Included are such diverse environmental parameters as temperature soundings, derived winds, atmospheric ozone and aerosols, land vegetation indices, as well as imagery.

OSDPD distributes these products to operational customers such as the National Weather Service and NASA; to retrospective customers including NOAA's National Data Centers for long-term archiving; and to a broad spectrum of public and private users. (Contact NOAA/NESDIS PA at 301-457-5005.) See also **CoastWatch Program**

Satellite Operations Control Center

NOAA's National Environmental Satellite, Data, and Information Service operates the Satellite Operations Control Center in Suitland, Md. A principal operating feature of the NOAA system is the centralized remote control of both geosynchronous and low-Earth orbiting satellites through command and data acquisition stations. These stations transmit command programs to the satellites and acquire and record meteorological and other environmental data, as well as engineering data, from the satellites. (Contact NOAA/NESDIS PA at 301-457-5005.)

Satellite Operations, Office of

The Office of Satellite Operations, within the National Environmental Satellite, Data, and Information Service, manages and directs operation of NOAA's satellites and acquisition of remotely sensed data. The office is responsible for the Satellite Operations Control Center in Suitland, Md., and the Command and Acquisition facilities in Wallops, Va., and Fairbanks, Ak.

The office works with the National Weather Service in planning major new satellites and ground facilities. It also supports the launch, activation, and evaluation of new satellites, and the in-depth assessment of satellite and ground system anomalies. The office evaluates the technical performance of NOAA's satellites and maintains current information and future predictions on the orbits and altitudes of the satellites. It evaluates the effectiveness of the operational facilities and procedures in terms of the quality, quantity, coverage, and timeliness of the data acquired.

Satellite Services

See **NOAA Satellite Services**

Scientific Support Coordinator (SSC)

NOAA Scientific Support Coordinators provide critical scientific support during spills of oil or hazardous materials. SSCs use spill trajectory estimates, chemical hazards analyses, and assessments of the sensitivity of resources to help the U.S. Coast Guard make operational decisions in the crisis environment of a spill. SSCs also provide guidance, experience, and resources to develop spill preparedness plans that help identify the course of action providing the most environmental benefit. (Contact NOAA/NOS PA at 301-713-3066.)

Sea Level Rise

One of the many anticipated effects of human-induced climate change is an accelerated rise in the global mean sea level. The Intergovernmental Panel of Climate Change (IPPC) estimates that over the next century the sea level will rise by 31 to 110 centimeters and that this could have severe impacts on coastal areas and their resources. NOAA scientists and management specialists continue to address the implications of this issue through development of effective Coastal Zone Management strategies and intensified monitoring and assessment

activities. (Contact NOAA/NOS PA at 301-713-3066.) See also **Altimeter, Coastal Zone Management**

Sea Turtles

Six species of sea turtles regularly spend all or part of their lives off the U.S. Atlantic and Pacific coasts, and in U.S. territorial waters of the Caribbean and western Pacific Ocean: The Kemp's ridley, olive ridley (Pacific only), loggerhead, green, hawksbill, and leatherback. Limited assessment data for 11 stocks exist for about half of the turtle species in U.S. waters, but studies of nesting densities provide a partial picture of population trends.

The Kemp's ridley population has experienced a major decline since 1947, from an estimated 40,000 nesting females to less than 800 nests per year between 1978 and 1988. Loggerhead nesting populations have declined over the last 20 to 30 years in the northern portion of their range (e.g., Georgia and South Carolina). On the Atlantic beaches of south Florida, however, loggerheads have not shown a decline, and might even be increasing. Green turtle nestings on Florida beaches are low, but they increased between 1971 and 1989. Leatherbacks nest on beaches of the Virgin Islands and Puerto Rico, but nesting records are too few to detect trends.

Under the Endangered Species Act, all marine turtles are listed either as endangered or threatened. NMFS has authority to protect and conserve marine turtles in the seas and the U.S. Fish and Wildlife Service maintains authority while turtles are on land. The Kemp's ridley, hawksbill, and leatherback turtles are listed as endangered throughout their ranges. The loggerhead and olive ridley turtles are listed as threatened throughout their U.S. ranges, as is the green turtle, except the Florida nesting population which is listed as endangered. Sea turtles are highly migratory and ply the world's oceans.

The National Marine Fisheries Service has the authority to protect and conserve marine turtles in the seas, and the U.S. Fish and Wildlife Service maintains authority while turtles are on land. (Contact NOAA/NMFS PA at 301-713-2370.) See also **Turtle Excluder Devices**

Sea-Surface Temperature

Sea-surface temperature in the Pacific Ocean near the equator changes little from day-to-day, week-to-week, or even month-to-month. Therefore, sea-surface temperature anomalies (sea-surface temperatures which are warmer or colder than the 30-year average for the location and date) often last for months, seasons or even years. Sea-surface temperature in the tropics is closely related to the occurrence of large thunderstorms throughout the tropics.

These storms transfer the warmth from the ocean surface into the atmosphere. At an average of every three to five years, ocean surface temperatures in the equatorial central and eastern Pacific become abnormally warm. The abnormal warming in the eastern Pacific often begins in mid- to late December, and peaks during the northern spring. (Contact NOAA/NWS PA at 301-713-0622.) See also **Anomaly, El Niño (El Niño/Southern Oscillation), Long-Lead Climate Outlook**

Seafood Inspection Services

Services offered under the National Marine Fisheries Service's National Seafood Inspection Program include vessel and sanitation inspections; product specification review; label review; laboratory analysis; training sessions for inspection personnel, industry and the public; and education/information. (Contact NOAA/NMFS PA at 301-713-2370.) See also **NMFS National Seafood Inspection Program**

Search and Rescue

See **U.S. Satellite Search and Rescue Program**

Seasonal Outlook

A climate outlook covering a 90-day period. (Contact NOAA/NWS PA at 301-

713-0622.) See also **Long-Lead Climate Outlook**

Senior Scientist, National Ocean Service Office of the

Serves as the focus for policy development, planning, and program evaluation within the National Ocean Service (NOS). The office develops primary policy for coastal and ocean science and provides technical oversight on NOS activities. (Contact NOAA/NOS PA at 301-713-3066.)

Severe Thunderstorm Warning

Thunderstorm warnings are issued when a thunderstorm produces hail ¾-inch or larger in diameter and/or winds equal to or exceeding 58 miles per hour. Warnings usually include the thunderstorm location, the possible path and the primary threat associated with the storm.

Severe Thunderstorm Watch

Conditions are favorable for the development of severe thunderstorms in and close to the watch area. Watches are usually in effect for several hours, with six hours being maximum.

Shellfish

Marine invertebrates which have a protective shell, such as lobster and oysters.

Ships, Classes of

All major NOAA vessels are classified based on the factor of power tonnage. Power tonnage is the combined horsepower and gross tonnage of any given vessel. Vessel classes are determined by specified ranges of power tonnage.

For NOAA, the following classes and power tonnages are:

Vessel Class I: 5,501 to 9,000
Vessel Class II: 3,501 to 5,500
Vessel Class III: 2,000 to 3,500
Vessel Class IV: 1,001 to 2,000
Vessel Class V: 500 to 1,000
Vessel Class VI: 500 and under; ship is not less than 65 feet in length

This classification is for the purpose of establishing a uniform system of ship identification. It is used for operational, maintenance/replacement costs, budget planning, and compensation purposes.

Showers

Brief intervals of rain that do not affect a large area.

Sky Conditions (Ceiling)

The height above the Earth's surface of the lowest layer of clouds that is reported as broken or overcast.

Sleet

Rain drops that freeze into ice pellets before reaching the ground. Sleet usually bounces when hitting a surface and does not stick to objects; however, it can accumulate like snow and cause a hazard to motorists.

Sleet Warning

Issued when accumulations of sleet, to a depth of ½-inch or more, are expected. This is a relatively rare event. See also **Sleet**

SLOSH (Sea, Lake, Overland Surges from Hurricanes) Model

A numerical computer model which forecasts the mean water level that may increase as an advancing storm crosses the continental shelf and moves close to the coast. Storm surge combines with normal astronomical tide to create a hurricane storm tide. See also **Hurricane, Storm Surge**

Small Craft Cautionary Statements

When a tropical cyclone threatens a coastal area, small craft operators are advised to remain in port or not to venture into the open sea. See also **Tropical Cyclone**

Smolt

A juvenile salmon or steelhead migrating to the ocean and undergoing physiological changes to adapt its body from a freshwater to a saltwater environment.

Snow

Heavy Snow: Snowfall accumulations of six inches or more in 12 hours, or eight inches or more in 24 hours.

Snow Flurries: Light snow falling for short durations. No accumulation, or light dusting, is all that is expected.
Snow Showers: Snow falling at varying intensities for brief periods of time. Some accumulation is possible.
Snow Squalls: Brief, intense snow showers accompanied by strong, gusty winds. Accumulation may be significant. Snow squalls are best known in the Great Lakes region.
Blowing Snow: Wind-driven snow that reduces visibility and causes significant drifting. Blowing snow may be snow that is falling and/or loose snow on the ground picked up by the wind.
Snow Blizzard: Winds over 35 miles per hour with snow and blowing snow reducing visibility to near zero.

Snow Advisory

An advisory issued by the National Weather Service when snowfall generally exceeds two inches but is not expected to accumulate six inches or more. May be used for one- or two-inch snowfalls if occurring at the beginning of the snow season or after a prolonged period between snow events.

Snow Warning, Heavy

A warning issued by the National Weather Service for snowfalls of six inches or more in 12 hours or less; or eight inches or more in 24 hours or less, with only light winds (less than 10 miles per hour).

Snowmelt Flooding

Flooding caused primarily by the melting of snow.

Solar Backscatter Ultraviolet Radiometer (SBUV)

An instrument that measures the vertical distribution and total ozone in the Earth's atmosphere. Data are used for the continuous monitoring of ozone distribution to estimate long-term trends. SBUV instruments are flown on NOAA polar-orbiting satellites having afternoon orbits.

Solar Wind

The outward flow of solar particles and magnetic fields from the sun. (Contact NOAA/ERL PA at 303-497-6286.)

Sounder

A special kind of radiometer that measures changes in atmospheric temperature with height, as well as the content of various chemical species in the atmosphere at various levels. The High-Resolution Infrared Radiation Sounder is flown on NOAA polar-orbiting satellites. See also **Greenhouse Gas, High-Resolution Infrared Radiation Sounder, Microwave Sounder Unit**

South Atlantic Regional Fishery Management Council

One of eight regional councils established by the Magnuson Fishery Conservation and Management Act. The council acts as a steward of the living marine resources off the coasts of North Carolina, South Carolina, Georgia, and the east coast of Florida. (Contact NOAA/NMFS PA at 301-713-2370.) See also **Regional Fishery Management Councils**

South Florida Cumulative Effects Study

Cumulative effects studies are a new research focus of the Coastal Ocean Program: investigating the cumulative impacts of multiple stressors on coastal ecosystems. Most coastal research on stressors has focused on the impact of a single stressor, either human-induced or natural, on an ecosystem. This new emphasis is a break with tradition that may provide resource managers with more effective tools for dealing with coastal degradation. One of two initial selections for funding in this new research area is a study of the south Florida ecosystem by a multi-institutional, multidisciplinary team headed by a scientist from the University of Miami's Rosenstiel School of Marine and Atmospheric Science. (Contact NOAA/NOS PA at 301-713-3066.) See also **Coastal Ocean Program**

South Florida Restoration

In response to heightened local concerns about deteriorating conditions due to land-

based human activities in Florida Bay, a federal-state agreement was signed establishing an interagency Task Force which then called for development of a Florida Bay Science Plan. The Coastal Ocean Program participated on the NOAA team to develop a research implementation plan reflecting the agency's interests and responsibilities in the bay. It has funded a number of research projects in the area, including one of its Cumulative Effects Studies. (Contact NOAA/NOS PA at 301-713-3066.) See also **Coastal Ocean Program, South Florida Cumulative Effects Study**

South Pole Observatory

Located at the South Pole, this observatory maintains monitoring programs in greenhouse and trace gases, atmospheric aerosols, and meteorological parameters, and conducts field programs to understand chemical changes in the Antarctic region that might impact climate and global change. The normal staff is two federal employees, but during field programs, additional researchers and staff members participate. (Contact NOAA/ERL PA at 303-497-6286.)

South Slough National Estuarine Research Reserve, Oregon

The first designated National Estuarine Research Reserve. It is one of eleven shallow tidal inlets of the Coos Estuary in Coos Bay, Oregon. Encompassing about 25 percent of the South Slough drainage basin, the reserve includes a variety of habitats, including upland forests, freshwater marsh, mudflats, salt marsh, and open water.

At least 22 commercially important fish species live in the estuary. Extensive eelgrass beds attract waterfowl migrating along the Pacific Flyway. The South Slough estuary has been altered dramatically since its development in the mid-1850s. Like most estuaries on the west coast, a large portion of its coastal wetlands are diked agricultural lands. Now the reserve's most prominent feature is its extensive array of dikes, many of which have been breached naturally at various times in the recent past. Some remain intact. (Contact NOAA/NOS PA at 301-713-3145 ext. 153.)

Southeast Marine Support Facility

Located in Miami, Fla., this facility is home port for the NOAA Ship *Malcolm Baldrige.* The *Malcolm Baldrige,* the Atlantic Marine Center's largest vessel, conducts worldwide research, primarily investigating marine geology, air-sea interactions, and the ocean's physical and chemical properties. (Contact NOAA PA at 202-482-6090.)

Southern Region Headquarters (SRH)

Located in Fort Worth, Texas, the SRH is the supervisory office for the 10-state Southern Region of the National Weather Service. SRH provides supervisory direction and technical, program and equipment support, and serves as coordinator for National Weather Service policy, to 87 field offices, including: Weather Service Forecast Offices, Weather Service Offices, Weather Service Meteorological Observatories, Center Weather Service Units, and Agricultural Weather Service Centers. SRH serves the states of New Mexico, Oklahoma, Texas, Arkansas, Louisiana, Tennessee, Mississippi, Alabama, Georgia, and Florida. (Contact NOAA/NWS Southern Region PA, 817-334-2654.)

Space and Physical Geodesy Program

Conducts space, astronomic, and gravimetric geodesy programs required to maintain the national geodetic networks. It analyzes absolute and relative gravity observations and optical and radio observations of extragalactic objects, stars, and Earth-orbiting satellites to determine point gravity and gravity anomaly values, define reference coordinate systems, monitor polar motion and earth rotation, and determine astronomic azimuths and astronomic and geocentric point positions. The program supplies information and assistance to other government agencies and the public on the

theory and application of space and physical geodesy. (Contact NOAA/NOS PA at 301-713-3066.)

Space Environment Center (SEC)

Located in Boulder, Colo., the National Centers for Environmental Prediction's SEC provides national and international forecasts, alerts and warnings of extraordinary conditions in the global space environment. The center issues specific predictions of activity levels of space weather for the next three days, and more general predictions up to several weeks in advance, as well as monthly summaries of observed conditions. Space weather includes solar radio noise, solar energetic particles, solar x-ray radiation, geomagnetic activity and conditions of stratospheric warming. (Contact NOAA/NWS PA at 301-713-0622.) See also **National Centers for Environmental Prediction**

Space Environment Laboratory (SEL)

Located in Boulder, Colo., this laboratory monitors and forecasts the near-Earth space environment. Through research and technical support activities, SEL improves techniques for forecasting solar storms and their effects on the Earth's environment; studies solar-terrestrial physics, involving interplanetary, magnetospheric, and ionospheric phenomena; and develops techniques for predicting solar disturbances. SEL also operates the Space Environment Services Center in conjunction with the U.S. Air Force's Air Weather Service. Daily forecasts of the space environment are disseminated worldwide. These forecasts directly support activities at U.S. Air Force and National Aeronautics and Space Administration installations, and also benefit private industry. (Contact NOAA/ERL PA at 303-497-6286.)

Space Environment Monitor (SEM)

An instrument that measures the condition of the Earth's magnetic field and the solar activity and radiation around the spacecraft, and transmits these data to a central processing facility. NOAA polar-orbiting and geostationary satellites both carry SEMs. (Contact NOAA/NESDIS PA at 301-457-5005.)

Spaceflight Meteorological Group (SMG)

The National Weather Service's Spaceflight Meteorological Group (SMG) is a critical member of the Flight Control Team in Mission Control at the National Aeronautics and Space Administration's (NASA) Johnson Space Center in Houston, Texas.

SMG provides detailed forecasts for space shuttle landing sites in Florida, California, New Mexico, Spain, and Africa, including Return to Launch Site (RTLS) contingency landings, Transoceanic Abort Landing sites, On-Orbit Primary Landing Sites, and final End of Mission landings. SMG also supports Shuttle payload operations and provides Shuttle landing weather briefings to NASA Flight Directors, astronauts, and the Mission Management Team.

SMG also issues weather advisories for thunderstorms, heavy rains, and hurricanes to Johnson Space Center, and provides weather briefings to NASA astronauts for training purposes. (Contact NOAA/NWS PA at 301-713-0622.)

Specific Area Message Encoder (SAME)

The Federal Communications Commission's (FCC) new Emergency Alert System will rely on new digital technology developed by the National Weather Service (NWS) for communicating severe weather and hazard warnings to the public. Local weather offices, emergency managers, police departments and other users will be able to receive and issue hazard warnings over the FCC's Emergency Alert System using the new SAME technology. NOAA Weather Radio broadcasts local NWS reports and warnings 24 hours a day over specially designated frequencies.

With the SAME technology, a message broadcast by the NWS over NOAA Weather Radio will have a brief digital code at the start of the warning message and the end of the warning message. One code

consists of tones (identical to those used by telephone companies) that identify the specific type of message to be broadcast—for example, a Tornado Warning. Another code identifies the county or counties affected. Broadcasters and cable operators can program their decoding equipment to receive an encoded warning message from the NWS or other agencies, and put a message on the air immediately, or tape a less urgent warning for broadcast at a time of their choice.

The message encoder-decoder technology will make it possible for the first time for any user within range of a NOAA Weather Radio station to program his/her weather radio's decoder to receive only certain types of messages for specific counties he/she selects. (Contact NOAA/NWS PA at 301-713-0622.) See also **Console Replacement System, Emergency Alert System, NOAA Weather Radio**

Spill

Water passed over a spillway or through regulating outlets without passing through turbines to produce electricity. Spill can be forced, when there is no storage capability and flows exceed turbine capacity, or planned, for example, when water is spilled to enhance juvenile fish survival.

Spillway

Overflow structure of a dam.

Stage

The level of the water surface of a stream above an established datum at a given location.

State Geodetic Advisor Program

NOAA sponsors a cost-sharing advisory program with several states in which the advisors instruct local surveyors and others on how to use and preserve the National Spatial Reference System. The program provides a liaison between NOAA and the host state, with a jointly funded NOAA employee residing in the state to guide and assist the state's charting, geodetic, and surveying programs. Designed to fill a need for more accurate local geodetic surveys, the program is a response to the states' desire to improve their surveying techniques to meet the highest standards. (Contact NOAA/NOS PA at 301-713-3066.) See also **National Spatial Reference System**

Statute Mile

A statute mile is a unit of linear measure (5,280 feet). See also **Nautical Mile**

Stellwagen Bank National Marine Sanctuary, Massachusetts

Below the surface of the ocean sits a geological feature that makes this part of the Atlantic one of the most biologically productive areas off the New England coast. Stellwagen is the most prominent submarine feature in Massachusetts Bay, measuring approximately 19 miles in length and 6¼ miles at its widest point, partially blocking the mouth of the bay. Depths at the bank's shallowest areas are around 65 feet, with other areas of the upper plateau in the 100-foot range. The sides drop off quickly, sliding down to 300 feet at its western flanks.

On the seaward side, the drop off is more gradual, although depths eventually exceed 600 feet. Marine mammals, including the endangered Northern right whale, humpback whale, and fin whale, make the waters surrounding the bank their summer feeding grounds, leaping out of the water as spectators watch in amazement. As a result of its size and location, Stellwagen Bank exerts a significant influence on ocean currents, the distribution of nutrients, and the overall ecology of Massachusetts Bay. Thus, the bank and surrounding waters create a variety of marine habitats supporting a diversity of marine life. Captain Henry S. Stellwagen discovered the bank in 1854 while employed by the U.S. Coast Survey, the precursor to NOAA. (Contact NOAA/NOS PA at 301-713-3145 ext. 153.)

Stock

Usually refers to a "stock" of fish that is genetically or behaviorally distinct from

others. For National Marine Fisheries Services purposes, it refers to a group of animals identified for management purposes, usually from regional or geographic criteria. See also **Population**

Stock Assessment

In general terms, a stock assessment includes an estimation of the amount or abundance of the resource, an estimation of the rate at which it is being removed due to harvesting and other causes, and one or more reference levels of harvesting rate and/or abundance at which the stock can maintain itself in the long term. Such assessments often also contain short-term (between one and five years, typically) projections or prognoses for the stock under a number of different management scenarios. This information on resource status is used by policy-makers and managers to determine what actions are needed to promote the best use of marine resources.

Stock assessment analyses rely on various sources of information to estimate resource abundance and population trends. The principal information comes from the commercial and recreational fishery harvests themselves. In addition, the National Marine Fisheries Service conducts dozens of resource surveys with specialized research vessels or chartered fishing vessels every year. These surveys, sometimes done in cooperation with state marine resource agencies, universities, international scientific organizations, or even with the fisheries agencies of other nations, produce an index of the resource abundance. (Contact NOAA/NMFS PA at 301-713-2370.) See also **Research Surveys**

Stock Level

A biological reference for determining resource status relative to the stock level which would, on average, support the Long-Term Potential Yield. See also **Long-Term Potential Yield**

Storm Prediction Center (SPC)

Located in Norman, Okla., the National Centers for Environmental Prediction's SPC provides short-term guidance products for hazardous weather over the contiguous United States. The center coordinates with National Weather Service field offices around the country for short-term aspects of hazardous weather. The six main hazardous weather elements forecasted by the SPC are: flash floods, thunderstorms, tornadoes, winter storms, blizzards and freezing precipitation. (Contact NOAA/NWS PA at 301-713-0622.) See also **National Centers for Environmental Prediction** (NCEP)

Storm Surge

An abnormal rise of sea along a shore as the result, primarily, of the winds of a storm. See also **Hurricane, SLOSH Model**

Strategic Environmental Assessments Program

Conducts a range of nationwide, interdisciplinary data collection and assessment activities in the United States coastal zone. Information is compiled and organized for decision-makers on human activities and their effects on the coastal environment. The program's concern extends inland to encompass the watersheds and drainage basins that directly affect the nation's estuaries, and extends seaward to at least the limits of the Exclusive Economic Zone. Its information, assessments, and decision-support systems help identify strategies and management actions for balanced conservation and development of estuarine and coastal resources. (Contact NOAA/NOS PA at 301-713-3066.)

Stratosphere

The region of the atmosphere between the troposphere and mesosphere, having a lower boundary of approximately eight kilometers at the poles or 15 kilometers at the equator and an upper boundary of approximately 50 kilometers.

Stratospheric Sounding Unit (SSU)

Temperature measurements in the upper stratosphere are derived from radiance measurements made in three channels using a pressure-modulated gas (CO_2) to accomplish selective bandpass filtration of the sampled radiances. The gas is of a pressure chosen to yield weighting functions peaking in the altitude range of 25 to 50 kilometers, where atmospheric pressure is from 15.5 to 1.5 millibars, respectively. This gas is contained in three cells, one of which is located in the optical path of each channel. (Contact NOAA/NESDIS PA at 301-457-5005.)

Supplemental Aviation Weather Reporting Station (SAWRS)

An aviation weather-reporting station established by a cooperator to meet requirements of federal air regulations; observations and reports are certified and supervised by the National Weather Service. (Contact NOAA/NWS PA at 301-713-0622.)

Supplementary Aviation Weather Observation Program

A network of Supplementary Aviation Weather Reporting Stations (SAWRS) established at locations where the government cannot provide aviation observations and has no requirement for the observations. The station and observation programs are established and operated by the local operators at their own expense under National Weather Service (NWS) supervision. NWS provides training, certification of observers, forms and instruction. SAWRS observations normally consist of elements required by Federal Air Regulations including sky cover, cloud height, visibility, weather and obstruction to vision, temperature, wind and altimeter setting. These data are observed, recorded, and disseminated (usually just locally) to users. (Contact NOAA/NWS PA at 301-713-0622.)

Surimi

Minced fish meat (usually Alaska pollock) which has been washed to remove fat and undesirable matters (such as blood, pigments, and odorous substances), and mixed with cryoprotectants, such as sugar and/or sorbitol, for a good frozen shelf life. See also **Analog Products**

Surplus Production

The total weight of fish that can be removed by fishing without changing the size of the population. It is calculated as the sum of the growth in weight of individuals in a population, plus the addition of biomass from new recruits, minus the biomass of animals lost to natural mortality. See also **Recruits, Biomass, Natural Mortality**

Sustainable Development

Sustainable development integrates the concepts of economic growth and environmental stewardship, reflecting the growing recognition by policy-makers and the public that sustained growth can only occur within the context of a healthy environment. Examples: Northeast Fisheries Emergency Assistance Plan; Northwest Fisheries Emergency Assistance Plan. (Contact NOAA PA at 202-482-6090.)

Systems Development, Office of

The Office of Systems Development, within NESDISe, provides for requirements development and validation, conducts conceptual and system definition studies, and provides overall system planning, including detailed management oversight required to develop and implement new or modified satellite strategies.

The office also provides for the operation of the Landsat system and NOAA's participation in the Landsat program management; for the licensing of private remote sensing space systems; for ground systems development and integration; and for coordination of the use of radio frequencies for the U.S. Department of Commerce. (Contact NOAA/NESDIS PA at 301-457-5005.)

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Telemetry

(1) Telecommunications transmission to a distance of measured magnitude by radio or telephony with suitably coded modulation; e.g., amplitude, frequency, phase, pulse.

(2) Transmission of data collected at a remote location over communications channels to a central station.

(3) Surveying measurement of linear distances by use of a tellurometer, a device that uses microwaves to measure distance.

Television and Infrared Observation System (TIROS)

A series of satellites launched to monitor Earth's weather from outer space. The era of the meteorological satellites began with the launch of TIROS-1 on April 1, 1960. For the first time, it was possible to monitor weather conditions over most of the world regularly from space.

Temperature

The degree of hotness or coldness of the ambient air as measured by any suitable instrument.

Territorial Sea

A zone extending 12 miles into the sea measured from a baseline on the coast country. This area is considered part of a country's sovereign territory.

Threatened Species

Marine life protected under the Endangered Species Act likely to become an endangered species in the foreseeable future throughout a significant portion of its range. (Contact NOAA/NMFS PA at 301-713-2370.) See also Endangered Species, Endangered Species Act

Tidal Analysis Program

Processes and analyzes water level measurements from the U.S. coastal ocean, including islands, possessions, and offshore ocean areas. It also analyzes other oceanographic measurements at selected locations within the National Water Level Observing Network. The program computes for predictions and maintains a primary archive of digital and hard-copy data bases, prepares data for dissemination, and develops and implements ADP software and hardware to enhance analysis techniques and data dissemination. The program conducts special studies of unusual tidal characteristics, geophysical and meteorological events, and time series comparisons. (Contact NOAA/NOS PA at 301-713-3066.)

Tidal Current Charts

Charts graphically representing tidal currents in selected bays and harbors of the

United States. Each series consists of a set of 12 or 13 charts depicting, by means of arrows and figures, the direction and speed of the tidal currents for equal intervals of the tidal cycle. (Contact NOAA/NOS PA at 301-713-3066.)

Tidal Current Tables

Tidal current tables list predicted times of minimum and maximum tidal currents and current velocities for each day of the year at 54 places located along the Atlantic and Pacific Coasts of North America and the Pacific coast of Asia. The tables also provide conversion factors for predicting tidal currents at 2,400 subordinate stations in these areas. (Contact NOAA/NOS PA at 301-713-3066.)

Tide Tables

Tide tables list the predicted times and heights of high and low waters for each day of the year from about 200 of the most important harbors in the world. The tables also list conversion factors for tidal predictions at thousands of subordinate stations. (Contact NOAA/NOS PA at 301-713-3066.)

Tides

Since ancient days, mariners have relied on knowledge of the tides to guide them out to sea and home again to port safely. Although contemporary technology has brought a great depth of understanding to the astronomical tidal cycles, a specific tide at any location is still strongly influenced by local conditions, including the strength of river discharge into a bay and local weather conditions. For this reason, NOAA has developed the Physical Oceanographic Real Time System for major harbors. The system is designed to provide precise reading of local tides and currents based on real-time on-site monitoring. (Contact NOAA/NOS PA at 301-713-3066.) See also **Physical Oceanographic Real Time System (PORTS)**

Tijuana River National Estuarine Research Reserve, California

This reserve encompasses 2,531 acres of tidally flushed wetlands, riparian, and upland habitats extending immediately north of the U.S.-Mexico border in southern San Diego County. As the southernmost estuarine system on the West Coast, the reserve is one of the few remaining examples of relatively undisturbed, tidally flushed coastal wetlands in southern California. The estuary provides productive marsh habitat for invertebrates, fish, and birds including federal and state-listed endangered or threatened species, such as the light-footed clapper rail, California least tern, brown pelican, and peregrine falcon. An endangered plant, the salt marsh bird's beak, also flourishes in the area. (Contact NOAA/NOS PA at 301-713-3145 ext. 153.)

TIROS

NOAA satellites that continuously orbit the Earth from the North Pole to the South Pole; hence, polar-orbiting, at an average altitude of 525 statute miles or 845 kilometers. These satellites collect visible and infrared imagery and provide atmospheric-sounding data and meteorological data relay and collection. A primary mission of these satellites is to monitor the 70 percent of the globe covered by water and provide continuous data to the National Weather Service for use in numerical forecast modeling. (Contact NOAA/NESDIS PA at 301-457-5005 for information about satellite operations. Contact NOAA/NWS PA at 301-713-0622 for information on how data from the satellites are used in weather forecasting.)

TIROS Operational Vertical Sounder (TOVS)

The TIROS Operational Vertical Sounder (TOVS) is a three-part TIROS system designed to measure the temperature profile of the Earth's atmosphere from the surface to one millibar; water vapor content of the Earth's atmosphere; and total ozone content of the Earth's atmosphere. TOVS is

flown on NOAA polar-orbiting operational environmental satellites. (Contact NOAA/ NESDIS PA at 301-457-5005.)

Tornado

Violently rotating column of air extending from a thunderstorm to the ground. A tornado is capable of tremendous destruction, with wind speeds of 250 miles per hour or more.

Tornado Research

See Vortex.

Tornado Warning

A tornado is indicated by radar or sighted by storm spotters. A tornado warning is issued by the National Weather Service. The warning will include the tornado's location and what towns may be in its path. See also Tornado

Tornado Watch

Conditions are favorable for the development of tornadoes in and close to the watch area. Watches issued by the National Weather Service are usually in effect for several hours, with six hours being the most common. See also Tornado

Total Allowable Level of Foreign Fishing (TALFF)

The TALFF, if any, with respect to any fishery subject to the exclusive fishery management authority of the United States, is that portion of the optimum yield of such a fishery that will not be harvested by vessels of the United States, as determined by provisions of the Magnuson Fisheries Conservation and Management Act. (Contact NOAA/NMFS PA at 301-713-2370.)

Toxic Chemical Contaminants Program

The Toxics Program is designed to augment, integrate, and expand the efforts of the National Ocean Service's National Status and Trends Program and the National Marine Fisheries Service. Three major activities are being funded: (1) a national survey of toxic contaminant bioeffects; (2) bioeffects indicator development; and (3) bioeffects and bioaccumulation research. Some of the major waterbodies studied under the program have been Long Island Sound, Tampa Bay, Hudson-Raritan Estuary, Boston Harbor, Southern California Bight, coastal South Carolina, northwest Florida bays, and Biscayne Bay. (Contact NOAA/ NOS PA at 301-713-3066.)

Trap

A container made of netting or wire, which is used to catch fish or shellfish, such as lobster.

Trawl Net

A large-mouth funnel-shaped mesh net that is towed behind a fishing vessel so that the net travels on the ocean bottom (bottom trawl) or in the water column (midwater trawl).

Trawler

Any fishing vessel capable of towing a trawl net from the stern. Most are constructed with a stern ramp to deploy fishing gear. See also Boat, Other; Trawl Net

Trawling

A fishing method in which a funnel-shaped net (trawl) is towed behind a fishing vessel.

Trolling

Fishing technique in which long fishing lines are towed through the water.

Tropical Cyclone

A low-pressure weather system in which the central core is warmer than the surrounding atmosphere. Storms called "hurricanes" or "typhoons" elsewhere are called "tropical cyclones" in the Indian Ocean and around the Coral Sea off northeastern Australia. See also Hurricane

Tropical Cyclone Research

Tropical cyclones (a generic term for hurricanes and typhoons) are a major cause of death and destruction. Estimates of the costs of rebuilding from Hurricane Andrew in Florida, Louisiana, and the Bahamas, Typhoon Omar in Guam, and Hurricane Iniki in Hawaii in 1992 range from $20-billion to $30-billion. The strongest tropical cyclones can produce wind speeds

of 160 miles per hour. However, it is the torrential rainfall and storm surge that usually cause the most damage and loss of life. Tropical cyclone research by NOAA scientists has increased forecasters' ability to predict the track and intensity of tropical cyclones. NOAA estimates that improvements in these forecasts can save several billion dollars per decade in preventable destruction. A major goal of NOAA research scientists is to extend the accuracy of 48-hour forecasts towards the level of present 24-hour forecasts. (Contact NOAA/OAR PA at 301-713-2483.)

Tropical Depression

A tropical cyclone in which the maximum sustained surface wind is 38 miles per hour (33 knots) or less. See also **Tropical Cyclone**

Tropical Disturbance

A moving area of thunderstorms in the tropics that maintains its identity for 24 hours or more. A common phenomenon in the tropics. See also **Tropical Cyclone**

Tropical Ocean Global Atmosphere Program

A multinational data collection and analysis experiment in the Pacific Ocean that has provided the basis for understanding the dynamics of the El Niño/Southern Oscillation phenomenon. Contact NOAA/OGP at 301-427-2089 ext. 22.)

Tropical Prediction Center/National Hurricane Center (TPC/NHC)

Located in Miami, Fl., TPC/NHC is one of three national centers operated by the National Weather Service. TPC/NHC has public, marine and aviation forecast and warning responsibilities for the North Atlantic and Eastern North Pacific Ocean tropical and subtropical regions, the Caribbean Sea and the Gulf of Mexico and adjacent land areas, as well as for tropical and subtropical systems moving to higher latitudes. The TPC/NHC provides data assimilation, data analysis and interpretation over these same areas, primarily between the equator and 40 degrees North. TPC/NHC's responsibilities are both national and international in scope. By international agreement under the United Nations World Meteorological Organization, the TPC/NHC also acts as a Regional Center for Tropical Meteorology. In this capacity, analyses and forecast guidance products are provided on a routine basis to the international community of the Caribbean and Central and North America, as well as all U.S. interests in the region. (Contact TPC/NHC PA at 305-229-4404.) See also **National Centers for Environmental Prediction** (NCEP)

Tropical Storm

A tropical cyclone in which the maximum sustained surface wind ranges from 39-73 miles per hour (34-63 knots) inclusive. See also **Tropical Cyclone**

Tropical Storm Warning

A warning issued by the National Weather Service for tropical storm conditions, including sustained winds within the range of 39 to 73 miles per hour (34 to 63 knots) which are expected in a specified coastal area within 24 hours or less. See also **Tropical Storm, Tropical Storm Watch**

Tropical Storm Watch

A watch issued by the National Weather Service for a coastal area when there is the threat of tropical storm conditions within 36 hours. See also **Tropical Storm, Tropical Storm Warning**

Tropical Wave

A trough of low pressure in the trade-wind easterlies.

Troposphere

The lower atmosphere, to a height of between15 and 18 kilometers above Earth, where temperature generally decreases with altitude, clouds form, precipitation occurs and convection currents are active.

Tsunami

A tsunami is a series of waves generated by earthquakes and is more prevalent in the Pacific Ocean. This translates from the

Japanese as a "great harbor wave." (In Japanese "tsu" means harbor, and "nami" means great wave.) (Contact NOAA/NWS PA at 301-713-0622.) See also **Alaska Tsunami Warning Center, International Tsunami Warning Center, Pacific Tsunami Warning Center**

Tuna

Any of the following species: albacore, Atlantic bluefin tuna, Atlantic bonito, bigeye tuna, skipjack tuna and yellowfin tuna.

Turbidity

Haziness in air caused by the presence of particles and pollutants, or a similar cloud condition in water due to suspended silt or organic matter.

Turtle Excluder Devices (TEDs)

Sea Turtles are killed incidentally in various commercial fisheries. Turtle excluder devices (TEDs) have been developed for shrimp and fish trawls. TEDs enable turtles to escape the trawl net and prevent them from drowning. These devices reduce the turtle kill by shrimp trawls by 97 percent, and studies indicate that the use of TEDs minimally reduces shrimp catches. TED use is presently mandated for most of the Atlantic and Gulf of Mexico shrimp and summer flounder trawl fisheries. (Contact NOAA/NMFS PA at 301-713-2370.) See also **Sea Turtles**

Typhoon

The name given to a tropical cyclone in the western North Pacific, with maximum sustained winds of 74 miles per hour (64 knots) or more near its center. See also **Tropical Cyclone, Knot**

Typhoon Research

See **Tropical Cyclone Research**

u

Ultraviolet Index

Forecast of the ultraviolet intensity at the Earth's surface over the one-hour period around midday. Ultraviolet exposure levels are presented on a scale of 0 (minimal) to 10+ (very high). (Contact NOAA/NWS PA at 301-713-0622.) See also **Ultraviolet Radiation**

Ultraviolet Radiation

The energy range just beyond the violet end of the visible spectrum. Although ultraviolet radiation constitutes only about five percent of the total energy emitted from the sun, it is the major energy source for the stratosphere and mesosphere, playing a dominant role in both energy balance and chemical composition. Too much ultraviolet radiation can burn the skin, cause skin cancer and cataracts, and damage vegetation. (Contact NOAA/NWS PA at 301-713-0622.)

Underutilized

Characteristic of a stock when more fishing effort is required to achieve Long-term Potential Yield (LTPY). This situation is generally indicated when Recent Average Yield (RAY) is less than Current Potential Yield (CPY), and CPY is greater than LTPY, while stock level is above the reference level that, on average, produces LTPY. There may be exceptions. For example, RAY may be held below CPY and LTPY by management to compensate for uncertainty in population estimates. (Contact NOAA/NMFS PA at 301-713-2370.) See also **Long-Term Potential Yield, Current Potential Yield, Recent Average Yield**

United States/Japan Cooperative Program in Natural Resources

The United States/Japan Cooperative Program in Natural Resources was established in 1964 as a result of a recommendation by the bilateral Committee on Trade and Economic Affairs, headed by the U.S. Secretary of State and Japan's Foreign Minister. The objectives are to provide a continuing forum to promote the development and conservation of natural resources through cooperation in applied science and technology, improve the environment for present and future generations, and increase and enhance relations between Japan and the United States. (Contact NOAA/OAR PA at 301-713-2483.)

Urban and Small Stream Flood Advisory

Alerts the public to flooding which is generally only an inconvenience (not life-threatening) to those living in the affected area. Issued when heavy rain will cause flooding of streets and low-lying places in urban areas. Also used if small rural or

urban streams are expected to reach or exceed bankfull. Some damage to homes or roads could occur.

U.S. Department of Commerce

This cabinet-level agency has the mission of improving the economic opportunities of Americans. It focuses on three paths to enhance the country's trading position: the National Export Strategy; the dynamic development of civilian technology; and sustained economic growth.

The Office of the Secretary is the focal point for all Commerce Department components, which include the following: the International Trade Administration; Bureau of Export Administration; Economics and Statistics Administration; Bureau of the Census; Bureau of Economic Analysis; National Oceanic and Atmospheric Administration; Technology Administration; Office of Technology Policy; National Institute of Standards and Technology; National Technical Information Service; National Telecommunications and Information Administration; Patent and Trademark Office; Economic Development Administration; Minority Business Development Agency; U.S. Travel and Tourism Administration; Office of Business Liaison; and Office of Consumer Affairs. (Contact Department of Commerce Public Affairs at 202-482-5151.)

U.S. Global Ocean Observing System Office (GOOS)

The Global Ocean Observing System (GOOS) encompasses a wide array of national and international oceanographic programs designed to provide useful social and economic information for state and local application as well as to academic planners, decision-makers and researchers. It coordinates long-term, routine, globally relevant, scientifically-based and systematic ocean observations. Planning for GOOS takes place within five areas: Climate Monitoring, Assessment and Prediction; Monitoring and Assessment of Living Marine Resources; Monitoring of the Coastal Zone Environment and its Changes; Assessment and Prediction of the Health of the Ocean; and Marine Meteorological and Operational Oceanographic Services. (Contact NOAA/NOS PA at 301-713-3066.)

U.S. Satellite Search and Rescue Program

Within the National Environmental Satellite, Data, and Information Service, the Office of Satellite Data Processing and Distribution functions as the overall U.S. program manager for the Search and Rescue Satellite Aided Tracking (SARSAT) system and manages the U.S. Mission Control Center (MCC) in Suitland, Md.

The MCC receives and processes data acquired by the U.S. ground systems and international MCCs, and distributes distress alert and location information to the appropriate search and rescue authorities. OSDPD coordinates and implements U.S. activities in the international satellite-aided search and rescue program, COSPAS-SARSAT. (Contact NOAA/NESDIS PA at 301-457-5005.) See also COSPAS/SARSAT

U.S. Territorial Sea

A zone extending three nautical miles from shore for all states except for Texas and the Gulf Coast of Florida, where the seaward boundary is three marine leagues (nine nautical miles). (Contact NOAA/NMFS PA at 301-713-2370.)

U.S. Weather Research Program (USWRP)

The goal of the USWRP is to advance weather-observing capabilities and the fundamental understanding of weather processes and to use this understanding to improve numerical weather prediction and enhance weather services to the nation. This will produce benefits in four areas: reduced fatalities and injuries due to weather hazards; reduced property damage; improved efficiency and savings for industry, transportation and agriculture; and improved flow of more accurate weather forecasts to the public and to

public officials. (Contact NOAA/ERL PA at 303-497-6286.)

U.S.-Flag Vessel Landings

Landings by all U.S. fishing vessels regardless of where landed, as opposed to landings at ports in the 50 United States. Include landings at foreign ports, U.S. territories, and foreign vessels in the U.S. FCZ under joint venture agreements. U.S. law prohibits vessels constructed or registered in foreign countries to land fish catches at U.S. ports. (Contact NOAA/ NMFS PA at 301-713-2370.)

Use of Fishery Products

Estimated disappearance of the total supply of fishery products, both edible and nonedible, on a round-weight basis, without considering beginning or ending stocks, exports, military purchases, or shipments to U.S. territories.

V

Vertical Network Office

Maintains the National Vertical Control Network, a component of the National Geodetic Reference System crucial to the precise determination of heights needed by surveying and engineering activities. The office tests new leveling instrumentation and provides technical assistance in geodetic vertical surveys to other government agencies, academia and the public. It improves the network by taking into account crustal motion, gravity, earth and ocean tides, atmospheric refraction, magnetic error and other phenomena. (Contact NOAA/NOS PA at 301-713-3066.)

Vessel, Fishing

Any vessel engaged in fishing, processing, or transporting fish loaded on the high seas, or any vessel outfitted for such activities.

Visible and Infrared Spin Scan Radiometer (VISSR)

This instrument on the GOES-7 satellite provides the pictures of the clouds presented on television weather programs. Several universities copy VISSR data as part of their atmospheric and agricultural research programs. Private firms use VISSR direct readout data to provide special weather services to their clients. Commercial VISSR stations can cost about $500,000, while university and amateur systems copy these signals on equipment costing far less. (Contact NOAA/NESDIS PA at 301-457-5005.)

Visual Aeronautical Charts Program

Constructs and maintains Visual Navigation Charts, Aircraft Position Charts and other special charts. The program furnishes elevations, geographic positions and other data on airports to the Federal Aviation Administration and develops methods and graphics for improved portrayals of terrain. (Contact NOAA/NOS PA at 301-713-3066.)

Volunteer Observing Ship Program

A global program run by NOAA's National Ocean Service in which approximately 120 vessels collect data for a number of worldwide projects, including WOCE, or the World Ocean Circulation Experiment, and TOGA, or the Tropical Ocean Global Atmosphere program, which has yielded exciting information about the nature of the El Niño phenomenon. (Contact NOAA/NOS PA at 301-713-3066.)

Volunteer Observing Ship Program

A program designed to make surface and subsurface marine observations using the Shipboard Environmental [Data] Acquisition System (SEAS) to collect surface

atmospheric observations, expendable bathythermograph (XBT) observations, conductivity/temperature/depth (CTD) profiles, and enroute observations of surface temperature and salinity, which are relayed via satellite to NOAA. At present, there are about 120 research and commercial vessels in the program that support data collection needs of the Tropical Ocean Global Atmosphere program (TOGA) and the World Ocean Circulation Experiment (WOCE). (Contact NOAA/NOS PA at 301-713-3066.)

Vortex

The Verification of the Rotation and Origins of Rotation in Tornadoes Experiment, based at the NOAA National Severe Storms Laboratory in Norman, Okla., and jointly sponsored by NOAA and the National Science Foundation, is the largest tornado field experiment ever staged. The experiment conducted its first field season in the southern and central plains states from April 1 to June 15, 1994, and continues over the same time period and area in 1995.

The object of Vortex is to intercept tornadic thunderstorms with coordinated teams of scientists in specially equipped chase vehicles to study the formation and life cycles of tornadoes. The information will improve severe storm forecasts and warnings.

Vortex involves the collaboration of approximately 20 scientists and 100 graduate and undergraduate students from NSSL, eight universities, the National Science Foundation, the National Center for Atmospheric Research, and Environment Canada.

Throughout the study period, Vortex leaders use research aircraft flights, special research instruments, and the entire suite of National Weather Service sensors to monitor weather conditions and deploy a small armada of 18-20 cars and vans with meteorological instruments and two-way communications to intercept and study any tornadic outbreaks. A chase may range over hundreds of miles and cover part of a day to several consecutive days. See also National Severe Storms Laboratory. (Contact NOAA/OAR PA at 301-713-2483.)

W

WAFS

See World Area Forecast System

Wallops, Va.

The NOAA Command and Data Acquisition Station at Wallops, Va., receives data from NOAA's GOES satellites. As the data are received, they are electronically calibrated, annotated, gridded, and reformatted. The data are transmitted back to the spacecraft, then transmitted to NOAA's National Environmental Satellite, Data, and Information Service in Suitland, Md. The data are then relayed to the Central Data Distribution Facility in the NOAA Science Center, Camp Springs, Md. (Contact NOAA/NESDIS PA at 301-457-5005.) See also **National Environmental Satellite, Data, and Information Service**

Waquoit Bay National Estuarine Research Reserve, Massachusetts

This reserve includes areas of intense, moderate and low human impact in the towns of Falmouth and Mashpee in Barnstable County. The reserve's boundary encompasses 2,250 acres spanning the open water and marshes of Waquoit Bay, adjacent upland fields and forest, and public recreational areas of South Cape Beach State Park and Washburn Island. The reserve is a home for the piping plover, which is federally listed as a threatened species, the endangered roseate tern, and other rare species. (Contact NOAA/NOS PA at 301-713-3145 ext. 153.)

Warnings

Issued by the National Weather Service to warn the public that a hazardous weather element is imminent or has a very high probability of occurrence, and that appropriate preparations should be taken.

Watches

Issued by the National Weather Service to alert the public to the possibility of severe weather or some other hazardous weather element. Watches are intended to provide enough lead time so that individuals who need to implement their plans can do so.

Water River Forecast System (WARFS)

A prototype river forecasting system that will couple weather monitoring and forecast capabilities with the most advanced river forecast models. WARFS can quantify the chances that flood and droughts will occur and predict how long they will continue once they begin. (Contact NOAA/NWS PA at 301-713-0622.)

Watersheds

The land area through which water drains to reach a stream; on a larger scale, referred to as "river basins."

Waterspout

A tornado that occurs over water.

Weather

The individual and combined atmospheric phenomena used to describe the local atmospheric conditions at the time of observation at any given time and place.

Weather Facsimile (WEFAX)

Weather Facsimile (WEFAX) dissemination is the retransmission of low-resolution satellite imagery and meteorological data from GOES satellites to a large number of direct readout stations. Automatic Picture Transmission provides four-kilometer resolution imagery from the NOAA polar orbiters. WEFAX enables the greatest possible number of individual users to have easy, cost-effective access to satellite imagery or other data relayed through personal computers. WEFAX provides imagery from the NOAA polar orbiters, NOAA GOES, and the European Meteosat satellites. (Contact NOAA/NESDIS PA at 301-457-5005.)

Weather Forecast Office (WFO)

The National Weather Service's (NWS) present field organization is about 25 years old. Its backbone as a weather and flood warning service is the national network of Weather Service Forecast Offices (WSFOs) that have the primary forecasting capability. They are linked to the smaller Weather Service Offices (WSOs), some in operation only part-time. Over the next 10 years, these offices will be phased into a streamlined network of modernized high-tech Weather Forecast Offices (WFOs) strategically located across the United States. The transition will be gradual and orderly, taking place during the mid- and late-1990s. Information on hurricanes, severe storms and flooding will flow continuously to the WFOs. They will receive guidance on changing large-scale weather patterns from the National Centers for Environmental Prediction (NCEP). A new generation of super computers will be installed at NCEP to process the vast amounts of new observations available to forecasters in the late 1990s. WFOs will also receive guidance from the NWS' National Centers for Environmental Prediction. Thirteen RFCs will continue to operate in the modernized National Weather Service, each collocated with a WFO. (Contact NOAA/NWS PA at 301-713-0622.) See also **National Weather Service, Weather Service Office, Weather Service Forecast Office, Regional Headquarters**

Weather Observations

See **Automated Surface Observing System**

Weather-Related Events

Weather-related events are those incidents caused by phenomena for which the National Weather Service has warning responsibility. Weather-related event classifications vary based on the magnitude and impact of the event. They may be defined as catastrophic, major or significant. (Contact NOAA/NWS PA at 301-713-0622.)

Weather Service Contract Meteorological Observatory (WSCMO)

A Weather Service Meteorological Observatory staffed by individuals contracted by the National Weather Service (NWS), rather than by NWS employees. (Contact NOAA/NWS PA at 301-713-0622.) See also **Weather Service Meteorological Observatories**

Weather Service Forecast Office (WSFO)

The main field forecast offices of the National Weather Service are 52 Weather Service Forecast Offices (WSFOs) whose responsibilities are organized on a geographical basis; in many cases, there is one or more WSFO per state. Each WSFO is responsible for meteorological and hydrological warnings, forecasts, and services for its state, part of a state, and/or hydrologic

service area. The WSFOs issue zone forecasts daily for a period out to 48 hours, as well as a generalized statewide forecast at least twice daily. Additionally, a more general extended five-day forecast is issued daily. Area-or state-wide warnings are issued to the public in critical weather situations, as are various special forecasts and warnings. In addition to the WSFOs, there are smaller offices, including Weather Service Offices (WSOs) and Weather Service Meteorological Observatories, that take manual weather observations. Some WSOs issue local area forecasts and warnings based on the products of the WSFOs. Hydrologic forecasts and warnings prepared by the River Forecast Centers are disseminated by the WSFOs and selected WSOs. The work of these operational field facilities is supported by the National Centers for Environmental Prediction. (Contact NOAA/NWS PA at 301-713-0622.) See also **National Centers for Environmental Prediction, River Forecast Center, Weather Service Office, Weather Forecast Office**

Weather Service Meteorological Observatories (WSMO)

The Weather Service Meteorological Observatories are primarily data acquisition offices (surface observations, upper-air observations and/or radar). The observations from the WSMO are sent to the National Centers for Environmental Prediction and other National Weather Service offices as part of the database for forecasts and warnings. WSMOs also alert and inform other offices of imminent severe storms and potentially severe weather. WSMOs provide little or no direct public weather service. (Contact NOAA/NWS PA at 301-713-0622.) See also **Weather Service Contract Meteorological Observatory**

Weather Service Modernization Act

This legislation, Title VII of the NOAA Authorization Act, Pub.L. 102-567 (15 U.S.C. 313 note), established a process to guide the transition of the National Weather Service (NWS) from its current structure of approximately 250 field offices with varying responsibilities to approximately 117 offices with uniform responsibilities using modern radars, automated surface observing systems, and communications and processing equipment. It was enacted on October 29, 1992.

The Act directs the NWS to contract with the National Research Council to assess the criteria for commissioning new observations systems, decommissioning old radars, evaluating staffing levels, and certifying that automating, consolidating, relocating, or closing a field office will not result in a degradation of services.

The Act establishes the broad requirements of these certifications as well as a number of consultation requirements with the Federal Aviation Administration and with a Modernization Transition Committee, created by the Act to advise on the modernization process. (Contact NOAA/NWS PA at 301-713-0622.) See also **Modernization and Associated Restructuring, Public Law 102-567, Doppler Weather Surveillance Radar, National Research Council**

Weather Service Office (WSO)

A Weather Service Office (WSO) is an office that works under the general guidance of the Weather Service Forecast Office (WSFO). WSOs have been delegated a subset of the WSFOs' warning responsibilities, including data gathering, public service, and adaptive forecast responsibilities.

WSOs meet local requirements but do not extend beyond the period covered by the forecasts. These offices also have important responsibilities for issuing and distributing local warnings of severe weather.

Some WSOs also have special service forecast duties, primarily hydrological responsibilities. (Contact NOAA/NWS PA at 301-713-0622.) See also **County**

Warning Area, Weather Forecast Office, Weather Service Forecast Office

Weather Surveillance Radar 88D (WSR-88D)

See Doppler Weather Surveillance Radar

Weeks Bay National Estuarine Research Reserve, Alabama

Located along the eastern shore of Mobile Bay in Baldwin County, Ala., the reserve encompasses over 3,000 acres in and around Weeks Bay. This small, shallow estuary is surrounded by forested wetlands. The reserve serves as a nursery for shrimp and other commercially important fisheries. (Contact NOAA/NOS PA at 301-713-3145 ext. 153.)

WEFAX

See Weather Facsimile

Wells National Estuarine Research Reserve, Maine

This reserve is located in the town of Wells in York County, on the southern coast of Maine. The reserve's diverse natural features create an ecosystem unique to the region, with undeveloped marshes and transitional upland fields and forests along two contrasting watersheds, the Little River estuary and the Webhannet River estuary. Two endangered species, the piping plover and least tern, nest within the reserve, and seven plant species recently expanded the list of state-protected species that thrive at the reserve, bringing the total to ten. (Contact NOAA/NOS PA at 301-713-3145 ext. 153.)

Western Pacific Regional Fishery Management Council

One of eight regional councils established by the Magnuson Fishery Conservation and Management Act. The council acts a steward of the living marine resources off the coasts of Hawaii, American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands. (Contact NOAA/NMFS PA at 301-713-2370.) See also **Regional Fishery Management Councils**

Western Region Headquarters (WRH)

The supervisory office for the eight-state western region of the National Weather Service. The WRH provides supervisory direction and technical, program and equipment support, and serves as coordinator for National Weather Service policy, to field offices, including: Weather Service Office/Fire Weather; Weather Service Office/Agriculture; Center Weather Service Units located at the Federal Aviation Administration's Air Route Traffic Control Center; Weather Service Meteorological Observatories; Weather Service Port Meteorological Office; and River Forecast Centers. The WRH serves the states of Arizona, California, Idaho, Montana, Nevada, Oregon, Utah and Washington. (Contact NWS Western Region PA, 801-524-5692 ext. 226.)

Wetlands

Transitional areas between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is covered by shallow water. (Contact NOAA/NOS PA at 301-713-3066.)

Wholesale Fish And Shellfish Prices

Those prices received at principal fishery markets by primary wholesalers (processors, importers, and brokers) for customary quantities, free on board (f.o.b.) warehouse.

Wind Advisory

Sustained winds of 30 miles per hour or greater are expected to last for one hour or longer, or gusts to 45 miles per hour or higher are expected for any duration.

Wind Chill

Based on the rate of heat loss from exposed skin caused by combined effects of wind and cold. As the wind increases, heat is carried away from the body at an accelerated rate, driving down the body temperature.

Wind Chill Advisory

An advisory issued by the National Weather Service informing the public that wind chills will be 35 degrees Fahrenheit below zero or colder for a sustained period of

time. Winds are expected to be at least 10 miles per hour. See also **Wind Chill, Wind Chill Warning**

Wind Chill Warning

An advisory issued by the National Weather Service informing the public that wind chills are expected to reach 50 degrees Fahrenheit below zero or colder and wind speeds are 10 miles per hour or greater. See also **Wind Chill, Wind Chill Advisory**

Wind Profiler

An upward looking Doppler radar that scans the atmosphere from about 1,500 feet to 52,000 feet above the ground, measuring wind speed and direction and reporting at every six minutes. These data are used daily in forecasts and models at the National Centers for Environmental Prediction. (Contact NOAA/NWS PA at 301-713-0622 or NOAA/ERL PA at 303-497-6286.) See also **Doppler Weather Surveillance Radar**

Wind Profiler Demonstration Network, NOAA

A network of 31 wind profilers located mostly throughout the central United States. Wind profilers are ground-based, remote sensing Doppler radars that are used to observe winds aloft. The network is an important element in understanding and forecasting weather events such as blizzards, tornadoes, and flash floods. (Contact NOAA/ERL PA at 303-497-6286.) See also **Wind Profiler**

Wind Shift

A change in wind direction of 45 degrees or more, with sustained winds of 10 knots or more.

Wind Speed

The rate, in knots, at which wind passes a given point.

Winter Storm

A weather event that involves one or more elements of general winter weather. Elements may include heavy snow or ice accumulations, blizzards, sleet, strong winds, extreme cold, etc. Parameters for defining a winter storm vary greatly in different regions of the country, including higher thresholds for regions in northern climes that are known to experience frequent incidents of winter precipitation and extremes of low temperatures to lower thresholds in southern regions not accustomed to cold temperatures and winter-type precipitation events such as sleet, freezing rain and snow. See also **Blizzard, Sleet, Snow**

Winter Storm Warning

Issued by the National Weather Service when heavy snow and some windiness is imminent or very likely, perhaps in combination with sleet and/or freezing rain/drizzle. These warnings are usually issued for up to a 12-hour duration, but can be extended out to 24 hours. See also **Winter Storm, Winter Storm Watch**

Winter Storm Watch

Issued by the National Weather Service when conditions are favorable for the development of hazardous weather elements such as heavy snow and/or blizzard conditions or significant accumulations of freezing rain or sleet. These conditions may occur singly, or in combination with others. A watch is usually issued 24 to 48 hours in advance of the event. See also **Winter Storm, Winter Storm Warning**

Winter Weather Advisory

Issued by the National Weather Service when a mixture of precipitation is expected, such as snow, sleet and freezing rain or drizzle.

World Area Forecast System

WAFS is designed to provide broadcasts of weather data needed by pilots around the world using satellite communications technology. High-quality global upper wind and temperature data and significant weather forecasts for pilots to use in pre-flight operational planning and associated flight documentation are broadcast on the WAFS system. WAFS is a joint project with the World Meteorological Organization and the International Civil Aviation

Organization. WAFS broadcasts began in April 1995 and reach all countries in the Americas. (Contact NOAA/NWS PA at 301-713-0622.) See also **Aviation Weather Center**

World Meteorological Organization (WMO)

The WMO is a specialized agency of the United Nations, headquartered in Geneva, Switzerland. The purposes of the WMO are:

(1) to facilitate world-wide cooperation in the establishment of networks of meteorological and hydrological observation stations;

(2) to promote the standardization of meteorological information;

(3) to promote the establishment and maintenance of systems for the rapid exchange of meteorological information;

(4) to further the application of meteorology to aviation, shipping, water problems, agriculture and other human activities; and

(5) to encourage research and training in meteorology.

World Ocean Circulation Experiment (WOCE)

The ocean plays a central role in moderating the Earth's climate. Knowledge of ocean circulation and its variation is essential for understanding and predicting long-term climate changes. WOCE is a cooperative scientific effort undertaken by more than 30 nations. Its goal is to understand the general circulation of the global ocean well enough to be able to predict its evolution in relation to long-term changes in the atmosphere. NOAA is one of the primary contributors to this program. (Contact NOAA/NOS PA at 301-713-3066.)

WSR-88D Operational Support Facility (OSF)

Located in Norman, Okla. OSF coordinates operating policies for the Weather Surveillance Radar (Model 1988) systems and provides centralized management and control of support to fielded equipment operated by the National Weather Service, the U.S. Air Force, the U.S. Navy, the U.S. Army and the Federal Aviation Administration.

The OSF is responsible for the resolution of technical and operational anomalies and implements hardware, software and algorithm improvements necessary to meet mission requirements for system performance and availability. It identifies technical requirements responsive to mission needs; evaluates, develops, tests and implements solutions to requests for change; maintains the WSR-88D baseline; and ensures system integrity.

The OSF coordinates support requirements for fielded systems; plans and manages near-term technical transfers activities and long-term system improvements work; and provides WSR-88D operator training through formal courses and distance learning media. (Contact NOAA/NWS PA at 301-713-0622.) See also **Doppler Weather Surveillance Radar**

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Zebra Mussel Research

The zebra mussel *(Dreissena polymorpha)* is a prolific, marble-sized shellfish that is causing barnacle-like fouling of municipal and industrial water intake pipes, ship hulls, and fishing nets throughout the Great Lakes region and in adjacent freshwater systems. Native to the Black, Caspian, and Aral Seas, zebra mussels are believed to have been introduced to U.S. waters in bilge discharges from ships originating in those waters in 1986. They were first discovered in Lake St. Clair in June 1988. NOAA zebra mussel research is carried out by the Great Lakes Environmental Research Laboratory and the national Sea Grant College Program. Zebra mussels are also collected and analyzed for concentration of trace elements and other chlorinated pesticides as part of NOAA's Mussel Watch Project. (Contact NOAA/OAR PA at 301-713-2483 and NOAA/NOS PA at 301-713-3066.)

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