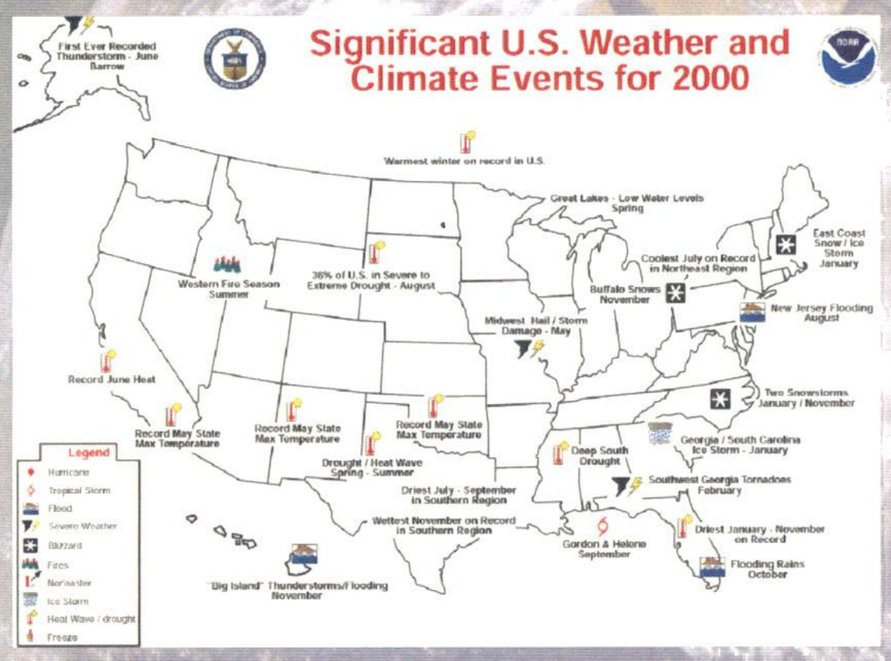
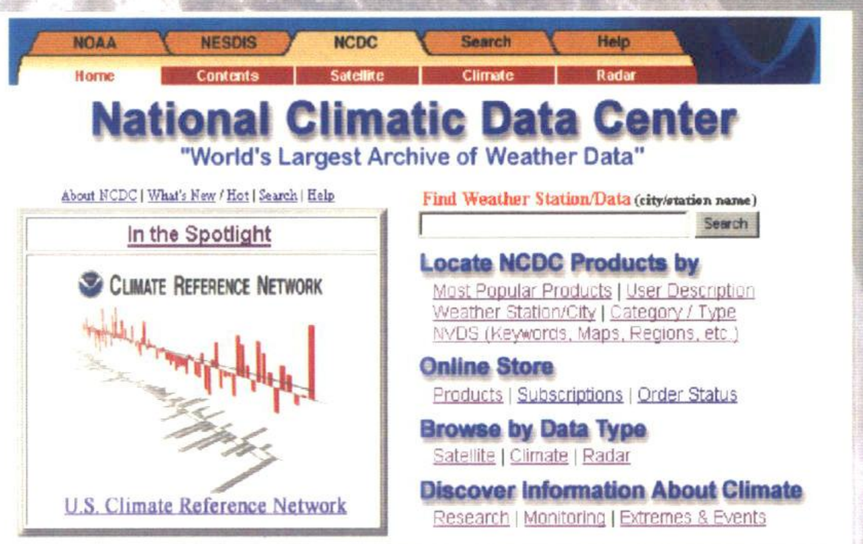
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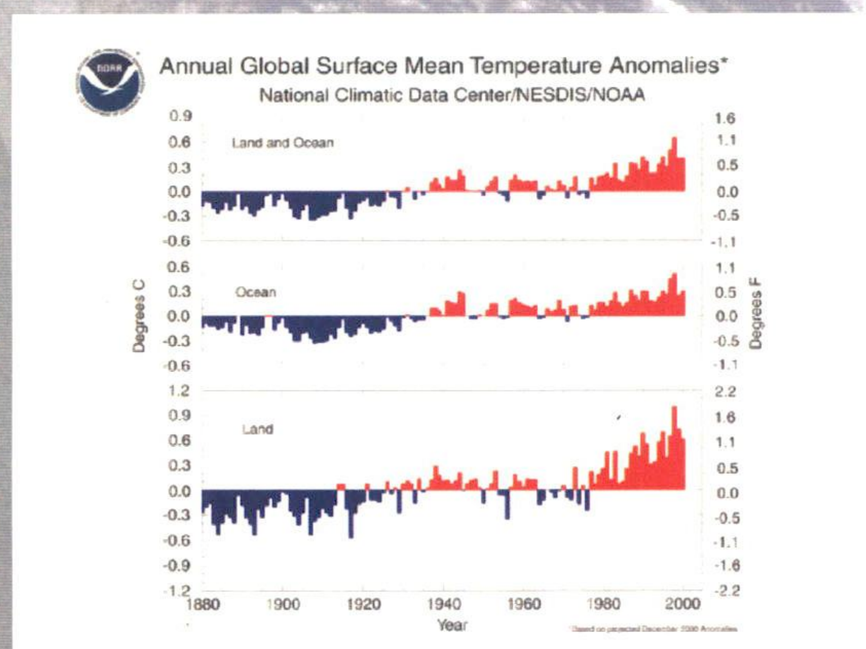
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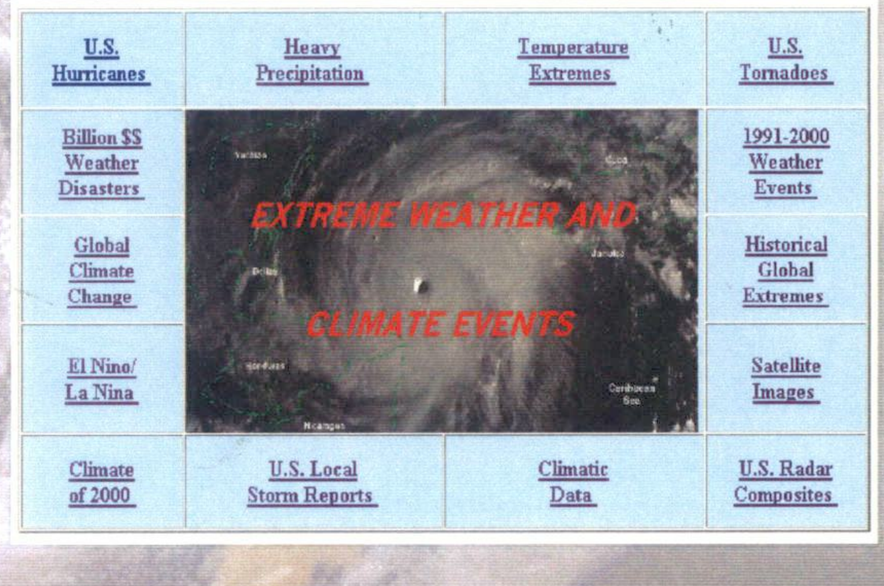
National Climatic Data Center

Products and Services Guide









NCDC Home Page: www.ncdc.noaa.gov

A National Resource for Climate Information

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PRODUCTS AND SERVICES GUIDE



NATIONAL CLIMATIC DATA CENTER

ASHEVILLE, NC

January 2001

Neal Lott
Tom Ross
Axel Graumann

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National Oceanic &
Atmospheric Administration
U.S. Dept. of Commerce

See http://www.ncdc.noaa.gov/ol/climate/climateproducts.html for a digital copy of this guide.

A message from the Director, National Climatic Data Center

The National Climatic Data Center offers a wide range of products and services. Our users range from large engineering firms designing the latest in safe energy efficient structures, to the attorney documenting a weather event, to the individual planning for a retirement move.

Services offered include data resource consultations, subscription items and publications, copies of original records, certifications, generation of specialized climate studies, and a host of other climate-related activities. Services are delivered on a variety of media including on-line access, CD-ROMs, magnetic tape, floppy disks, computer tabulations, maps, and publications.

Tom Karl
Director

About the National Climatic Data Center

The National Oceanic and Atmospheric Administration (NOAA) Data Centers (of which NCDC is the largest) are world-class centers that provide long-term preservation, management, and ready accessibility to environmental data. The combined archive includes records taken even before Ben Franklin's weather observations and continues with the latest real-time satellite imagery. The Centers are part of the National Environmental Satellite, Data and Information Service (NESDIS). The NCDC is located in Asheville, NC .

NCDC Mission Statement

NCDC's mission is to manage the Nation's resource of global climatological in situ and remotely sensed data and information to promote global environmental stewardship; to describe, monitor and assess the climate; and to support efforts to predict changes in the Earth's environment. This effort requires the acquisition, quality control, processing, summarization, dissemination, and preservation of a vast array of climatological data generated by the national and international meteorological services.

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WORLD WIDE WEB SERVICE

ADDRESS: http://www.ncdc.noaa.gov

The National Climatic Data Center (NCDC) maintains an Internet World Wide Web (WWW) homepage service. This service is accessible through numerous Internet 'browsers,' such as Netscape or Internet Explorer. Some of the datasets and products available via WWW are highlighted in the following pages, with at least the first page of the web system shown. Our WWW service is frequently updated, so we encourage you to check our homepage for the latest updates, and only use this Guide as an overview of some of our online products and services.

Our web system includes access to U.S. and global climatic data, satellite data, radar images, inventories of datasets available off-line, publications, climate monitoring reports, special reports on extreme weather events, and an on-line ordering system. Approximately 350 gigabytes of data and information are downloaded each month from this system. If you encounter slow response from the system during peak hours (typically late morning through afternoon), we suggest you try again during other times of day (or night). We appreciate your usage and suggestions!

Following is an outline of our current online datasets and products. For a link to this list and to each of the items listed, see http://www.ncdc.noaa.gov/ol/climate/climatedata.html. Our most popular products are highlighted at http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwAW~MP. For a quick-review matrix of datasets and products, see http://www.ncdc.noaa.gov/ol/climate/datasel.html. And, for a station locator, go to http://www.ncdc.noaa.gov/ol/climate/stationlocator.html.

Climatology, Climate Monitoring, & Extreme Events

Extreme Weather and Climate Events System
(Maps, tables, reports...US/global historical extremes, severe weather, recent events, climate monitoring, etc)
U.S. Climatological Averages and Normals
(Long-term monthly averages/normals for over 270 U.S. cities)
U.S. Storm Events Database
(1950 - present, local storm reports, damage reports, etc from various sources)

Climatic Summaries in Published Form:
Annual Climatological Summaries (Monthly/Annual Summaries for ~ 8000 U.S. Locations)

Climatological Data (Daily/Monthly Data for ~ 8000 U.S. Locations)
Climate Variations Bulletin (Monthly Reports of U.S. Climate)
Climates of the World (Regional Narratives and Climatic Tables by City)
Climatography of the U.S. (Maps of Temperature, Precipitation, Degree Days)
Climatography of the U.S. - Monthly Normals (1961-1990)
Freeze/Frost data for the U.S. (PDF format)
Heating and Cooling Degree Days (Monthly State, Regional, and National Degree Days)
Hourly Precipitation Data (Hourly Precip Data for over 2500 U.S. Locations)
Local Climatological Data (Hourly/Daily Data for nearly 300 U.S. Cities)
Monthly Climatic Data for the World (Selected Worldwide Cities' Climate Summaries)
Storm Data Publication (Monthly Reports of Damaging Weather)
Wind Climatology (PDF format) (Wind Climatology for selected U.S. Cities)

Surface Data: Graphs & Maps

Climate Visualization (CLIMVIS)
Graphics/Selection of global station data--includes daily values for U.S. and global stations, and monthly data for global stations and U.S. climate divisions.
Gridded Climate and Satellite Data
Graphics / Selection of gridded climate and satellite data (modeled).

Surface Data: Hourly (Temperature, Precipitation, Winds, Pressure, Etc)

Data Files and Printable Forms:
- U.S.--Select by Station (Unedited Local Climatological Data)
(1996 - present, over 300 stations, before final quality control, all elements *)
- U.S.--Select by Station (Edited Local Climatological Data)
(1996 - present, over 300 stations, after final quality control, all elements *)
- U.S.--Select by Station (Unedited Surface Weather Obs, 10A/B)
(1996 - present, over 300 stations, before final quality control, all elements *)

Data Files:
- U.S. Hourly Precipitation--Select by Station
(Full period of record, 1948 - present, over 6000 stations)
- U.S. 15-Minute Precipitation--Select by Station
(Full period of record, 1971 - present, over 3400 stations)
- Precipitation for Selected National Weather Service Sites
(1995 - March 1999, ~ 75 stations)

Surface Data: Daily (Temperature, Precipitation, Winds, Pressure, Snow, Etc)

Data Files and Graphics:
- Global and U.S.--Select by Station, or All Stations by Month
  (1994 - present, over 8000 worldwide stations with over 1000 in U.S., all elements*)
- U.S.--Select by Station, or By Region (Contour Map)
  (1948 - 1998, over 500 stations, all elements *)

Data Files and Printable Forms:
- U.S. High Resolution--Select by Station (Cooperative, NWS)
  (1996 - present, over 8000 stations, temperature and precipitation)
- U.S.--Select by Station (Unedited Local Climatological Data)
  (1996 - present, over 300 stations, before final quality control, all elements *)
- U.S.--Select by Station (Edited Local Climatological Data)
  (1996 - present, over 300 stations, after final quality control, all elements *)

Data Files:
- U.S. High Resolution--Select by Station (Cooperative, NWS)
  (Full period of record, 1948 - present, over 18000 stations, all elements *)
- World War II Era
  (1940 - 1945, 162 stations, all elements *)
- Daily U.S. Historical Climate Network
  (1901 - 1997, 138 selected long-term stations, temperature and precipitation)
- Global Student Network
  ("GLOBE", 1995 - present, temperature and precipitation)

Surface Data: Monthly (Temperature, Precipitation, Pressure, Etc)

Data Files and Graphics:
- Global Data--Select by Station, or All Stations
  ("GHCN", 1800 - 1996, over 7000 stations, temperature/precipitation/pressure)
- U.S. National/State/Divisional Data--Select by State/Division, or Complete Datasets, or Plot (Line Graph) Divisional Averages
  (1895 - present, national/state/divisional averages by month, temperature & precipitation)

Data Files and Printable Forms:
- U.S. Data--Select by Station (Unedited Local Climatological Data)
  (1996 - present, over 300 stations, before final quality control, all elements *)
- U.S. Data--Select by Station (Edited Local Climatological Data)
  (1996 - present, over 300 stations, after final quality control, all elements *)
- Annual Climate Summaries--Select by Station (Cooperative Network)
  (1996 - present, over 8000 stations, temperature and precipitation)

Data Files:
- U.S. High Resolution--Select by Station (Cooperative, NWS)
  (Full period of record, 1948 - present, over 18000 stations, all elements *)
- Global Data--Select by Station
  (1986 - 1998, over 3000 stations, all elements *)
- U.S. Precipitation Data by State
  (1948 - 1997, over 8000 active stations, cooperative network + NWS sites)
- U.S. Historical Climate Network Data
  ("USHCN", 1880 - 1997, over 1000 long-term stations, temperature and precipitation)

Surface Data: Modeled

Data Files and Graphics:
- Global Surface Temperature Anomalies (Modeled)
  (1992 - present, monthly temperature)
- Gridded Climate and Satellite Data (Modeled)
  (1860 - 1996, monthly temperature and precipitation)

Data Files:
- Global Climate Model--100 Year Run, or 1000 Year Run
  (Temperature and precipitation models based on CO2 estimates)

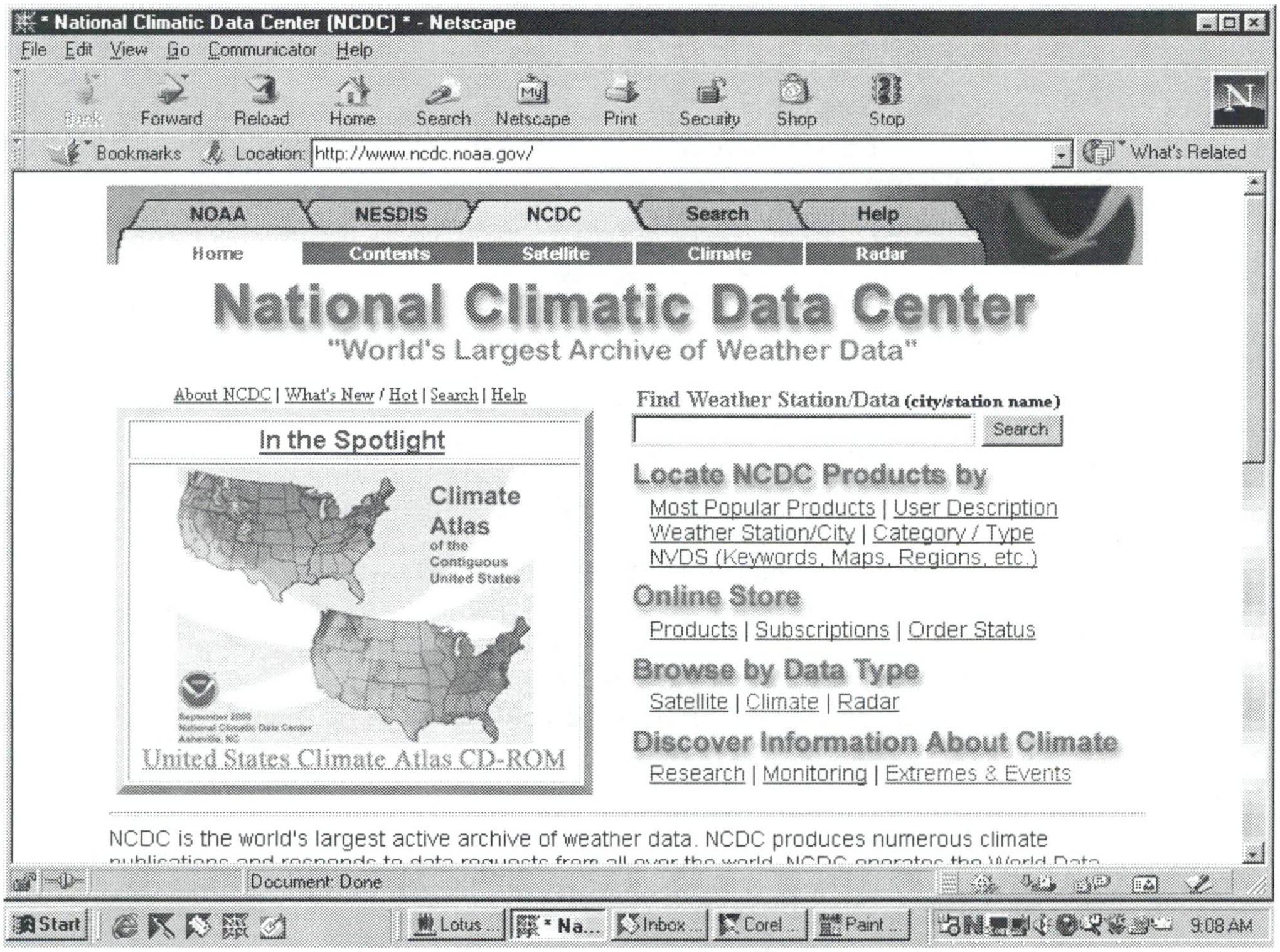
Marine Data

Data Files and Graphics:
- Global Buoy Data--Select by Buoy
  (1994 - present, click on ocean basin for station list, all elements *)

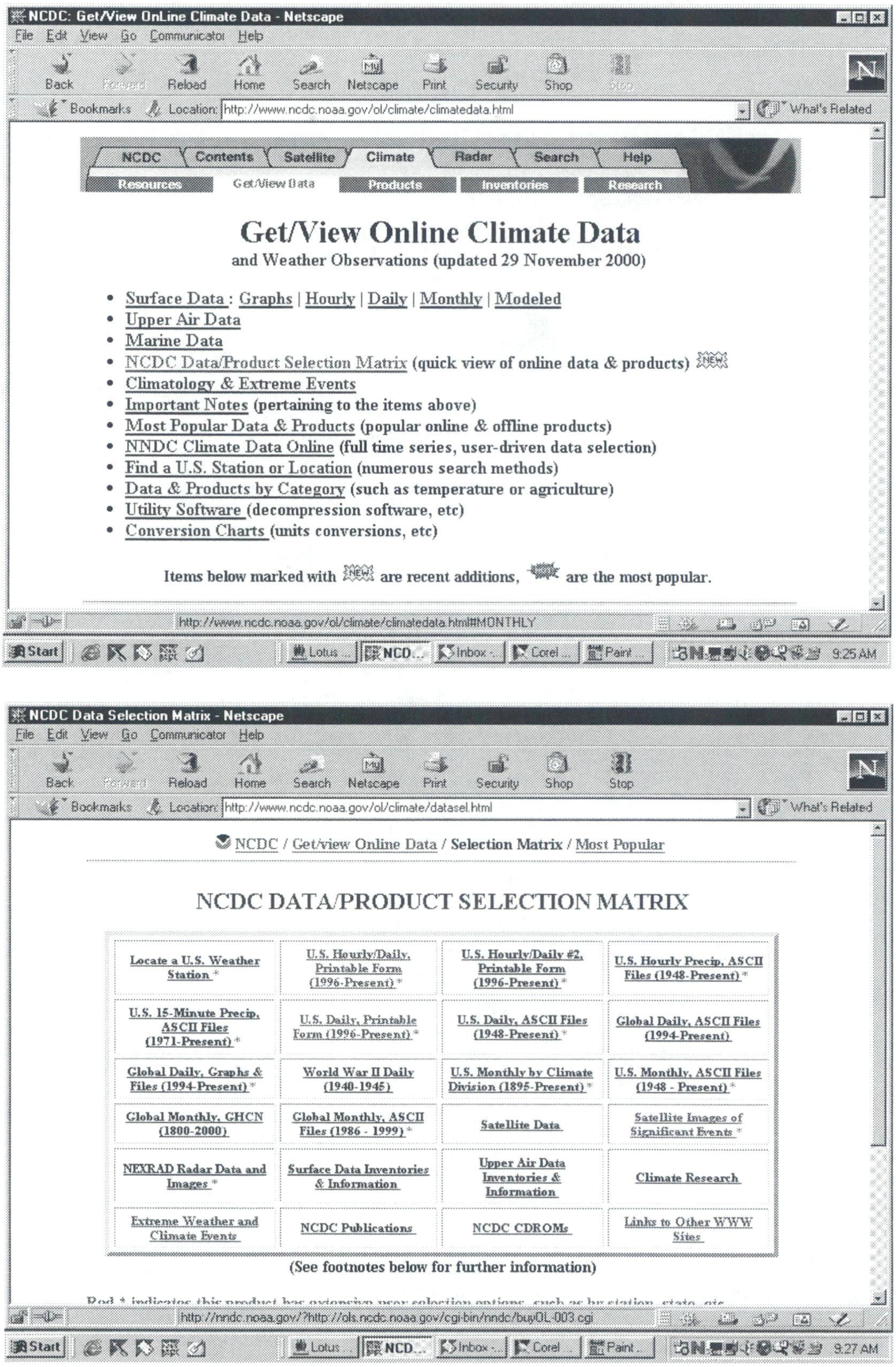
Data Files:
- U.S. Coastal Subset of Global Marine Dataset
  ("COADS", 1980 - 1992, all elements *)

* - "all elements" - Indicates all available elements as reported by each station, such as winds, temperature, dew point, visibility, pressure, weather conditions, precipitation amount, snow depth, etc.

NCDC HOMEPAGE



ONLINE DATA AND PRODUCT ACCESS



NCDC: Most Popular Products, Most Popular Products - Netscape

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Bookmarks Location: http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwAW~MP What's Related

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- Publications
- Digital ASCII Files



- Downloadable NOW
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Notes: See Icon Legend for description of icons. Some products and samples require Adobe Acrobat Reader

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Start Lotus... NCD... Inbox... Corel... Paint... 9:28 AM

NCDC: Locate Weather Observation Station Record - Netscape

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Bookmarks Location: http://www.ncdc.noaa.gov/ol/climate/stationlocator.html What's Related

NCDC / Climate-Radar Data Inventories / Locate Station / Search / Help



WebCliServ Version 2.1

Locate Weather Observation Station Record

*U.S. Controlled Stations Only At This Time **

Locate Station by:

- Latitude/Longitude
- State/Division/County/City *
- List Radar Stations by Name / by Alias
- **Search By:** *Select the field you wish to search*

(•) **Station Name*/City*** *(city not identified in some records)*
( ) **Zip Code***
( ) **State*** *(use two character abbreviation)*
( ) **County*** *(county not identified in some records)*
( ) **WBAN #***
( ) **Call Sign***
( ) **Cooperative Station ID#***
( ) **World Meteorological Organization ID#***

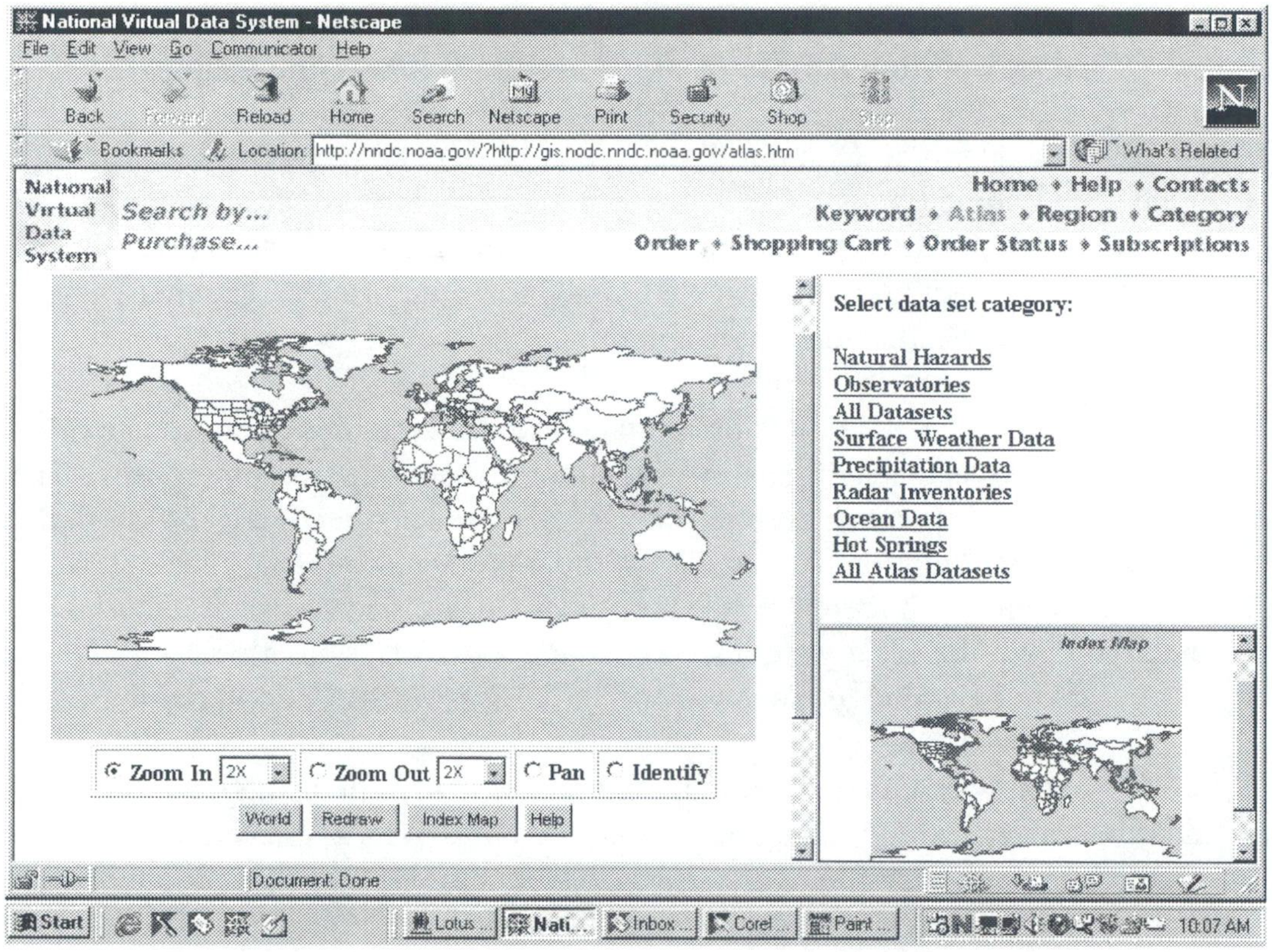
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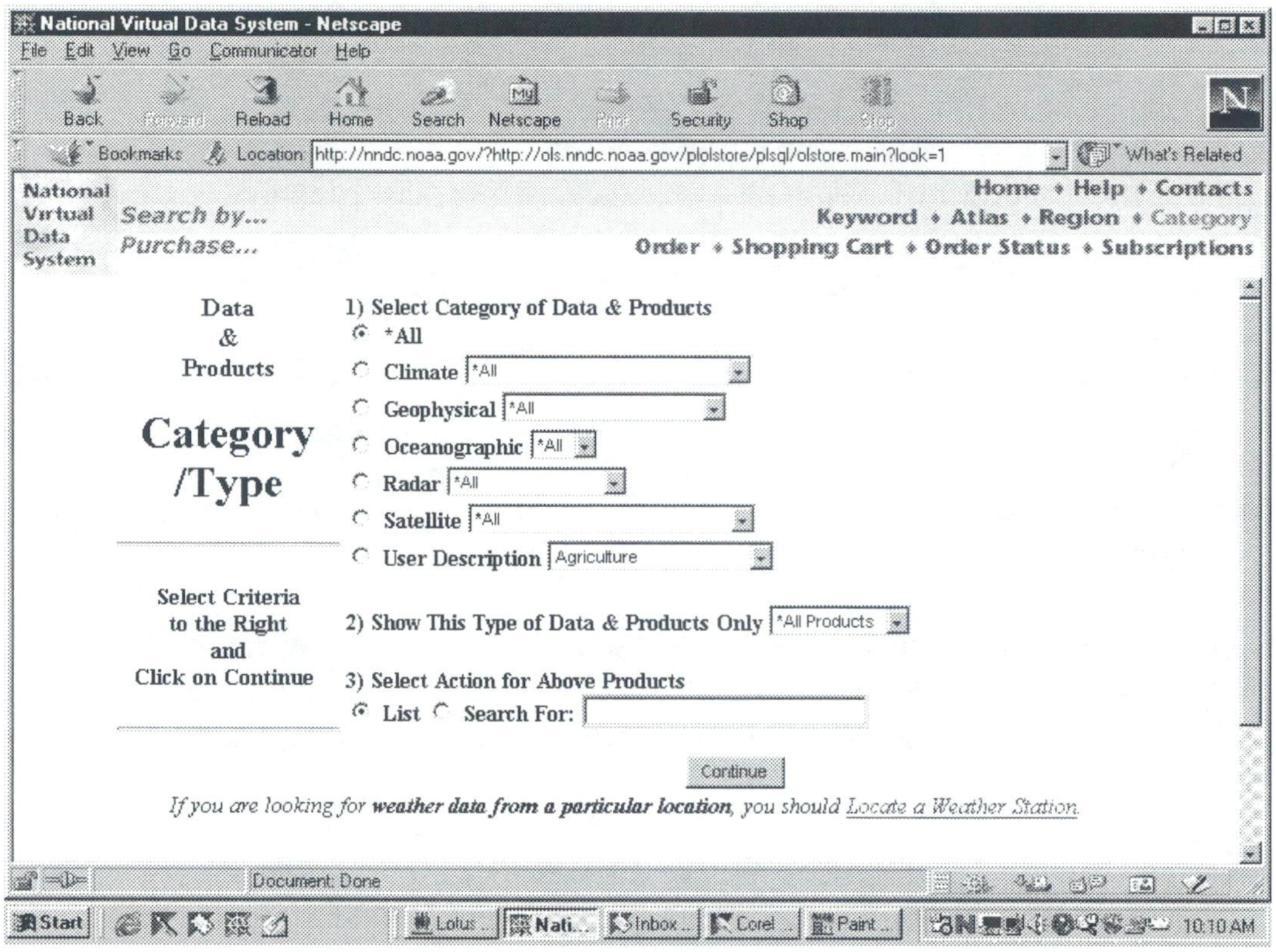
Search

List of Stations with Photographs Available On Line NEW

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National Virtual Data System - Netscape
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1) Select Category of Data & Products
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Climate *All
Geophysical *All
Oceanographic *All
Radar *All
Satellite *All
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2) Show This Type of Data & Products Only *All Products
3) Select Action for Above Products
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NOAA National Data Center Climate Data Online System

During 1998-1999, the National Climatic Data Center developed the NOAA National Data Center Climate Data Online (NNDC CDO) System to a) provide fast, easy online access to a variety of climatic datasets; b) provide the climatic support and backbone for the NNDC Server (in development); and c) facilitate migration from a Unisys mainframe customer support environment to an open systems unix environment.

The system includes both recent and historical data, useful for studies of particular weather events, and for historical analysis of data for statistical and other research purposes. The types of data currently included in the system, which continues to be populated, are surface daily and monthly data, hourly precipitation data, and 15-minute precipitation data. The data are primarily for the United States, although there are two monthly datasets, one of which includes global stations. The system will be greatly expanded during 2000-2001, with global surface hourly and global upper air data to be added to the system. The URL is: **http://cdo.ncdc.noaa.gov**.

The NNDC CDO backbone is an Oracle relational database system, using structured query language and other programming languages to retrieve data. Data are accessible and selectable by region, country, state (US), climate division (US), county (US), and station, and by time period (year, month, day, hour). The data are available free of charge to NOAA users and to educational institutions (.edu), with charges applied for other users. However, charges are greatly reduced as compared to traditional off-line delivery of climatic data.

The climatic data currently accessible are:

- Daily (primarily U.S.) for full period of digital record, typically 1948 to present, over 19,000 stations historically, over 8000 currently active.
- Monthly (primarily U.S.) for full period of digital record, typically 1948 to present, over 19,000 stations historically, over 8000 currently active.
- Global monthly for 1987 to present, over 3000 stations historically, over 1000 currently active.
- Hourly precipitation (primarily U.S.) for full period of digital record, typically 1948 to present, over 6000 stations historically, over 2800 currently active.
- 15-minute precipitation (primarily U.S.) for full period of digital record, typically 1971 to present, over 3400 stations historically, over 2400 currently active.

The main user interface (Figure 1) allows initial selection by region, by country, or by data type. So, you can select, for example, one country to see what types of data are available for that country. Or, you can select one data type to see what countries and stations have data available for that type of data.

The next "page" (Figure 2) allows selection of the entire dataset ('worldwide'), selection by region, by country, or by station number range. Selection of United States as the country then leads to an interface (Figure 3) allowing selection by entire state, climate division, county, or

individual station(s). This is quite flexible in that you can select, for example, all stations in a county, or just pick selected stations from a particular state.

The next "page" will vary depending on what you selected so far. For example, if you choose "climate division" as your criteria, you'll then see a map of the divisions for that state (Figure 4). If you choose "county" as your criteria, you'll see a list of counties (Figure 5). If you choose station as your criteria, you'll see a full list of stations for the state (Figure 6).

The next "page" (Figure 7) then provides for selection of the period/dates you require and the output format desired. Also, some datasets (e.g., daily, monthly) provide element selection capability on this page, so that you can select just the desired weather elements (e.g., precipitation, temperature). Our basic format options (for most datasets) are:

Space-delimited with station name in each data record
Space-delimited without station name
Comma-delimited with station name in each data record
Comma-delimited without station name
The standard (archive) variable length format for that particular dataset
The standard fixed length format for that particular dataset

Most users prefer one of the delimited formats. Comma-delimited is often better for import into a spreadsheet. Space-delimited is easier on the eyes and easy to write a program for, such as with Fortran or C++. The standard dataset formats are often required by users with application programs previously written for those specific NCDC formats.

The next "page" will provide a summary of your request and will then direct you into our Online Store, unless you have free access as mentioned above. The Online Store then requests payment information, with a similar interface as you would see for other online systems. At present, payment by credit card is the only option, but we plan to add a subscription option, whereby users will be able to subscribe to the system for a year at a fixed price.

Finally, you're directed to an html address with a list of files that have been produced, or are being produced. Your data file may already be available, so you can click on the file to see if it's there. If not, just bookmark the page for future reference. Also, you're "double-covered" in that we send you an email with directions to your data when your order has finished processing. You'll have access to the data file, an inventory for your selection, a station list, and data format documentation. Most small orders (e.g, a few mb) complete processing in a few minutes. However, some larger orders require a few hours to process, so keep that in mind after placing your order. Of course, if our system is quite busy, run times will be longer; and if the internet "lines" in your path to NCDC are busy, your time required to ftp the data files will be longer.

A complete help system is included (http://www5.ncdc.noaa.gov/cdo/info.html) with a data price schedule, general system information, detailed system help for diagnosing problems (e.g.,

inability to connect due to firewall on user end), format documentation, data samples, station lists, utility software, etc.

Although with limited publicity, this system has proven to be quite popular since its online implementation in June 1999. Customers for the available datasets are now frequently using this system rather than placing off-line orders by phone for later delivery by mail. However, when off-line orders are placed, NCDC uses NNDC CDO to fill the order and provide the data on the requested media (e.g., CDROM, zip disk, magnetic tape, ftp delivery). This means we only have to maintain one system for both online and off-line support for these datasets, and future datasets that will be added. That translates into substantial cost savings to the government.

We currently limit the data volume for a specific user-requested file to 40 mb, which is then compressed (gzip) to 5 mb or so. We plan to increase that limit in the near future, as bandwidth improvements allow. Of course, you can place several orders (i.e., for several files) in one web session to retrieve all of the required data. For the immediate future, we suggest that requirements for large data volumes (over ~ 100 mb) be placed as an off-line order by phone (828-271-4800) or email (orders@ncdc.noaa.gov).

Again, the system URL is: **http://cdo.ncdc.noaa.gov**. We encourage you to give it a try and provide feedback to us. We continue to implement enhancements to the system, with user feedback being a key to that process. Our long-term plan is for this system to be NCDC's primary method of delivering in-situ data to weather and climate data customers. Also, the capability to generate html printable forms directly from NNDC CDO will gradually be added to the current ASCII text output format options. Users may access both the NNDC CDO system and a separate system for printable forms via our homepage (http://www.ncdc.noaa.gov).

Figure 1

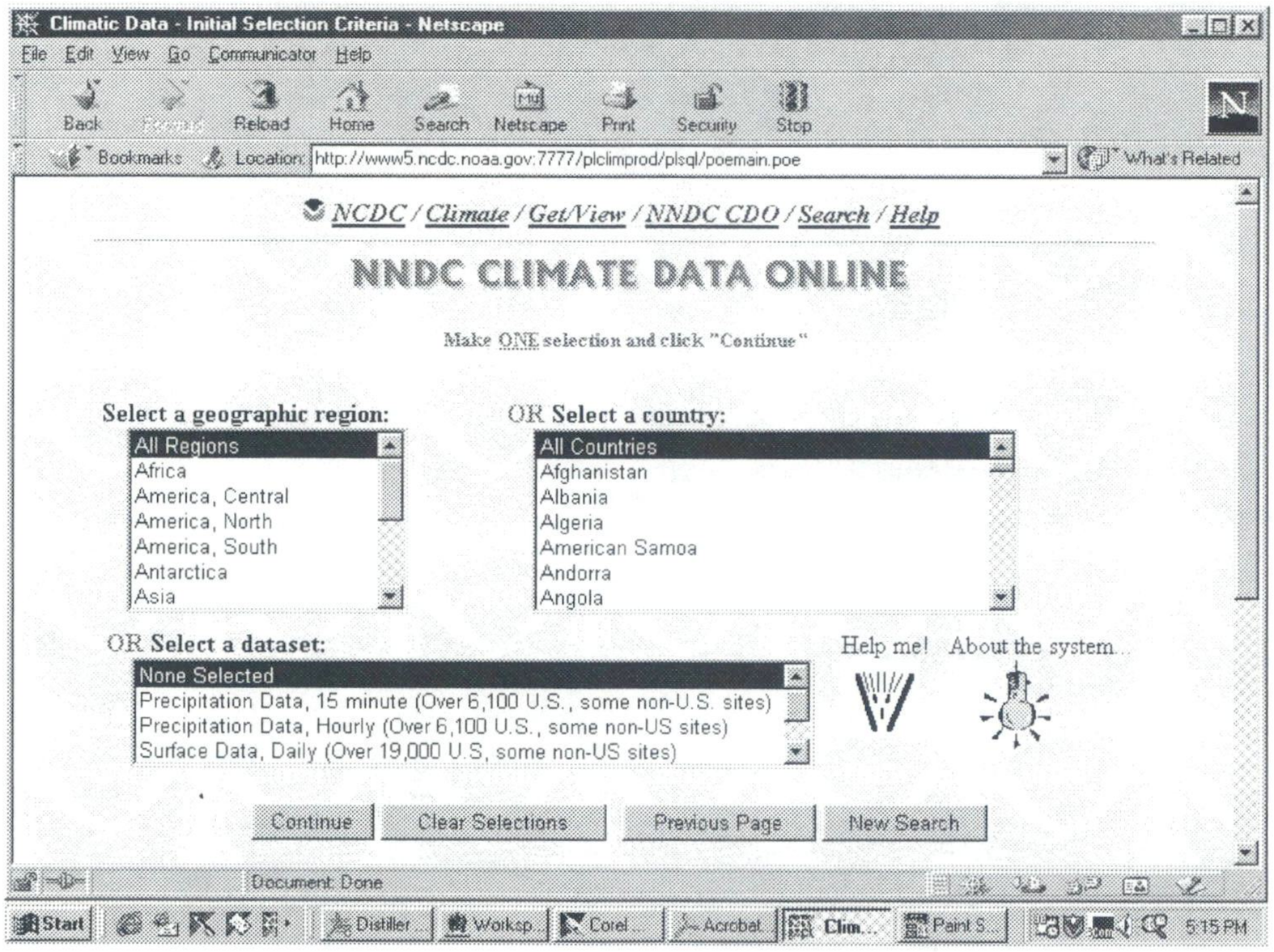


Figure 2

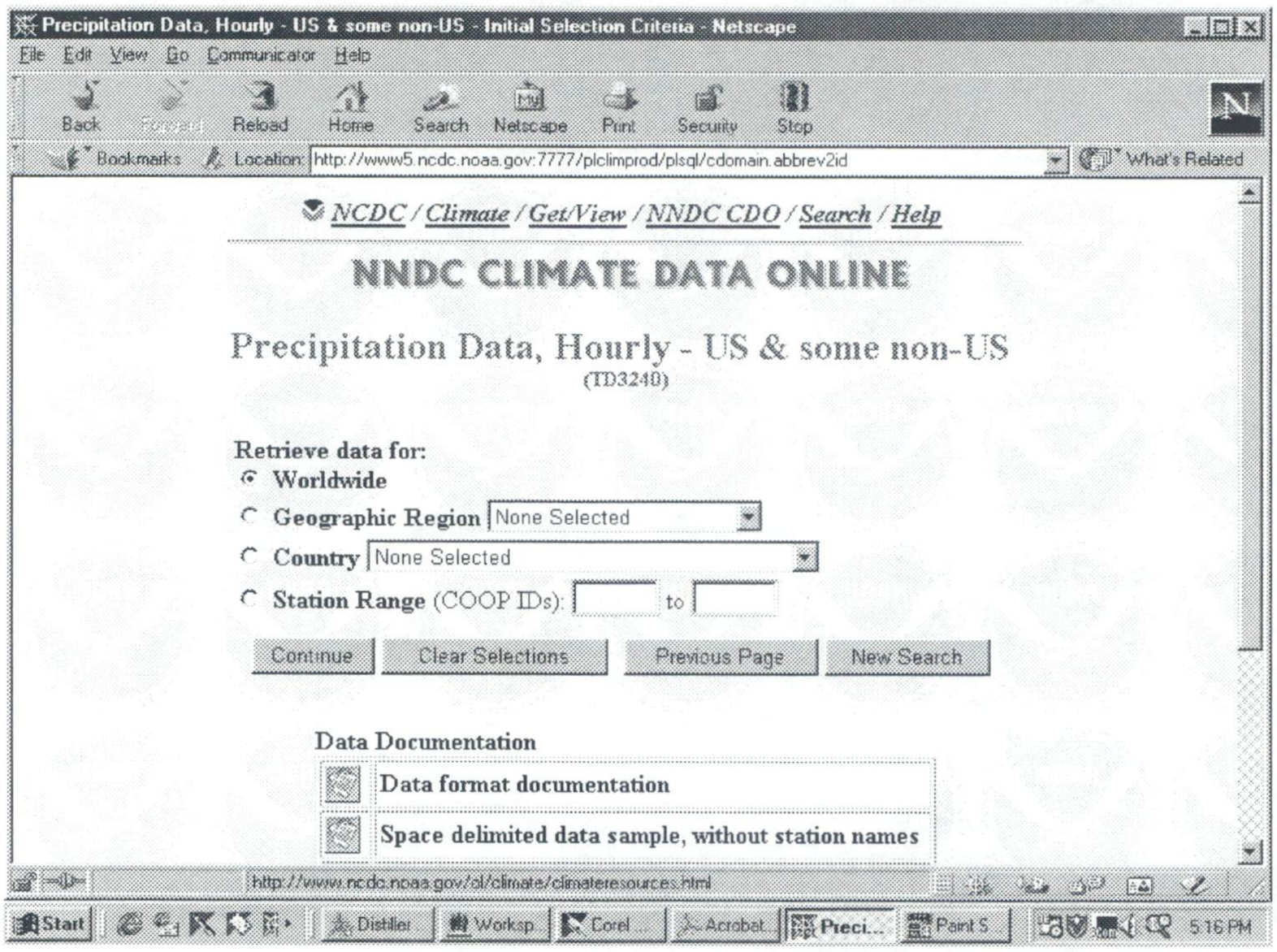


Figure 3

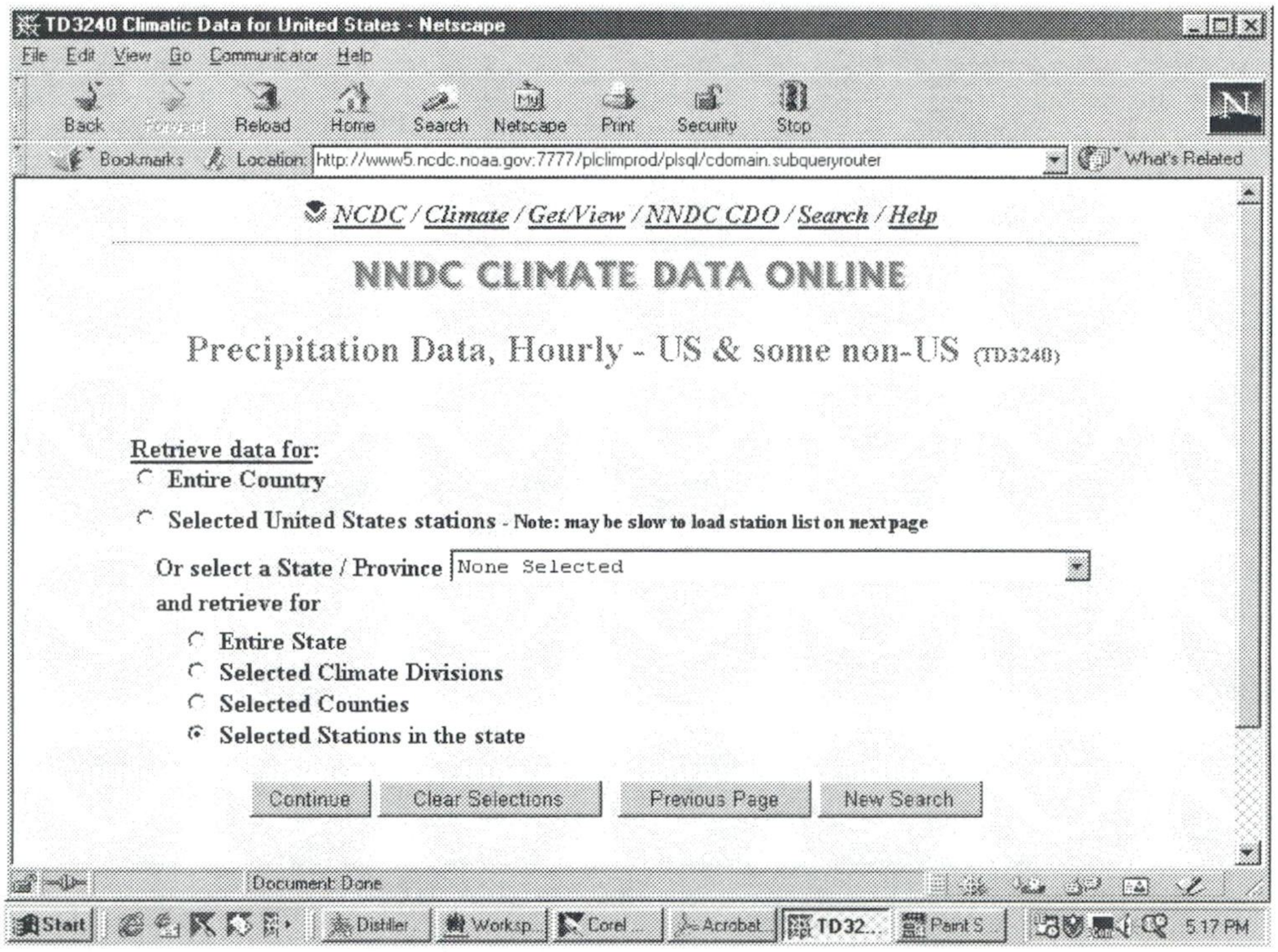


Figure 4

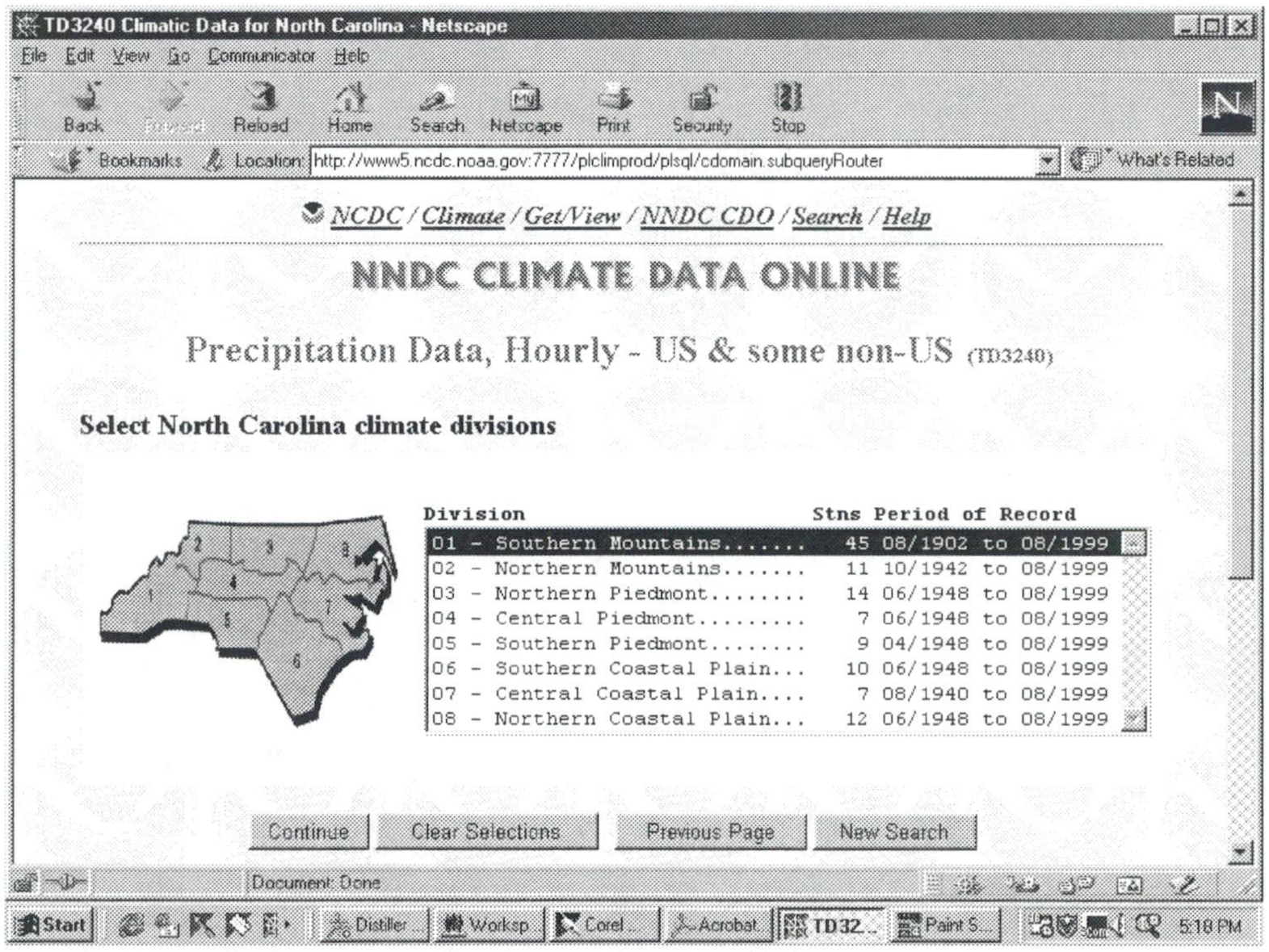


Figure 5

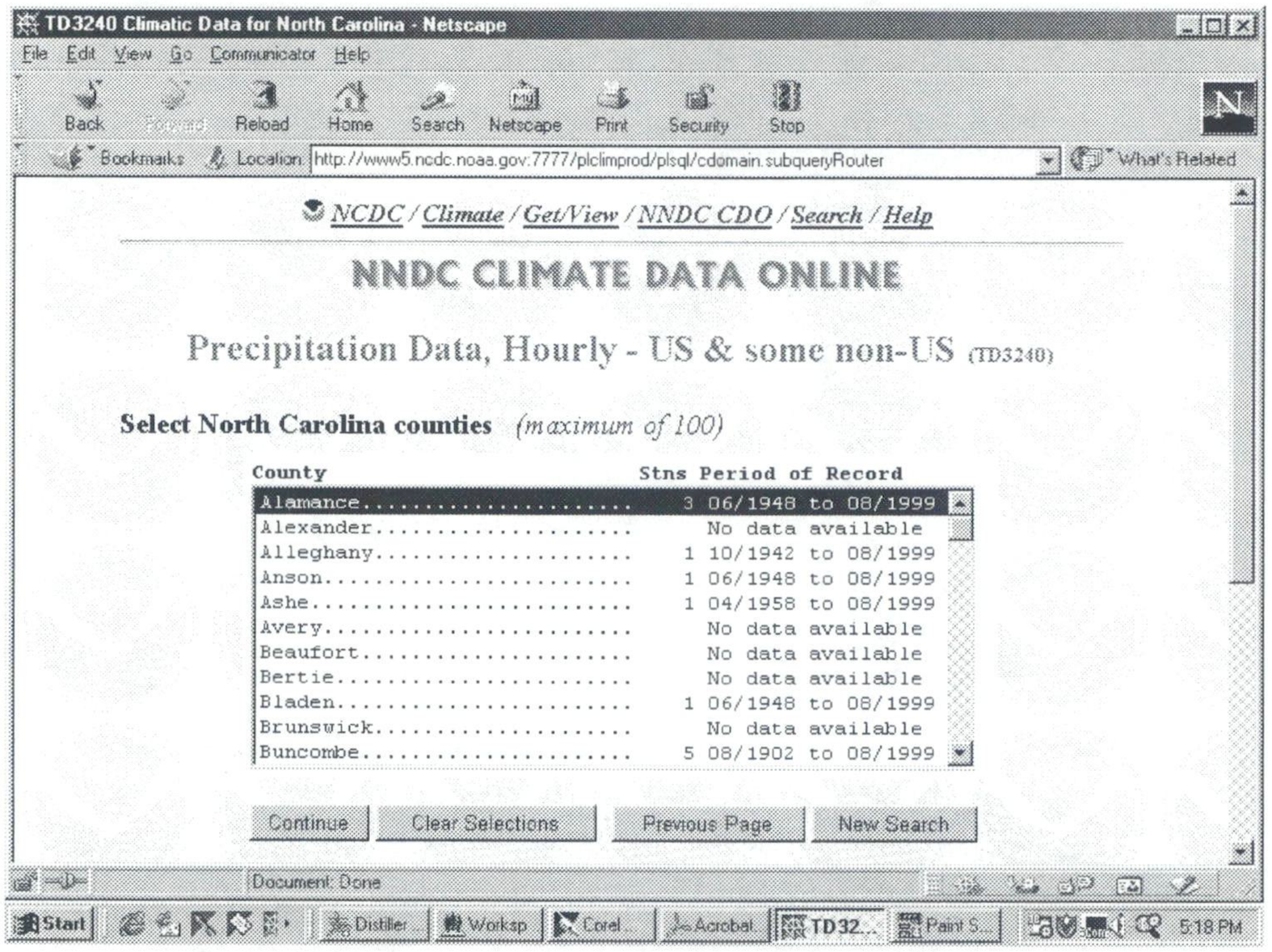


Figure 6

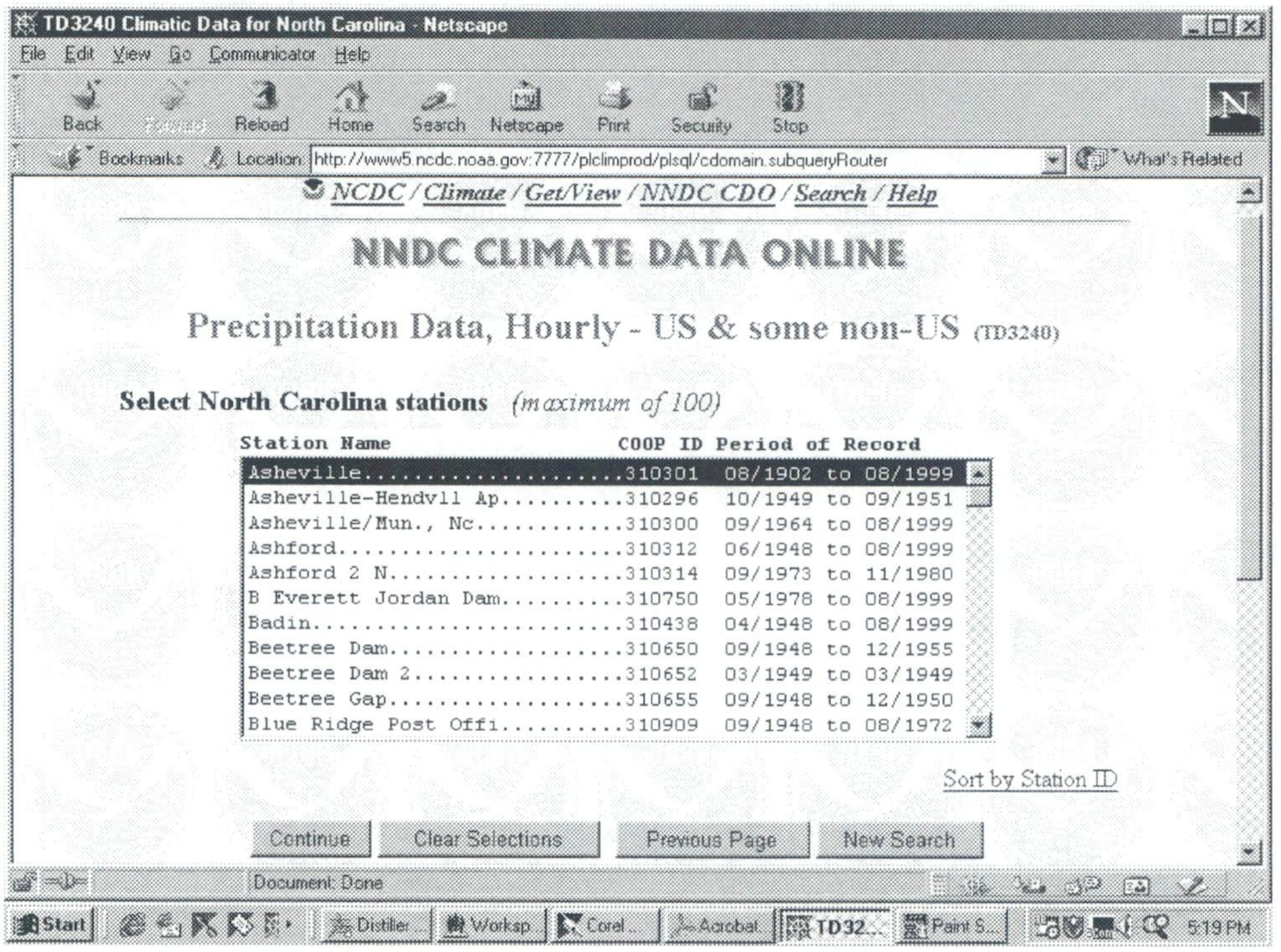
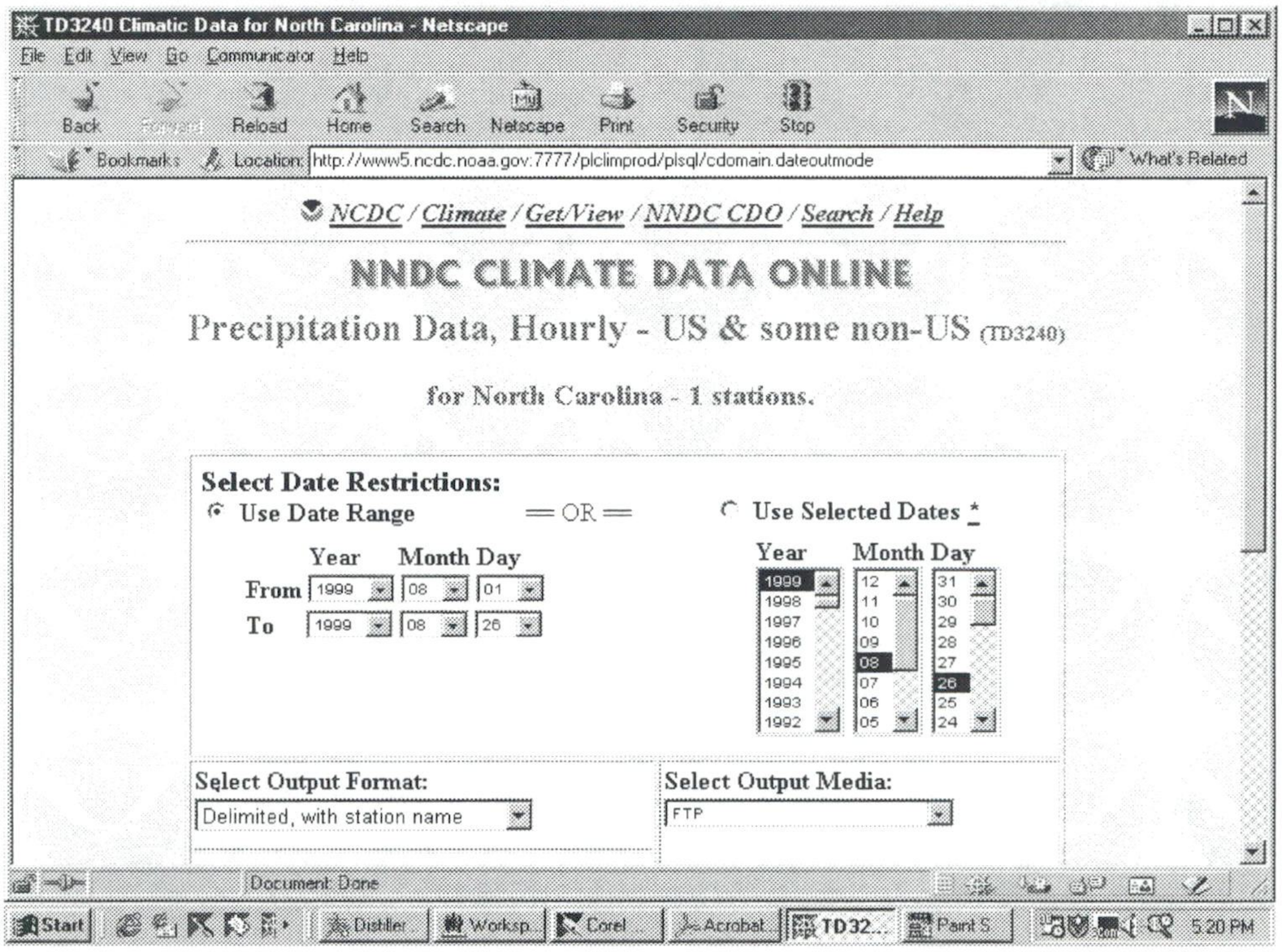
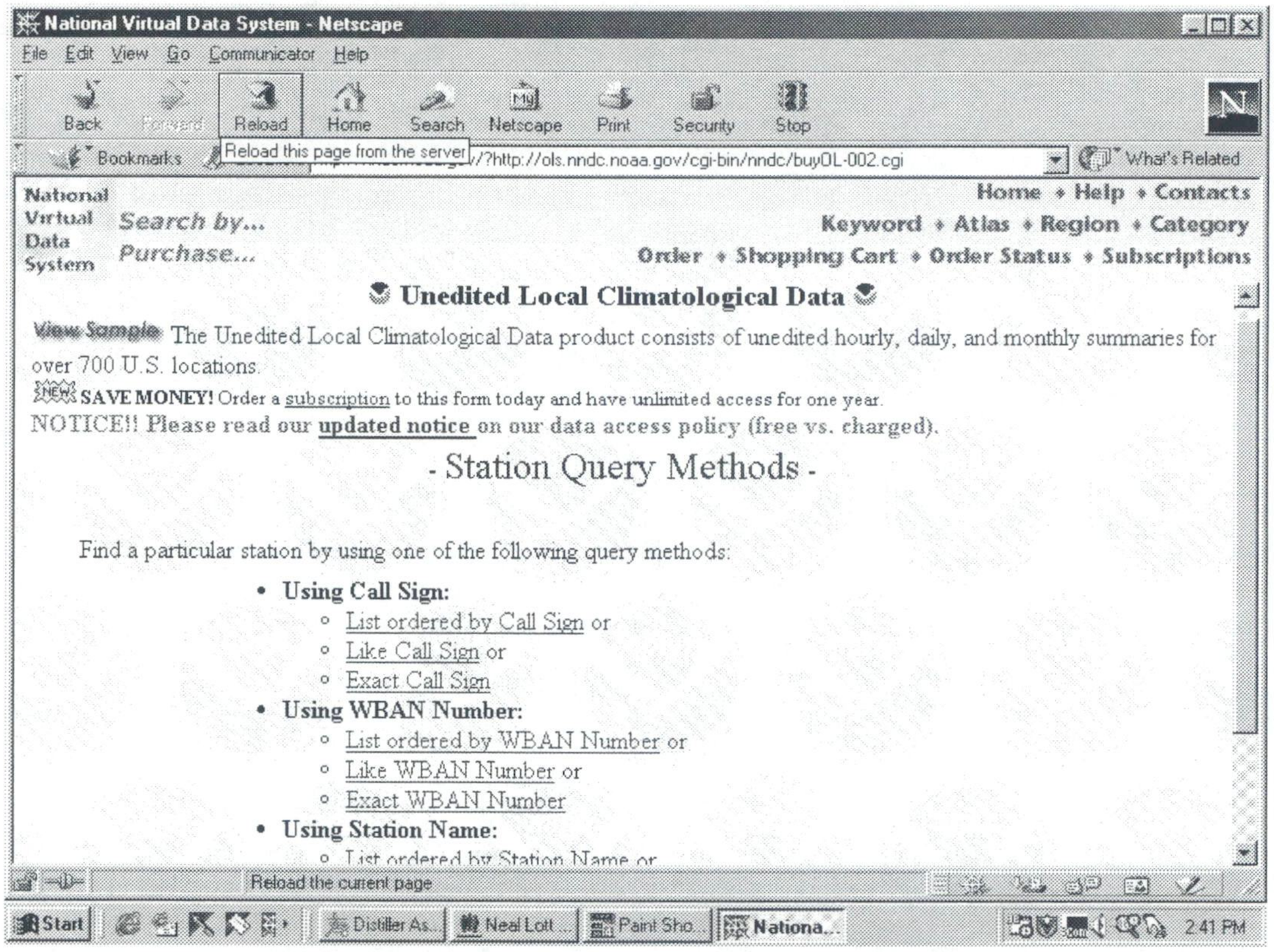
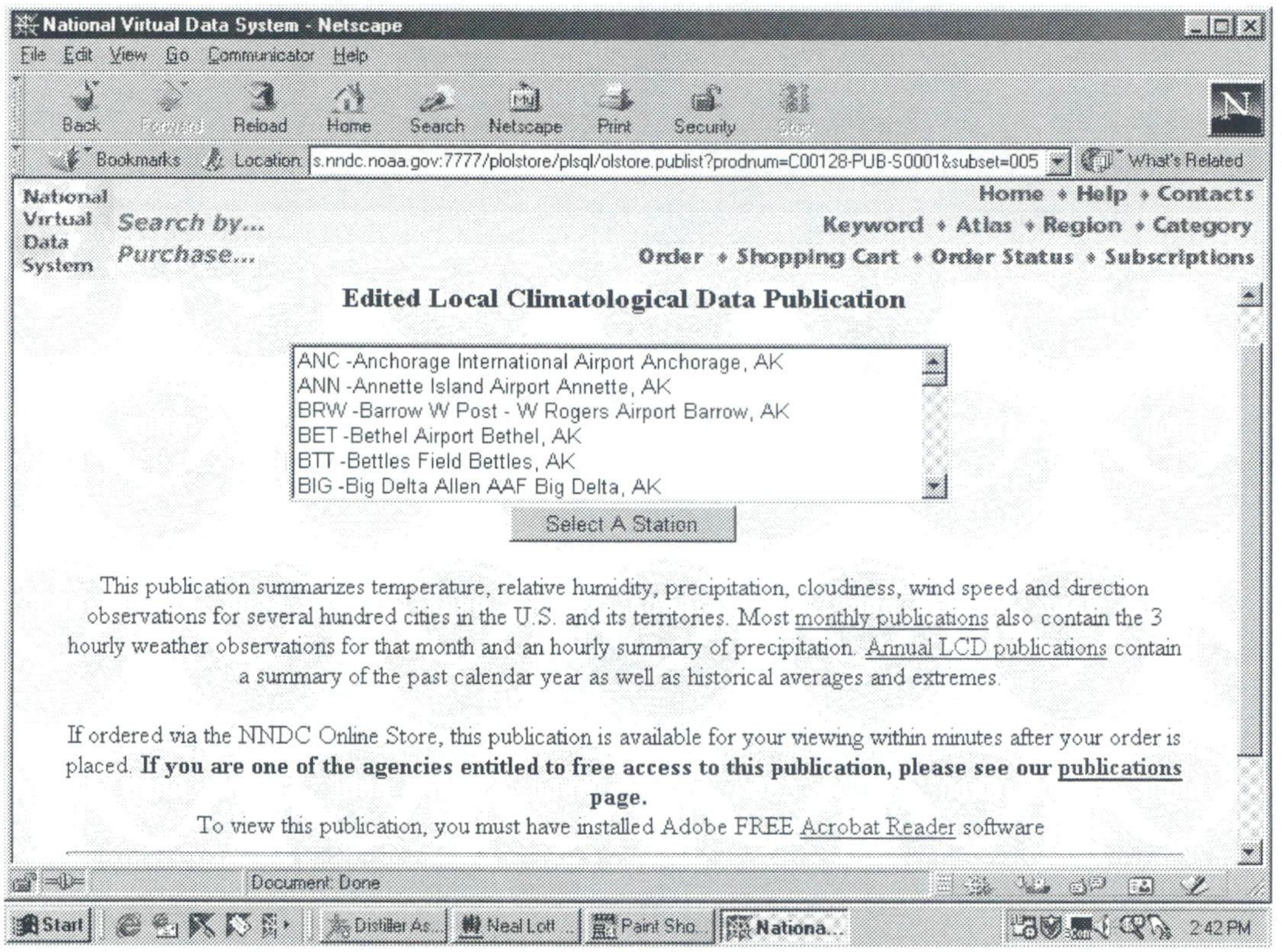


Figure 7


TD3240 Climatic Data for North Carolina - Netscape
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Bookmarks Location: http://www5.ncdc.noaa.gov:7777/plclimprod/plsql/cdomain.dateoutmode
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NCDC / Climate / Get/View / NNDC CDO / Search / Help
NNDC CLIMATE DATA ONLINE
Precipitation Data, Hourly - US & some non-US (TD3240)
for North Carolina - 1 stations.
Select Date Restrictions:
Use Date Range
OR
Use Selected Dates *
Year Month Day
From 1999 08 01
To 1999 08 26
Year Month Day
1999 1998 1997 1996 1995 1994 1993 1992
12 11 10 09 08 07 06 05
31 30 29 28 27 26 25 24
Select Output Format:
Delimited, with station name
Select Output Media:
FTP
Document Done
Start
Distiller
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TD32...
Paint S
5:20 PM


National Virtual Data System - Netscape
File Edit View Go Communicator Help
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Bookmarks
/?http://ols.nndc.noaa.gov/cgi-bin/nndc/buyOL-002.cgi
What's Related
National Virtual Data System
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Keyword • Atlas • Region • Category
Order • Shopping Cart • Order Status • Subscriptions
Unedited Local Climatological Data
View Sample The Unedited Local Climatological Data product consists of unedited hourly, daily, and monthly summaries for over 700 U.S. locations.
NEW SAVE MONEY! Order a subscription to this form today and have unlimited access for one year.
NOTICE!! Please read our updated notice on our data access policy (free vs. charged).
- Station Query Methods -
Find a particular station by using one of the following query methods:
Using Call Sign:
List ordered by Call Sign or
Like Call Sign or
Exact Call Sign
Using WBAN Number:
List ordered by WBAN Number or
Like WBAN Number or
Exact WBAN Number
Using Station Name:
List ordered by Station Name or
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Edited Local Climatological Data Publication
ANC -Anchorage International Airport Anchorage, AK
ANN -Annette Island Airport Annette, AK
BRW -Barrow W Post - W Rogers Airport Barrow, AK
BET -Bethel Airport Bethel, AK
BTT -Bettles Field Bettles, AK
BIG -Big Delta Allen AAF Big Delta, AK
Select A Station
This publication summarizes temperature, relative humidity, precipitation, cloudiness, wind speed and direction observations for several hundred cities in the U.S. and its territories. Most monthly publications also contain the 3 hourly weather observations for that month and an hourly summary of precipitation. Annual LCD publications contain a summary of the past calendar year as well as historical averages and extremes.
If ordered via the NNDC Online Store, this publication is available for your viewing within minutes after your order is placed. If you are one of the agencies entitled to free access to this publication, please see our publications page.
To view this publication, you must have installed Adobe FREE Acrobat Reader software
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2:42 PM

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National Virtual Data System

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Summary of the Day

- COOP Station Query Methods -

Find a particular COOP station by using one of the following query methods:

- by **State, Territory, or Country**
- by **Station ID:**
  - Like Station ID or
  - Exact Station ID
- by **Station Name:**
  - Like Station Name or
  - Exact Station Name
- by **Coordinate Ranges.**

Summary of the Day

The Summary of the Day product consists of daily observations from over 8000 sites in the U.S. for recent 12 months.

Document Done

Start Distiller As... Neal Lott ... Paint Sho... Nationa... 2:44 PM

Global Surface Summary of Day - Netscape

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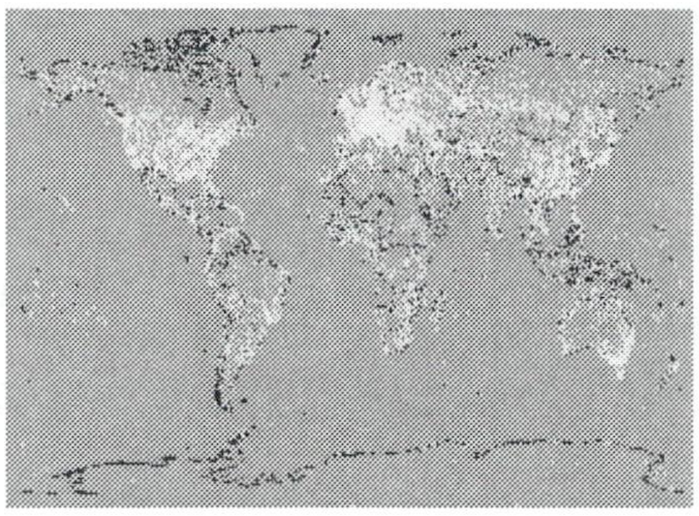
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Bookmarks Location: http://www.ncdc.noaa.gov/cgi-bin/res40.pl What's Related

NCDC | Contents | Climate | Get/View | Surface | Search | Help

Global Surface Summary of Day

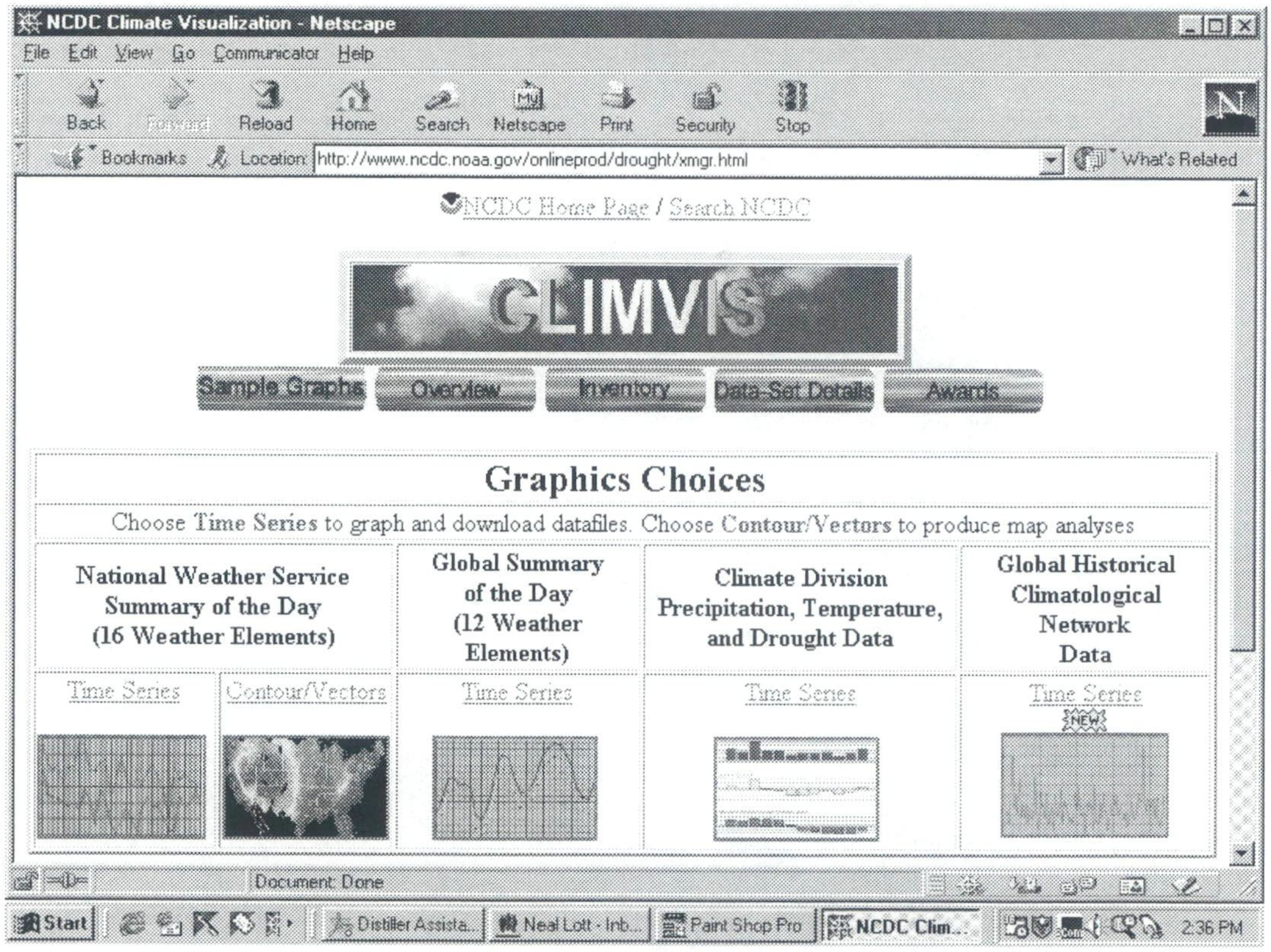
Version 5/6 - Over 8000 Worldwide Stations - through Dec 2000



- Important Notes
- Informational Files
- Data Files (Current)
- Data Files (All Months)
- Data Files (Severe Events)
- Utility Software
- Map of Station Locations
- Uncompression Software
- Anonymous FTP Instructions
- Brief Description of Data
- Details/Format
- Interactive Selection/Graphing

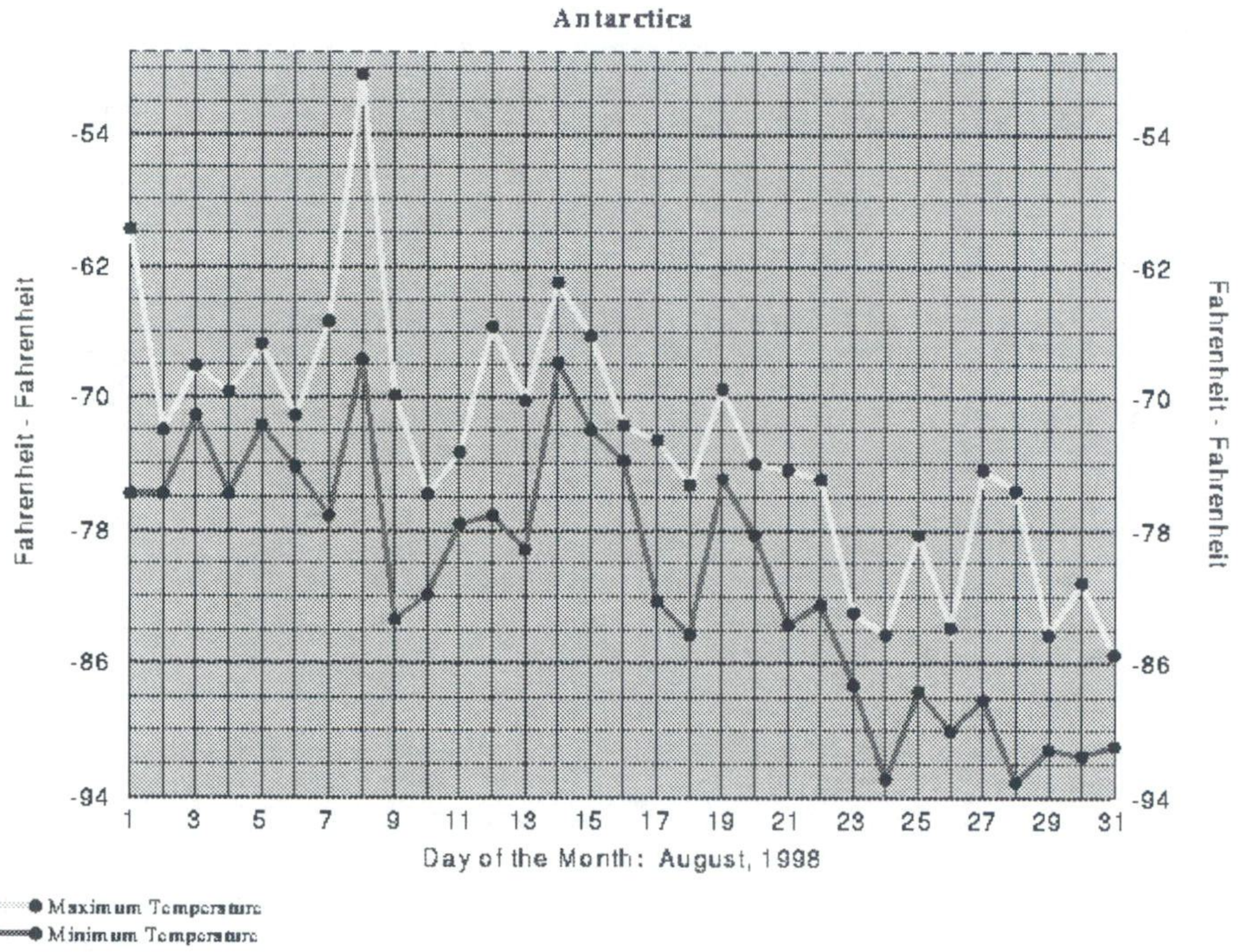
Document Done

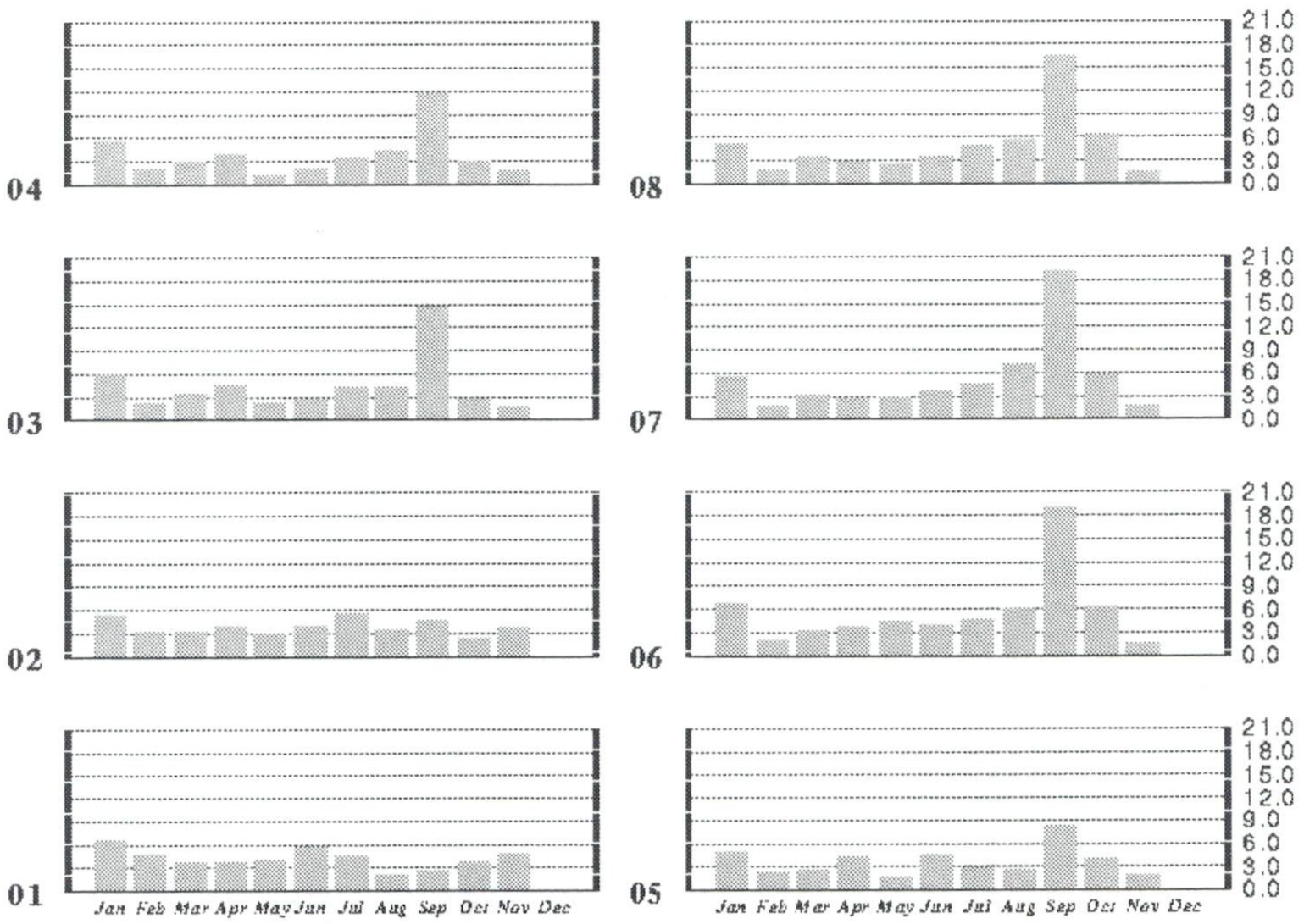
Start Lotus ... Glob... Inbox ... Corel ... Paint ... 10:14 AM

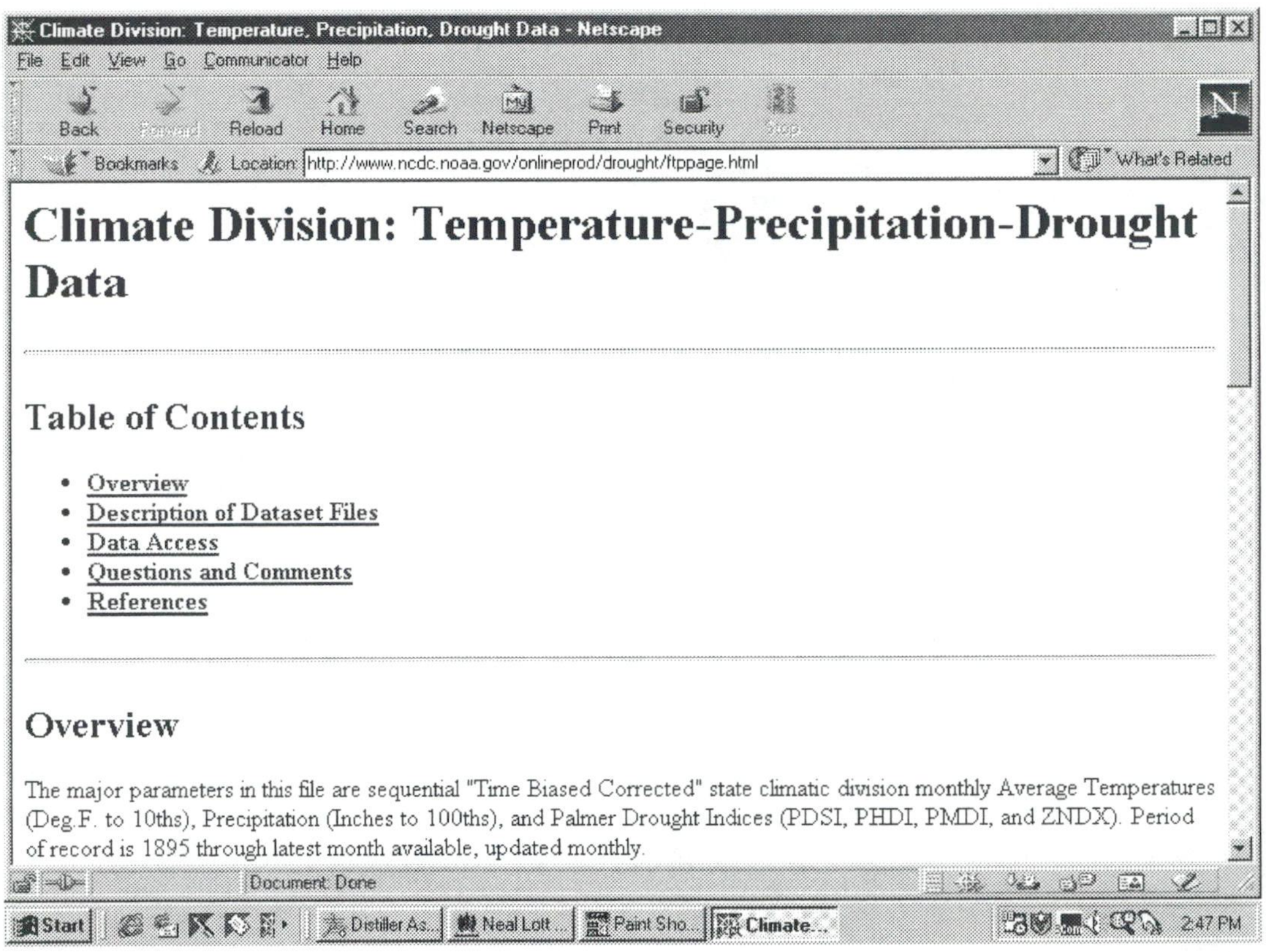


This graph, and the dataset associated with it, are not for commercial distribution

Mon Jan 3 14:40:42 2000




Precipitation (Inches)
04
08
03
07
02
06
01
05
21.0
18.0
15.0
12.0
9.0
6.0
3.0
0.0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
North Carolina - All Divisions: 1999 (Monthly Averages)


Climate Division: Temperature, Precipitation, Drought Data - Netscape
File Edit View Go Communicator Help
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Bookmarks Location: http://www.ncdc.noaa.gov/onlineprod/drought/ftppage.html
What's Related
Climate Division: Temperature-Precipitation-Drought Data
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Overview
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Data Access
Questions and Comments
References
Overview
The major parameters in this file are sequential "Time Biased Corrected" state climatic division monthly Average Temperatures (Deg.F. to 10ths), Precipitation (Inches to 100ths), and Palmer Drought Indices (PDSI, PHDI, PMDI, and ZNDX). Period of record is 1895 through latest month available, updated monthly.
Document: Done
Start
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Climate...
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National Virtual Data System - Netscape

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National Virtual Data System

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Annual Climatological Summary

View Sample Monthly and annual summaries for over 8000 U.S. locations, highlighting monthly average temperatures, total precipitation, heating and cooling degree days, departures from normal, extremes and "days with..." values.

NEW **SAVE MONEY!** Order a subscription to this form today and have unlimited access for one year.

NOTICE!! Please read the following **updated notice** on our data access policy (free vs. charged).

- COOP Station Query Methods -

Find a particular COOP station by using one of the following query methods:

- by **State, Territory, or Country**
- by **Station ID:**
  - Like Station ID or
  - Exact Station ID
- by **Station Name:**
  - Like Station Name or
  - Exact Station Name

Document: Done

Start Distiller As... Neal Lott ... Paint Sho... Nationa... 2:47 PM

World War II Era Summary of Day Dataset - Netscape

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Bookmarks Location: http://www.ncdc.noaa.gov/ol/climate/online/ww-ii-data.html What's Related

NCDC | Contents | Climate | Get/View | Surface | Search | Help

World War II Era Summary of Day Dataset



- **Introduction**
- **Available Files**
- **Anonymous FTP Instructions**
- **Notes**

Document: Done

Start Distiller As... Neal Lott ... Paint Sho... World ... 2:44 PM

Conversion Charts> - Netscape

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Bookmarks Location: http://www.ncdc.noaa.gov/ol/climate/conversion/mppconversion.html What's Related

NCDC / Most Popular Products / Conversion Charts / Search / Help

Most Popular Conversion and Decoder Charts

- Key to METAR Surface Weather Observation
- Celsius to Fahrenheit Conversion Chart
- Wind Chill Chart
- Knots to Miles Per Hour Conversion Chart
- Land Beaufort Scale
- Marine Beaufort Scale
- Heat Index Chart

http://www.ncdc.noaa.gov/ol/climate/conversion/mppconversion.html
Last updated 23 May 2000 by webmaster@ncdc.noaa.gov
Please see the NCDC Contact Page if you have questions or comments.

Document: Done

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Inventories - Netscape

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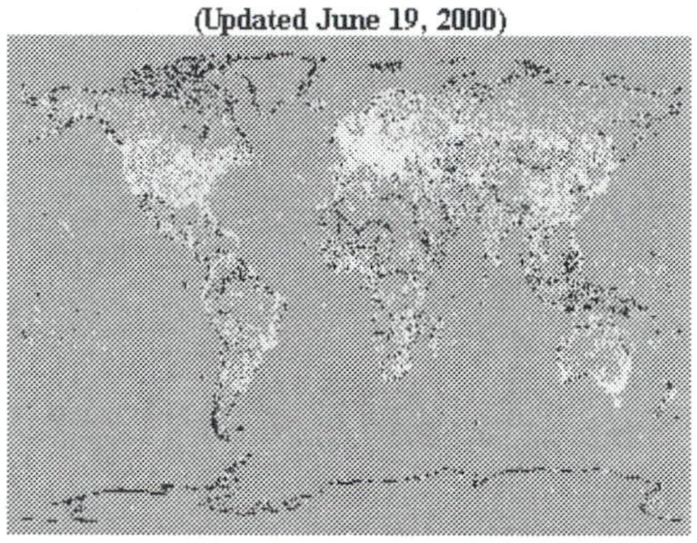
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Bookmarks Location: http://www.ncdc.noaa.gov/ol/climate/surfaceinventories.html What's Related

NCDC Contents Climate Inventories Surface Search Help

Inventories/Station Lists

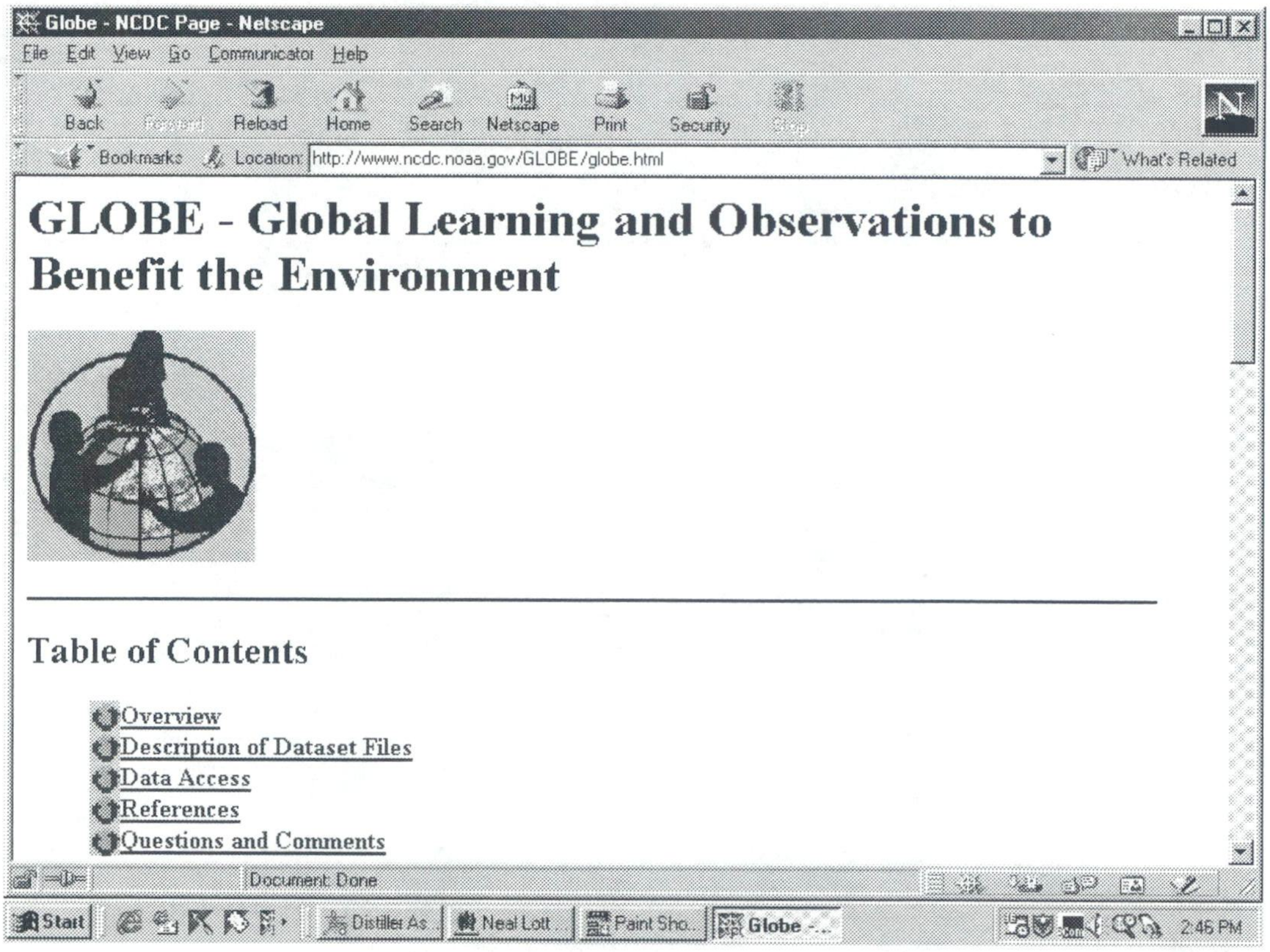
For U.S. and Global Surface Data
(Updated June 19, 2000)



- Introduction
- Surface Data Inventories/Station Lists
- GIS Shape Files
- Other Inventories & Information
- Anonymous FTP Instructions
- Notes

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Globe - NCDC Page - Netscape
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GLOBE - Global Learning and Observations to Benefit the Environment
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CLIMATE MONITORING AND EXTREMES

NCDC: Climatic Extremes and Weather Events - Netscape

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Bookmarks Location: http://www.ncdc.noaa.gov/ol/climate/severeweather/extremes.html What's Related

NCDC / Climate Resources / Get/View Data / Extremes / Search / Help

U.S. Hurricanes	Heavy Precipitation	Temperature Extremes	U.S. Tornadoes
Billion $$ Weather Disasters			1991-2000 Weather Events
Global Climate Change			Historical Global Extremes
El Nino/ La Nina			Satellite Images
Climate of 2000	U.S. Local Storm Reports	Climatic Data	U.S. Radar Composites

Document: Done

Start Lotus... NCD... Inbox -... Corel... Paint... 4:21 PM

Hurricanes - Netscape

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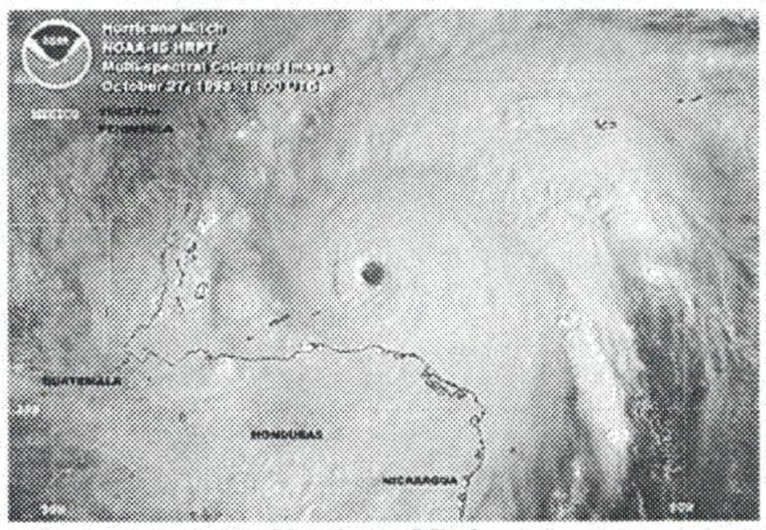
Back Forward Reload Home Search Netscape Print Security Shop Stop

Bookmarks Location: http://www.ncdc.noaa.gov/ol/climate/severeweather/hurricanes.html What's Related

NCDC / Publications / Extremes & Events / Hurricanes / Search / Help

Hurricanes

Updated 11 September 2000



Hurricane Mitch

Note: Although the maps below have not been updated to include 1997-2000, please check NOAA's

http://www.ncdc.noaa.gov/pub/data/images/hurr-mitch-19981027-n15.gif

Start Lotus... Hurri... Inbox -... Corel... Paint... 4:23 PM

NCDC Climate Extremes: Heavy Precipitation - Netscape

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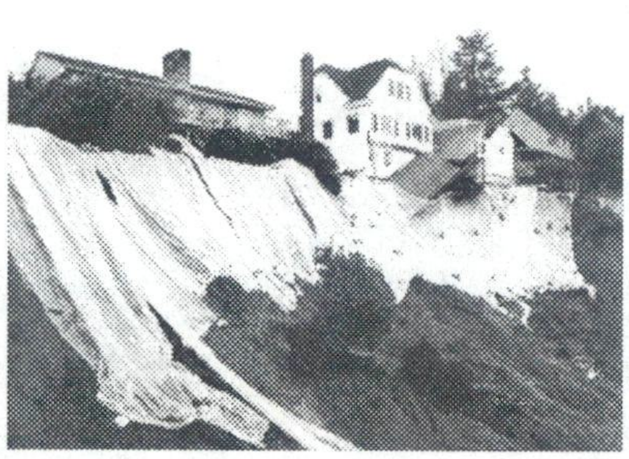
Back Forward Reload Home Search Netscape Print Security Shop Stop

Bookmarks Location: http://www.ncdc.noaa.gov/ol/climate/severeweather/rainfall.html What's Related

NCDC / Publications / Extremes & Events / Heavy Precipitation / Search / Help

Heavy Precipitation

Updated 15 November 2000



Note: Tables and maps updated through 1998.

Small--for a quick view, Large--larger image for printing

Use Adobe Acrobat PDF Reader for PDF Files.

Document: Done

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NCDC Climate Extremes: Heavy Precipitation - Netscape

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Bookmarks Location: http://www.ncdc.noaa.gov/ol/climate/severeweather/rainfall.html What's Related

Note: Tables and maps updated through 1998.

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Use Adobe Acrobat PDF Reader for PDF Files.

24-Hour Rainfall Maximums By State (Maps--GIF):

Small Map
Large Map
Table (PDF)

Annual Rainfall Maximums By State:

Small Map
Large Map
Table (PDF)

Annual Rainfall Minimums By State:

Small Map
Large Map
Table (PDF)

Document: Done

Start Corel WordPerfe... NCDC Climat... Paint Shop Pro 5:35 PM

NCDC Climate Extremes: Heavy Precipitation - Netscape

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Back Forward Reload Home Search Netscape Print Security Shop Stop

Bookmarks Location: http://www.ncdc.noaa.gov/ol/climate/severeweather/rainfall.html What's Related

Extreme Events & Special Reports:

- 2000

Climate-Watch, October 2000 (Miami FL Flooding)
Climate-Watch, September 2000 (TS Gordon and Helene)
Climatology of Recent Extreme Weather and Climate Events (Tech Report)
Changes in the Probability of Heavy Precipitation (PDF)
Heavy Precipitation and High Streamflow in the Contiguous U.S. (PDF)
Climate-Watch, August 2000 (New Jersey Flooding)
Climate-Watch, July 2000 (SE Asia Flooding)
Climate-Watch, June 2000 (Mexico Flooding)
Climate-Watch, May 2000 (OK/MO Flooding)
Climate-Watch, April 2000 (Southeast Rains)
Climate-Watch, March 2000 (Africa Flooding)
Climate-Watch, February 2000 (AK Avalanches, Africa Flooding)
Climate-Watch, January 2000 (Winter Storms)

- 1999

Hurricane Irene--October 1999
Hurricane Floyd--September 1999
Hurricane Dennis--August 1999
Hurricane Bret--August 1999
Oregon, Washington Heavy Rainfall--February 1999

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Temperature Extremes - Netscape

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Bookmarks Location: http://www.ncdc.noaa.gov/ol/climate/severeweather/temperatures.html What's Related

NCDC / Publications / Extremes & Events / Temperature Extremes / Search / Help

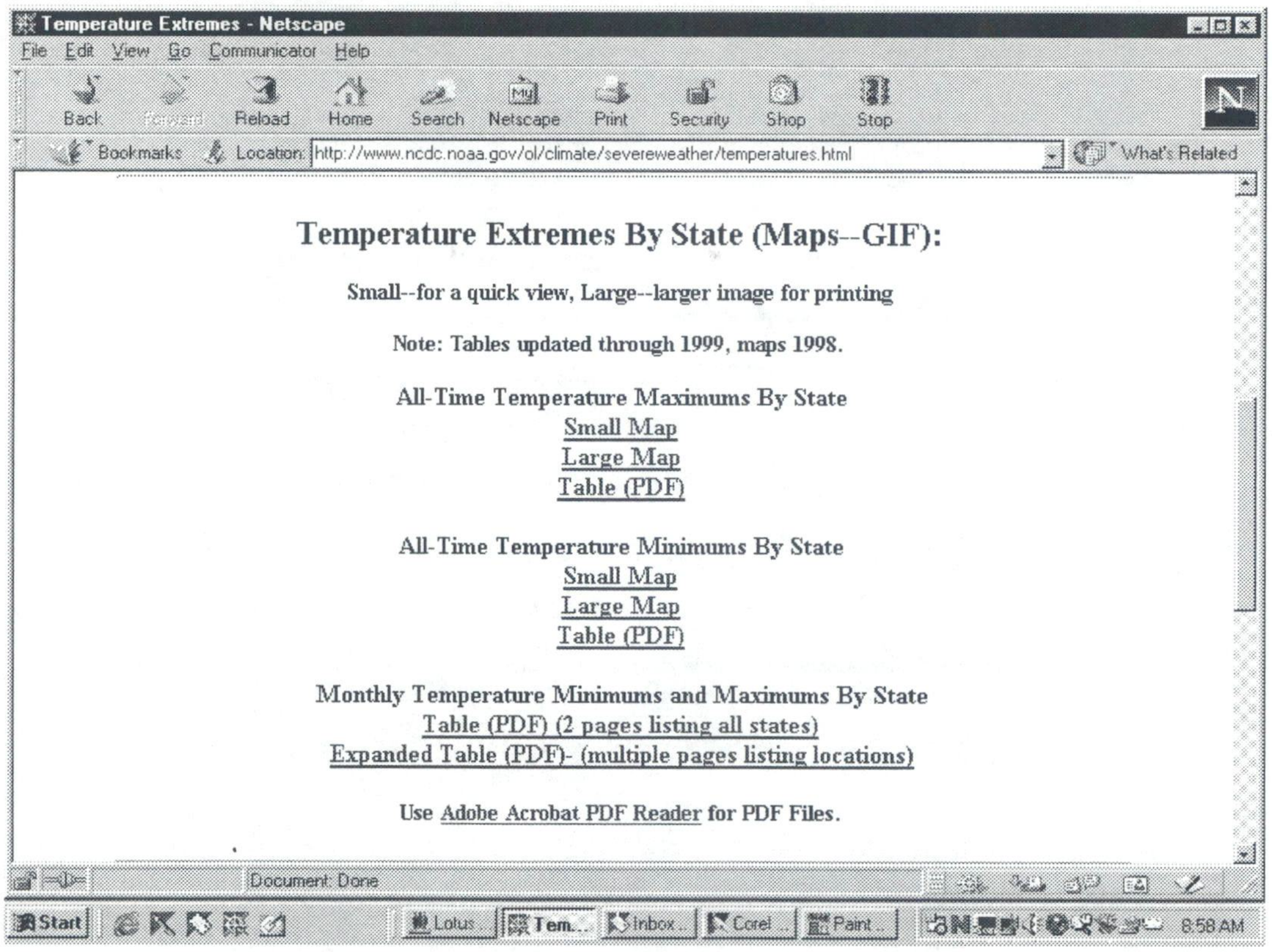
Temperature Extremes

Updated 24 August 2000



Document: Done

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Temperature Extremes - Netscape
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What's Related
Temperature Extremes By State (Maps--GIF):
Small--for a quick view, Large--larger image for printing
Note: Tables updated through 1999, maps 1998.
All-Time Temperature Maximums By State
Small Map
Large Map
Table (PDF)
All-Time Temperature Minimums By State
Small Map
Large Map
Table (PDF)
Monthly Temperature Minimums and Maximums By State
Table (PDF) (2 pages listing all states)
Expanded Table (PDF)- (multiple pages listing locations)
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Tornadoes - Netscape
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Bookmarks Location: http://www.ncdc.noaa.gov/ol/climate/severeweather/tornadoes.html
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Tornadoes
Updated 11 September 2000
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9:00 AM

Tornadoes - Netscape

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Bookmarks Location: http://www.ncdc.noaa.gov/ol/climate/severeweather/tornadoes.html What's Related

1950-1995 Long-Term Averages By State (Maps--GIF):

Small--for a quick view, Large--larger image for printing

Overall Average (small) (large)

Overall Average Per 10,000 Square Miles (small) (large)

Strong-Violent Average (small) (large)

Strong-Violent Average Per 10,000 Square Miles (small) (large)

U.S. Annual Very Strong (F3-F5) Tornado Count, 1950 - 1999 (small) (large)

Note: Although the maps below have not been updated to include 1997-2000, please check NOAA's Storm Prediction Center for more recent maps and tables.

1990-1995 Annual Totals By State (Maps--GIF):

1990	1991	1992	1993	1994	1995

Document: Done

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Tornadoes - Netscape

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Bookmarks Location: http://www.ncdc.noaa.gov/ol/climate/severeweather/tornadoes.html What's Related

Special Reports:

Tornado FAQ (from Storm Prediction Center)
Georgia Tornadoes--February 2000
1998-1999 Tornadoes and a Long-Term Tornado Climatology (Aug 2000 Update)
Oklahoma, Kansas Tornadoes--May 1999
Arkansas, Tennessee Tornadoes--January 1999
The Fujita Tornado Scale
California Flooding and Florida Tornadoes--February 1998
Texas Tornadoes--May 1997
Tornadoes and Flooding--March 1997
Fort Smith, Arkansas Tornado--April 1996
Galva, Iowa Tornado--June 1994
Super Outbreak of April 1974
Tri-State Tornado of March 1925

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*NCDC / **Publications** / Extremes & Events / **Tornadoes** / **Search** / **Help***

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Worldwide Weather Events of 1991-2000 - Netscape

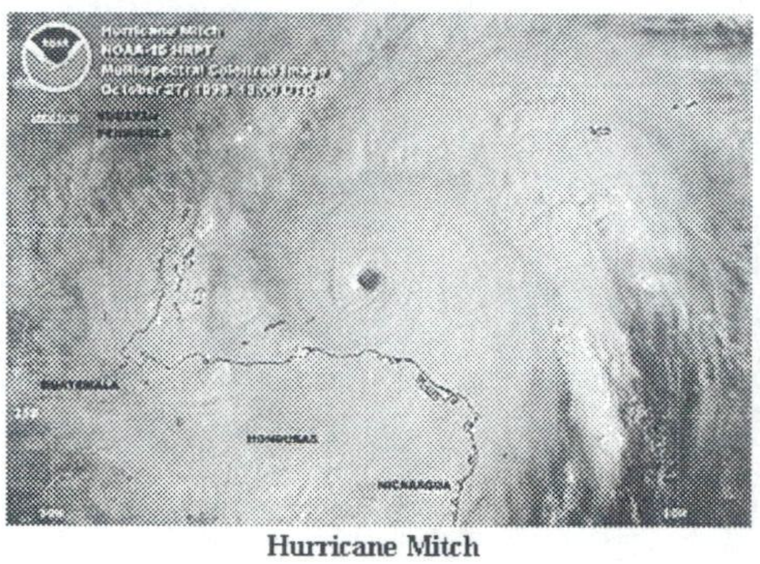
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Bookmarks Location: http://www.ncdc.noaa.gov/ol/reports/weather-events.html What's Related

NCDC Contents Climate Products Events Search Help

Worldwide Weather Events of 1991-2000



Hurricane Mitch

- 2000
- 1999
- 1998
- 1997
- 1996
- 1995
- 1994
- 1993
- 1992
- 1991
- Billion $$ Disasters
- International
- Historical Events
- Storm Events Database
- WWW Sites with Information

http://www.ncdc.noaa.gov/pub/data/images/hurr-mitch-19981027-n15.gif

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Worldwide Weather Events of 1991-2000 - Netscape

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Bookmarks Location: http://www.ncdc.noaa.gov/ol/reports/weather-events.html What's Related

2000

Summary of Major US Events for 2000 (PDF format)
Summary of Major Global Events for 2000 (PDF format)
Climatology of Recent Extreme Weather and Climate Events (Tech Report)
Climate-Watch, December 2000 (White Christmas?, Indonesia Flooding, Southeast US Snow)
Climate-Watch, November 2000 (Hawaii Rains, Europe Flooding, Typhoon Xangsane)
Climate-Watch, October 2000 (Hurricane Keith, SE Asia Flooding, Miami Flooding)
Hurricanes -- 2000
Climate-Watch, September 2000 (Galveston 1900 Hurricane, S. Plains Heat, Etc)
June-August US Drought, Heat, and Fires
Western U.S. Wildfires
Climate-Watch, August 2000 (Western Wildfires, Hurricane Climatology, Global Weather)
Climate-Watch, July 2000 (Drought in Southeast U.S., Balkan Heat Wave)
Climate-Watch, June 2000 (Drought/Fires in U.S., Mexico Flooding, Global Weather)
Climate-Watch, May 2000 (New Mexico Fires, OK/MO Flooding, Global Weather)
Climate-Watch, April 2000 (Southeast Rains, Weather Satellites, Global Weather)
Climate-Watch, March 2000 (Africa Flooding, Global Weather)
Climate-Watch, February 2000 (AK Avalanches, GA Tornadoes, Africa Flooding)
Climate-Watch, January 2000 (Winter Storms, Global Weather)
NWS Service Assessments (Special Reports on Particular Events)
Midwest Climate Watch
Southeast Climate Watch
Northeast Climate Watch
Southern Climate Watch

Document Done

Start Lotus WorL... Inbox Corel Paint 9:06 AM

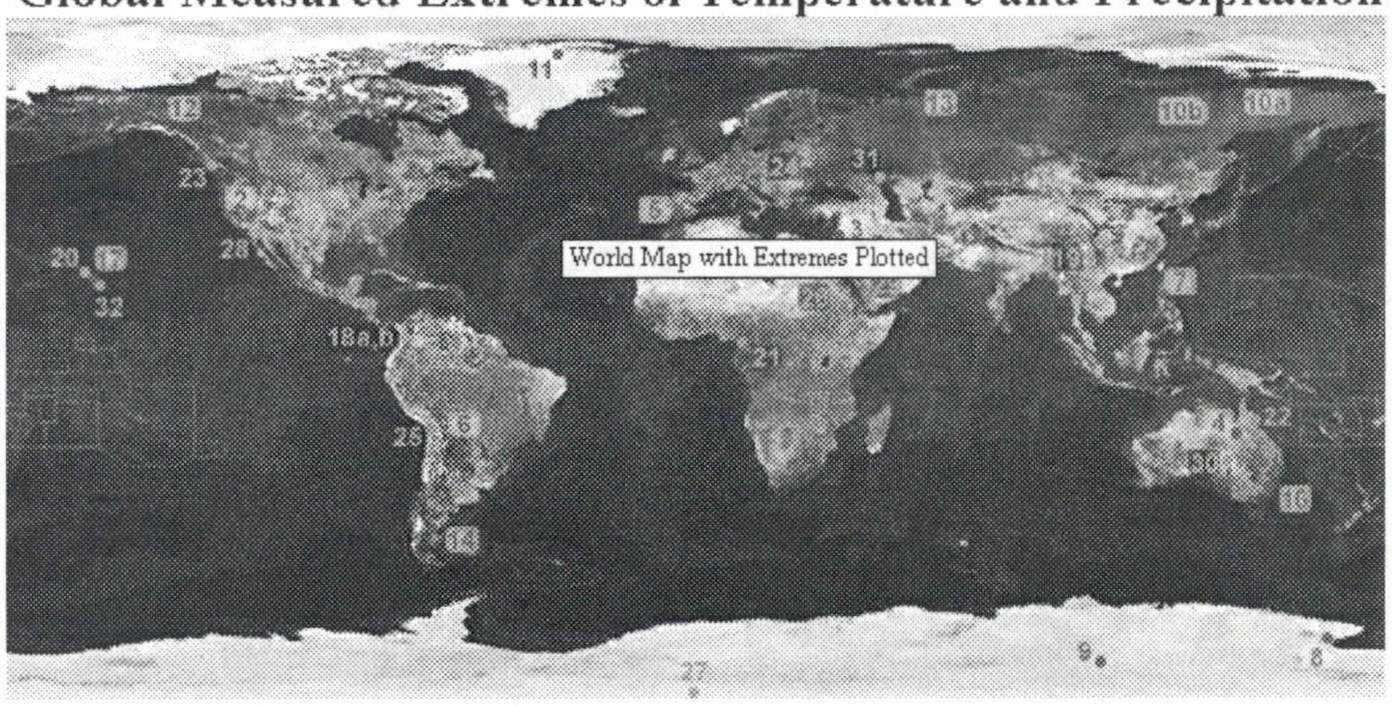
NCDC: Global Measured Extremes of Temperature and Precipitation - Netscape

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Bookmarks Location: http://www.ncdc.noaa.gov/ol/climate/globalextremes.html What's Related

Global Measured Extremes of Temperature and Precipitation



Temperature Extremes shown in RED

- **Highest Temperatures**
- **Lowest Temperatures**

Precipitation Extremes shown in ORANGE

- **Highest Average Precipitation**
- **Lowest Average Precipitation**

Document: Done

Start | Distiller Assista... | Neal Lott - Inb... | Paint Shop Pro | NCDC: Glo... | 1:43 PM

NCDC: Global Measured Extremes of Temperature and Precipitation - Netscape

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Bookmarks Location: http://www.ncdc.noaa.gov/ol/climate/globalextremes.html What's Related

Highest Temperature Extremes

Locator #	*Continent*	***Highest Temp.*** *(deg F)*	*Place*	*Elevation (Feet)*	*Date*
1	Africa	136	El Azizia, Libya	367	13 Sep 1922
2	North America	134	Death Valley, CA (Greenland Ranch)	-178	10 Jul 1913
3	Asia	129	Tirat Tsvi, Israel	-722	21 Jun 1942
4	Australia	128	Cloncurry, Queensland	622	16 Jan 1889
5	Europe	122	Seville, Spain	26	4 Aug 1881
6	South America	120	Rivadavia, Argentina	676	11 Dec 1905
7	Oceania	108	Tuguegarao, Philippines	72	29 Apr 1912
8	Antarctica	59	Vanda Station, Scott Coast	49	5 Jan 1974

Lowest Temperature Extremes

Locator #	*Continent*	***Lowest Temp.***	*Place*	*Elevation (Feet)*	*Date*

Document: Done

Start | Distiller Assista... | Neal Lott - Inb... | Paint Shop Pro | NCDC: Glo... | 1:43 PM

NCDC: HSEI - - Netscape

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Bookmarks Location: http://www5.ncdc.noaa.gov/cgi-bin/hsei/hsei.pl?directive=welcome

What's Related

NCDC / Satellite / Get/View / HSEI / Search / Help

HSEI

NCDC

Welcome

What's New

Most Popular

Quick Search

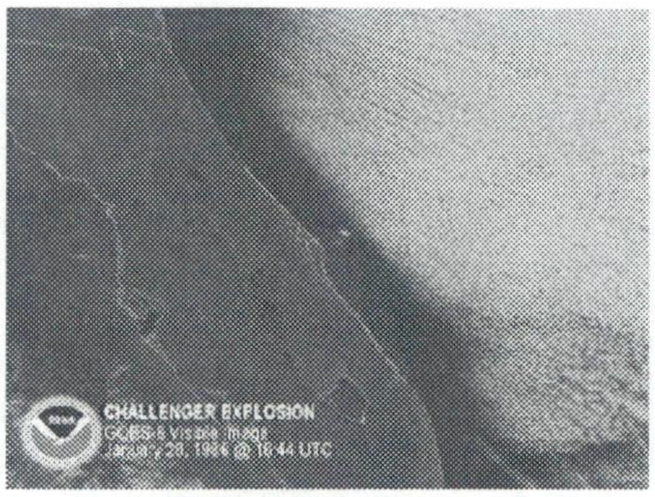
Help / Links

Historical Significant Events Imagery | HSEI

Welcome

Welcome to the National Climatic Data Center's (NCDC) Historical Significant Events Imagery database (HSEI)! In here you will find hundreds of selected satellite images capturing some of the more important weather and environmental events over the last 30 years.

To get started, click on the What's New, Quick Search or Most Popular buttons at the left. From **Quick Search**, you can search for images of a specific type of event for the date range you desire. You will then see a list of resulting images, from which you can view/download the image files to your computer for free, or you can order hardcopy matte or glossy finish prints.



Space Shuttle Challenger Explosion January 28 (1986)

Feel free to contact the Satellite Services Group for any special imaging requirements at satorden@ncdc.noaa.gov. Permission is granted to use, duplicate, modify, and redistribute any of our images. Please give credit to NOAA / National Climatic Data Center.

Document: Done

Start Lot... N... Inb... Cor... Pai... 9:14 AM

NEXRAD National Mosaic Reflectivity Images - Netscape

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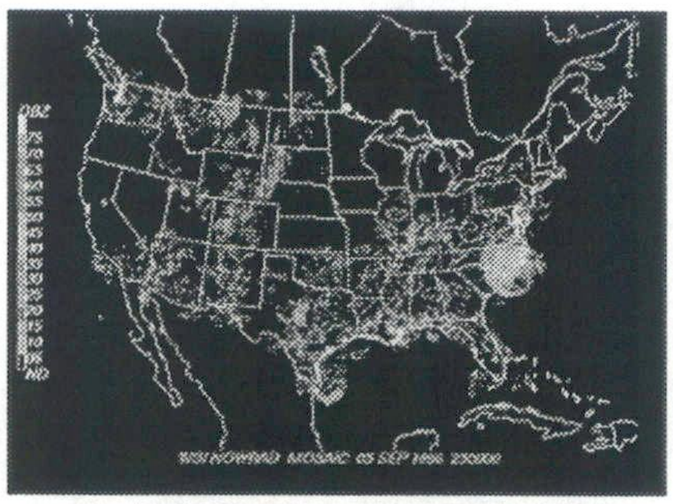
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Bookmarks Location: http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?WWNEXRAD~Images2

What's Related

NCDC | Contents | Radar | Get/View | Images | Search | Help

NEXRAD National Mosaic Reflectivity Images



Hurricane Fran, 5 Sept. 1996; click to enlarge

Select Date

Please Select Day, Month, and Year for the desired image.

1 January 2000

SUBMIT

Currently Available

1 April 1995 to 18 April 1997, Daily

19 April 1997 to 30 December 2000, Hourly

Images provided by Weather Services International Corp. (WSI) and NASA though the Global Energy and Water Cycle Experiment Continental-Scale International Project (GCIP)

Document: Done

Start Lot... N... Inb... Cor... Pai... 9:16 AM

Billion Dollar U.S. Weather Disasters - Netscape

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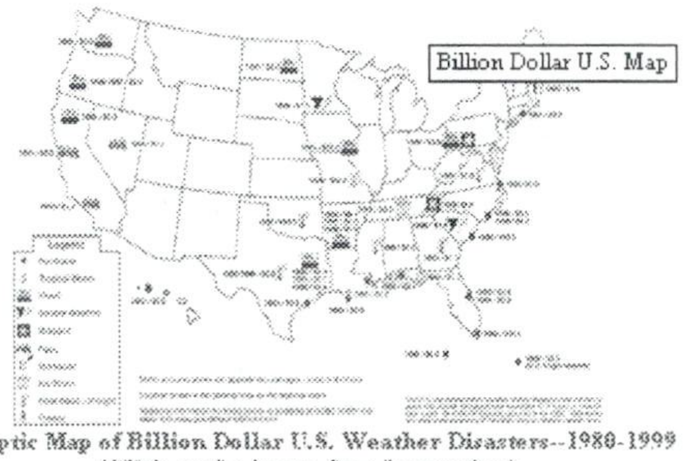
Bookmarks Location: http://www.ncdc.noaa.gov/ol/reports/billionz.html What's Related

NCDC / Climate Data / Weather Extremes / Billion Dollar Disasters / Search / Help

National Oceanic and Atmospheric Administration

Billion Dollar U.S. Weather Disasters, 1980-2000

National Climatic Data Center - December 21, 2000



Synoptic Map of Billion Dollar U.S. Weather Disasters--1980-1999
(Click on the image for a larger view)

- Narrative
- Chronological List
- Global Historical Extremes
- El Nino/La Nina
- * NEW * Technical Report (PDF)

http://www.ncdc.noaa.gov/ol/reports/billion/billionmap_pg.gif

Start Lot... Bil... Inb... Cor... Pai... 9:17 AM

Global Climate Change - Netscape

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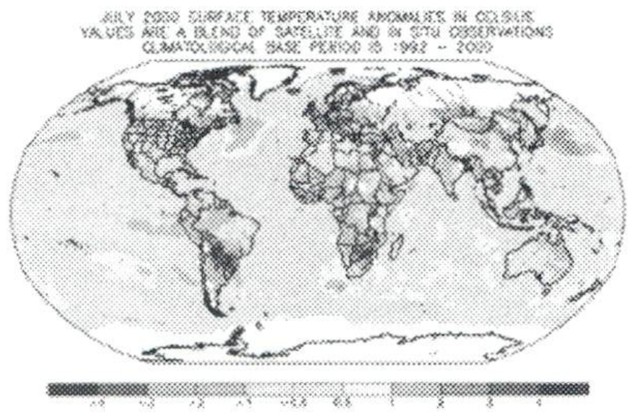
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Bookmarks Location: http://www.ncdc.noaa.gov/ol/climate/climateextremes.html What's Related

NCDC | Contents | Climate | Get/View | Change | Search | Help

Global Climate Change

Updated 30 October 2000



larger image

- Events, Reports, and Publications
- Data, Images, and Climatology
- WWW Sites with Natural Disaster and Other Information

NCDC | Contents | Climate | Get/View | Change | Search | Help

Document: Done

Start Lotus ... Glob... Inbox - ... Corel ... Paint ... 9:21 AM

NCDC: El Niño - Netscape

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Bookmarks Location http://www.ncdc.noaa.gov/ol/climate/elnino/elnino.html What's Related

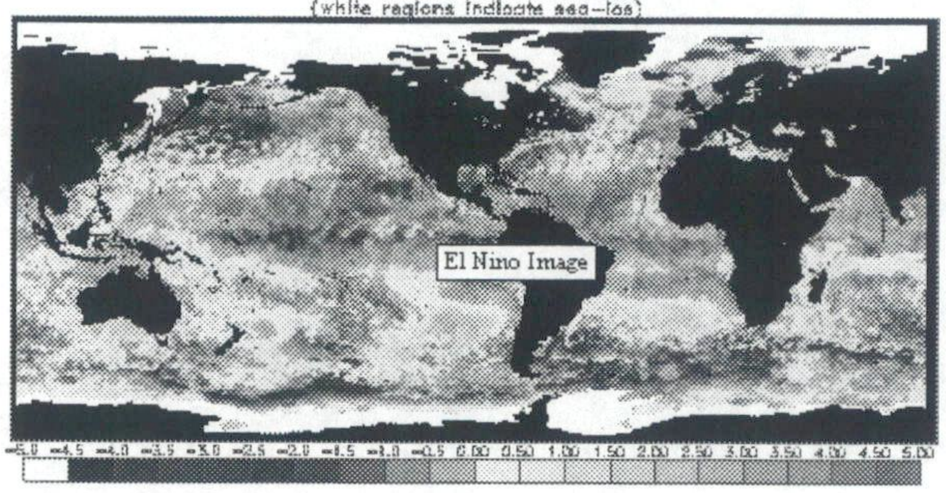
NCDC | Contents | Climate | Products | El Niño | Search | Help

El Niño/La Niña

Depicting the Impacts of the 1997-2000 El Niño/La Niña

NOAA Current SST Anomalies (C), 12/31/2000

(white regions indicate sea-ice)



- Overview
- Events and Reports
- Data and Images
- NOAA El Niño/La Niña Page
- Other Resources

NCDC | Contents | Climate | Products | El Niño | Search | Help

http://psbsgi1.nesdis.noaa.gov:8080/PSB/EPS/SST/climo.html

Start Lotus... NCD... Inbox... Corel... Paint... 9:23 AM

Climate of 2000 - Climate Perspectives Reports - Netscape

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Bookmarks Location http://www.ncdc.noaa.gov/ol/climate/research/2000/perspectives.html What's Related

NCDC / Climate Resources / Climate Research / Climate of 2000 / Search / Help

National Oceanic and Atmospheric Administration

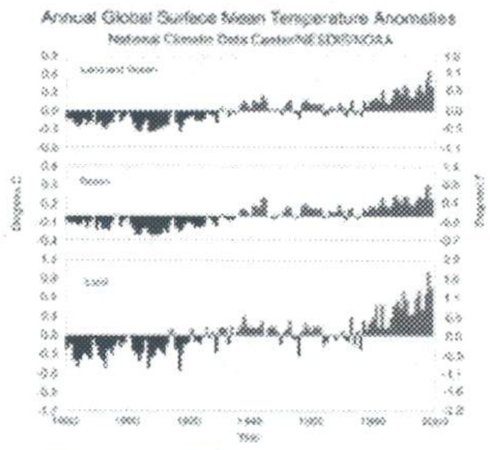
The Climate of 2000

(US and Global Climate Perspectives)

Climate Monitoring Group

National Climatic Data Center, Asheville, NC

August 14, 2000



Climate of 1999 Annual Review

- Global Surface Temperature Anomalies
- Monthly Reports
- Special Reports
- Climate Variations Bulletin
- Climatic Extremes, Weather Events
- Climate of 1999 (Reports)

Document: Done

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NCDC Storm Events-Select State - Netscape

File Edit View Go Communicator Help

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Bookmarks Location: http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwEvent~Storms What's Related

NCDC / Climate Resources / Climate Data / Events / Storm Events / Search / Help

Storm Events

Select State

Select Desired State or *All

State: *All

Continue

Search the NCDC Storm Event database to find various types of storms recorded in your county or use other selection criteria as desired. The database currently contains:

The Storm Events Database contains data from the following sources:

All Weather Events from 1993 - Current, as entered into Storm Data.

Plus additional data from the Storm Prediction Center; Including
'Tornadoes 1950-1992

Document: Done

Start Lotus... NCD... Inbox -... Corel... Paint... 9:25 AM

Climate Monitoring - Netscape

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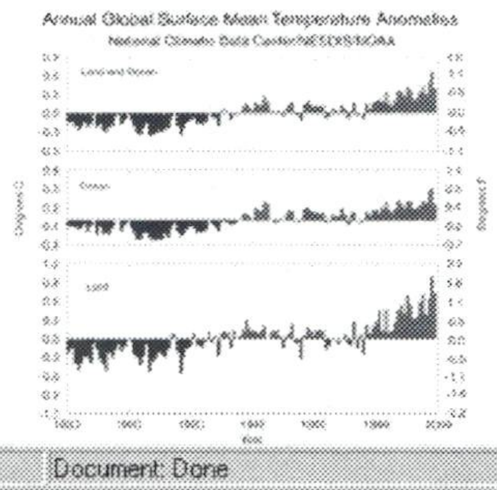
Bookmarks Location: http://www.ncdc.noaa.gov/ol/climate/research/monitoring.html What's Related

NCDC / Climate Research / Monitoring / Search / Help

National Oceanic and
Atmospheric Administration

Climate Monitoring
Reports and Products

National Climatic Data Center, Asheville, NC
November 8, 2000

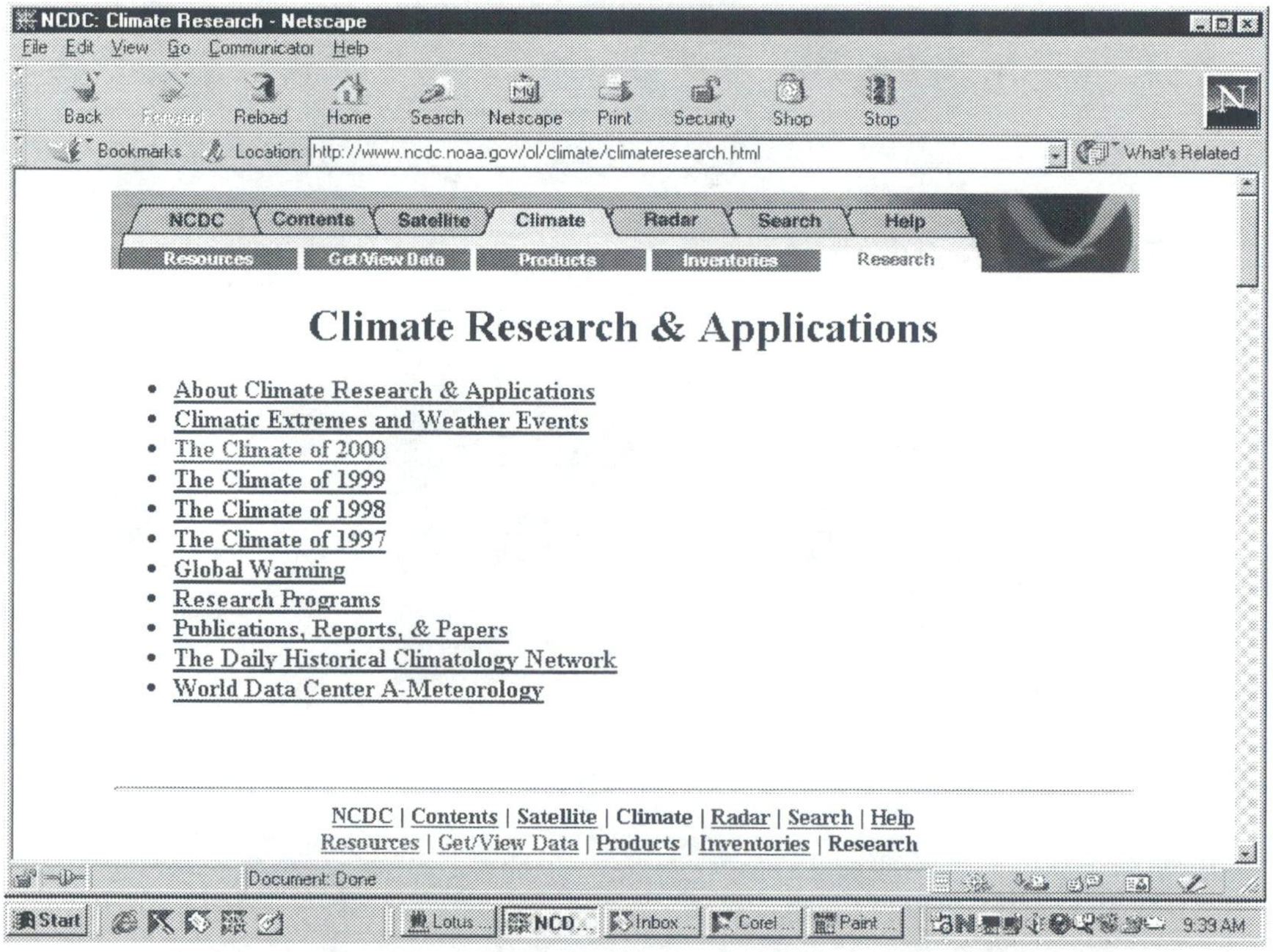


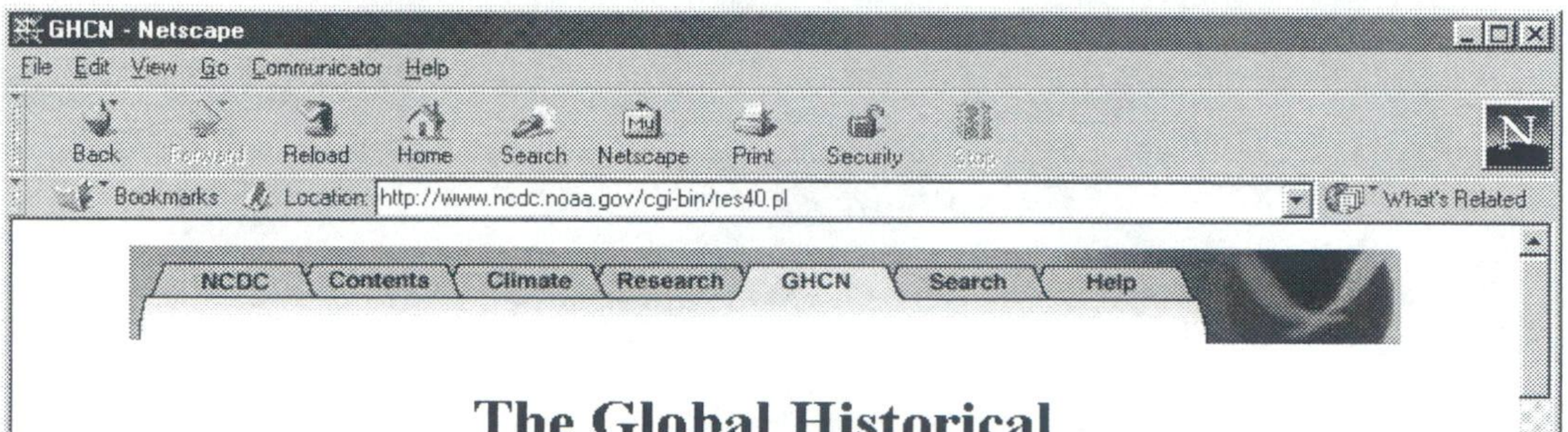
- **Climate Reports**
  - Climate of 2000
  - Climate of 1999
  - Climate of 1998
- **On-Line Access to U.S. Climate Information**
  - Climate At A Glance
- **Monthly Monitoring Products**
  - US Temp and Precip
  - Global Temp and Precip
- **Weekly Monitoring Products**
  - US Temp and Precip
- **Other Products**
  - Global Temperature Anomalies

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CLIMATE RESEARCH





United States Historical Climatology Network (USHCN) - Netscape

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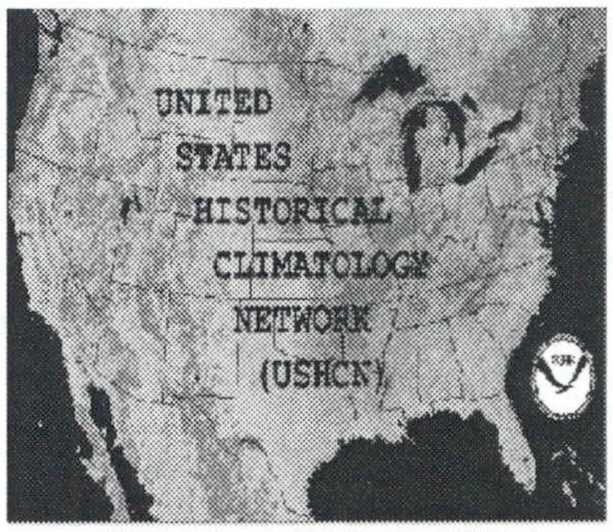
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Bookmarks Location: http://www.ncdc.noaa.gov/ol/climate/research/ushcn/ushcn.html What's Related

NCDC | Contents | Climate | Research | USHCN | Search | Help

United States Historical Climatology Network (USHCN)

- Introduction
- Quality Control, Homogeneity Testing, and Adjustment Procedures
- Data Package Description
- Updated Data Status



Click on Image for Larger View

- Comparing the USHCN and the U.S. Climate Division Dataset
- References
- Logo Image Information
- Obtain Data On-Line

NCDC | Contents | Climate | Research | USHCN | Search | Help

http://www.ncdc.noaa.gov/ol/images/ushcn.gif

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NCDC: USHCN - Daily Historical Climatology Network - Netscape

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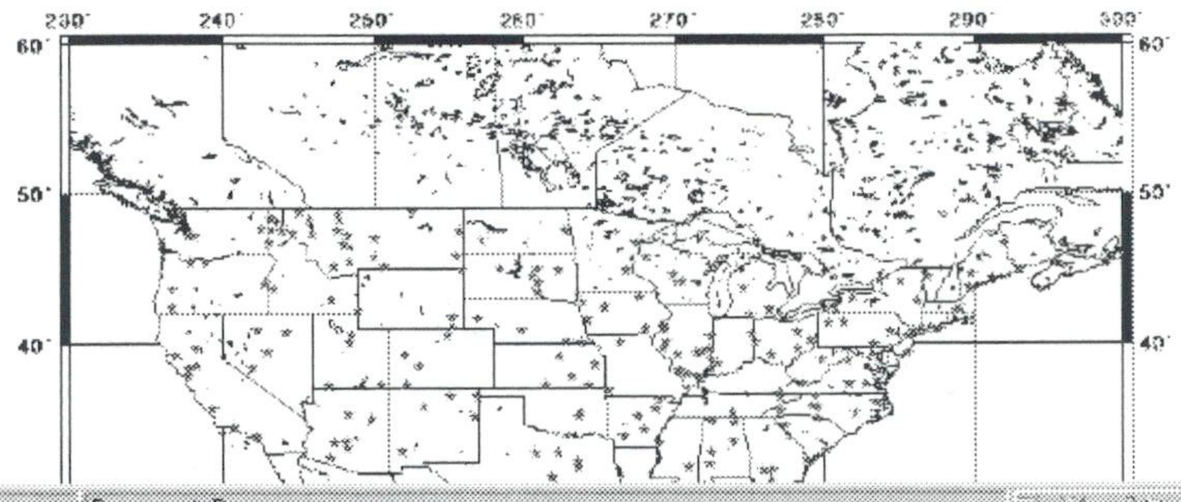
Bookmarks Location: http://www.ncdc.noaa.gov/ol/climate/research/ushcn/daily.html What's Related

Climate Research Data

The Daily Historical Climatology Network

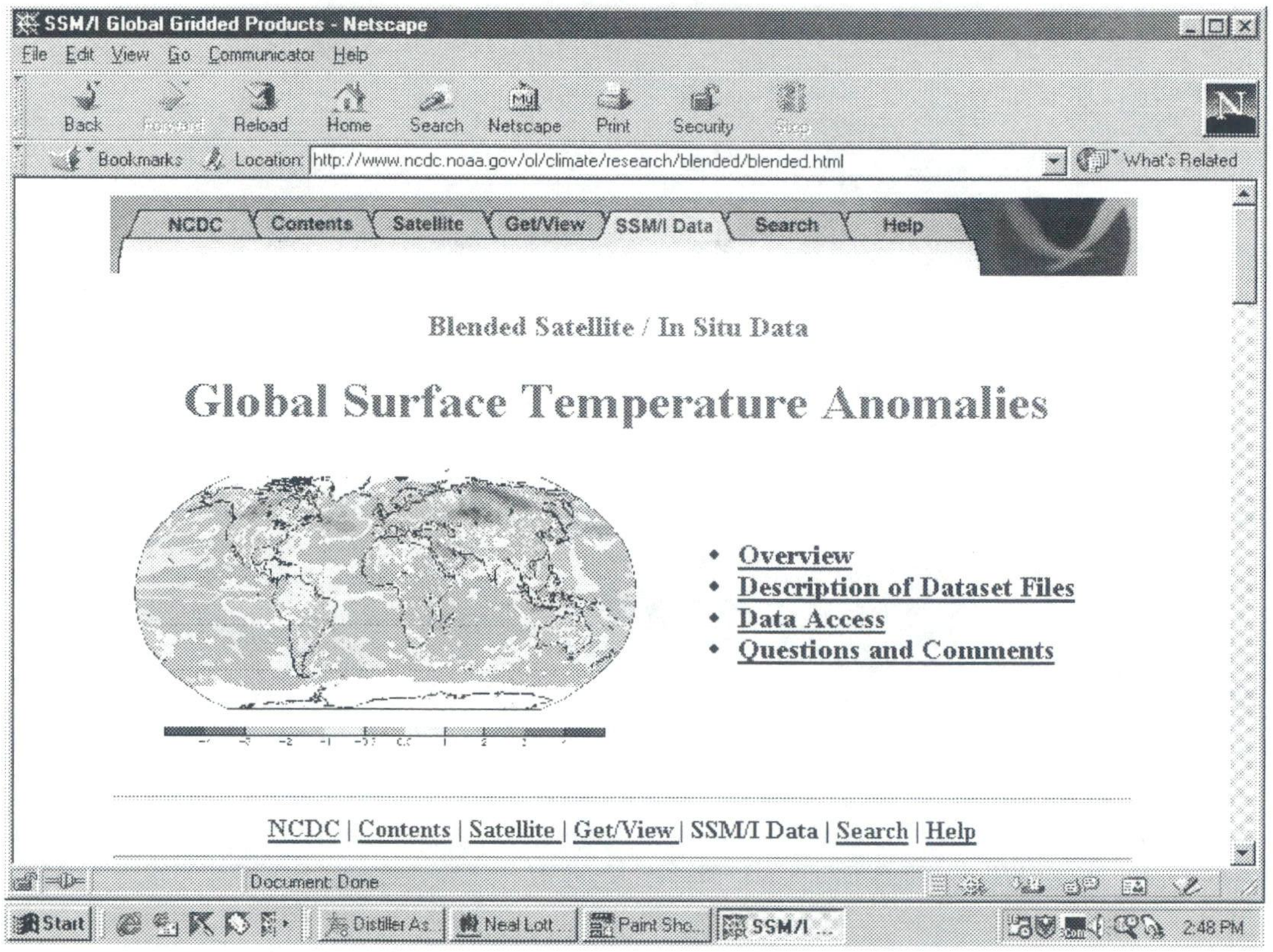
National Climatic Data Center, Asheville, NC

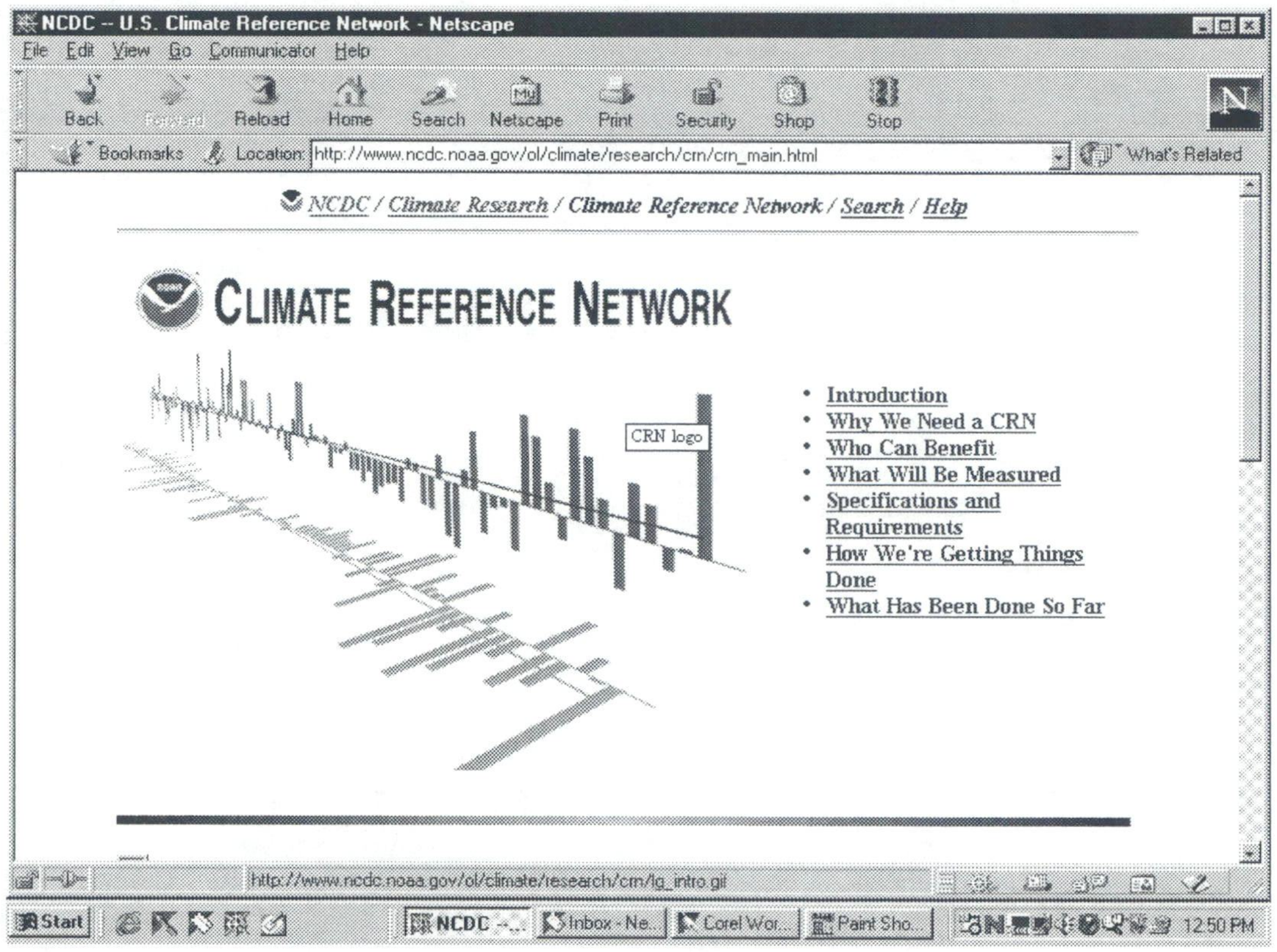
March 19, 1998



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SSM/I Global Gridded Products - Netscape
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Bookmarks Location: http://www.ncdc.noaa.gov/ol/climate/research/blended/blended.html
What's Related
NCDC Contents Satellite Get/View SSM/I Data Search Help
Blended Satellite / In Situ Data
Global Surface Temperature Anomalies
Overview
Description of Dataset Files
Data Access
Questions and Comments
NCDC | Contents | Satellite | Get/View | SSM/I Data | Search | Help
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SSM/I ...
2:48 PM

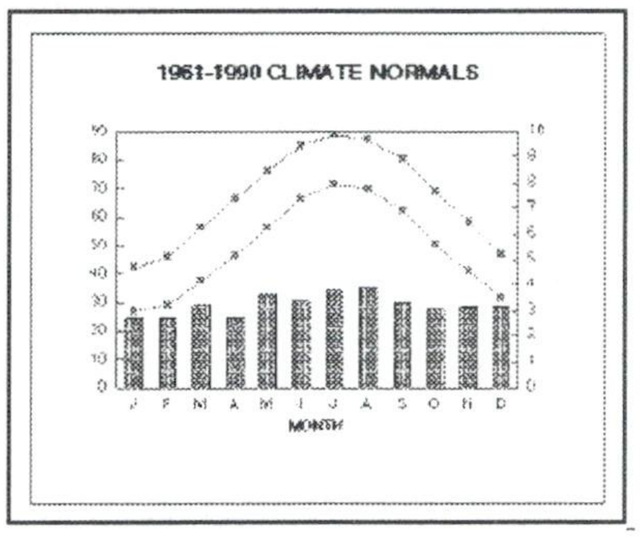

NCDC -- U.S. Climate Reference Network - Netscape
File Edit View Go Communicator Help
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Bookmarks Location: http://www.ncdc.noaa.gov/ol/climate/research/crn/crn_main.html
What's Related
NCDC / Climate Research / Climate Reference Network / Search / Help
CLIMATE REFERENCE NETWORK
CRN logo
Introduction
Why We Need a CRN
Who Can Benefit
What Will Be Measured
Specifications and Requirements
How We're Getting Things Done
What Has Been Done So Far
http://www.ncdc.noaa.gov/ol/climate/research/crn/ig_intro.gif
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U.S. National 1961-1990 Climate Normals - Netscape

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Bookmarks Location: http://www.ncdc.noaa.gov/normals/us/us_normals.html What's Related



U.S. National 1961-1990 Climate Normals

May 14, 1997

"***Climate Normal***" - *Definition: The arithmetic average of a meteorological element over 30 years.*

- Introduction
- Interpretation of "Climatic Normals"
- Overview of the 1961-90 United States Climate Normals Products

http://www.ncdc.noaa.gov/normals/us/normals_wash_dc.html

Start U.S. N... Inbox - N... Corel Wo... Paint Sho... 12:52 PM

Colonial Archive - Netscape

File Edit View Go Communicator Help

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Bookmarks Location: http://www.ncdc.noaa.gov/ol/climate/research/ghcn/colonialarchive.html What's Related

NCDC | Contents | Climate | Research | Colonial | Search | Help

The Colonial Era Archive Data Project

Historical Data for Data Sparse Underdeveloped Countries

- Abstract
- Project Goals and Methodology
- Data Collection and Analysis
- Results and Accomplishments
- Contacts

NCDC | Contents | Climate | Research | Colonial | Search | Help

Document: Done

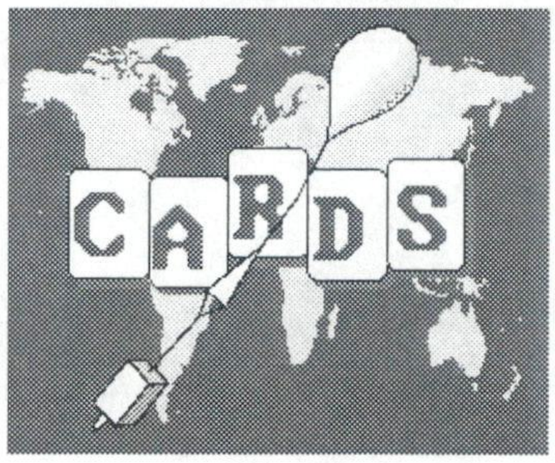
Start Colonia... Inbox - N... Corel Wo... Paint Sho... 12:53 PM

CARDS Page - Netscape

File Edit View Go Communicator Help

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Bookmarks Location: http://www.ncdc.noaa.gov/cards/cards_homepage.html What's Related



Comprehensive Aerological Reference Data Set

The goal of the National Climatic Data Center's Comprehensive Aerological Reference Data Set (CARDS) project is to produce a global upper air data set based on daily (up to four per day) radiosonde observations suitable for use in evaluating climate models and detecting tropospheric and stratospheric climate change.

Populated with more than 2300 upper air stations, CARDS currently contains over 27 million quality controlled radiosonde observations. These data are comprised of observations collected from over 20 data sources and range from 1940 to 2000. Data is added on a monthly basis and is available within 8 weeks of the data month.

- **Project Description**
- **Station Inventories**

Document: Done

Start CARDS... Inbox - N... Corel Wo... Paint Sho... 12:54 PM

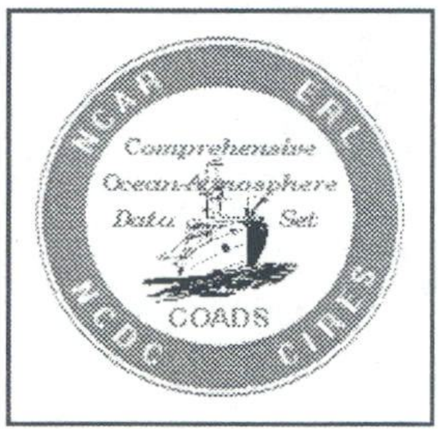
COADS - Comprehensive Ocean-Atmosphere Data Set - Netscape

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Bookmarks Location: http://www.ncdc.noaa.gov/onlinedata/coads/coads.html What's Related

The Comprehensive Ocean-Atmosphere Data Set (COADS) Project

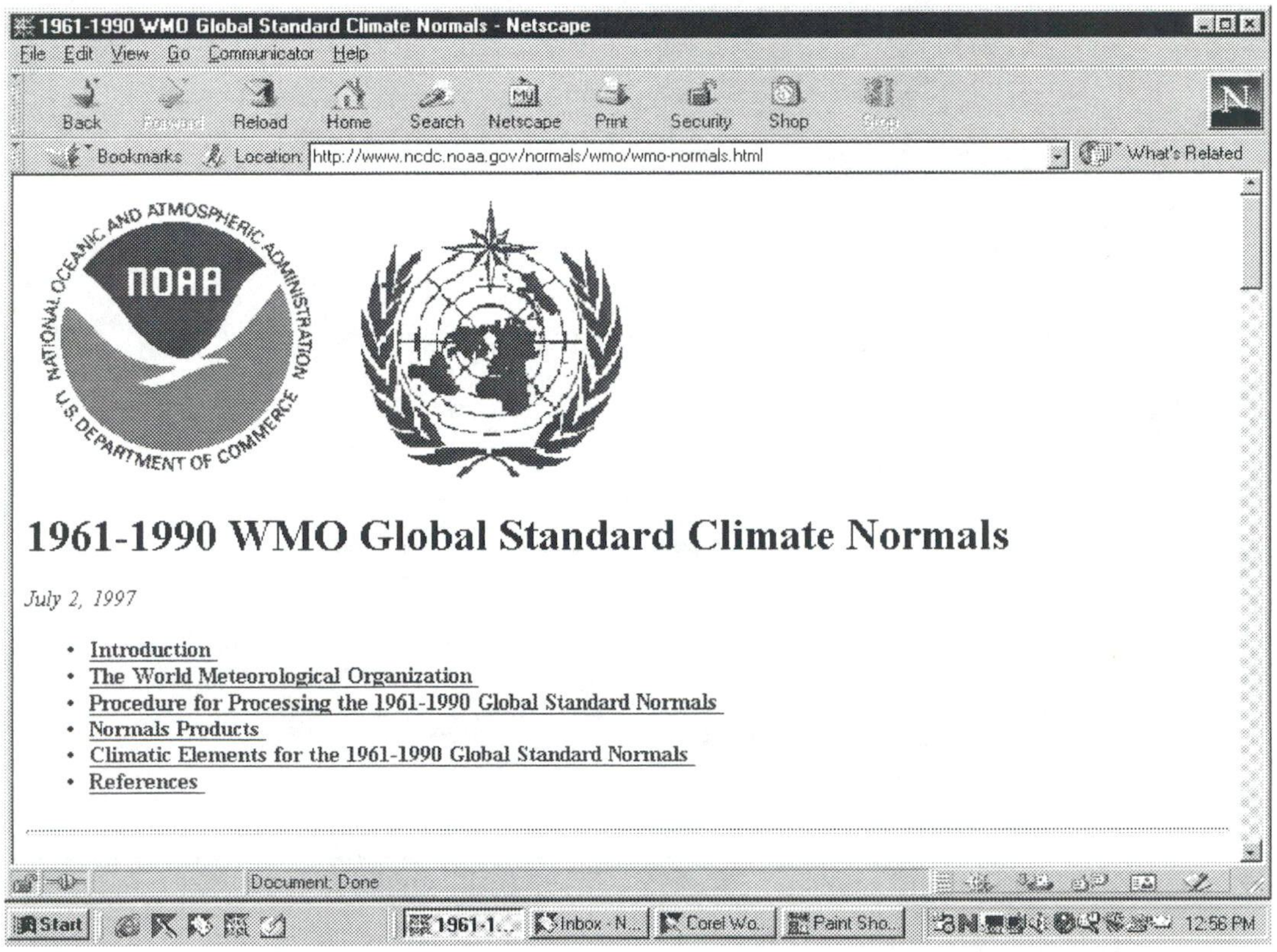


Is the Earth's ocean surface getting warmer? Are wind and pressure patterns changing over the global oceans and do these changes relate to recent extreme weather events?

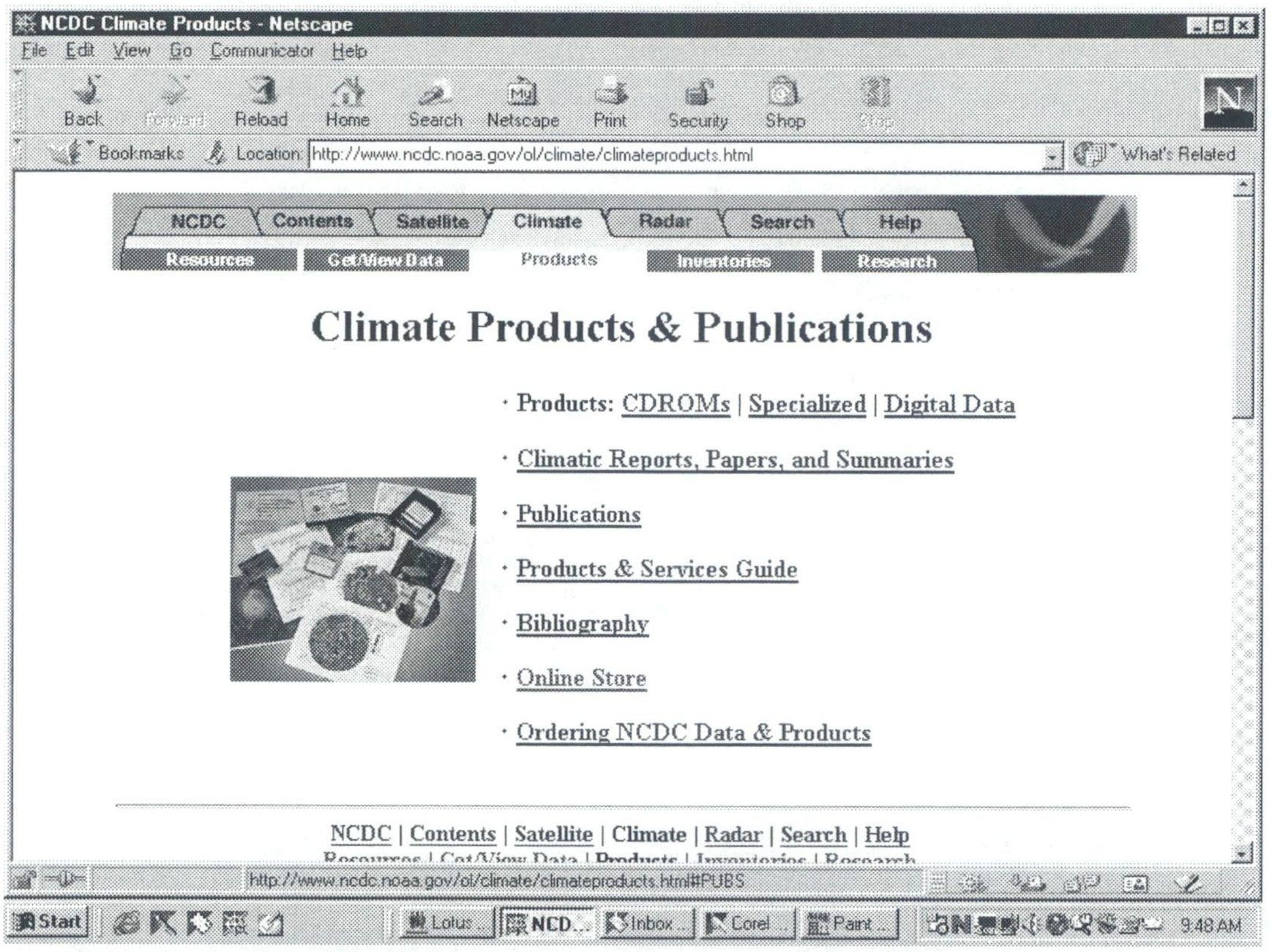
To answer questions such as these, data collected today must be compared to data taken over a sufficiently long time span in the past. The 142-year historical marine record is maintained through the COADS project. This project is a cooperative effort between NOAA -- its NESDIS/National Climatic Data Center (NCDC) and its Environmental Research Laboratories (ERL)/Climate Diagnostics Center (CDC) -- and the National Science Foundation's National Center for Atmospheric Research (NCAR). COADS provides a standard of comparison and gives meaning and context to the environmental measurements being collected daily around the globe.

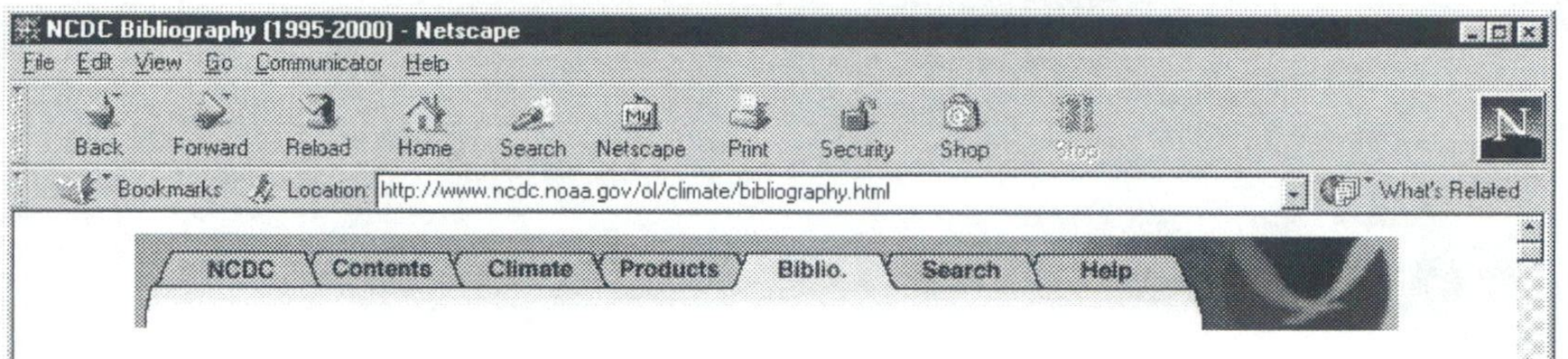
Document: Done

Start COADS... Inbox - N... Corel Wo... Paint Sho... 12:55 PM


1961-1990 WMO Global Standard Climate Normals - Netscape
File Edit View Go Communicator Help
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Bookmarks Location: http://www.ncdc.noaa.gov/normals/wmo/wmo-normals.html
What's Related
NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE
1961-1990 WMO Global Standard Climate Normals
July 2, 1997
Introduction
The World Meteorological Organization
Procedure for Processing the 1961-1990 Global Standard Normals
Normals Products
Climatic Elements for the 1961-1990 Global Standard Normals
References
Document: Done
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1961-1...
Inbox - N...
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ONLINE PUBLICATIONS





NCDC Climate Products - Netscape

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Bookmarks Location: http://www.ncdc.noaa.gov/ol/climate/climateproducts.html What's Related

Climatic Reports & Papers:

The 2000 Olympic Games--A Climatology for Sydney, Australia
Extreme Weather and Climate Events (Weather Disasters, Climate Change, Etc)
Published Papers (Selected NCDC Papers from Journals, etc)
Technical Reports (Special Reports, Studies, Extremes--Climate, Satellite, NEXRAD)

Climatic Summaries:

Annual Climatological Summaries (Monthly/Annual Summaries for ~ 8000 U.S. Locations)
Climatological Data (Daily/Monthly Data for ~ 8000 U.S. Locations)
Climate Variations Bulletin (Monthly Reports of U.S. Climate)
Comparative Climatic Data (Climatological Averages for U.S. Cities)
Climates of the World (PDF format, Regional Narratives and Climatic Tables by City)
Climatography of the U.S. (PDF format, Maps of Temperature, Precip, Degree Days)
Climatography of the U.S. - Monthly Normals (1961-1990)
Freeze/Frost data for the U.S. (PDF format)
Heating and Cooling Degree Days (Monthly State, Regional, and National Degree Days)
Hourly Precipitation Data (Hourly Precip Data for over 2500 U.S. Locations)
Local Climatological Data (Hourly/Daily Data for nearly 300 U.S. Cities)
Monthly Climatic Data for the World (Selected Worldwide Cities' Climate Summaries)
Storm Data Publication (Monthly Reports of Damaging Weather)
Wind Climatology (PDF format, Wind Climatology for Selected U.S. Cities)

Other Reports and Web Pages:

Conversion Charts
Earth Day, 1999
Earth Day, 2000

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National Virtual Data System - Netscape

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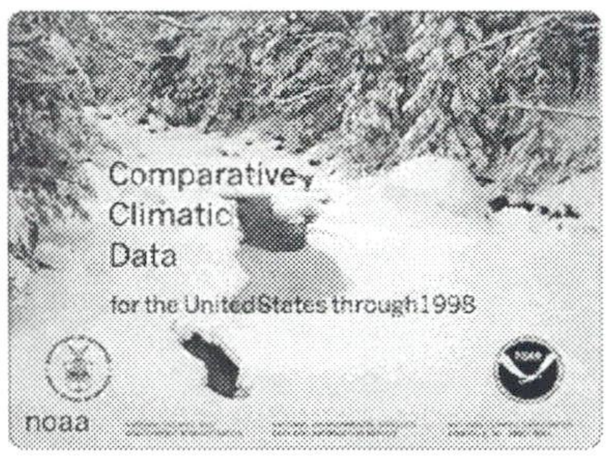
Bookmarks Location: ttp://ols.nndc.noaa.gov:7777/plolstore/plsql/olstore.prodspecific?prodnum=C00095-PUB-A0001 What's Related

National Virtual Data System

Search by...
Purchase...

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Keyword • Atlas • Region • Category
Order • Shopping Cart • Order Status • Subscriptions

Comparative Climatic Data



- Overview
- Data Tables
- Table Notes
- Downloading of ASCII data used in Publication

Overview

Document: Done

Start Distiller As... Neal Lott ... Paint Sho... Nationa... 2:40 PM

National Virtual Data System - Netscape

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Observed Data

- Temperature - Highest of Record, Degrees F
- Temperature - Lowest of Record, Degrees F
- Mean Number of Days Maximum Temperature 90 Deg. F or Higher
- Mean Number of Days Minimum Temperature 32 Deg. F or Less
- Mean Number of Days with Precipitation 0.01 Inch or More
- Snowfall (Including Ice Pellets and Sleet) - Average Total in Inches
- Wind - Average Speed (MPH)
- Wind - Maximum Speed (MPH)
- Sunshine - Average Percent of Possible
- Cloudiness - Mean Number of Days (Clear, Partly Cloudy, Cloudy)
- Average Relative Humidity - Morning (M), Afternoon (A)

Climatological Normals

- Normal Daily Maximum Temperature, Degrees F
- Normal Daily Minimum Temperature, Degrees F
- Normal Daily Mean Temperature, Degrees F
- Normal Heating Degree Days (July-June) Base 65 Degrees F
- Normal Cooling Degree Days (Jan-Dec) Base 65 Degrees F

http://www.ncdc.noaa.gov/ol/climate/online/ccd/extremelow.html

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NCDC: Heating and Cooling Degree Day Data, (State, Regional, and National) - Netscape

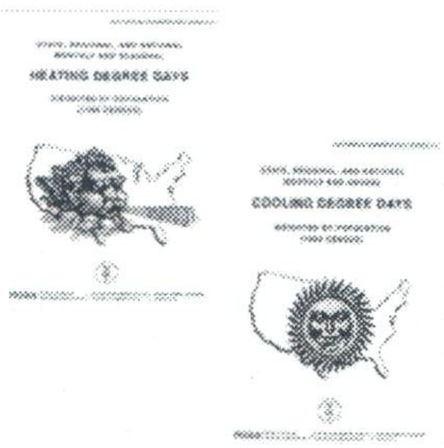
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Bookmarks Location: http://www.ncdc.noaa.gov/ol/documentlibrary/hcs/hcs.html What's Related

NCDC | Contents | Climate | Resources | Doc Library | Search | Help

Heating and Cooling Degree Day Data



Monthly State, Regional and National Historical Climatological Series (HCS)

HCS 5-1: Heating Degree Days

- Overview
- Publication

HCS 5-2: Cooling Degree Days

- Overview
- Publication

NCDC | Contents | Climate | Resources | Doc Library | Search | Help

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SATELLITE AND RADAR DATA & PRODUCTS

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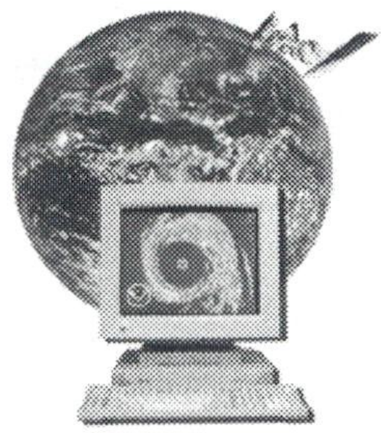
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Get/View Online Satellite Data



- Historical GOES Browse Server
- Satellite Active Archive (Lev 1b POES/DMSP DATA)
- Images/Movies of Hurricanes and Special Events
- SSM/I Global Gridded Files from FTP server
- SSM/I Monthly Image Products
- Satellite's Eye Art Galleries (discussions and images)
- Interactive SSM/I and Blended Image Products

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http://www.ncdc.noaa.gov/ol/satellite/olimages.html

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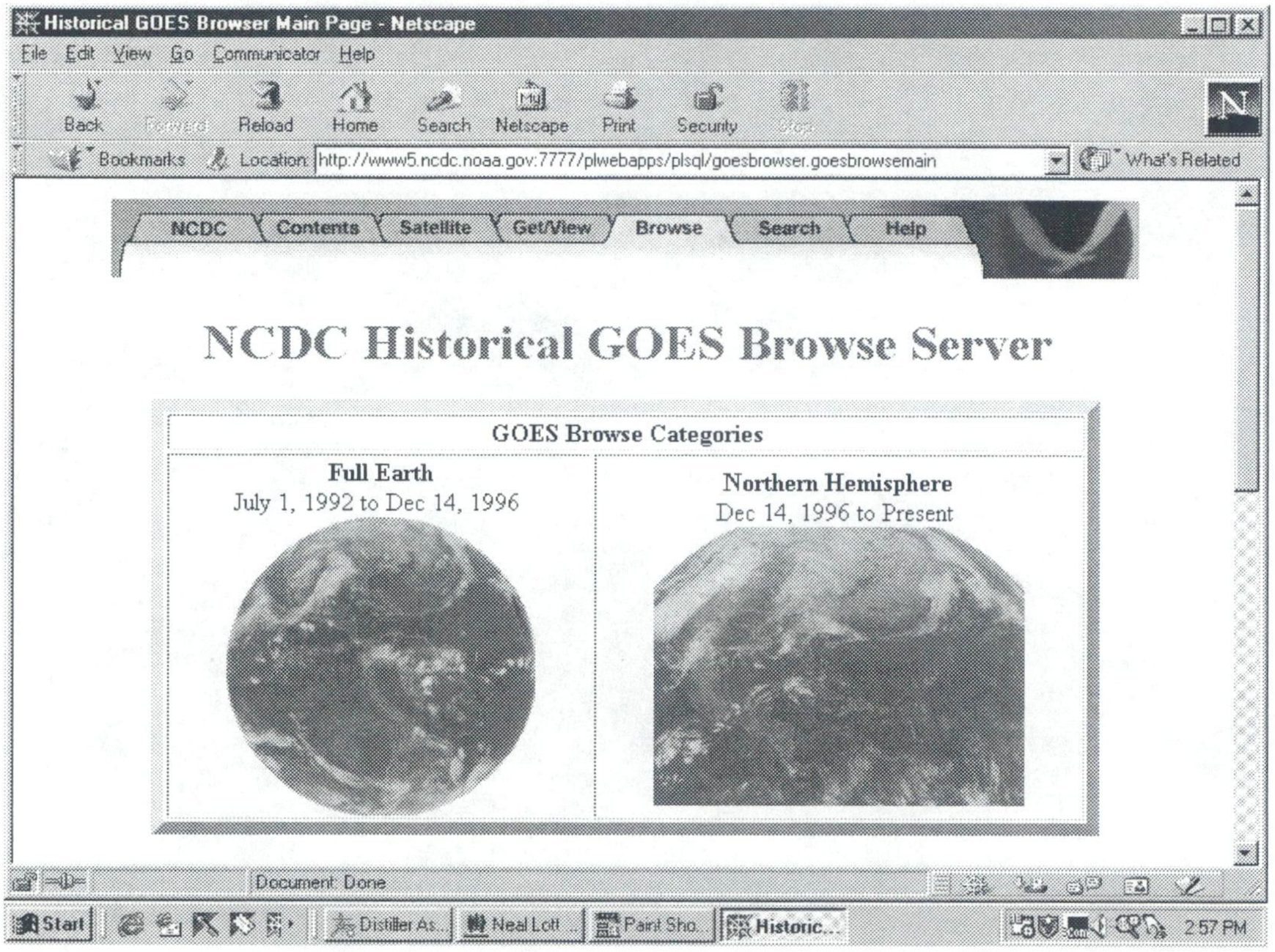
Radar Products & Publications

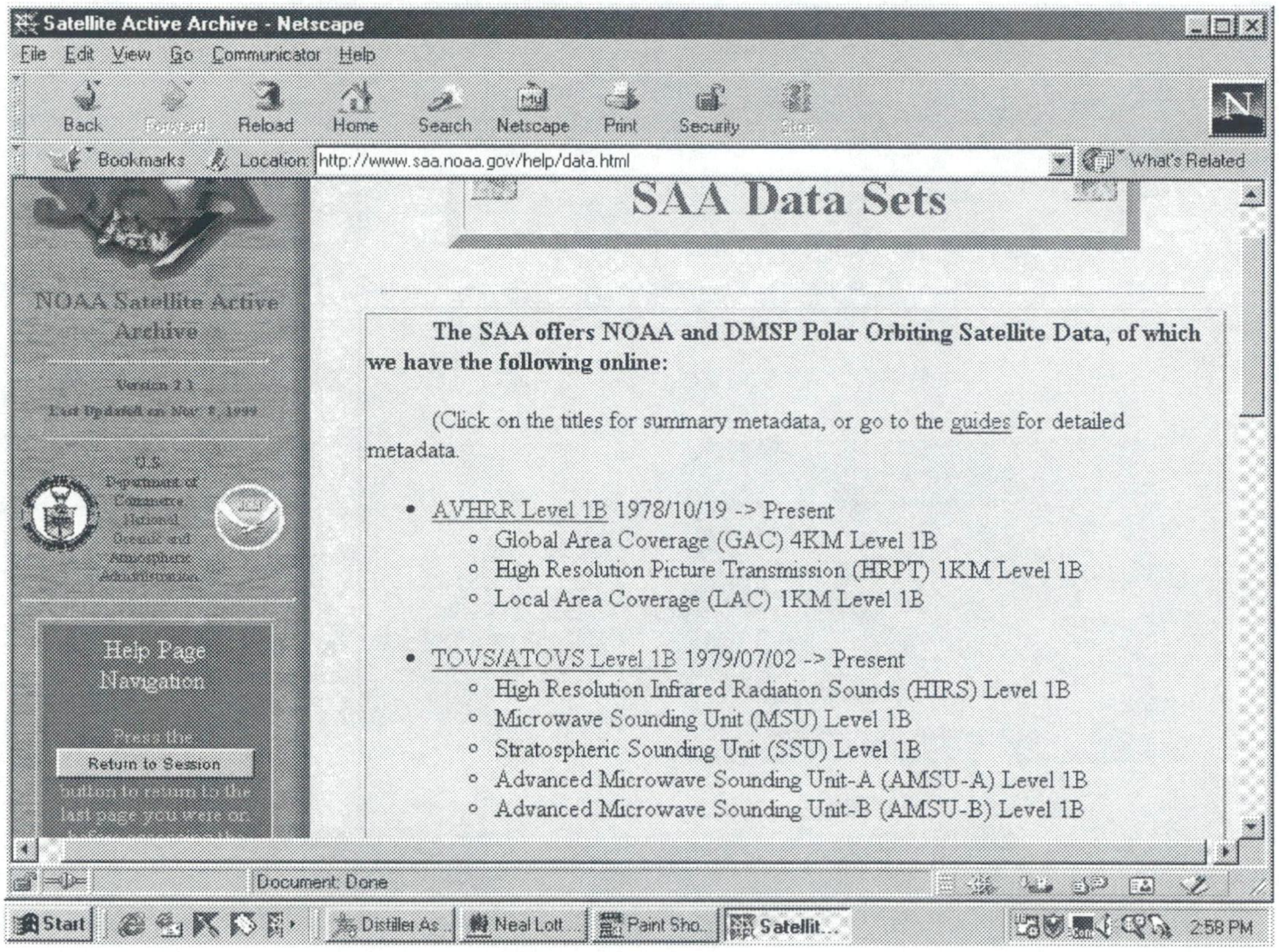
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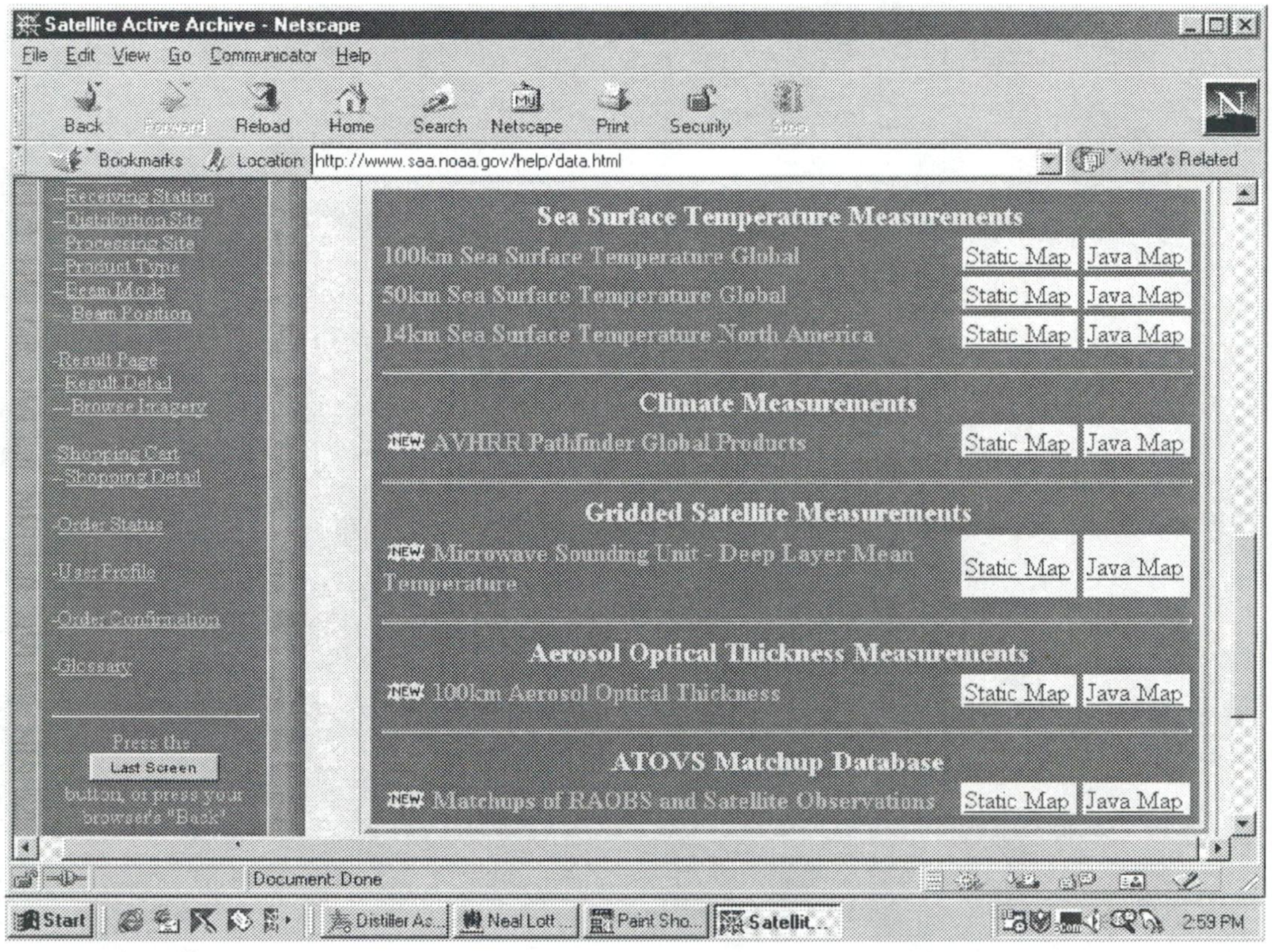
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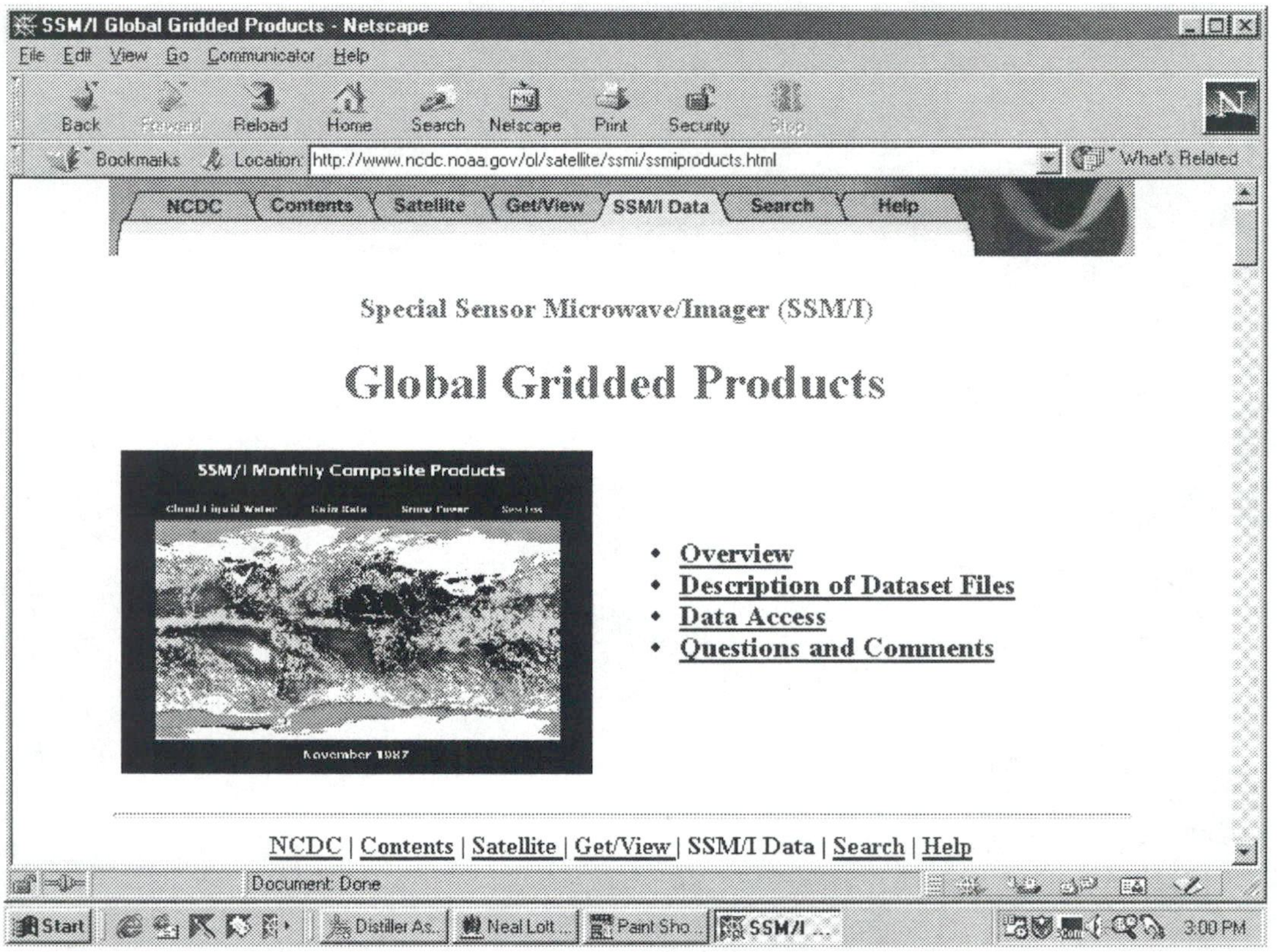
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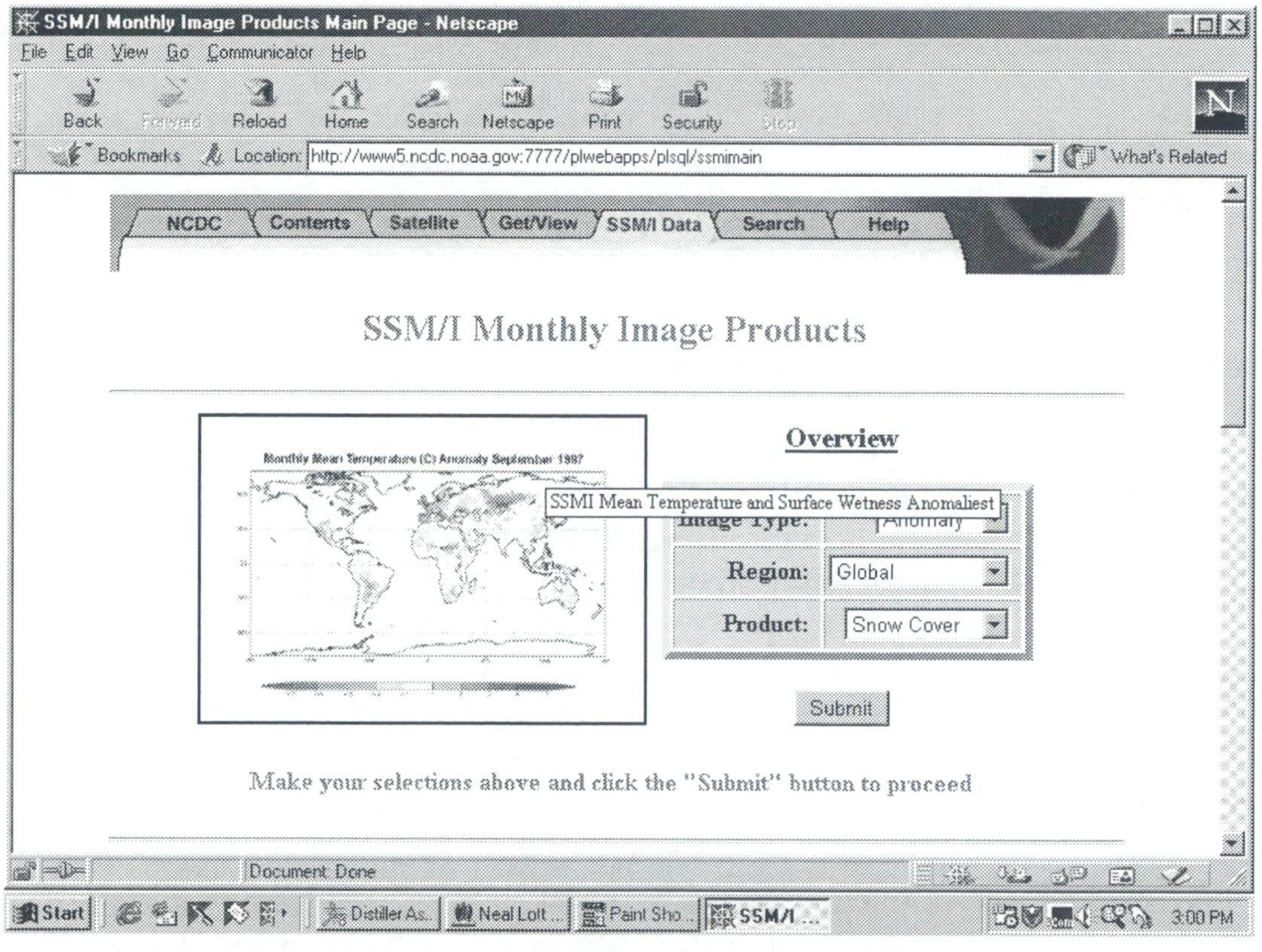
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Historical GOES Browser Main Page - Netscape
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July 1, 1992 to Dec 14, 1996
Northern Hemisphere
Dec 14, 1996 to Present
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NOAA Satellite Active Archive
Version 2.1
Last Updated on Mar 8, 1999
U.S. Department of Commerce National Oceanic and Atmospheric Administration
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SAA Data Sets
The SAA offers NOAA and DMSP Polar Orbiting Satellite Data, of which we have the following online:
(Click on the titles for summary metadata, or go to the guides for detailed metadata.
AVHRR Level 1B 1978/10/19 -> Present
Global Area Coverage (GAC) 4KM Level 1B
High Resolution Picture Transmission (HRPT) 1KM Level 1B
Local Area Coverage (LAC) 1KM Level 1B
TOVS/ATOVS Level 1B 1979/07/02 -> Present
High Resolution Infrared Radiation Sounds (HIRS) Level 1B
Microwave Sounding Unit (MSU) Level 1B
Stratospheric Sounding Unit (SSU) Level 1B
Advanced Microwave Sounding Unit-A (AMSU-A) Level 1B
Advanced Microwave Sounding Unit-B (AMSU-B) Level 1B
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-Processing Site
-Product Type
-Beam Mode
-Beam Position
-Result Page
-Result Detail
-Browse Imagery
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-User Profile
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Sea Surface Temperature Measurements
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50km Sea Surface Temperature Global Static Map Java Map
14km Sea Surface Temperature North America Static Map Java Map
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NEW AVHRR Pathfinder Global Products Static Map Java Map
Gridded Satellite Measurements
NEW Microwave Sounding Unit - Deep Layer Mean Temperature Static Map Java Map
Aerosol Optical Thickness Measurements
NEW 100km Aerosol Optical Thickness Static Map Java Map
ATOVS Matchup Database
NEW Matchups of RAOBS and Satellite Observations Static Map Java Map
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Global Gridded Products
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Monthly Mean Temperature (C) Anomaly September 1987
SSMI Mean Temperature and Surface Wetness Anomaliest
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Product: Snow Cover
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Latest Masterpiece
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CD-ROM PRODUCTS

NCDC produces a suite of CD-ROM's with diverse environmental data ranging from global tropical cyclone tracks, to worldwide climatologies, to hourly surface data. More details concerning these CD's, including an **on-line ordering system (with discounted prices vs those below), are accessible via http://www.ncdc.noaa.gov/ol/climate/climateproducts.html**.

International Station Meteorological Climate Summary (ISMCS) Vers 4.0. Provides detailed climatological summaries for 2600 locations worldwide. These locations include National Weather Service stations, domestic and overseas Navy and Air Force sites, and numerous foreign stations. Limited summaries are also given for approximately 4000 additional worldwide sites. This version also contains year/month and long term mean precipitation data for 1000 foreign locations. Tabular or statistical data can be exported to a printer or spreadsheet. Joint NCDC, USAF and U.S. Navy product. Please note that the non-U.S. data cannot be redistributed by users of the CD for commercial purposes. **$175.**

U.S. Navy Marine Climatic Atlas of the World - Vers 1.1. Includes analysis and display software for climatological averages of atmospheric and oceanographic data. The data are summarized with user-defined 1 and 5 degree grid areas covering the global marine environment. The summaries are produced using predominately ship data collected between 1854-1969. The major elements include air and sea temperature, dewpoint temperature, scalar wind speed, sea-level pressure, wave height, wind and ocean-current roses. This CD-ROM allows the user to define element intervals (e.g. 5 to 10 knots, 2 degree temperature intervals). The CD-ROM also allows contouring for explicitly user-defined regions and exporting data to a printer or diskette. Narratives for Mediterranean ports and ocean basin climatology narratives are included. U.S. Navy sponsored product. **$175.**

Global Upper Air Climatic Atlas (GUACA), 1980-1991. This two-volume CD-ROM set uses 12-year (1980-1991) 2.5 degree gridded upper air climatic summaries derived from the European Centre for Medium Range Weather Forecasts (ECMWF) model analyses. The CD-ROM presents upper air statistics for 15 different vertical levels in the Northern and Southern Hemisphere for dry bulb and dewpoint temperature, geopotential height, air density, and vector and scalar wind speed. The CD-ROM provides access/display software for gridpoint data, contouring capability for user-defined areas, and vertical profiles. The climatology covers the 12-year period as well as individual year-months. Joint NCDC and U.S. Navy product. **$350.**

Global Upper Air Statistics (GUAS), 1980-1995. This single-volume CD-ROM set uses 16-year (1980-1995) 2.5 degree gridded upper air climatic summaries derived from the European Centre for Medium Range Weather Forecasts (ECMWF) model analyses--similar to that used for GUACA above. It presents upper air statistics for 15 different vertical levels in the Northern and Southern Hemisphere for dry bulb and dewpoint temperature, geopotential height, air density, and vector and scalar wind speed. The CD-ROM provides the data as easy-to-use ASCII files without access/display software, and covers the 16-year period summarized for each month. Joint NCDC and U.S. Navy product. **$100.**

CLIVUE CD-ROM. The National Climatic Data Center (NCDC) developed a CD-ROM in support of a museum exhibit which traveled across the U.S. The CD contains a 1,500-station subset of NCDC's nearly 8,000 U.S. daily cooperative stations. The user selects a date and area of the U.S. and the CD-ROM database is queried for stations within the specified domain having data. Then, the system displays daily maximum and minimum temperatures, precipitation, and snowfall for the site. Graphs showing 7 years, 21 years, and the full period of record (varies by station) for the station(s) are available. Visual displays allow users to view trends, variability, and extremes. Joint NCDC and Franklin Institute product. **$175.**

SAMSON, 1961-1990. The Solar and Meteorological Surface Observational Network (SAMSON) 3-volume CD-ROM set is divided geographically into regions: eastern, central, and western U.S. It contains hourly solar radiation data along with selected meteorological elements for the period 1961-1990. It encompasses 237 NWS stations in the United States, plus offices in Guam and Puerto Rico. The dataset includes both observational and modeled data. The hourly solar elements are: Extraterrestrial horizontal and extraterrestrial direct normal radiation; global, diffuse, and direct normal radiation. Meteorological elements are: Total and opaque sky cover, temperature and dew point, relative humidity, pressure, wind direction and speed, visibility, ceiling height, present weather, precipitable water, aerosol optical depth, snow depth, days since last snowfall, and hourly precipitation. Joint NCDC and NREL product. **$175 per region or $525 per set.**

Radiosonde Data of North America, 1946-1997. Contains all available radiosonde data for North America (U.S., Canada, Mexico, and Caribbean Islands) through the 100-mb level on four disks, for 1946-1997. Data include significant, mandatory, and special wind levels for all observation times, and include geopotential height, temperature, dew point, wind direction, and scalar speed. The user can select for output to printer, screen, or file: a single station or multiple stations for a defined time period, or all stations within a specified geographic region in either synoptic or station sort. The CD contains available station metadata, and software is available to access the data for DOS, UNIX and VMS computer systems. Joint NCDC and ERL product. **$700, four volume set**. The latest single CD-ROM (1994-1997) is available separately for **$175.**

Global Tropical and Extratropical Cyclone Climatic Atlas (GTECCA) 2.0. This single volume CD-ROM contains all global historic tropical storm track data available for five tropical storm basins. Periods of record vary for each basin, with the beginning as early as the 1870s and with 1995 as the latest year. Northern hemispheric extratropical storm track data are included

from 1965 to 1995. Tropical track data includes time, position, storm stage (and maximum wind, central pressure when available). The user has the capability to display tracks, and track data for any basin or user-selected geographic area. The user is also able to select storm tracks passing within a user-defined radius of any point. Narratives for all tropical storms for the 1980-1995 period are included along with basin-wide tropical storm climatological statistics. Joint NCDC and U.S. Navy product. **$175**.

Global Daily Summary (GDS), 1977-1991. This CD-ROM provides access to a 10,000-station set of daily maximum/minimum temperature, daily precipitation, and 3-hourly present weather for the 1977-1991 period of record. Data can be selected for viewing or output to file for geographic areas or by a predefined user-selected list of stations. The dataset includes element flags for suspected erroneous data. A data inventory contains station name, latitude/longitude, elevation, period of record, and the number of observations of available data. Requires a bare minimum of 4MB of RAM, with 8MB of RAM recommended. **$175.**

Global Historical Fields (GHF), 1899-1994. Northern hemisphere charts. This CD-ROM allows users to view daily surface charts for the period 1899 through April 1994. Daily upper air charts (700mb, 500mb, 300mb) are available from the late 1940's through April 1994. Surface charts contour sea level pressure only (not station plots); upper air charts contour geopotential heights and temperatures. Charts can be contoured, looped, and exported to a file or printer. Joint NCDC and U.S. Navy product. **$175.**

U.S. Divisional and Station Climatic Data and Normals. This NCDC CD-ROM contains a collection of ASCII text data and documentation files that pertain to the U.S. climate normals and by-products of the normals. Climatic variables include temperature, precipitation, degree days, and Palmer Drought Indices. The current normals period of 1961-1990 is covered with monthly values calculated for approximately 6600 precipitation and 4700 temperature stations. The earlier data/normals are provided for comparison and research applications. This CD-ROM contains no software or extraction routines that allow users to import the data directly into spreadsheets or other applications. Format and description of the files match NCDC magnetic tape series TD-9640 and TD-9641. **$100.**

NCDC Cooperative Station Data, 1948-1997. This NCDC 21 volume CD-ROM set has TD-3200 cooperative station data. Major elements include daily high and low temperatures, daily rainfall, daily snowfall and snow depth, and evaporation. General period of record is 1948-1993 (1994-1996 on separate CD; 1997 on separate CD), but longer for selected stations. There are approximately 8000 active stations in the dataset. Historically, approximately 23,000 stations are included for various years. States are grouped geographically into volume numbers. The set contains inventories, station histories, and ASCII data files. Joint NCDC and ARL project. An extraction program is provided on diskette. **$100 volume or $1300 set**. A 1994-1996 single volume CD-ROM is available for **$100.** A 1997 single volume CD-ROM is also available for **$100**.

Hourly Modeled Sounding Data, 1990. This 12 volume CD-ROM set contains hourly 80 KM modeled gridpoint U.S. sounding data for 1990. This data is the output from the Penn State

University MM4 model which used available daily sounding data for 1990 as input. Wind, temperature, dewpoint depression, and geopotential height data for 8 standard and 15 variable levels are included in the NWS TTAA, TTBB format. One of the applications of this CD-ROM is to access air pollution impacts on a local scale. Joint NCDC and ARL product. Sold only as a set. **$600, 12 volume set**.

Coastal-Marine Automated Network (C-MAN) Station and Buoy Reports and Summarized Elements (SeaBreeze), 1974-1993. This two volume CD-ROM set contains climatic summaries and archived observations measured by National Data Buoy Center (NDBC) moored buoys and C-MAN stations for 197 sites. The period of record generally covers a 3-20 year period depending on the station and ends with December 1993. The two volume set consists of archived observations and climatic summary tables. All measurements are included except for spectral wave data and subsurface measurements. A map shows station locations and data inventories show measurements and time periods for each station. The following elements are summarized: monthly frequency distributions of wind speed, wind gust, sea level pressure, air and sea temperature, air-sea temperature difference, dew point (where available), significant wave height, average and dominant wave period. Additional tables include: wind speed versus direction, significant wave height versus dominant and average wave periods, significant wave height versus wind speed. The individual monthly means and extremes for all measurements are included. Stations with less than 3 years of data will only have individual monthly means and extremes summarized. Joint NCDC and NDBC product. This item is sold only as a set. **$350**.

NOAA Weather Charts-CD-ROM Subscription. The series is available as a **subscription (one year basis only) or as individual CD's,** and contains weather charts most commonly used by researchers and the general public. They are archived as PCX files on a monthly basis and serve as a continuation of NCDC's microfilm archive. The series includes monthly CD-ROM editions of: A) Surface and Upper Air Weather Charts; B) Initial Analysis and Forecast Charts; and C) Tropical Strip/Precipitation and Observed Weather Charts. Subscription orders begin with the current processed month. Contact NCDC's Climate Services Branch at 828-271-4800, 4876 FAX, or orders@ncdc.noaa.gov for additional chart details, hardware and software requirements, and ordering information. **$300 per year per chart series (A, B, or C), or at a reduced price of $600 per year for the entire set. Back issues (begin Oct 94) of the CD-ROMs cost $100 per CD-ROM.**

Polar Ice, 1972-1994. The Arctic and Antarctic Sea Ice Data CD-ROM Version 1.0, contains weekly ice data in the International Sea Ice in the Digital Form (SIGRID) format for 1972-1994 for the Arctic and 1973-1994 for the Antarctic. This .25 degree grid structure includes total ice concentration, thickness stage, and form of ice for the complete period of record. The SIGRID format was designed to meet the sea ice requirements of large-scale climate and statistical studies. The CD-ROM contains no display or extraction routines. The SIGRID reference file provides detailed information concerning the coding system for digitizing sea ice chart data. Joint NCDC, U.S. Navy, National Ice Center product. **$100.**

HUSWO, 1990-1995. The Hourly U. S. Weather Observations (HUSWO) CD-ROM contains 1990-1995 hourly weather data for 262 NWS locations. It has a map interface and station list for

data selection, or you can copy the data files directly from the CD (without using the interface). The elements included are: Total and opaque sky cover, temperature and dew point, relative humidity, station pressure, wind direction and speed, visibility, ceiling height, present weather, ASOS cloud layer data, snow depth, and hourly precipitation. Data can be output in either English or Metric units. Joint NCDC and EPA product. **$175.**

International Surface Weather Observations, 1982-1997. The International Surface Weather Observations (INSWO) CDROM set contains 5 CD's, and is compatible with MS-DOS, all Windows (e.g., 95, 98, NT), and Unix systems. The dataset includes hourly and/or synoptic (every three hours) climatic data for approximately 1500 international stations for 1982-1997. It provides excellent worldwide coverage of city locations, including U.S. stations. The 1982-1993 version of this dataset was used to develop the climatological tables for the 1997 American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) Handbook of Fundamentals. The elements included are: total sky cover; cloud types by layer; lowest cloud height; ceiling height; temperature and dew point; sea-level pressure; altimeter setting; wind direction, speed, and gust; visibility; three-hour pressure change; present weather and past weather. The data and inventory files are well-organized, with directories by state for the U.S. and by WMO block for the rest of the world. Each data file contains data for one station-year in compressed form--easily uncompressed with Winzip or with software provided on the CD. The overall set contains nearly 15 gigabytes of data when uncompressed. Please note that the non-U.S. data cannot be redistributed by users of the CD for commercial purposes. **$500**.

The Maury Collection, Global Ship Observations, 1792-1910. In recognition of the International Year of the Ocean (YOTO), NCDC has produced a CDROM entitled "The Maury Collection, Global Ship Observations, 1792-1910." It contains nearly 1.5 million historical ships' weather observations, 1792-1910, with the majority taken during the period 1820-1860. The observations include air and sea temperatures, ocean currents, pressure, cloud cover, present weather, and wind direction/speed. The data were digitized from paper copies of hand written forms via the U.S.-PRC Protocol on Cooperation in the Field of Marine and Fishery Science and Technology, by the Joint Coordination Panel for Data and Information Cooperation, facilitated by NOAA and the government of China. This CD-ROM contains no display or extraction routines. **$100.**

United States Snow Climatology. This 3-disk CD-ROM set describes the snow climatology of the United States. Snowfall and snow depth data through 1996 were analyzed for 5525 stations in the contiguous U.S. and Alaska. Climatic variables include daily, monthly, and seasonal snowfall and snow depth. Computed statistics include mean, median, quartiles, extremes, frequencies, and the number of years with non-missing data. Several indicators were computed, based on the data and metadata, to enable the user to assess the quality of the stations. These include frequencies of station moves and observation time changes, number of missing values and breaks in the record, number of values failing the QC checks, and percentages indicating how complete the data record is. The snow climatology CD-ROM also includes files from two other NCDC projects: 1) return period statistics of seasonal (August-July) 1-day, 2-day, and 3-day extreme snowfall, and total seasonal snowfall amount--for 10-year, 25-year, 50-year, and 100-year return periods; 2) 1961-1990 snowfall and snow depth normals. The CD-ROM set is a

collection of DOS ASCII files; the CD contains no software or extraction routines that allow the user to import data directly into spreadsheets or other applications. However, a file may be easily copied from the CD-ROM onto a hard drive or other device with the DOS copy command for manipulation. The text files are easily read by a word processor or text file editor. **$300**.

Time Series of Global Monthly Vegetation Cover from NOAA/AVHRR, 1985-1997. This CD-ROM contains data generated from the National Oceanic and Atmospheric Administration (NOAA) Polar-orbiting Operational Environmental Satellite (POES) Advanced Very High Resolution Radiometer (AVHRR) instrument. These data were further processed into Normalized Difference Vegetation Index (NDVI) data. There are twelve years of global monthly NDVI files, in both digital and graphical formats. The CD-ROM is arranged as a series of HTML files that are linked to each other through the Welcome page. A portion of this CD-ROM is available online at URL: http://www2.ncdc.noaa.gov/docs/ndvisamp/intro.htm. **$175**.

Global Climate Normals, 1961-1990: This CD-ROM contains a collection of DOS files which describe the 1961 - 1990 global standard climate normals for over 4000 stations worldwide, computed by more than 135 countries and territories. The files include ASCII data files, documentation files, eye-readable ASCII table files, graphics files, and limited extraction software. The data are provided in large files with a fixed length record format. They can be read by software written by the user according to the format specifications outlined in the documentation files. The data files may also be opened by any ASCII-compatible application that can handle large data volumes. The graphics files are maps identifying the countries that submitted normals. This CD-ROM contains no software or extraction routines that allow users to import the data directly into their spreadsheets or other applications. This is an NCDC product in conjunction with the World Meteorological Organization. **$100.**

Probabilities of Temperature Extremes in the USA, Vers 1.0. This CD allows the user to use the U.S. climate normals and various projections of temperature trends to generate statistics for numerous U.S. locations. The software generates frequency distributions of user-selected temperature extremes. **$175.**

U.S. Hourly Precipitation Data, 1948-1998. These data and software were developed jointly by the National Climatic Data Center (NCDC) and NOAA's Forecast Systems Laboratory (FSL). Data files contain hourly precipitation amounts for more than 2500 active stations and close to 7000 total stations. The period of record is 1948 through June 1998, although some stations begin in 1900. Access software, available for most UNIX and DOS platforms, is included to extract data from the CDROM archive and, if needed, can be used to summarize the data into daily or monthly precipitation quantities. Display software (java-enabled web browser required) will generate zoomable map and time series graphics. 2-CD set. **$350**.

National Climatic Data Center Periodical Publications. Contains PDF format versions of NCDC serial publications. Monthly issues of Climatological Data (all states), Hourly Precipitation Data (all states), Storm Data, and Monthly Climatic Data for the World. **$225 for latest quarter, $1000 for one year subscription (issued quarterly).**

Engineering Weather Data. This CD-ROM contains an update of a very popular publication that was first printed by the Air Force in 1967 and republished in 1978. As compared to the Engineering Weather Data publication, the new interactive CD-ROM database contains updated meteorological tables, new summarized parameters, and graphical displays. Approximately 800 worldwide stations have been summarized. For each station, the data and information on this CD-ROM include: Summarized design criteria data for dry and wet bulb temperatures and humidity ratios, average annual climate summaries, psychrometric summaries, binned temperature data, annual temperature and humidity summaries, heating and cooling degree data summaries for building envelop loads, ventilation and infiltration loads, solar radiation data, and seasonal wind direction and wind speed summaries. Please note that the non-U.S. data cannot be redistributed by users of the CD for commercial purposes. **$100.**

U.S. Climate Atlas. This CD-ROM contains the new Climate Atlas of the Contiguous United States. It replaces a popular paper Atlas last published in 1968. The new CD Atlas contains 737 color maps of climatic elements such as temperature, precipitation, snow, wind, pressure, etc., chosen to portray the climate of the contiguous US. The period of record of the data for most of the maps is 1961-1990. The user may install the Atlas onto a local drive, or run the Atlas from the CD. From the Atlas interface, the user chooses an element (temperature, precipitation, snow, etc.) and a parameter of that element (mean, or maximum, or record extreme, etc.). The Atlas displays maps of the selected element/parameter using ESRI's ArcExplorer, which is included on the CD. ArcExplorer provides GIS capabilities, such as zoom, query, identify, and theme layering. The Atlas provides access to extensive documentation and help directly from its interface. **$175.**

Important Notes

- Many NCDC CD-ROM products were produced for use in a 'DOS' PC environment and will not work in an Apple 'MAC' environment. In addition, the majority of NCDC CD-ROMs were produced in a pre-Windows 95/98 environment and may not work without configuration changes or rebooting in DOS mode. NCDC will provide a help sheet for Windows 95/98 users, if requested.

- Some of the CD-ROMs present the data in an atlas type format (interactive software) rather than as ASCII data files. If you have technical questions, call 828-271-4702.

- The NCDC's Climate Services Branch is responsible for distribution of NCDC CD-ROM products. Domestic customers add a $11.00 service charge per order; foreign users add $31.00 per order. Address:

National Climatic Data Center
151 Patton Avenue
Asheville, NC 28801-5001

Attn: Climate Services Branch
Telephone: 828-271-4800; Fax: 828-271-4876
Internet: orders@ncdc.noaa.gov

SPECIALIZED PRODUCTS

General Information

These Specialized Products can be provided on diskette or as paper copy (unless otherwise indicated). Please call 828-271-4800 or email "info@ncdc.noaa.gov" for further details. There are charges involved for these services.

Cooperative Station Extremes Tabulation: This tabulation shows daily and monthly extremes for the entire period of record (generally 1948 to present) for U.S. cooperative and National Weather Service sites. There are currently over 8000 of these stations active. The elements included are maximum/minimum temperature, precipitation, and snowfall.

Wind Rose Summary: This summary provides a statistical summary of wind speed vs wind direction for any station (U.S. or foreign) reporting adequate observational data. Data are tabulated in incremental 'bins' such as 0-3 miles per hour, 4-7 miles per hour, etc.

Mixing Height Summary: This summary provides a day by day estimate of the mixing height for the boundary layer by using surface and upper air observational data. It's often used for pollution and air dispersion models.

Stability Array: This provides month by month averages of surface-based stability in Pasquill stability categories. Hourly or synoptic surface observations are used as input.

Comparative Climatic Data: This product contains climatological normals and averages for 270 NWS offices, in ASCII data files.

Summary of Day Data for U.S. and Foreign Sites: This historical summary of day data can be produced from any station reporting synoptic and/or hourly observational data. The format is the same as the on-line global summary of day data. It includes the following elements for each day available:

Mean temperature
Mean dew point
Mean sea level pressure
Mean station pressure
Mean visibility
Mean wind speed
Maximum sustained wind speed
Maximum wind gust
Maximum temperature
Minimum temperature
Precipitation amount
Snow depth
Indicators for occurrence of: Fog, Rain, Snow, Hail, Thunder, Tornado/Funnel Cloud

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DIGITAL DATASETS

General Information

1. See glossary of acronyms at end of Guide for details on terms used below.

2. The periods of record for these datasets vary considerably depending on data type and station (if applicable).

3. All reference to QC pertains strictly to data checking and corrections performed within the Federal Climate Complex by NCDC and/or AFCCC. Other gross QC is usually performed at the point of origin such as NCEP and AFWA.

4. The media available are: Magnetic tape (6250 BPI), IBM 3480 cartridge tape, diskette (3.5 or 5.25 inch), CDROM, Exabyte 8 mm tape, and FTP transfer. These options vary depending on database.

5. Cost to customer varies depending on data volume and the processing required for order.

6. **This is only a summary of the major digital datasets available from NCDC**. Many other datasets/data types (in addition to those listed below) are available. Contact NCDC's Climate Services Branch for further information.

7. NCDC's WWW Homepage has numerous datasets and data inventories on-line at http://www.ncdc.noaa.gov. NCDC makes frequent updates to this system; users are encouraged to review the Homepage periodically to see what's available.

8. Points of contact for information, cost estimates, and data requests:

National Climatic Data Center
Climate Services Branch
151 Patton Avenue
Asheville, NC 28801
Telephone: 828-271-4800
Fax: 828-271-4876
Internet: info@ncdc.noaa.gov

DATABASE: Worldwide surface observations (hourly/synoptic). Includes 3 datasets - TD3505, TD3280, and TD9956.

TD3505–Integrated Surface Hourly (ISH)--worldwide stations.

Data Type - ASCII character data.
Quality Control - Extensive automated QC (all data); additional manual QC for USAF, Navy, and NWS stations.
Data Origin - An integration of data from TD9956, TD3280, and TD3240 (each described below), comprising all stations available historically in TD9956 and TD3280.
Content/Elements

- About 10,000 stations currently active.
- Includes wind speed and direction, wind gust, temperature, dew point, cloud data, sea level pressure, altimeter setting, station pressure, present weather, visibility, precipitation amounts for various time periods, snow depth, and various other elements as observed by each station.
- Observational practices vary by country.

Period of Record - 1900 to present (varies greatly by station).
Notes - See http://www4.ncdc.noaa.gov/ol/documentlibrary/datasets.html for further details.

TD3280--Navy and first order National Weather Service (NWS) stations.

Data Type - ASCII character data.
Quality Control - Undergoes extensive automated and manual QC.
Data Origin - Mainly from ASOS-direct ingest, diskettes from the stations, and keyed data for NWS stations; and from TD9956 (see below) for Navy stations.
Content/Elements

- About 380 stations currently active.
- Includes most surface elements observed in the U.S. (wind speed and direction, temperature, dew point, cloud data, sea level pressure, altimeter setting, station pressure, present weather, and visibility). Wind gust, daily precipitation amount, and snow depth are not included, but are placed in TD3210 (see below). Hourly precipitation amount stored in separate dataset (TD3240).
- "Specials" are not included and only synoptic hours (every 3rd hour) are included for 1965-1981 (for most stations).

Period of Record - 1948 to present.
Notes - See http://www4.ncdc.noaa.gov/ol/documentlibrary/datasets.html for further details. Data subsets for 1961-1995 are available on 3-volume and 1-volume CDROM sets.

TD9956--AFCCC DATSAV3 Surface--worldwide stations.

Data Type - ASCII character data.
Quality Control: Extensive automated QC (all data); manual QC for USAF stations.
Data Origin - Mainly from GTS, various other sources, and keyed data prior to 1973.
Content/Elements
- About 10,000 stations currently active.
- Includes all surface elements observed internationally (see TD3280) along with wind gust, precipitation amount, snow depth, and other elements as reported by each station. Also includes "Specials."
- Observational practices vary by country.

Period of Record - 1973 to present with some data from 1900 to present.
Notes - See http://www4.ncdc.noaa.gov/ol/documentlibrary/datasets.html for further details. NCDC can produce summary of day data (1 record per day) from this dataset--18 elements summarized as available. A 1982-1997 hourly subset is available on a 5-volume CDROM set.

DATABASE: Worldwide ship and buoy observations (hourly/synoptic). Includes 2 datasets - TD1129 and TD1171.

Data Type - ASCII character data.
Quality Control - Undergoes automated + some manual QC.
Data Origin - Data originate from GTS + some key entered data.
Content/Elements

- Includes elements observed by ships and buoys--temperature and dew point, wind direction and speed, visibility, present weather, sea level pressure, sea surface temperature, cloud data, ice data, and wave/swell heights and periods.
- Generally, buoys only observe temperature, wind, pressure, sea surface temperature, and wave/swell data; while some ship reports include other elements.
- Elements vary considerably by station.

Period of Record - As early as 1800's to present.
Notes - See http://www4.ncdc.noaa.gov/ol/documentlibrary/datasets.html for further details.

- Occasionally, if needed observations are not found in TD1129 or TD1171, we use TD9956 as a source.

DATABASE: Worldwide upper-air observations–Comprehensive Aerological Reference Dataset (CARDS)–TD6305.

Data Type - ASCII character data.
Quality Control - Undergoes some automated QC.
Data Origin - Various sources including diskettes from the stations (U.S. + some Mexican), key entered data, digital data from source countries, and GTS.
Content/Elements

- Includes all elements observed in upper air soundings--generally temperature, dew point, wind direction and speed, and height of each pressure level.
- About 1000 stations currently active.

Period of Record - Generally 1946 to present.
Notes - See http://www4.ncdc.noaa.gov/ol/documentlibrary/datasets.html for further details.

- Also have North American data for 1946-1997 on 4-volume CDROM set.

DATABASE: Hourly precipitation data for NWS and cooperative U.S. stations--TD3240.

Data Type - ASCII character data.
Quality Control - Undergoes automated and manual quality control.
Data Origin - Various sources including ASOS and punched tape from stations.
Content/Elements
- Hour-by-hour precipitation amounts.
- About 2800 stations currently active.

Period of Record - Generally 1948 to present.
Notes - See http://www4.ncdc.noaa.gov/ol/documentlibrary/datasets.html for further details.
- Data are also available on a CDROM set.

DATABASE: 15-Minute precipitation data for NWS and cooperative U.S. stations--TD3260.

Data Type - ASCII character data.
Quality Control - Undergoes automated and manual quality control.
Data Origin - Various sources including ASOS and punched tape from stations.
Content/Elements
- Precipitation amounts for 15-minute increments.
- About 2400 stations currently active.

Period of Record - Generally 1971 to present.
Notes - See http://www4.ncdc.noaa.gov/ol/documentlibrary/datasets.html for further details.

DATABASE: Cooperative station and NWS summary of day data for the U.S.--TD3200.

Data Type - ASCII character data.
Quality Control - Undergoes automated and manual quality control.
Data Origin - Various sources including key-entry from forms and ASOS.
Content/Elements

- Includes summary of day parameters such as maximum/minimum temperatures, precipitation, and snowfall/snow depth. Some stations have additional data such as evaporation and soil temperature.
- About 8000 stations currently active.

Period of Record - Generally 1948 to present (some late 1800's to present).
Notes - See http://www4.ncdc.noaa.gov/ol/documentlibrary/datasets.html for further details.

- Data are also available on a CDROM set.

DATABASE: Summary of day data for National Weather Service (U.S.) and Department of Defense (U.S. and foreign) sites. Includes 2 datasets--TD3210 and TD9953 (AFCCC's TDF34).

Data Type - ASCII character data.
Quality Control - Both datasets are QC'ed (automated + manual).
Data Origin - Various sources including ASOS, diskettes from stations, and key-entry.
Content/Elements

- Includes maximum/minimum temperatures, precipitation, snow depth, peak wind gust, sunshine, days with various weather phenomenon, and several other elements for selected stations.
- About 600 stations currently active.

Period of Record - Generally 1940's to present with some data as old as the late 1800's.
Notes - See http://www4.ncdc.noaa.gov/ol/documentlibrary/datasets.html for further details.

DATABASE: Monthly summary data for NWS and cooperative U.S. stations--TD3220.

Data Type - ASCII character data.
Quality Control - Undergoes automated and manual quality control.
Data Origin - Monthly summaries built from NWS and cooperative daily data as described above.
Content/Elements

- Includes temperature (mean minimum, mean maximum, overall mean, extreme minimum, extreme maximum), precipitation amount, and for selected stations--snowfall, evaporation data, and soil temperature data.
- About 8000 stations currently active.

Period of Record - Generally 1948 to present (some late 1800's to present)
Notes - See http://www4.ncdc.noaa.gov/ol/documentlibrary/datasets.html for further details.

DATABASE: Hourly solar radiation and meteorological data for the U.S., Guam, and Puerto Rico--TD3282.

Data Type - ASCII character data.
Quality Control- Underwent extensive QC of data.
Data Origin - Originated from 3 sources--NWS hourly surface data, NWS summary of day data, and NREL solar radiation data.
Content/Elements

- Includes 5 solar radiation elements + 15 meteorological elements with both observational and modeled data.
- 239 stations.

Period of Record - 1961 to 1990.
Notes - See http://www4.ncdc.noaa.gov/ol/documentlibrary/datasets.html for further details.
- Data are also available on 3-volume CDROM set.

DATABASE: Worldwide gridded upper-air analysis (multiple pressure levels).
Includes 5 datasets:

TD6140 (NGM and MRF data)--

Data Type - Binary data.
Quality Control - No quality control performed.
Data Origin - Data originate from NCEP's model output.
Content/Elements

- NGM: Covers U.S., southern Canada, and nearby coastal waters. 180 km by 180 km polar stereographic grid. Includes temperature, specific humidity, vertical velocity, and u/v wind components from about 980 mb to 434 mb + 11 variables for the surface. 12 analysis hours/day.
- MRF: Worldwide coverage. 2.5 degree by 2.5 degree grid. Includes temperature, relative humidity, vertical velocity, geopotential, and u/v wind components from 1000 mb to 50 mb + 3 variables for the surface. 4 analysis hours/day.

Period of Record - 1991 to present.
Notes - See http://www4.ncdc.noaa.gov/ol/documentlibrary/datasets.html for further details.

TD6141 (ETA and FNL data)--

Data Type - Binary data.
Quality Control - No quality control performed.
Data Origin - Data originate from NCEP's model output.
Content/Elements

- ETA: Covers U.S., southern Canada, and nearby coastal waters. 80 km by 80 km Lambert Conformal grid. Includes pressure, temperature, precipitation, soil moisture, relative humidity, u/v wind components, snow/rain occurrence, latent heat flux, sensible heat flux, momentum flux, low cloud cover, medium cloud cover, high cloud cover, total cloud cover, radiation flux, geopotential height, and vertical velocity. 22 pressure levels from surface to 50 mb. 8 analysis hours per day.
- FNL: Worldwide coverage. 129 by 129 polar stereographic grid. Includes pressure, temperature, precipitation, soil moisture, relative humidity, u/v wind components, latent heat flux, sensible heat flux, momentum flux, total cloud cover, radiation flux, geopotential height, and vertical velocity. 14 pressure levels from surface to 20 mb. 4 analysis hours per day.

Period of Record - 1997 to present.
Notes - See http://www4.ncdc.noaa.gov/ol/documentlibrary/datasets.html for further details.

AFCCC's HIRAS--

Data Type - ASCII character data.
Quality Control - No quality control performed.
Data Origin - Data originate from AFWA's model output.
Content/Elements

- Worldwide coverage.
- 4 analysis hours/day.
- On 2.5 degree by 2.5 degree grid.
- Includes temperature, dew point depression, specific humidity, precipitable water, vorticity, relative humidity, u/v wind components, D-value, and tropopause data from the surface to 10 mb.

Period of Record - 1985 to present.
Notes - Request database manual for further details.

DATABASE: Worldwide gridded cloud analysis--TD9951 (AFCCC's RTNEPH).

Data Type - Binary data.
Quality Control - Undergoes automated QC of data.
Data Origin - Data originate from AFWA's model output.
Content/Elements

- 8 analysis hours/day.
- On polar stereographic grid (eighth-mesh--roughly 40 km by 40 km resolution).
- Includes cloud layer data (base, top, type, and amount) and total cloud amount from surface reports and satellite data, along with present weather and visibility from surface reports.

Period of Record - 1984 to present.
Notes - Request database manual for further details.

DATABASE: Global aircraft reports--TD6380.

Data Type - ASCII character data.
Quality Control - Undergoes automated QC.
Data Origin - Data originate from PIREPS, AIREPS, ASDAR, and ACARS reports.
Content/Elements

- Includes pressure altitude, temperature, relative humidity, dew point, wind direction and speed, clouds, and turbulence.

Period of Record - Generally 1973 to present.
Notes - See http://www4.ncdc.noaa.gov/ol/documentlibrary/datasets.html for further details.

DATABASE: ASOS 1-minute and 5-minute data--TD6401-6406.

Data Type - ASCII character data.
Quality Control - Undergoes automated QC.
Data Origin - Data originate from ASOS ingest process.
Content/Elements

- Includes most surface elements observed in the U.S. (wind speed and direction, temperature, dew point, cloud data, sea level pressure, altimeter setting, station pressure, present weather, visibility, precipitation amount, etc).
- About 900 stations currently active.

Period of Record - Generally 1998 to present.
Notes - See http://www4.ncdc.noaa.gov/ol/documentlibrary/datasets.html for details.

DATABASE: NOAAPORT data.

Data Type - ASCII character and binary data.
Quality Control - No quality control performed.
Data Origin - Data originate from NOAAPORT ingest.
Content/Elements

- Includes all surface, upper-air, forecast, warning, and other bulletins received via NOAAPORT. Also includes all NCEP model data as binary files, such as the ETA, AVN, and MRF.

Period of Record - Late 2000 to present.
Notes - These are the "raw" data as received from NCEP and NWS.

DATABASE: Remote-sensing data. Satellite (worldwide), wind profiler (central U.S.), NEXRAD radar data (U.S. sites). See separate sections (following pages) for additional details.

Data Type - All are binary data.
Quality Control - Little or no QC performed on these data.
Data Origin - Data originate from the sensor (satellite, profiler, radar).
Content/Elements

- Satellite data are available in several datasets from NCDC's Satellite Services Group.
- Profiler data are available from 1991 to present. (Selected data are on-line and can be copied via FTP transfer.)
- NEXRAD data are available as level II and level III.

Period of Record - Varies depending on the dataset and station.
Notes - Request database documentation for further details.

NEXRAD DATA

NEXRAD LEVEL II (DIGITAL BASE DATA)

Level II data are digital base data output from the Radar Data Acquisition's (RDA's) signal processor in polar format containing status messages, performance/maintenance data, volume scan strategy, clutter filter bypass map, and wideband communication console messages. The meteorological elements included are base reflectivity, base velocity, and base spectrum width. Initially, Level II recorders were placed at selected sites for use when significant weather events were taking place. As the system developed, it became apparent that Level II data would be important in properly calibrating the radars, in research applications, and to test revised algorithms. Current plans call for level II recorders to be placed at all WSR-88D sites.

Exabyte tape drives and 8mm tapes are used as recording devices and media. Each tape can hold approximately 4.7 gigabytes of data and, depending on operational mode of the model and recorder model used, one tape may be filled about every 1.8 days for each site. These tapes are received at the National Climatic Data Center (NCDC) from individual sites and are processed on a series of 8505 Exabyte drives, reblocked, cataloged, inventoried, and archived.

The WSR-88D is a very complex system. Program modifications and engineering changes are common. Early models experienced difficulties in the recording of Level II data and even today tapes are received that contain spurious, erroneous, or illegal configurations. The user is cautioned that these anomalies may be encountered while reading the archived tapes, and in some cases, data gaps are evident.

Personnel at the NCDC will be glad to assist in solving problems encountered in reading the tapes; however, technical questions about the data themselves must be addressed to the:

NWS/Operational Support Facility
Applications Branch
1200 Westheimer Drive
Norman, OK 73069
Telephone: (405) 366-6530
Fax: (405) 366-6550

The NCDC also distributes the software, including source codes, to display the WSR-88D Level II data. Reflectivity, velocity, and spectrum width are displayed while the level II tape is being read and written to disk, or images can be displayed after the data have been written to disk. The WSR-88D Visualization Software (WVS) runs on SUN, IBM, HP, and SGI unix-based workstations. A copy of WVS may be obtained either by mail on 8mm tape or through ftp.

Also, NEXRAD inventories and national composites of reflectivity (precipitation) are available via the World Wide Web (WWW): http://www.ncdc.noaa.gov -- click on Radar Resources.

NEXRAD LEVEL III (PRODUCTS)

There are a total of 24 Level III products routinely available from the National Climatic Data Center (NCDC) which include 7 graphic products in clear air mode, 11 graphic products in precipitation mode, 5 graphic overlays and 1 alphanumeric product. Products are stored on Write Once Read Many (WORM) optical disks that are sent to the NCDC by National Weather Service Nexrad sites for archive and distribution to customers. Each product will include state, county, and city background maps. Level III graphic products are available only as color hard copy, gray scale hard copy or acetate overlay copies. The following is a list of the Nexrad Level III products available from NCDC:

Base Reflectivity (R) - A display of echo intensity measured in dBZ.

Base Spectrum Width (SW) - A measure of velocity dispersion within the radar sample volume.

Base Velocity (V) - A measure of the radial component of the wind either toward the radar (negative values) or away from the radar (positive values).

Composite Reflectivity (CR) - A display of maximum reflectivity for the total volume within the range of the radar.

Echo Tops (ET) - An image of the echo top heights color coded in user-defined increments.

Hail Index Overlay (HI) - A product designed to locate storms which have the potential to produce hail.

Mesocyclone Overlay (M) - This product is designed to display information regarding the existence and nature of rotations associated with thunderstorms.

One-hour Precipitation (OHP) - A map of estimated one hour precipitation accumulation on a 1.1 x 1.1 nm grid.

Severe Weather Probability Overlay (SWP) - A measure of a storms relative severity as compared with those storms around it.

Storm Structure (SS) (Alphanumeric product) - A table displaying information on storm attributes which include maximum reflectivity, maximum velocity at lowest elevation angle, storm overhang, mass weighted storm volume, storm area base and top, storm position and storm tilt.

Storm Total Precipitation (STP) - A map of estimated storm total precipitation accumulation continuously updated since the last one-hour break over the entire scope.

Storm Tracking Information Overlay (STI) - A product which shows a plot of the past hours movement, current location, and forecast movement for the next hour or less for each identified thunderstorm cell.

Tornadic Vortex Signature Overlay (TVS) - A product which shows an intense gate to gate azimuthal shear associated with tornadic-scale rotation.

VAD Wind Profile (VWP) - A graphic display of wind barbs plotted on a height staff of 500 ft or 1000 ft increments.

Vertically Integrated Liquid (VIL) - The water content of a 2.2 x 2.2 nm column of air which is color coded and plotted on a 124 nm map.

SATELLITE DATA, PRODUCTS, and SERVICES

Satellite data and derived products from NOAA's satellite systems are available through the National Climatic Data Center. The two primary satellite systems are the Geostationary Operational Environmental Satellite (**GOES**), which began in 1975, and the Polar-orbiting Operational Environmental Satellite (**POES**), which began as the TIROS series in 1960. The NCDC also archives certain data sets from the Defense Meteorological Satellite Program (**DMSP**) satellites. See complete product listing below along with the latest prices.



About NOAA's Satellites

NOAA's current series of GOES satellites are three-axis body stabilized and equipped with a separate Imager and Sounder. For optimum coverage over the Western Hemisphere, there are normally two GOES satellites, one positioned over the equator at 75 west longitude and the other positioned at 135 west longitude. There are several instruments on the satellites but the two NCDC is concerned with are the Imager and Sounder instruments. The Imager consists of five channels ranging from the visible to the longwave infrared channel. The visible channel has a resolution of 1 km while the infrared channels have a resolution of 4 km at nadir, except for the water vapor channel which is usually 8 km. The Sounder has 18 thermal infrared channels and can make over 50,000 soundings per hour. Each of the GOES satellites scans predetermined areas of the earth. During routine mode of operation, observations are taken over the United States every fifteen minutes by each satellite. More frequent observations of five minutes or less can be obtained when severe weather threatens. Several operational and experimental products are created to improve near real-time and longer range forecasts.

The POES satellite system offers the advantage of daily global coverage, by making nearly polar orbits about 14.1 times daily. Since the number of orbits per day is not an integer, the sub-orbital tracks do not repeat on a daily basis, although the local solar time of each satellite's passage is essentially unchanged for any latitude. NOAA tries to maintain a two satellite configuration to obtain global observations at least four times daily.

NOAA has begun its fourth generation of polar orbiting satellites with the launch of NOAA-K in May 1998. These satellites, like their predecessors, operate in near sun-synchronous orbits. These new satellites carry a series of instruments which have been modified and improved from previous NOAA satellites. The Advanced Very High Resolution Radiometer (AVHRR) has been retrofitted with a sixth channel in the near-IR (1.6um), which is time shared with the original channel 3. The new channel is referred to as channel 3A and operates during the daylight part of the orbit. Channel 3B corresponds to the original channel 3 and operates during the night portion of the orbit. The actual shared time may vary depending on NOAA's.

The Microwave Sounding Unit (MSU) and Stratospheric Sounding Unit (SSU) instruments have been replaced with Advanced Microwave Sounding units AMSU-A1, AMSU-A2 and AMSU-B. The AMSU-A is a 15-channel microwave radiometer in two separate units. The new AMSU data is expected to provide improved temperature and humidity soundings. Additionally, window channels 1, 2 and 15 will provide information on precipitation, sea ice and snow cover. The AMSU-B is a five-channel microwave radiometer; three of the channels are centered on the 183.31 Ghz water vapor line. The other two channels are at 89 Ghz and 150 Ghz.

The new High Resolution Infrared Radiation Sounder (HIRS/3) has a different calibration sequence. On HIRS/2, the calibration mode required the use of three calibration targets (space view, cold target, and warm target). On HIRS/3, the cold target will not be routinely used in the calibration sequence, resulting in one additional scan line of Earth data (38 Earth scans per 256 second cycle). Detailed information about the NOAA-K,L,M instruments, data formats, calibration and similar technical characteristics of the spacecraft are contained in the NOAA KLM User's Guide which is available on-line at www2.ncdc.noaa.gov/docs/klm/. A file of this document is also available for downloading via ftp; details can be found at the User's Guide site.

Satellite Active Archive (SAA)

NOAA's Satellite Active Archive (SAA) provides direct Internet access to NOAA's satellite data collected by POES and DMSP satellites using the File Transfer Protocol (FTP) method. The SAA allows users to search inventories of satellite data, preview representative Earth images of that data, and download selected data sets for further processing and analyses in one session. The URL is: www.saa.noaa.gov.

AVHRR data are available beginning as early as August 1981, while the TOVS data are available all the way back to October 1978. DMSP data are available as early as July 1991. r the user has placed his or her requirements via the Inventory Search Criteria page, an order may be placed for FTP. Up to thirty-two data sets with no more than 10 MB of data each can be ftp'ed at no cost. For datasets larger than 10 MB, the order system will automatically set the order to tape output for a fee of $50.00 for the first data set and $30.00 for subsequent datasets. The user must contact the NCDC to establish an open account for SAA, prior to placing tape orders. For one-time orders, contact the Satellite Services Group and provide the SAA entity IDs along with a means of payment.



Historical Significant Event Imagery (HSEI)

The Historical Significant Event Imagery is a growing satellite image archive of significant environmental and meteorological events. Hundreds of new or reprocessed historical images are added yearly with the goal to develop a central data base and distribution system for several thousand significant event satellite images that have been created since the 1960s. This web-based system includes a multi-parameter search engine capable of locating satellite images based upon users' keyword requirements (i.e., all events, hurricanes, tornado, snow cover, dust storm, smoke, etc.) and a time period range (i.e., entire period of record, day, month, year, etc.), or users can quickly find the most popular images by clicking on "Most Popular" button. For the latest additions users can simply click on the "What's New" button. Also, customers have the option of purchasing selected images online via the NNDC Online Store for high quality prints and mini-posters. The URL is www.nndc.noaa.gov/cgi-bin/hsei/hsei.pl?directive=welcome.

Historical GOES Browse Server

The Historical GOES Browse Server is another web-based satellite imagery distribution system containing daily GOES images from July 1992 to the present. Users can enter a date and select a satellite (GOES East or West) and channel (i.e. visible, water vapor, longwave ir) for viewing. The images for the period July 1, 1992 through December 14, 1996 are full earth, whereas the images from December 15, 1996 to present cover the Northern Hemisphere at a higher resolution. The primary purpose of this system is for users to quickly search for particular weather events, such as hurricanes, severe weather, snowstorms, etc., which can be tracked as often as every twelve hours. Users can then order higher spatial and temporal resolution images from NCDC by contacting the Satellite Services Group. Within the next two to three years, it is likely that NCDC will create a GOES Active Archive, where users can order the full resolution data either as images or in scientific format for research work directly from the Internet. The URL is www5.ncdc.noaa.gov:7777/plwebapps/plsql/goesbrowser.goesbrowsemain

SSM/I Monthly Image Products

The products include full and anomaly fields for wetness and snow cover, and anomaly fields for blended surface temperature for the period January 1992 to the latest available month. These climate products are derived from the Special Sensor Microwave Imager (SSMI), a polar orbiting satellite with global coverage. The fields are presented as both global and higher resolution North American images. The data are available in near real time by the eighth day of the following month. Anomalies are derived from the base period 1992 to the latest year for which there is monthly data. The spatial resolution is 1 degree for all three data products. Theses products can be accessed at www5.ncdc.noaa.gov:7777/plwebapps/plsql/ssmimain.

Digital Satellite Data and Products

Polar Operational Environmental Satellite (POES):

LEVEL 1b DATASETS:

AVHRR GAC (Global Area Coverage)	10/78 - Present
AVHRR HRPT/LAC (Local Area Coverage)	04/85 - Present
TOVS MSU (Microwave Sounding Unit)	10/78 - Present
TOVS SSU (Statospheric Sounding Unit	10/78 - Present
TOVS HIRS/2 (High Resolution Infrared Sounder)	10/78 - Present
SBUV/2 (Solar Backscatter Ultraviolet/2)	03/85 - Present
AMSU-A/B (Adv'ed Microwave Sounding Unit)	10/98 - Present
TOVS HIRS/3 (High Resolution Infrared Sounder)	10/98 - Present

PRODUCTS:

TOVS Sounding Product	01/79 - Present
RTOVS Sounding Product	10/98 - Present
ATOVS Sounding Product	04/99 - Present
AMSU-B Sounding Product	04/00 - Present
Vegetation Index/AVHRR (3rd Generation)	04/85 - Present
Heat Budget Data--	
Monthly Mean	01/79 - Present
Seasonal	06/74 - Present
Mapped GAC Imagery–	
Polar Stereographic	12/78 - Present
Mercator	06/85 - Present
Sea Surface Temperature Data--	
7 - 8 Day Observation File	12/78 - Present
250 km Monthly Mean Data	01/79 - Present
100 km Analysis (Global Scale)	12/72 - Present
50 km (Regional Scale) and 500 km	03/74 - Present
14 km Analysis (Local-Scale)	01/86 - Present

Geostationary Operational Environmental Satellite (GOES):

GVAS & GVAR DATA:

Full Disk and Sectors	03/75 - Present

PRODUCTS:

Sounder Based Products–	02/95 - Present
Vertical Temperature Profiles	
Layer Precipitable Water	
Total Precipitable Water	
Lifted Index	
Geopotential Heights	
Imager Based Products–	02/95 - Present
Cloud Drift Winds	
Water Vapor Winds	
ASOS Supplemental Cloud Height/Amount	
Lifted Index Images	10/99 - Present
Surface Skin Temperature	
Total Precipitable Water	

Defense Meteorological Satellite Program (DMSP):

LEVEL 1b DATASETS:

Special Sensor Microwave/Temperature (SSM/T)	08/87 - Present
Special Sensor Microwave/Imager (SSM/I)	08/87 - 06/06/96
Special Sensor Microwave/Water Vapor (SSM/T2)	06/94 - Present

PRODUCTS:

Temperature, Sensor, and Environmental	
Data Records (TDR,SDR,EDR)	07/87 - Present
SSM/T Sounding Product	01/89 - Present
SSM/I Monthly Gridded Products–	01/87 - 12/94
Precipitation	
Snow Cover/Sea ice	
Total Precipitable Water	
Cloud Liquid Water	
Oceanic Surface Wind Speed	
RTNEPH Layered Cloud Amount,	
Type, Base, Height	01/84 - Present
(Global analysis on 40km grid, every 3 hours)	

International Satellite Cloud Climatology Project (ISCCP):

B1 Radiance Data (10km) from GOES	
VISSR/VAS	07/83 - Present
B1 Radiance Data (10km) from GMS	07/83 - Present
B1 Radiance Data (10km) from METEOSAT	07/83 - Present
B2 Radiance Data (30km) from NOAA Polar	
Orbiters	07/83 - Present
B3 Radiance Data (30km, 3hr) from NOAA	

Polar Orbiters	07/83 - 06/30/94
B3 Radiance Data (30km, 3hr) from GOES	07/83 - 06/30/94
B3 Radiance Data (30km, 3hr) from METEOSAT	0783 - 06/94
B3 Radiance Calibration Tables (3hr for each satellite)	07/01/83 - 06/30/94
C1 Global Cloud Data (3hr, 280km grid, satellites merged) all	07/83 - 06/91
C2 Global Cloud Data (monthly, 280km grid, all satellites merged)	07/83 - 06/91
D1 Global Cloud Data (3hr, 280km grid) (*replaces C1 Data-will be processed back to 1983*, gap in yrs 1987-89)	06/86 - 12/92
D2 Global Cloud Data (monthly, 280km grid) (*replaces C2 Data-will be processed back to 1983*, gap in yrs 1987-89)	01/90 - 12/92

Aerosols:

Optical Thickness (OT) Observations	06/87 - Present
OT Weekly Analyzed Fields	06/87 - Present
OT Monthly Analyzed Fields	06/87 - Present

Non-digital Satellite Products

AVHRR Imagery:

Local Area Coverage (LAC)	04/85 - Present
High Resolution Picture Transmission (HRPT)	04/85 - Present
Global Area Coverage (GAC) by satellite pass	10/78 - Present

GOES Imagery:

Visible and Infrared Hardcopy Imagery	01/78 - Present

Sea Surface Temperature Charts:

250km Global Monthly Mean Charts	07/81 - Present
50km Regional Charts (selected regions)	04/76 - Present
14km Local Charts (mainly U.S. coastal areas)	01/86 - Present
Gulf Stream Anal. Charts-North/South Panels	10/19/78 - 09/30/95

Aerosol Charts:

100 km Weekly Contour	10/19/78 - Present
Monthly Mean	10/19/78 - Present

Satellite Data Pricing Schedule

Data Type	Fees
PRINTS [1]	
Custom Images - Prints (8"x10" and 11"x17") Alternate formats: Transparency IBM diskette	$85.00 each (add $25.00 for each additional channel for same scene. Copies: add $10.00 each.)
Reproduction Images	$25.00 each (cost is less if ordered online)
DIGITAL	

Please contact the Satellite Services Group for quotes on satellite based digital products. These data and products are now priced on a per unit output volume and can vary widely depending on how the data are extracted and subsetted. In most cases, the data will be less costly and more reflective of actual cost of processing the data. Earlier published prices were based on the number of input files or tapes.

Footnote:

[1] quotes on other formats provided. **Custom images** are created using customer defined parameters such as time, location, resolution, and any special enhancements. **Reproduction images** are copies of existing images, usually of a significant event such as a hurricane. To preview a sampling of event images go to the Historical Significant Events Imagery web site at www5.ncdc.noaa.gov/cgi-bin/hsei/hsei.pl?directive=welcome. You may also order these images online to take advantage of discount prices.

Contact information for satellite data and products:

Telephone: 828-271-4850
Facsimile: 828-271-4876
E-mail: satorder@ncdc.noaa.gov

PUBLICATIONS

Following is a brief summary of publications available from the National Climatic Data Center (NCDC). Unless otherwise noted, the summaries are for U.S. locations only. However, there are a number of worldwide summaries/publications. For publications listed as available from NTIS, the phone number is 703-487-4650. Otherwise, please contact NCDC for information on pricing and availability. Some publications are out of print and available on microfiche/microfilm only (* items). Some publications are available online from:
http://www.ncdc.noaa.gov/ol/climate/climateproducts.html

National Climatic Data Center
Climate Services Branch
Federal Building
Asheville, NC 28801
Phone: 828-271-4800
Fax: 828-271-4876
Internet: info@ncdc.noaa.gov

HISTORICAL CLIMATOLOGY SERIES

1-1 A Long Record of Weather Observations at Cooperstown, NY, 1854-1977

1-2 Ninety-One Years of Weather Records at Yellowstone National Pk., WY, 1887-1977

1-3 A Long Record of Weather Observations in Southeastern Iowa, 1839-1979

2-1 Index of Historical Surface Weather Records, New York

2-2 A History of Sunshine Data in the U.S., 1891-1980 *

2-3 Inventory of Sources of Long Term Climatic Data

3-1 Atlas of Mean Winter Temperature Departures From the Long-Term Mean over the Contiguous U.S., 1895-1983

3-2 Atlas of Mo. & Sea. Temp Departures, (Winter), 1895-1983

3-3 Atlas of Mo. & Sea. Temp Departures (Spring), 1895-1983

3-4 Atlas of Mo. & Sea. Temp Departures (Summer), 1895-1983

3-5 Atlas of Mo. & Sea. Temp Departures (Fall), 1895-1983

3-6 Atlas of Monthly Palmer Hydrological Drought Indices (1895-1930) for the Contiguous U.S.

3-7 Atlas of Monthly Palmer Hydrological Drought Indices (1931-1983) for the Contiguous U.S.

3-8 Atlas of Monthly Palmer Moisture Anomaly Indices (1895-1930) for the Contiguous U.S.

3-9 Atlas of Monthly Palmer Moisture Anomaly Indices (1931-1984) for the Contiguous U.S.

3-10 Atlas of Monthly Palmer Drought Severity Indices (1895-1930) for the Contiguous U.S.

3-11 Atlas of Monthly Palmer Drought Severity Indices (1931-1983) for the Contiguous U.S.

3-12 Atlas of Monthly and Seasonal Precipitation Departures from Normal (1895-1985) for the Contiguous U.S. - Winter

3-13 Atlas of Monthly and Seasonal Precipitation Departures from Normal (1895-1985) for the Contiguous U.S. - Spring

3-14 Atlas of Monthly and Seasonal Precipitation Departures from Normal (1895-1985) for the Contiguous U.S. - Summer

3-15 Atlas of Monthly and Seasonal Precipitation Departures from Normal (1895-1984) for the Contiguous U.S. - Fall

3-16 Probabilities and Precipitation Required to End/Ameliorate Droughts

4-1 State, Regional, and National Monthly and Annual Temperatures Weighted by Area, 1931-1991

4-2 State, Regional, and National Monthly and Annual Precipitation Weighted by Area, 1931-1991

4-3 Regional and National Monthly, Seasonal and Annual

Temperature Weighted by Area, 1895-1983

4-5 Time Series of Regional Seasonal Averages of Maximum, Minimum, and Average Temperature, and Diurnal Temperature Range Across the United States, 1901-1987

4-7 Climate Variations Bulletin (nationwide climate divisional data) - Preliminary report showing current monthly climate anomalies in a historical perspective using climate databases archived at NCDC. Back issues (monthly since 1989)

5-1 State, Regional, and National Monthly and Seasonal Heating Degree Days Weighted by Population, 1931-1992

5-2 State, Regional, and National Monthly and Seasonal Cooling Degree Days Weighted by Population, 1931-1991

5-3 Percent of Normal, State, Regional, and National Monthly and Seasonal Heating Degree Days Weighted by Population, 1931-1983

5-4 Percent of Normal, State, Regional, and National Monthly and Seasonal Cooling Degree Days Weighted by Population, 1931-1982

6-1 Statewide Average Climatic History (1983)

6-2 Tropical Cyclones of the N. Atlantic Ocean, 1871-1992 with annual updates

6-3 Climatic Averages and Extremes for U.S. Cities (274 cities)

6-4 Climates of The World

MARINE PUBLICATIONS

Climatic Summaries for NDBC Data Buoys (1986) - Seasonal/Annual Persistence of Wind Speed and Wave Height Events

Climatic Summaries for NDBC Buoys and Stations Update 1 (1990) - Seasonal/Annual Persistence of Wind Speed and Wave Height Events

Marine Climatological Summaries, 1961-70 (10 vols) - Approx- 50-75N, 50-170W

Summary of Synoptic Meteorological Observations (SSMO): Most World Coastal Marine Areas, 1850-1979 (97 vols) Great Lake Areas, 1960-73 (4 vols)

U. S. Navy Climatic Study of the Caribbean Sea & Gulf of Mexico:
- Volume 1, W. Caribbean Sea & Central American Waters
- Volume 2, E. Caribbean Sea
- Volume 3, Florida Coastal Waters & SW Atlantic
- Volume 4, Gulf of Mexico

U. S. Navy Regional Climatic Studies:
- Mediterranean Sea (1987)
- Northern California Operating Area (1988)
- Southern African Waters (1989)
- U.S. Atlantic Coast & Associated Waters (1989)
- Mozambique and Adjacent Waters (1989)
- Barents Sea and Adjacent Waters (1991)
- Sea of Okhotsk and Adjacent Waters (1991)
- Greenland, Iceland, UK, & Associated Waters (1992)
- Persian Gulf and Northern Arabian Sea (1992)
- Red Sea and Adjacent Waters (1993)
- Gulf of Aden and Adjacent Waters (1993)
- North Sea, Celtic Sea, Irish Sea, Assoc Wtrs (1994)

Climatic Studies of the Near Coastal Zone:
- East Coast of the U.S. (1976)
- West Coast of the U.S. (1976)
- Persian Gulf and Gulf of Oman (1980)
- Malacca and Sunda Straits (1982)
- Red Sea South & Gulf of Aden (1982)
- Southern Calif. Operating Area (1984)

Climatic Atlas of the Outer Continental Shelf Waters and Coastal Regions of Alaska:

Vol I, Gulf of Alaska (1988)
Vol II, Bering Sea (1988)
Vol III, Chukchi-Beaufort Sea (1988)
Vol I, Gulf of Alaska (1977)
Vol II, Bering Sea (1977)
Vol III, Chukchi-Beaufort Sea (1977)

Climatic Summaries:

Major Seventh Fleet Ports and Waters (1973)
Major Indian Ocean Ports and Waters (1974)

Environmental Guides:

Seven U.S. Ports (1972)
U.S. Gulf Coast (1972)
Mona Passage Area (1974)

Environmental Scenarios:

Northeast Atlantic (1973)
Northeast Pacific (with errata) (1974)
Bermuda (1974)

North Atlantic Tropical Cyclones, 1950-1980. *

Mariners Worldwide Climatic Guide to Tropical Storms at Sea - Narrative information and charts showing storm tracks, frequency maps and tropical cyclone roses.

U.S. Navy Hindcast Spectral Ocean Wave Model Climatic Atlas: Historical environmental dataset in the form of a wind and wave climatology. Data in the Atlas were produced by applying the Spectral Ocean Wave Model in hindcast mode to historical wind and pressure fields. Areas: North Atlantic Ocean - North Pacific Ocean - Mediterranean Sea.

Wind and Wave Summaries for Selected U.S. Coast Guard Operating Areas - Describes wind and wave conditions for the U.S. East Coast, Great Lakes and Eastern Pacific. Available from NTIS on microfiche only: Document No. AD-A130 647.

Addendum to Wind and Wave Summaries for Selected U.S. Coast Guard Operating Areas - Contains additional sites for the locations given in the first summary along with U.S. West Coast and Hawaiian locations. Also included is a section on coastal site wind statistics for the U.S. Coast.

Mariners Weather Log: January 1957 to present (published quarterly). Microfiche available 1972 to present from NTIS.

RAINFALL FREQUENCY ATLASES & EVENT STATISTICS

TP-40: Rainfall Frequency Atlas of the U.S. - Weather Bureau Technical Paper No. 40 - Presents 49 U.S. rainfall frequency maps for selected durations from 30 minutes to 24 hours and return periods from 1 to 100 years.

HYDRO-35: Five- to 60-Minute Precipitation Frequency for the Eastern and Central U.S. (Supersedes TP-40 above for the eastern 2/3 of the U.S. for durations of 1 hr. and less.) - Presents 6 U.S. rainfall frequency maps for durations of 5, 15 and 60 minutes at return periods of 2 and 100 years. Equations are given to derive 10- and 30-minute values between 2 and 100 years.

NOAA Atlas 2: Precipitation Frequency Atlas of the Western U.S. (Supersedes TP-40 above for the 11 western states) - Contains maps for the 6- and 24-hour durations for return periods of 2, 5, 10, 25, 50, and 100 years.

Rainfall Event Statistics - Created for stormwater/wastewater discharge applications. Includes rainfall and evaporation data such as wet and dry day counts and storm frequencies, depths, and durations. Available for over 3,200 U.S. cities.

MISCELLANEOUS SUMMARIES

Local Climatological Data - Monthly climatic data for National Weather Service locations. **

Climatological Data - Monthly climatic data by state for over 8000 stations in the U.S. **

Hourly Precipitation Data - Monthly precipitation data by hour for over 2500 U.S. stations. **

Storm Data - Monthly summary of storms/related damage for the U.S. **

Monthly Climatic Data for the World - Monthly climatic data for worldwide locations. **

Climatic Atlas of the U.S., 1931-60 - Contoured maps of climatic averages for the U.S.

Climatological Summaries, 1951-80 (No. 20) - Climatic summaries by city for the U.S.

Freeze/Frost Data (No. 20 Sup. 1) - Freeze/frost statistics for over 3000 U.S. locations.

Climates of the States (No. 60) - Climatic summaries by state.

Monthly Normals, 1961-90 (No. 81):

Monthly Station Normals-Temperature, Precip, & Heating/Cooling Degree Days, 1961-90.
Monthly Precipitation Probabilities, 1961-90, No. 81 Sup. 1.
Annual Degree Days to Selected Bases, 1961-90, No. 81 Sup. 2.

Maps of Annual 1961-90 Normal Temperature, Precipitation, & Degree Days, No. 81 Sup. 3.

Summary of Hourly Observations, 1951-60 (No. 82) - Hourly observational summary by city.

Daily Normals, 1961-90 (No. 84) - U.S. daily normals by city.

Divisional Normals/Standard Deviations, 1931-90 (No. 85) - U.S. normals by climatic division for: Temperature and Precipitation, Heating and Cooling Degree Days.

Climatological Summary of States, 1951-60 (No. 86) - Statewide climatic summaries.

Airport Climatological Summary, 1965-74 (No. 90) - Climatic summaries, U.S. airport locations.

Comparative Climatic Data, nationwide, 1996 edition - Climatological tables for U.S. cities.
Also available via NCDC's web site (http://www.ncdc.noaa.gov) under Climate Resources.

** Available by subscription.

SOLAR RADIATION PUBLICATIONS

Mean Daily Solar Radiation, monthly and annual maps.

Annual Average Daily Global Solar Radiation on a South Facing Surface (1952-75).

Input Data for Solar Systems (1941-70) - Contains:
Normal max, min and mean temperatures.
Normal heating and cooling degree days.
Monthly mean daily total solar radiation.

Insolation Data Manual (1952-75) - Contains statistics from "Input Data for Solar Systems" and a global cloudiness index.

Direct Normal Solar Radiation Data Manual (1952-75) - Long term, monthly mean, daily totals for 235 National Weather Service Stations.

Solar Radiation Energy Resource Atlas of the U.S. (1952-75) - Contains maps of monthly and annual values of:
Global average solar radiation.
Global average direct normal solar radiation.
Global average diffuse solar radiation.
Available from NTIS. Microfiche presentations available from NCDC. Include monthly & annual data in microfiche or photocopy form for 237 stations (up to 3 fiche per station).

Solar Radiation and Radiation Balance Data (The World Network) - Contains year-to-year monthly and annual means of global solar radiation, radiation balance and sunshine duration for the periods 1964-1968, 1969-1973, 1974-1979 and 1980-1984. Available for worldwide sites.

Solar Radiation Data, Monthly Summary (1977-1980) - Monthly publication is out of print, but is available on 101 microfiche.

Hourly Solar Radiation (unedited) (January 1981 - October 1985) - A continuation of the above data but editing for quality control was suspended with the publication in December 1980).

Hourly Solar Radiation Data (edited) (January 1988 - Current) - Global and direct solar radiation data are collected for the 31 station NOAA Solar Radiation Network.

Selected Climatic Maps of the United States (1931-60) - Contains the following maps:
Mean daily Solar Radiation (January and July).
Mean total hours of sunshine (annual).
Mean percentage of possible sunshine (January, July, annual).
Mean percentage of possible sunshine (monthly and annual maps).

WIND DATA PUBLICATIONS AND TABULATIONS

Wind Energy Resource Atlas (through 1978) - Twelve published volumes of wind energy statistics using data from approximately 975 locations are available from NTIS.

Comparative Climatic Data - Presents separate tables of monthly and annual average wind speed in MPH for about 300 U.S. sites.

Climatic Atlas of the U.S. (1931-60) - Presents maps of monthly and annual averages of prevailing direction, mean speed (MPH) and fastest mile of wind.

Local Climatological Data, Annual Summary - Presents tables of monthly and annual average, resultant and fastest mile wind speed for the current year, and monthly and annual mean and fastest mile speed for a long period, usually 15 to 30 years.

Airport Climatological Summaries (1965-74) - Presents monthly and annual tables of mean wind speed (Kts) and prevailing direction plus percent frequency of wind direction vs. wind speed (Kts)

Wind-Ceiling-Visibility Data at Selected Airports (1948-78) - 284 locations available - presents annual-only wind direction vs. wind speed circular graphs and tabulations for six ceiling-visibility classes.

Summary of Hourly Observations (1951-60) - 138 locations available - Presents monthly and annual tables of percent frequency of wind direction and speed (MPH) + percent frequency of hourly wind speed (MPH); and hourly sky cover.

Customized Wind Rose Tabulations - Federal Aviation Administration (FAA) Wind Rose for Airport Design: Wind direction versus wind speed frequency tabulations. The standard tabulation provides an overall summary of 36-point wind quadrant data for combined all-weather conditions. Wind speeds are reported in knots and use 9 standard FAA speed groups plus calm. In general, the most recent 8 years of hourly data will be summarized. Additional tabulations described under "Customized Tabulations" below provide diskette files in the FAA Airport Design software format. NCDC can provide customized 16-point or 36-point wind rose tabulations of monthly, seasonal, and/or annual data; wind units in mph, knots, or meters/sec; and customer-specified a) ceiling-visibility thresholds, b) hours of operations, c) variety of present weather conditions, and d) speed classes (up to 9 classes with flexible ranges).

Extreme Wind Speeds at 129 Stations in the Contiguous U.S. - Presents measured fastest mile wind speed and direction from beginning of record (usually 1941) to 1977 for each year, and computed extreme wind speeds for return periods from 2 years to 1 million years. Tropical storm extreme winds were included for this study, but caution should be used when using this book in hurricane prone areas.

Directional Extreme Wind Speed Data for the Design of Buildings and Other Structures - Presents largest yearly fastest-mile wind speed data corresponding to winds blowing from each octant at 37 airport stations in the United States.

Historical Extreme Winds in the U.S., Atlantic and Gulf of Mexico - Area covered: 53 coastal locations from Maine to Texas. Tables present measured annual values from beginning of record (varies from 1875 to 1947) to 1979. Maps present computed annual 100-year return period fastest-mile wind speed at 10 and 30 meters above ground level. Tropical storm extreme winds were included in this study.

Historical Extreme Winds in the U.S., Great Lakes and Adjacent Regions - Area covered: 70 locations in 8 Great Lakes states plus Iowa. Tables present measured annual values from beginning of record (varies from 1875 to 1951) to 1979. Maps present computed annual 100-year return period fastest-mile winds at 10 and 30 meter heights above ground level.

Index to Summarized Wind Data (Sep 1977) - Presents samples of 15 different Wind Rose tabulation formats available from the NCDC together with an index arranged alphabetically by state/city and format. Periods of record are listed for each tabulation. Contains no actual or average wind data.

National Wind Data Index--Final Report (Dec 1978) - Presents sample of forms used to record original wind observations and a listing of periods of record available for actual manuscript wind observation data together with a list of anemometer heights and height-change dates. Contains no actual or average wind data.

Wind Energy Resource Information (WERIS) Index - Presents samples of the 19 types of statistical tables and the period of record available for the approximately 975 stations. Contains no actual or average wind data.

WORLDWIDE/FOREIGN PUBLICATIONS

Climates of the World (1969) - Presents average temperature and precipitation data for approximately 800 stations throughout the world. It also includes brief narrative descriptions of the climate of each continent and maps depicting the annual average worldwide distribution of temperature and precipitation.

World Weather Records - This six volume set contains monthly and annual tables of mean temperatures, mean pressures, and total precipitation for most stations throughout the world for which complete data for the ten year period (e.g., 1981-1990) are available. Prior issues back to 1920 are available on microfiche.

Volume 1, North America
Volume 2, Europe
Volume 3, West Indies, South and Central America
Volume 4, Asia
Volume 5, Africa
Volume 6, Islands of the World

Monthly Climatic Data for the World (MCDW) - Issued monthly only, and contains monthly mean values of surface and upper air measurements from a large number of selected stations throughout the world. The surface elements included are pressure, temperature, vapor pressure, precipitation, and percent of long-term averaged sunshine. The upper air data consist of height, temperature, dew point depression, and mean vector wind at standard constant pressure levels.

Miscellaneous Summaries - Weather data recorded by the U.S. Air Force and U.S. Navy weather services stateside and abroad are archived on paper and microfiche at NCDC. Hourly surface data are available from many locations since the 1940s on one form per day. Some autographic charts and radiosonde records are available. Much of this military data are also available in digital form, and can be printed on paper at cost. Summarized data available ranges from 1 sheet monthly averages to several-hundred page 3-hourly summaries. Detailed climatic summaries are also available for many regions of the world.

Worldwide Airfield Summaries - This series of summaries presents monthly and annual climatological information for approximately 4,000 airfields and climatic areas throughout the world. The period of record varies by stations and elements. The data used are prior to 1974. These summaries were prepared by the U.S. Air Force Environmental Technical Applications Center (ETAC) for the U.S. Naval Oceanography Command and are archived on 156 microfiche and on one CD-ROM. Copies of data for individual stations are available on paper or on microfiche.

Upper Air Studies - Joint U.S. Navy/U.S. Air Force Climatic Study of the upper atmosphere. These atlases introduce a new historical gridded upper air dataset. Data in these atlases were produced by summarizing the European Center for Medium-Range Weather Forecasts (ECMWF) 00 & 12Z gridded analyses for 1980-1985. Also available on CD-ROM for period 1980-1991.

Summary of Meteorological Observations-Surface (SMOS) - Monthly and annual summaries (some by 3-hour groups) of weather conditions; precipitation; surface winds; ceiling versus visibility and sky cover; temperature and relative humidity; and pressure for approximately 980 worldwide locations. Data available on paper and on CD-ROM.

Revised Uniform Summary of Surface Weather Observations (RUSSWO)/Surface Observational Climate Summary (SOCS) - Similar summaries to those listed above as 'SMOS' are available for approximately 450 worldwide locations on paper and on CD-ROM. Various periods of record are available.

NCDC Foreign Data Collection - Consists of over 100,000 volumes of publications printed in foreign countries and exchanged with NOAA for US climate publications. The collection contains worldwide average meteorological data on a country-by-country basis. A digital index file is used to locate potentially useful data. Significant large holdings include publications from:

1. Argentina
2. Australia
3. France
4. Germany
5. Japan
6. Philippines
7. Poland
8. United Kingdom
9. USSR

World Data Center-A For Meteorology - Of particular interest to research scientists are the collections of WDC-A for Meteorology, collocated with NCDC. Catalogs have been published and are available in most large research libraries for databases available, which include: GATE, FGGE, MONEX, WAMEX, ALPEX, IFYGL, and STREX.

NOAA Library - Contains an extensive collection of foreign weather data publications. Visitors are welcome. Address:

NOAA Central Library
2nd Floor, SSMC3
1315 East-West Highway
Silver Spring, MD 20910

GUIDES AND CATALOGS

Selective Guide to Climatic Data Sources (Washington, DC: NOAA, 1988) - Contains brief descriptions of many NCDC domestic, and some NCDC foreign holdings. Available on 7 microfiche, free from NCDC.

Guide to Standard Weather Summaries and Climatic Services (NAVAIR 50-IC-534) (Asheville, NC: NOCD, 1986) - Contains the most complete site inventory available of NCDC foreign (and domestic) summarized unpublished tabulations. Available only on 4 microfiche, free from NCDC.

Catalog of Publications of the World Meteorological Organization (Geneva, Switzerland: WMO, 1983) - For U.S. and Canadian requests, order from:

American Meteorological Society
45 Beacon St.
Boston, MA 02108
Phone: 617-227-2425 (ask for publications)

AFCCC Directory of Climatic Databases (Asheville, NC: AFCCC, 1996) - Descriptions of many Air Force climatic databases available from Federal Climate Complex in Asheville, NC. Free from NCDC.

GLOSSARY OF ACRONYMS

AFWA	Air Force Weather Agency
ASOS	Automated Surface Observing System
AFCCC	Air Force Combat Climatology Center
ECMWF	European Center For Medium-range Weather Forecasts
GTS	Global Telecommunications System
MRF	Medium Range Forecast model
NCEP	National Centers for Environmental Prediction
NGM	Nested Grid Model
NREL	National Renewable Energy Laboratory
NWS	National Weather Service
POR	Period of Record
QC	Quality Control
TD	Tapedeck