NOAA Technical Memorandum NESS 110

GOES DATA COLLECTION SYSTEM - USER PROGRAMS

Washington, D.C.
August 1980

U.S. DEPARTMENT OF COMMERCE / National Oceanic and Atmospheric Administration / National Earth Satellite Service

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NESS 67 Data Collection System Geostationary Operational Environmental Satellite: Preliminary Report. Merle L. Nelson, March 1975, 48 pp. (COM-75-10679/AS)

NESS 68 Atlantic Tropical Cyclone Classifications for 1974. Donald C. Gaby, Donald R. Cochran, James B. Lushine, Samuel C. Pearce, Arthur C. Pike, and Kenneth O. Poteat, April 1975, 6 pp. (COM-75-10676/AS)

NESS 69 Publications and Final Reports on Contracts and Grants, NESS-1974. April 1975, 7 pp. (COM-75-10850/AS)

NESS 70 Dependence of VTPR Transmittance Profiles and Observed Radiances on Spectral Line Shape Parameters. Charles Braun, July 1975, 17 pp. (COM-75-11234/AS)

NESS 71 Nimbus-5 Sounder Data Processing System, Part II: Results. W. L. Smith, H. M. Woolf, C. M. Hayden, and W. C. Shen, July 1975, 102 pp. (COM-75-11334/AS)

NESS 72 Radiation Budget Data From the Meteorological Satellites, ITOS 1 and NOAA 1. Donald H. Flanders and William L. Smith, August 1975, 20 pp. (PB-246-877/AS)

NESS 73 Operational Processing of Solar Proton Monitor Data (Revision of NOAA TM NESS 49). Stanley R. Brown, September 1975, 15 pp. (COM-73-11647)

NESS 74 Monthly Winter Snowline Variation in the Northern Hemisphere From Satellite Records, 1966-75. Donald R. Wiesnet and Michael Matson, November 1975, 21 pp. (PB-248-437/6ST)

NESS 75 Atlantic Tropical and Subtropical Cyclone Classifications for 1975. D. C. Gaby, J. B. Lushine, B. M. Mayfield, S. C. Pearce, and K.O. Poteat, March 1976, 14 pp. (PB-253-968/AS)

NESS 76 The Use of the Radiosonde in Deriving Temperature Soundings From the Nimbus and NOAA Satellite Data. Christopher M. Hayden, April 1976, 19 pp. (PB-256-755/AS)

NESS 77 Algorithm for Correcting the VHRR Imagery for Geometric Distortions Due to the Earth Curvature, Earth Rotation, and Spacecraft Roll Attitude Errors. Richard Legeckis and John Pritchard, April 1976, 31 pp. (PB-258-027/AS)

NESS 78 Satellite Derived Sea-Surface Temperatures From NOAA Spacecraft. Robert L. Brower, Hilda S. Gohrband, William G. Pichel, T. L. Signore, and Charles C. Walton, June 1976, 74 pp. (PB-258-026/AS)

NESS 79 Publications and Final Reports on Contracts and Grants, NESS-1975. National Environmental Satellite Service, June 1976, 10 pp. (PB-258-450/AS)

NESS 80 Satellite Images of Lake Erie Ice: January-March 1975. Michael C. McMillan and David Forsyth, June 1976, 15 pp. (PB-258-458/AS)

NESS 81 Estimation of Daily Precipitation Over China and the USSR Using Satellite Imagery. Walton A. Follansbee, September 1976, 30 pp. (PB-261-970/AS)

NESS 82 The GOES Data Collection System Platform Address Code. Wilfred E. Mazur, Jr., October 1976, 26 pp. (PB-261-968/AS)

NESS 83 River Basin Snow Mapping at the National Environmental Satellite Service. Stanley R. Schneider, Donald R. Wiesnet, and Michael C. McMillan, November, 1976, 19 pp. (PB-263-816/AS)

NESS 84 Winter Snow-Cover Maps of North America and Eurasia From Satellite Records, 1966-1976. Michael Matson, March 1977, 28 pp. (PB-267-393/AS)

NESS 85 A Relationship Between Weakening of Tropical Cyclone Cloud Patterns and Lessening of Wind Speed. James B. Lushine, March 1977, 12 pp. (PB-267-392/AS)

NESS 86 A Scheme for Estimating Convective Rainfall From Satelliue Imagery. Roderick A. Scofield and Vincent J. Oliver, April 1977, 47 pp. (PB-270-762/AS)

(Continued on inside back cover)

NOAA Technical Memorandum NESS 110

GOES DATA COLLECTION SYSTEM - USER PROGRAMS

Merle L. Nelson

Washington, D.C.
August 1980

UNITED STATES
DEPARTMENT OF COMMERCE
Philip M. Klutznick, Secretary

NATIONAL OCEANIC AND
ATMOSPHERIC ADMINISTRATION
Richard A. Frank, Administrator

National Earth Satellite Service
David S. Johnson,
Assistant Administrator

GOES Data Collection System

User Programs

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GOES Data Collection System
User Programs

ABSTRACT. The National Environmental Satellite Service (NESS) began services with the GOES Data Collection System (DCS) in 1974. Since that time, several organizations have become participants in this system. As of February, 1980, 50 different users are associated with the system. Some of these users may have terminated their DCS program, or are in the process of being accepted into the system. Collectively, the active users have over 1100 DCP's in the program. This report describes these users and their various applications of the data.

1. THE GOES DATA COLLECTION SYSTEM

NESS operates the GOES DCS for the purpose of collecting a large variety of environmental data in the Western Hemisphere. The data are transmitted from platforms on Earth to one of two GOES satellites, which in turn relay the data back to Earth. Figure 1 shows a picture of the GOES satellite. NESS has two GOES satellites in operation, one at longitude 75° West, and the other at longitude 135° West. Figure 2 shows the coverage on the Earth's surface for reliable communication to these satellites.

The major elements of the system are: the GOES DCS Control Center in the World Weather Building (WWB) near Washington, D.C., the NESS transmit and receive station at Wallops Island, Va., the GOES satellites, and the Data Collection Platforms (DCP's). A detailed description of these elements can be found in "Geostationary Operational Environmental Satellite/Data Collection System." 1/ NESS operates the satellites, GOES DCS Control Center, and the Command and Data Acquisition Station (CDA) at Wallops Island. The users of the system operate the DCP's and are responsible for retrieving the data.

2. USE OF DATA

2.1. Availability of Data

GOES DCS data that are transmitted through the GOES satellites may be obtained from the GOES DCS Control Center, read directly from the satellite or from the users. If the data are to be acquired from the GOES DCS Control Center, a copy of the User Interface Manual 2/ should be obtained. This manual is a technical document that describes the interface for obtaining DCS data from the World Weather Building. The report, "Some Considerations in the Design and Installation of a Receiving System to Receive DCS Data Directly from the SMS/GOES Family of Satellites," which can be found as Appendix D in reference 1 is helpful to users for establishing a satellite receiving station.

2.2. NESS Policy

The GOES DCS program was developed to meet NOAA requirements. In the interest of efficiency, non-NOAA parties are invited to participate in the program.

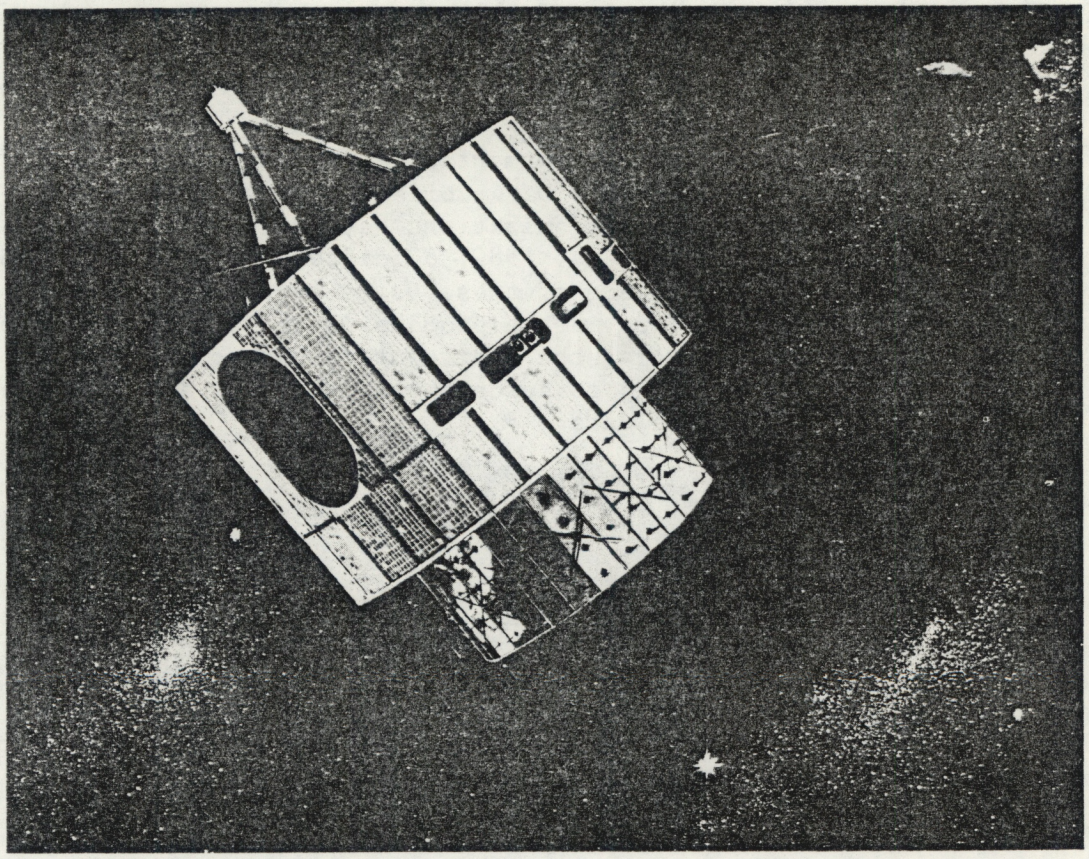

Figure 1.--GOES satellite

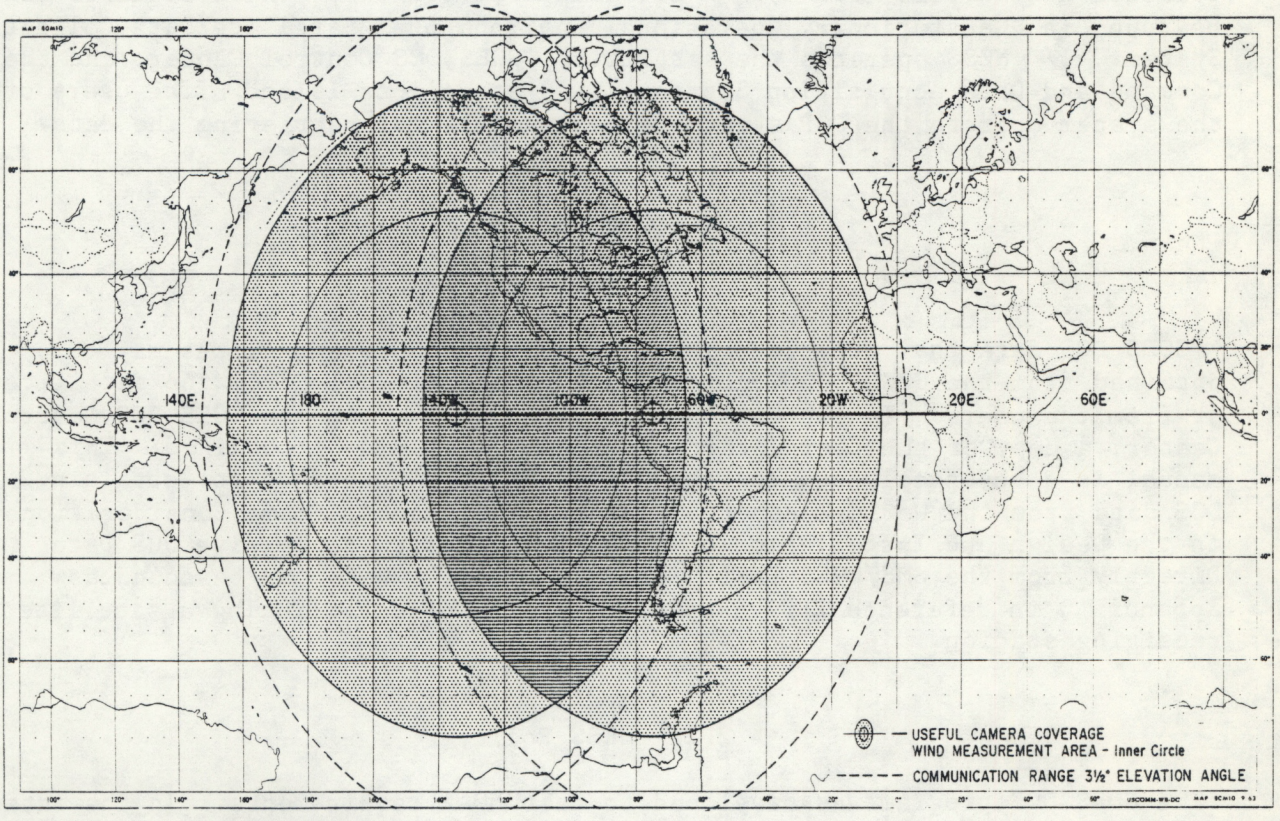

Figure 2.--GOES communication coverage

In fact, most users of the system are outside of NOAA. This approach is possible as long as NOAA has an interest in the collected data.

In view of this background, it is clear that NOAA users have priority use of all collected data. Any NOAA user interested in certain collected data shall be accommodated. Non-NOAA organizations, who may or may not be participants of the GOES DCS program, may also express an interest in obtaining certain collected data. These organizations should expect to be accommodated; however, NOAA organizations will have preference to the system in the event that contention for data should arise. Considering the sizing of the computer system and the design features of the software, it is expected that legitimate requests for data can be accommodated.

2.3. Procedures

NOAA organizations may request to obtain GOES DCS data by writing to NESS. The contact at NESS is:

National Environmental Satellite Service
Chief, Data Collection & Direct Broadcast Branch
World Weather Building
Mail Stop G
Washington, D.C. 20233

Non-NOAA organizations should contact the particular user who is the collector of the data of interest. If the primary user finds the request acceptable, they should notify NESS so that their data can be made available to the other party.

3. USER PROGRAMS

The general purpose of this publication is to provide information on the applications now found in the GOES DCS program. Hopefully, this effort will stimulate potentially interested organizations to consider using the data now available in this program. This type of response will serve to increase the usefulness of the system by bringing together a larger number of people for using the same data.

Much of the information on the various applications were provided to me from several users upon my solicitation. Unfortunately, some time has elapsed between my reception of the information and the publication of this report. Although I tried to update data as much as possible, readers are cautioned not to rely solely on this report. If there is an interest in a program, the particular user should be contacted for verification of the information.

Information is provided on 44 different applications of the GOES DCS. Each description is presented succinctly and yet as complete as possible. In order to facilitate finding particular information, the same format was used throughout. This format is given below for the convenience of the reader.

X. NAME

X.1. Identification of the User

X.1.1. Name and Address
X.1.2. Contact
X.1.3. Type of Organization
X.1.4. Funding Organization

X.2. General Program Description

X.3. Features of the Program

X.3.1. Type of Program
X.3.2. Start of Program
X.3.3. Type of Data Collected
X.3.4. Parameters Measured
X.3.5. Data Retrieval

X.4. Data Collection Platform Information

X.4.1. Number and Type
X.4.2. Special Operating Features
X.4.3. Location of DCPs

X.5. Future Plans

X.6. Bibliography

REFERENCES

1. Office of System Engineering, Geostationary Operational Environmental Satellite/Data Collection System, NOAA Technical Report NESS 78, Washington, D.C., July 1979. 80 pp.

2. U.S. Department of Commerce, NOAA/NESS, GOES Data Colleciton System, User Interface Manual, Technical document, Washington, D.C., July 19, 1978. 69 pp.

3. Nagle, John J., Some Considerations in the Design and Installation of a Receiving System to Receive DCS Data Directly from the SMS/GOES Family of Satellites, Technical document, Office of System Engineering, NESS/NOAA, Washington, D.C., Dec. 1978. 24 pp.

Acknowledgment

My appreciation is extended to those users who supplied me with information for this report. It is largely due to their cooperation that this report is possible. A special thanks is owed to Mr. Jack Ellis, Chief, Editorial Branch, Environmental Science Information Center, for editing and assisting in arrangement for the report. In addition, I am indebted to his staff who did the typing of the final draft and all of the final version.

1. ALBERTA

1.1. Identification of the User

1.1.1. Name and Address

Alberta Environment
Environmental Engineering Support Services
Oxbridge Place
9820 106 Street
Edmonton, Alberta, Canada T5K 2J6

1.1.2. Contact

Mr. David R. Graham
(same address as above)

1.1.3. Type of Organization

Provincal Government in Canada

1.1.4. Funding Organization

Province of Alberta

1.2. General Program Description

The Alberta River Forecast Centre is responsible for the forecasting of runoff for the purposes of water management, flood forecasting, and reservoir regulation. It is to these ends in which we are developing a real time hydrometeorological network.

The Alberta River Forecast Centre co-operates with several other agencies both in Canada and the United States. Some of the agencies whom we exchange data with are as follows:

> British Columba Ministry of Environment, Canadian Atmospheric Environment Services, United States National Weather Services, United States Conservation Services, Parks Canada, Saskatchewan Ministry of Environment as well as many other agencies and companies within Alberta.

The main purpose of this data is for real time flow forecasting. Because it will be collected in areas where little climatic data is currently available it will also be very useful to many other people both historically and in real time. All data collected will be published and available to all users. Currently all hydrometric snow pack and precipitation data will be recorded in the field as well as telemetered. The only record of wind run, wind direction, humidity, and temperature will be that obtained through GOES. Therefore the data are extremely important during heavy rain situations.

1.3. Features of the Program

1.3.1. Type of Program

Operational

1.3.2. Start of Program

Fall, 1979

1.3.3. Type of Data Collected

Hydrology
Meteorology

1.3.4. Parameters Measured

Wind Speed
Wind Direction
Humidity
Temperature
Precipitation
River Level

1.3.5. Data Retrieval

Initially the collected data will be obtained by 110 baud dial-up circuits. As the volume of data increases, we will provide for 300 and/or 1200 baud circuits.

1.4. Data Collection Platform Information

1.4.1. Number and Type

We are proposing to install GOES DCP's in the South Saskatchewan River Basin over the next 5 years. One DCP will be located in the Paddle River Basin. It is also expected that approximately 10 additional DCP's will be required in the Red Deer River Basin during the next 2 to 3 years but no firm plan has been proposed yet. Depending on the success of this project it is hoped that the network might be expanded to other areas of Alberta within the next 10 years. In summary we are proposing to install 29 GOES DCP's over the next 5 years with the possibility of expanding and/or accelerating this project.

All platforms will be of the self-timed type. The proposed time scale for installation is as follows:

1979 - 4 DCP's, 1980 - 7 DCP's, 1981 - 6 DCP's, 1982 - 6 DCP's, 1983 - 6 DCP's

1.4.2. Special Operation Functions

None

1.4.3. Location of DCP's

All presently proposed platforms will be located in the South-Western half of the province of Alberta. The following is a list of stations and where they will be located:

STATION NAME	LOCATION LATITUDE	LOCATION LONGITUDE	PROPOSED YEAR OF INSTALLATION OF TELEMETRY
Paddle Head Waters	54° 02'	115° 30'	1979
Bovin Lake	49 12	114 05	1979
Little Elbow Summit	50 44	114 59	1979
Burnt Timber Creek	51 39	115 01	1979
Akamina Pass	49 02	114 03	1980
Forget-Me-Not Mtn.	50 45	114 43	1980
Sheep Ranger Station	50 39	114 39	1980
Chief Mountain	48 47	113 36	1980
West Castle	49 17	114 23	1980
Sunshine	51 27	115 45	1980
Cuthead Lake	51 27	115 45	1980
Allison Pass	49 45	114 34	1981
Vicary Creek	49 47	114 28	1981
Bertha Lake	49 02	113 57	1981
Mist Creek	59 32	114 52	1981
Prairie Creek	50 51	114 55	1981
Shoki	51 32	116 01	1981
North Kootenay Pass	49 24	114 34	1982
Red Rock	49 08	113 38	1982
Burns Creek	50 37	114 53	1982
Cox Hill	50 59	114 56	1982
Mud Lake	50 47	115 20	1982
Divide Creek	51 40	115 52	1982
Cyclamen Ridge	50 01	114 35	1983
Chaffen Creek	50 04	114 15	1983
Lost Creek	50 12	114 41	1983
Evans Thomas	50 47	115 04	1983
Ghost Diversion	51 17	115 08	1983
Limestone Ridge	51 54	115 26	1983

1.5. Future Plans

The plan for upgrading the existing data collection network in the headquarters of the South Saskachewan River is a five year program.

1.6. Bibliography

Hydrometeorologic Network Proposal for the Headwaters of the South Saskatchewan River, D.R. Graham, W. Kuhuke, Alberta River Forecast Center, November, 1975.

2. ARGENTINA

2.1. Identification of the User

2.1.1. Name and Address.

National Comission on Space Research (CNIE)
Avda. Comodoro Pedro Zanni 250
Capital Federal Republica Argentina

2.1.2. Contact.

Juan Carlos Saez
San Miguel Space Center
Technical -- Scientific Department

2.1.3. Type of Organization.

Government (Air Force)

2.1.4. Funding Organization.

National Comission on Space Research

2.2. General Program Description

The CNIE plans for several stages of development for this advance technology in Argentina.

First Stage: Background and Feasibility Study of the Project.

Enthusiasm for this project comes from the expansion of data collection networks in the United States, Canada, Japan, Russia and some experiments in Latin America. The large area of Argentina makes it difficult to implement conventional observation networks because of the high operational costs, the need for qualified personnel in areas which do not offer reasonable living conditions, the lack of adequate communications, and the inaccessibility of certain regions. These elements demand the search for new technology.

Second Stage: Preparation and Development of Demonstration in Argentina.

CNIE coordinated a demonstration with federal agencies operating the GOES and Landsat DCS. This demonstration took place in November, 1977 at Villa Ortuzar Province of Buenos Aires. Data from the Landsat receiving station in Chile and from the GOES Control Center at NOAA/NESS were received via telex thus showing the feasibility of the systems.

Third Stage: Implementation of an Experimental Pilot Network in Argentina.

After the demonstration, authorization was obtained to operate DCPs on an experimental basis during 1978. The DCPs were located in areas with severe climatological conditions and proximity to conventional DCS stations. Since 1978, DCPs have been operating at Chapelco, Mascardi Lake and Limay River.

2.3. Features of the Program

2.3.1. Type of Program

Experimental

2.3.2. Start of Program

June, 1978

2.3.3. Type of Data Collected

Meteorology
Hydrology

2.3.4. Parameters Measured

River Level
Air Pressure
Wind Direction
Wind Speed
Air Humidity
Rainfall
Air Temperature

2.3.5. Data Retrieval

NESS forwards the data to the National Weather Service (NWS). The NWS places the data on the Global Telecommunications System which has a link to Buenos Aires.

2.4. Data Collection Platform Information

2.4.1. Number and Type

CNIE has four self-timed DCP's.

2.4.2. Special Operating Features

None

2.4.3. Locations of DCP's

ADDRESS	TYPE OF PLATFORM	STATION	SENSORS	PURPOSE	UPDATE INTERVAL	REPORTING TIME	REPORTING INTERVAL	CHANNEL
16C67AEO	SELF-TIME LA BARGE, INC.	CHAPELO LAT. 40° 13'S LON. 71° 20'W NEUQUEN CLOSEST TOWN: SAN MARTIN DE LOS ANDES (30 KM)	AIR TEMPERATURE	METEOROLOGY	15 Min.	0147 GMT	3 hourly	47
16C68E24	SELF-TIME LA BARGE, INC.	LAGO NASCARDI (TRONADOR) LAT. 40° 13'S LONG. 71° 40'W CLOSEST CITY: SAN CARLOS DE BARILOCHE (50 km)	AIR TEMPERATURE WIND DIRECTION WIND SPEED AIR HUMIDITY RAINFALL AIR PRESSURE LAKE LEVEL	METEOROLOGY	1 HOURLY	0149 GMT	3 hourly	47
16C69380	SELF-TIME	PASO LIMAY LAT. 40° 32'S LONG. 70° 21'W CLOSEST CITY: NEUQUEN (200 km) CLOSEST TOWN: PIEDRA DEL AGUILA (60 km)	RIVER LEVEL	HYDROLOGY	15 Min.	0150 GMT	3 hourly	47

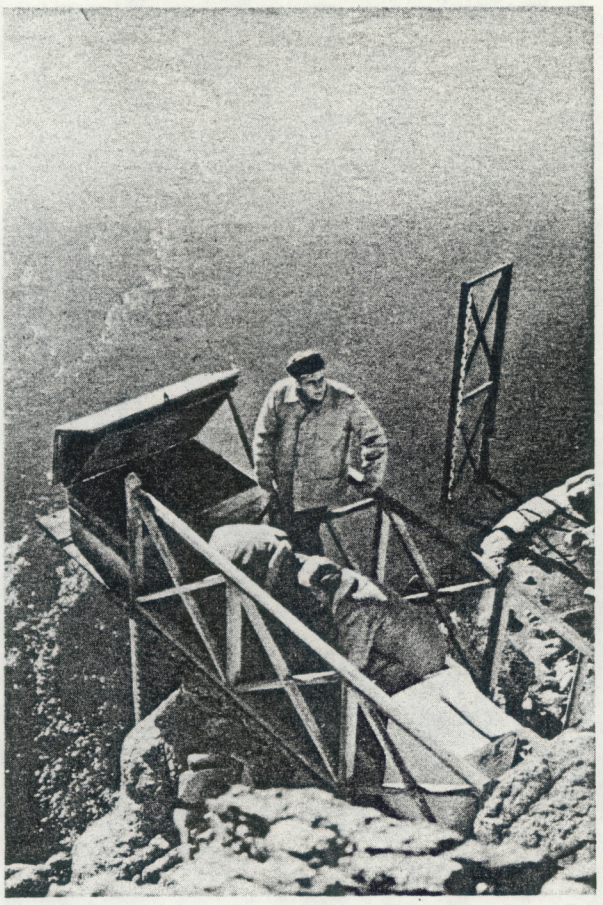

Figure 3.--PASO LIMAY. Installation.

Figure 4.--NASCARDI LAKE.

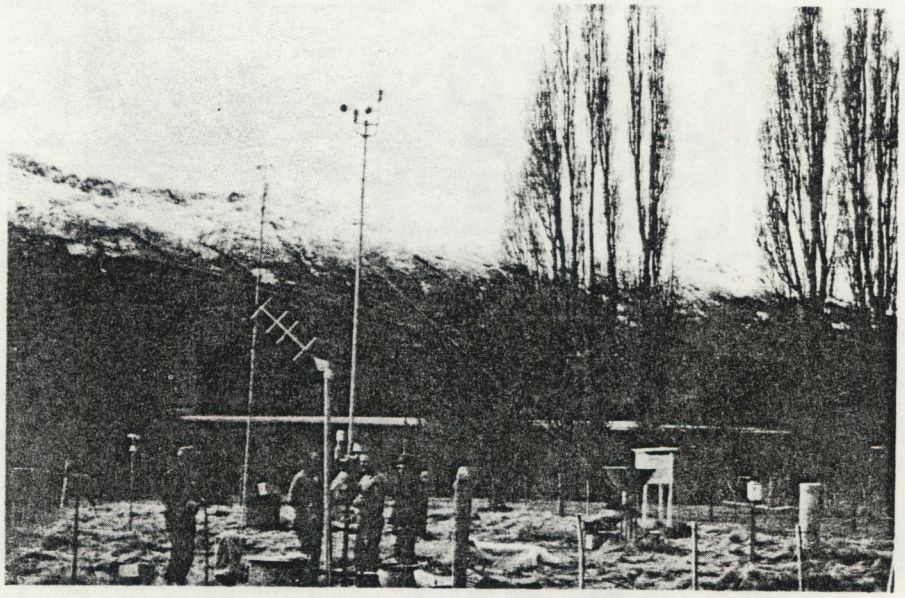

Figure 5.--NASCARDI LAKE. Installation.

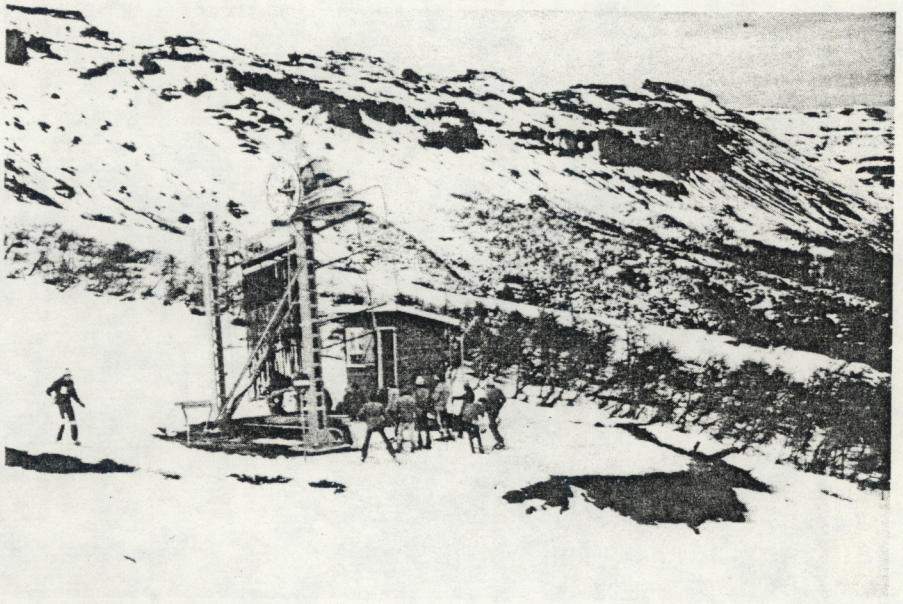

Figure 6.--CHAPELCO. Installation.

2.5. Future Plans

Three DCPs will continue to operate in the experimental meteorological-hydrological program. This effort was arranged with the United States Geological Survey (USGS) and will continue until April 4, 1983. During this period, there are plans for collecting data in support of snow and seismology studies.

3. ATMOSPHERIC ENVIRONMENT SERVICE, CANADA

3.1. Identification of the User

3.1.1. Name and Address

Atmospheric Environment Service
4905 Dufferin Street
Downsview, Ontario
Canada, M3H 5T4

3.1.2. Contact

R. A. Strachan
Chief, Forecasting, Computers & Communications
System Division
(Same address as above)

3.1.3. Type of Organization

Federal Government of Canada

3.1.4. Funding Organization

Atmospheric Environment Service

3.2. General Program Description

The Atmospheric Environment Service (AES) of Canada is now embarking on a program to make use of the GOES DCS to fill in gaps in the basic meteorological data gathering network of Canada. All of the information gathered will be available for distribution to the world meteorological community via the Global Telecommunications System (GTS).

3.3. Features of the Program

3.3.1. Type of Program

Operational

3.3.2. Start of Program

November, 1978

3.3.3. Type of Data Collected

Atmospheric
Meteorology

3.3.4. Parameters Measured

Wind Direction	Air Temperature
Wind Speed	Precipitation
Pressure	Relative Humidity

3.2.5. Data Retrieval

NESS forwards the collected data to the NWS who in turns relays the data to AES in Toronto, Canada.

3.4. Data Collection Platform Information

3.4.1. Number and Type

Eleven self-time DCP's

3.4.2. Special Operating Features

None

3.4.3. Location of DCP's

Carribou Island	47.3N	85.8W
Lac Eon	51.8N	63.2W
Cape St. James	51.6N	131.0W
Thelon River	65.1N	102.2W
Border	55.2N	63.1W
Ennadai Lake	61.1N	100.5 W
Fort Reliance	62.4N	109.1W
Winisk	55.3N	85.2W
Queen Charlotte Islands	53.3N	133.0W
Spring Island	50.0N	127.3W
South Georgia Strait	48.4N	123.5W

3.5 Future Plans

AES is presently completing the installation of 11 DCP's in remote observing sites on Canadian territory.

4. ATMOSPHERIC SCIENCES LABORATORY DEPARTMENT OF THE ARMY

4.1. Identification of the User

4.1.1. Name and Address

Department of the Army
U.S. Army Atmospheric Sciences Laboratory
Meteorological Support Division
ATTN: DELAS-MS-I
White Sands Missile Range, New Mexico 88002

4.1.2. Contact

Mr. William Bruce
Met Instrumentation, Engineering and Technology Branch
Meteorological Support Division
U.S. Army Atmospheric Sciences Laboratory
White Sands Missile Range, New Mexico 88002
Telephone:

Commercial	(505)678-3838
	(505)678-4782
FTS	898-3838
	898-4382
Autovon	258-3838
	258-4382

4.1.3. Type of Organization

Federal Government

4.1.4. Funding Organization

Department of the Army

Principal Investigator: 1st Lt. John H. Klingelhoeffer

4.2. General Program Description

The GOES data collection program is being used by the U.S. Army Atmospheric Sciences Laboratory to gather meteorological data in support of U.S. Army research, development, test, and evaluation projects. The laboratory operates 14 meteorological teams at military installations throughout the continental United States, Alaska, and the Panama Canal Zone. It is hoped that many of the military personnel serving in harsh environmental climates may be eliminated and replaced with data collection platform equipment in the future.

4.3. Features of the Program

4.3.1. Type of Program

Operational

4.3.2. Start of Program

November, 1976

4.3.3. Type of Data Collected

Meteorology
Solar

4.3.4. Parameters Measured (all transmitted in metric units)

Atmospheric Pressure
Cumulative Precipitation
Wind Speed
Wind Direction
Incoming Solar Radiation
Outgoing Solar Radiation
Relative Humidity
Ambient Air Temperature
Ambient Soil Temperature

4.3.5. Data Retrieval

Data are obtained by direct readout from the GOES satellite. The station consists of a 25-foot (8-meter) parabolic dish antenna and a digital synthesizer tuned receiver. The system allows reception of data from any channel on either the east or west satellite. The data are archived on a minicomputer system in addition to being read out immediately on a low-speed printer to forecast personnel.

4.4. Data Collection Platform Information

4.4.1. Number and Type

They are using 5 interrogated DCP's.

4.4.2. Special Operating Features

A cumulative precipitation counter may be reset by the secondary address interrogation.

4.4.3. Location of DCP

White Sands Missile Range, New Mexico

4.5. Future Plans

Plans are to continue the operations and analysis of the operational system. This information will aid in further decision making for system expansion.

5. BONNEVILLE POWER ADMINISTRATION

5.1. Identification of the User

5.1.1. Name and Address

Bonneville Power Administration (BPA)
P. O. Box 3621
Portland, Oregon 97208

5.1.2. Contact

D. J. Marihart, Head
Communications Systems Section
Bonneville Power Administration
P. O. Box 3621
Portland, Oregon 97208

FTS: 429-4361

5.1.3. Type of Organization

Federal Government

5.1.4. Funding Organization

Federal Government

5.2. General Program Description

In accordance with the Columbia River Treaty between the United States and Canada, the Memorandums of Understanding between BPA and the National Weather Service, U.S. Geological Survey, and Corps of Engineers, BPA is responsible for collecting hydromet data from assigned portions of the Columbia River Basin. These assigned portions include the Clark Fork Basin in Western Montana, the Columbia Basin from Bonneville Dam to the Umatilla River, and the Columbia Basin from the Yakima River north. BPA hydromet system began in 1969 with conventional hydromet stations installed in phases. Currently there are nine phase I stations, 14 phase II stations, and 19 phase III stations in operation. These stations use the BPA microwave system and VHF radio to transmit hydromet data from the remote sites to the Hydromet Controller at the Dittmer Control Center.

Phase IV of hydromet remote site installation will complete the BPA obligation for the collection of weather data. Several of these sites are located such that reliable VHF paths are not possible. For this reason, alternate communication methods are required. BPA has just completed a test program using four GOES DCPs. This approach appears to meet BPA requirements.

5.3. Features of the Program

5.3.1. Type of Program

Operational

5.3.2. Start of Program

Fall, 1976

5.3.3. Type of Data Collected

Hydrology
Meteorology

5.3.4. Parameters Measured

River Level
Precipitation

5.3.5. Data Retrieval

BPA dials-in to NESS on the 1200 Baud circuit. An automatic dial-in terminal is used to obtain a timely retrieval of the data.

5.4. Data Collection Platform Information

5.4.1. Number and Type

BPA will install 14 self-timed GOES DCP's.

5.4.2. Special Operating Features

None

5.4.3. Location of DCP's

NAME	LATITUDE	LONGITUDE	HYDROMET PARAMETER
Boundary, Wash.	48° 58' 51"	117° 21' 28"	Precip.
Colfax, Wash.	46° 53' 23"	117° 22' 09"	River level
Columbia Falls, Mont.	48° 29' 44"	114° 07' 36"	River level
Darby, Mont.	46° 01' 40"	114° 10' 34"	Precip.
Hooper, Wash.	46° 45' 31"	118° 08' 52"	River level
Laurier, Wash.	48° 59' 01"	118° 12' 56"	River level
Ovando, Mont.	47° 01' 09"	113° 07' 44"	Precip.
Pleasant Valley, Mont.	48° 06' 34"	114° 52' 07"	Precip.
Polebridge, Mont.	48° 45' 54"	114° 17' 01"	Precip.
Seeley Lake, Mont.	47° 12' 47"	113° 31' 05"	Precip.
Summit, Mont.	48° 19' 01"	113° 21' 11"	Precip.
Walla Walla 13 ESE, Oreg.	45° 59' 24"	118° 03' 00"	Precip.
West Glacier Park, Mont.	48° 30' 01"	113° 58' 59"	Precip.
Kettle Falls, Wash.	48° 35' 40"	118° 03' 42"	River level

A map showing the location of these sites is given below.

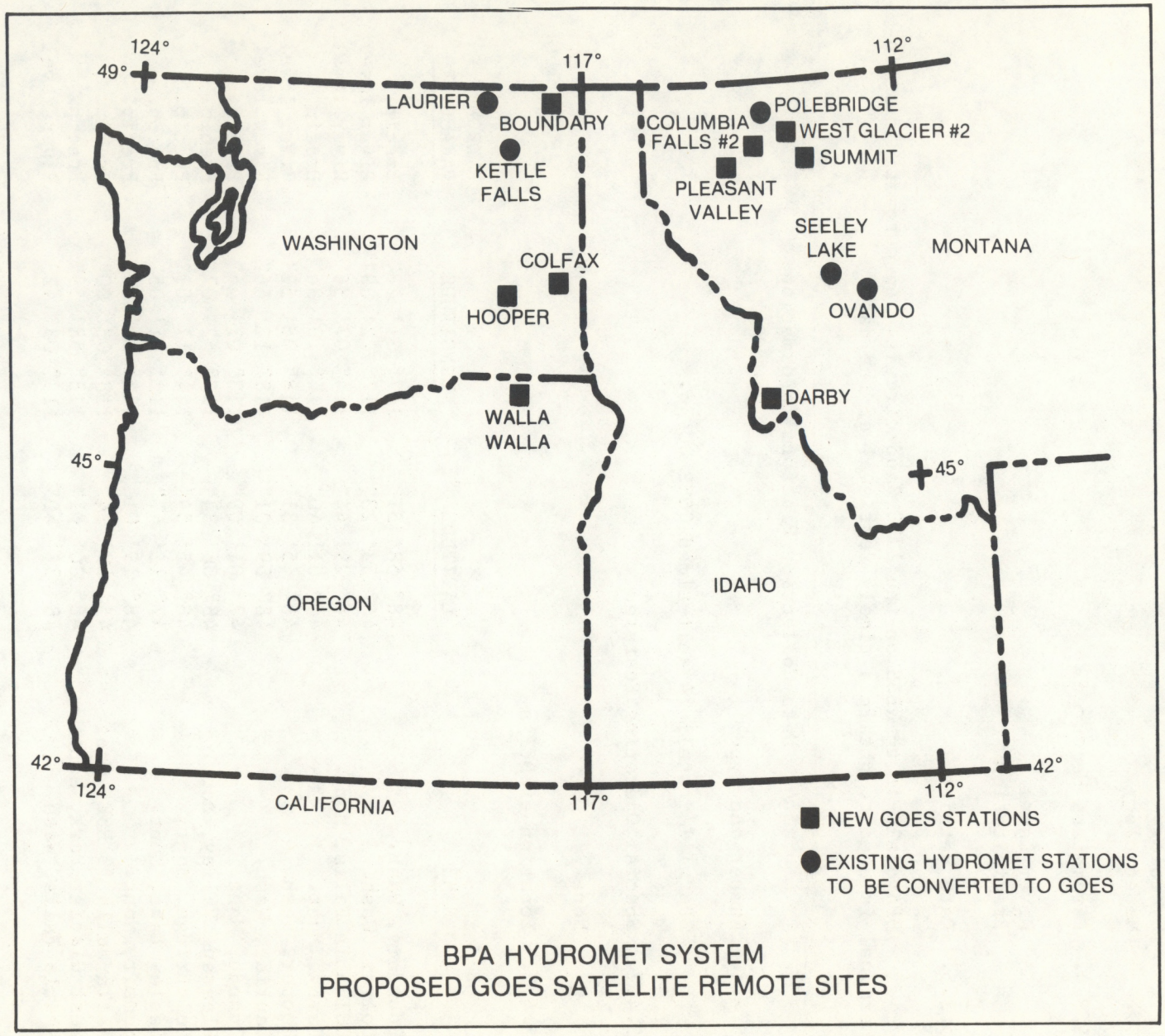

Figure 7.--Map showing location of DCP sites.

5.5. Future Plans

BPA proposes installing 14 GOES remotes to gather precipitation and river level data from isolated sites. These data will be stored in a regional hydromet data bank known as the Columbia River Operational Hydromet Management System (CROHMS) which is operated by the Corps of Engineers. Agencies which need these data may then access CROHMS for the data they require. The Corps of Engineers will use the data for reservoir control, and BPA will use the data for power forecasting and scheduling.

5.6. Bibliography

1. Test Report TR-78-004, BPA, Geostationary Operational Environmental Satellite Data Collection System (GOES-DCS) Remote Station Test Program. July 15, 1978.

6. BROOKHAVEN NATIONAL LABORATORY

6.1. Identification of the User

6.1.1. Name and Address

Brookhaven National Laboratory
Upton, New York 11973

6.1.2. Contact

S. Rankowitz, FTS 666-4219
G. Dimmler, FTS 666-4119
Instrumentation Division
(Same address as above)

6.1.3. Type of Organization

Brookhaven National Laboratory is operated by Associated Universities, Inc. under contract with the U.S. Department of Energy.

6.1.4. Funding Organization

Department of Energy

6.2. General Program Description

The present GOES DCS program at Brookhaven is focused on development of a data collection and communication system for the continental shelf ecosystem research program planned by the Oceanographic Sciences Division. Biological and physical oceanographic measurements will be required in real time.

6.3. Features of the Program

6.3.1. Type of Program

Experimental

6.3.2. Start of Program

1977

6.3.3. Type of Data Collected

Oceanography

6.3.4. Parameters Measured

Current
Temperature
Conductivity
Biological Measurements

6.3.5. Data Retrieval

They are obtaining the collected data by dialing into the computer at the GOES DCS Control Center.

6.4. Data Collection Platform Information

6.4.1. Number and Type

Two interrogation types of DCP's are presently operating.

6.4.2. Special Operating Features

None

6.4.3. Location of DCP's

Atlantic Ocean coastal region

6.5. Future Plans

We are testing a system that continuously measures and stores data collected from sensors in large semiconductor memory requiring very low power. The system processes data from several voltage to frequency converters, and stores the digitized data in uniquely assigned locations in buffer memory. The use of large buffers will permit continuous measurement and infrequent platform interrogations.

7. BUREAU OF LAND MANAGEMENT

7.1. Identification of the User

7.1.1. Name and Address

United States Department of the Interior
Bureau of Land Management
Denver Service Center
Denver Federal Center, Building 50
Denver, Colorado 80225

7.1.2. Contact

Mr. Dale Vance
Office of Scientific Systems Development
(Same address as above)
(303) 234-4620

7.1.3. Type of Organization

Federal Government

7.1.4. Funding Organization

Bureau of Land Management

7.2. General Program Description

BLM has the requirement for collecting weather information and support of fire weather forecasting in Alaska. The GOES DCS effort is also being viewed as a possible method for use in other BLM programs for weather, air and water quality monitoring.

7.3. Features of the Program

7.3.1. Type of Program

Operational

7.3.2. Start of Program

November, 1977

7.3.3. Type of Data Collected

Meteorology

7.3.4. Parameters Measured

Wind Speed (10 min. int.)	Pressure
Wind Direction (10 min. int.)	Precipitation
Temp (air) Naturally Aspirated	Relative Humidity
Temp (med. forest fuel)	Battery Voltage

7.3.5. Data Retrieval

The collected data are forwarded to the National Weather Service (NWS) and then to Alaska via the FAA/NWS TTY network.

7.4. Data Collection Platform Identification

7.4.1. Number and Type

Seven self-time DCP's are currently being used.

7.4.2. Special Operating Features

None

7.4.3. Location of DCP's

1. Grasmere, Idaho
2. 30 miles S.W. of Bettles, Alaska
3. Salmon - Trout, Alaska (Near Canadian border, south of Brooks Range)
4. Kiwalik - S.W. of Granite Mountain on Seward Peninsula in Alaska
5. Inoko Flats, Alaska - between Unalakleet and McGrath
6. Percell Mountain, Alaska - between Galena and Dahl Creek
7. Twin Lakes, Alaska near Wein Lake

Additional DCP's are used in Utah, Nevada, and New Mexico.

7.5. Future Plans

There are plans to expand the National Fire Danger Rating System Network to as many as 1,000 systems. Increasing demands on remote data collection should also see growth in hydro and hydromet areas.

7.6. Bibliography

"A Remote Automatic Weather Station for Fire Weather Monitoring, Development and Test," by Dale N. Vance and John R. Warren, October 1978.

8. BUREAU OF RECLAMATION
ENGINEERING AND RESEARCH CENTER

8.1. Identification of the User

8.1.1. Name and Address

United States Department of the Interior
Bureau of Reclamation
Engineering and Research Center
Division of Research
Box 25007, Mail Code 1200
Denver, Colorado 80225

8.1.2. Contact

Mr. Donald Rottner
Office of Atmospheric Resources Management
(Same address as above)
(303) 234-3901

8.1.3. Type of Organization

Federal Government

8.1.4. Funding Organization

EROS Program Office, United States Geological Survey and Bureau of Reclamation.

8.2. General Program Description

The Bureau of Reclamation is operating three surface weather stations called Automatic Environmental Surface Observation Platforms (AESOP's). They are designed to be installed in remote high-altitude areas that are inaccessible during winter months. All three stations are located in the Sierra Nevada in the American River Basin in California.

The operational environment for these stations is severe from a precipitation standpoint. In order to keep the stations above the snow-pack, two of the DCP's are on 20 foot towers and one is a 10 foot tower. Even with the 20 foot towers (at approximately 7000 feet elevation) there is a very good chance that the station will be under the snowpack one year out of ten.

Outages have not been a serious problem. Outages that have occurred have been recent and seem to be directly related to our newly developed solar panel power supply. Two possible reasons for these outages may be:

(1) Too high a regulated potential from the solar panel to the battery causing too high a component sensitivity during transmit cycles.

(2) Snow accumulation on the solar panel causing battery discharges. Outages tend to be long-term solely because of the inaccessibility of the stations. For instance, once the snowpack begins to accumulate, Sunflower Hill is inaccessible except by helicopter or a 15 mile snowmobile ride over dangerous terrain.

These stations have proven to be very valuable tools during the Sierra Cooperative Pilot Project (SCPP) field season. They give the Field Director and forecasters real time information on the surface meteorology and precipitation conditions in the project area. These personnel make operational decisions based on this information. In the future, it is planned to add as many as five more AESOP's in support of the SCPP.

8.3. Features of the Program

8.3.1. Type of Program

Operational

8.3.2. Start of Program

August 1975

8.3.3. Type of Data Collected

Meteorology

8.3.4. Parameters Measured

Dew Point Temperature
Temperature
Precipitation
Wind Speed and Direction

8.3.5. Data Retrieval

The collected data are forwarded to the National Weather Service (NWS) from the GOES DCS Control Center. The NWS switches the data onto a line connected to the Engineering and Research computer in Denver, Colorado. There the data are merged with the NWS and Federal Aviation Administration hourly surface weather reports. These reports cover portions of the United States west of the Mississippi River. The users of these data are the Bonneville Power Administration, Bureau of Land Management, Forest Service, and 20 universities.

8.4. Data Collection Platform Information

8.4.1. Number and Type

The Bureau of Reclamation is presently using three self-timed DCP's.

8.4.2. Operating Features

The DCP's sample and report data hourly.

8.4.3. Location of DCP's

State	Nearest Town	Lat. & Long.	Station Name	Station ID
California	Forest Hill	39°03'10"N 120°37'26"W	Mosquito Ridge (MOS)	16C30FF0
California	Soda Springs	39°16'42"N 120°22'43"W	Onion Creek (ONC)	16C2F35C
California	Forest Hill	39°09'57"N 120°27'34"W	Sunflower Hill (SFH	16C11972

8.5 Future Plans

The Bureau of Reclamation is presently developing a portable, low-power consumption, automatic, remote telemetered hydrometeorological data collection network. This work is being carried out under the Bureau of Reclamation's Office of Atmospheric Resources Management Program in the High Plains Experiment area, which is called HIPLEX. This area is located in Texas. The network will include between 25 and 150 stations.

8.6 Bibliography

Testing of Satellite Uplinked Remote Surface Weather States in the Sierra Nevada, by Dan Rottner and Gerald R. Price.

The referenced report was presented at the Conference on Sierra Nevada Meteorology at South Lake Tahoe, California, on June 17-21, 1978, and at the 8th Technical Conference at the Air Force Academy on November 28-December 1, 1978.

9. BUREAU OF RECLAMATION
PACIFIC NORTHWEST REGION

9.1.1. Name and Address

Bureau of Reclamation
Pacific Northwest Region
Federal Building & U.S. Courthouse
Box 043 - 550 West Fort Street
Boise, Idaho 83724

9.1.2. Contact

Administration:	Mr. Rod Vissia Regional Director (Same address as above)
Principal Investigator:	Mr. Dan Lute (Same address as above) FTS 554-1970

9.1.3. Type of Organization

Federal Government

9.1.4. Funding Organization

Bureau of Reclamation

9.2. General Program Description

The Boise-Minidoka Hydromet System will support the acquisition of real-time hydrological and meteorological data (hydromet) in the Snake River Basin above Hells Canyon, Idaho, and the Deschutes River Basin above Tygh Valley, Oregon, with possible future expansion to other parts of the Pacific Northwest. This system is part of a joint effort by six Federal agencies to acquire and share Hydromet data in the Columbia River Basin through the Columbia River Operational Hydromet and Management System (CROHMS) data bank in Portland, Oregon. This system will provide the necessary hydromet data upon which to base critical real-time project operational decisions. It will also provide the historical data base for statistical analysis, projection, and future project operational studies and modeling.

Two modes of operating are planned. Several DCP's will operate in the self-time mode. Secondly, dedicated channels will be used for experimenting with DCP's reporting in the random reporting mode.

9.3. Features of the Program

9.3.1. Type of Program

Operational for self-time mode
Experimental for random reporting DCP's

9.3.2. Start of Program

January 1980

9.3.3. Type of Data Collected

Hydrology
Meteorology

9.3.4. Parameters Measured

Streamflow
Reservoir Content
Air Temperature
Precipitation
Soil Moisture
Battery Voltage
Snow Water Content

Ultimately up to sixteen parameters will be reported. The streamflow parameter is the most perishable and may have a possible reporting frequency of 15 minutes during times of critical runoff. This frequency is required to identify peaks of increasing or decreasing flows.

9.3.5. Data Retrieval

Primary data delivery will be by means of a GOES satellite "down-link" in Boise, Idaho. This "down-link" will be supplied as part of the Boise-Minidoka Hydromet System procurement. NESS facilities will be used as temporary backup in case of failure of the local "down-link." NESS facilities will be accessed by means of an FTS, voice-grade, dial-up circuit, initially at 300 bps and later changing to 1200 bps.

All hydromet data is automatically transferred in real-time to the CROHMS central data bank where it is available to any agency having an interest or need. In particular, this will provide the real-time link to provide the data to the National Weather Service River Forecast Center in Portland, Oregon.

9.4. Data Collection Platform Information

9.4.1. Number and Type

The Boise-Minidoka Hydromet System is configured for 300 platforms ultimately. The initial procurement for the first phase of the system contains 68 platforms with a second optional phase proposed for the Deschutes River Basin in central Oregon which will involve an additional 20-25 platforms. All platforms will be of the "dual-channel" type with one channel used for the self-timed reporting, and the second channel utilized for random event reporting. Initially the random reporting channel will be activated on only two or three platforms to assess the effect on the NESS facilities. If no adverse impact occurs, the random reporting feature will be gradually increased to 25-30 platforms during a two-year test period.

Based upon present proposal schedules, all 68 platforms in the first phase will become operational from January, 1980 through August, 1980. The additional 20-25 platforms in the Deschutes Basin will be installed after testing and acceptance of the first phase.

9.4.2. Special Operating Features

The Adaptive Random Reporting mode will be used. The Bureau of Reclamation is the first user to experiment with this approach on the GOES.

9.4.3. Locations of DCP's

Boise-Minidoka Hydromet System
Remote Data Stations

Station Name	State	Latitude Longitude	Parameters	Sta. Repts. per Day	Frequency of Reading	Random Reports
Afton	Wyoming	42°44' 110°56'	Air Temp. Precipitation Batt. Volt.	4	Hourly	--
Alta	Wyoming	43°45' 111°01'	Air Temp. Precipitation Batt. Volt.	4	Hourly	--
Bondurant	Wyoming	43°14' 110°26'	Air Temp. Precipitation Batt. Volt.	4	Hourly	--
Buffalo River	Wyoming	43°50' 110°26'	River Stage Batt. Volt.	4	Hourly	--
Fall River at Squirrel	Idaho	44°04' 111°14'	River Stage Batt. Volt.	4	Hourly	--
Glade Creek	Wyoming	44°08' 110°56'	Snow Water Content Soil Moisture Air Temp. Precip. Batt. Volt.	4	Hourly	--
Grays River near Alpine	Wyoming	43°09' 110°59'	River Stage Batt. Volt.	4	Hourly	--
Henrys Fork near Rexburg	Idaho	43°50' 111°30'	River Stage Batt. Volt.	4	Hourly	--

Station Name	State	Latitude Longitude	Parameters	Sta. per Day	Repts.	Frequency of Reading	Random Reports
Henrys Fork near St. Anthony	Idaho	43°58' 111°40'	River Stage Batt. Volt.	12		Hourly	--
Henrys Lake	Idaho	44°36' 111°21'	River Stage Reservoir Stage Batt. Volt.	4 4		Hourly Hourly	-- --
Huckle-berry Divide	Wyoming	44°04' 110°42'	Snow Water Content Soil Moisture Air Temp. Precip. Batt. Volt.	4		Hourly	--
Idaho Falls 16 NE	Idaho	43°21' 111°47'	Air Temp. Precip. Batt. Volt.	12		Hourly	--
Island Park Dam	Idaho	44°25' 111°24'	Reserv. Stage River Stage Sump Alarm Batt. Volt.	24 24		Hourly Hourly	Yes --
Jackson	Wyoming	43°29' 110°46'	Air Temp. Precip. Batt. Volt.	4		Hourly	--
Little Wood River near Carey	Idaho	43°20' 114°00'	River Stage Reserv. Stage Air Temp. Precip. Batt. Volt.	24 24		Hourly Hourly	Yes --
Milner Dam	Idaho	42°31' 224°01'	River Stage Reserv. Stage Batt. Volt.	24 24		Hourly Hourly	-- --
Moran (Jackson Lake Dam)	Wyoming	43°51' 110°35'	River Stage Reserv. Stage Snow Water Content Soil Moisture Air Temp. Precip. Batt. Volt.	24		Hourly	Yes
Pacific Creek	Wyoming	43°51' 110°31'	River Stage Batt. Volt.	4		Hourly	--

Station Name	State	Latitude Longitude	Parameters	Sta. Repts. per Day	Frequency of Reading	Random Reports
Palisades Dam	Idaho	43°21' 111°13'	River Stage	24	Hourly	--
			Reserv. Stage	24	Hourly	Yes
			Air Temp.			
			Precip.			
			Batt. Volt.			
Ririe Dam	Idaho	43°35' 111°45'	River Stage	24	Hourly	--
			Reserv. Stage	24	Hourly	Yes
			Air Temp.			
			Precip.	4	Hourly	--
			Batt. Volt.			
Salt River near Etna	Wyoming	43°05' 111°02'	River Stage	4	Hourly	--
			Batt. Volt.			
Snake River near Lorenzo	Idaho	43°44' 111°52'	River Stage	24	15 minute	--
			Batt. Volt.			
Snake River below Flat Creek	Wyoming	43°22' 110°44'	River Stage	24	15 minute	Yes
			Batt. Volt.			
Snake River near Alpine	Wyoming	43°12' 110°53'	River Stage	4	Hourly	--
			Batt. Volt.			
Snake River near Blackfoot	Idaho	43°08' 112°31'	River Stage	24	15 minute	Yes
			Batt. Volt.			
Snake River near Heise	Idaho	43°37' 111°40'	River Stage	24	15 minute	Yes
			Batt. Volt.			
Snake River near Shelley	Idaho	43°25' 112°08'	River Stage	4	15 minute	--
			Batt. Volt.			
Snake River Station	Wyoming	44°08' 110°40'	Snow Water Cont.	4	Hourly	--
			Soil Moisture			
			Air Temp.			
			Precip.			
			Batt. Volt.			
Teton River near St. Anthony	Idaho	43°56' 111°37'	River Stage	24	15 minute	--
			Batt. Volt.			

Station Name	State	Latitude Longitude	Parameters	Sta. Repts. per Day	Frequency of Reading	Random Reports
Thumb Divide	Wyoming	44°22' 110°34'	Snow Water Cont. Soil Moisture Air Temp. Precip. Batt. Volt.	4	Hourly	--
Valley View	Idaho	44°38' 111°19'	Snow Water Cont. Soil Moisture Air Temp. Precip. Batt. Volt.	4	Hourly	--
Willow Creek near Tex Creek	Idaho	43°27' 111°44'	River Stage Batt. Volt.	24	15 minute	Yes
Agency Valley Dam	Oregon	43°54' 118°09'	River Stage Reserv. Stage Air Temp. Precip. Batt. Volt.	24 24	15 minute 15 minute	-- Yes
Arrowrock Dam	Idaho	43°36' 115°55'	Reserv. Stage Air Temp. Precip. Batt. Volt.	24	Hourly	Yes
Atlanta	Idaho	43°48' 115°08'	Snow Water Cont. Air Temp. Precip. Batt. Volt.	4	Hourly	--
Boise River at Boise	Idaho	43°37' 116°12'	River Stage Batt. Volt.	24	15 minute	--
Bully Creek at Warm Springs	Oregon	44°01' 117°28'	River Stage Batt. Volt.	24	15 minute	Yes
Bully Creek Dam	Oregon	44°01' 117°24'	Canal Stage Reserv. Stage Air Temp. Precip. Batt. Volt.	24	15 minute	Yes
Cascade Dam	Idaho	44°31' 116°03'	River Stage Reserv. Stage Air Temp. Precip. Batt. Volt.	24 24	Hourly Hourly	-- Yes

Station Name	State	Latitude Longitude	Parameters	Sta. Repts. per Day	Frequency of Reading	Random Reports
Deadwood Dam	Idaho	44°18' 115°39'	River Stage Reserv. Stage Snow Water Cont. Air Temp. Precip. Valve House Temp. Batt. Volt.	24	Hourly	Yes
Idaho City	Idaho	43°50' 115°50'	Snow Water Cont. Air Temp. Precip. Batt. Volt.	4	Hourly	--
Lucky Leaf Dam	Idaho	43°32' 116°03'	Gate Opening(6) Reserv. Stage Batt. Volt.	24	Hourly	Yes
Malheur River at Vale	Oregon	43°59' 117°13'	River Stage Batt. Volt.	24	15 minute	Yes
Mason Dam	Oregon	44°40' 118°00'	River Stage Reserv. Stage Air Temp. Precip. Batt. Volt.	24	Hourly	Yes
New York Canal at Headworks	Idaho	43°32' 116°06'	Canal Stage Batt. Volt.	2	Hourly	--
Owyhee Dam	Oregon	43°39' 117°15'	River Stage Reserv. Stage Air Temp. Precip. Gate Opening(2) Batt. Volt.	24	Hourly Hourly	-- --
Payette Lake	Idaho	44°55' 116°07'	River Stage Reserv. Stage Batt. Volt.	24 24	Hourly Hourly	-- --
Payette River at Lowman	Idaho	44°05' 115°36'	River Stage Air Temp. Precip. Batt. Volt.	24	15 minute	Yes

Station Name	State	Latitude Longitude	Parameters	Sta. Repts. per Day	Frequency of Reading	Random Reports
Payette River near Horseshoe Bend	Idaho	43°57' 116°12'	River Stage Batt. Volt.	24	15 minute	Yes
Rome	Oregon	42°52' 117°39'	River Stage Batt. Volt.	24	15 minute	Yes
Thief Valley Dam	Oregon	45°01' 117°47'	River Stage Reserv. Stage Batt. Volt.	4	Hourly	--
Unity Dam	Oregon	44°30' 118°11'	River Stage Reserv. Stage Air Temp. Precip. Batt. Volt.	4	Hourly	Yes
Warm Springs Dam	Oregon	43°35' 118°12'	River Stage Reserv. Stage Air Temp. Precip. Batt. Volt.	24 24	Hourly Hourly	Yes --
Wildhorse Dam	Nevada	41°41' 115°51'	River Stage Reserv. Stage Air Temp. Precip. Batt. Volt.	4 4	Hourly Hourly	-- --
Central Oregon Canal	Oregon	44°02' 121°18'	Canal Stage Batt. Volt.	2	Hourly	--
Clear Lake Government Camp	Oregon	45°11' 121°42'	River Stage Reserv. Stage Precip. Air Temp. Batt. Volt.	4 4	Hourly Hourly	-- --
Crane Prairie Reservoir	Oregon	43°45' 121°47'	River Stage Reserv. Stage Batt. Volt.	4 4	Hourly Hourly	-- Yes
Crescent Lake	Oregon	43°30' 121°58'	River Stage Reserv. Stage Precip. Air Temp. Batt. Volt.	4 4	Hourly Hourly	-- Yes

Station Name	State	Latitude Longitude	Parameters	Sta. Repts. per Day	Frequency of Reading	Random Reports
Deschutes River at Benham Falls	Oregon	43°56' 121°25'	River Stage Batt. Volt.	4	Hourly	--
Grizzly	Oregon	44°31' 120°52'	Precip. Air Temp. Batt. Volt.	4	Hourly	--
Haystack Reservoir	Oregon	44°30' 121°09'	Reserv. Stage Batt. Volt.	4	Hourly	Yes
Madras 2N	Oregon	44°40' 121°09'	Precip. Air Temp. Batt. Volt.	4	Hourly	--
North Canal (COID)	Oregon	44°05' 121°18'	Canal Stage Batt. Volt.	2	Hourly	--
North Unit Main Canal	Oregon	44°05' 121°18'	Canal Stage Batt. Volt.	2	Hourly	--
Ochoco Reservoir	Oregon	44°18' 120°43'	River Stage Reserv. Stage Batt. Volt.	4 4	Hourly Hourly	-- Yes
Ochoco Ranger Station	Oregon	44°24' 121°26'	Precip. Air Temp. Batt. Volt.	4	Hourly	--
Prineville Reservoir	Oregon	44°07' 120°47'	River Stage Reserv. Stage Precip. Air Temp. Batt. Volt.	4 4	Hourly Hourly	-- Yes
Prineville 4NW	Oregon	44°21' 120°54'	Precip. Air Temp. Batt. Volt.	4	Hourly	--

9.5. Future Plans

The future plans call for expansion of the random reporting program if the two year test period proves to be satisfactory.

10. CALIFORNIA

10.1. Identification of the User

10.1.1. Name and Address

This program is divided into two separate and distinct efforts. The Department of Forestry, and the Department of Water Resources, both of the State of California, have GOES DCS programs that derive technical support from the Department of General Services.

California Department of Forestry (CDF)
1416 9th Street, Room 1646
Sacramento, California 95814

California Department of Water Resources (DWR)
1416 9th Street
Sacramento, California 95814

Department of General Services
Communications Division
2025 19th Street
Sacramento, California 95818

10.1.2. Contact

Primary contact: Larry A. Mertens, Communications Engineer
Department of General Services
Communications Division
2025 19th Street
Sacramento, California 95818

(916)445-2034

Alternate contact: Jerry Kiliany, Communications Engineer
(Same address as above)

(916)445-2752

10.1.3. Type of Organization

State Government

10.1.4. Funding Organization

California Department of Forestry

10.2. General Program Description

California Department of Forestry

The State of California is the most fire-prone of all the states. With mild winters and dry summers, vast areas of forest and scrub brush country,

and overpopulation all combine to make the state extremely susceptible to fire damage. This has resulted in the need for continuous real-time fire weather and fire danger information to support fire protection functions. The CDF and NASA/Ames Research Center have jointly undertaken a Fire Index Experiment. This experiment was for the evaluation of using unmanned remote stations throughout the State of California for the sensing and transmission of fire index parameters. This experiment recently has been completed. The CDF is now pursuing an operational GOES DCS program for providing automated fire weather data.

California Department of Water Resources

The DWR has worked with the National Weather Service and Geological Survey to operate a flood warning and forecasting system for more than a decade. The primary purpose of this sytem is to provide hydrological data from remote stream and rain sensors to Sacramento during periods of storm and high water. The threat of rapid snow melt and rainfall dictates a continual search for effective systems of flood protection and early flood warning. The GOES DCS effort now being established, will be used for prediction of water runoff due to melted snow.

California Department of General Services
Communications Division

The Communications Division will install and maintain all DCP's.

10.3. Features of the Program

10.3.1. Type of Program

Operational

10.3.2. Start of Program

The CDF started their evaluation program with NASA/Ames Research Center in 1976.

The DWR will start their program in the Spring, 1980.

10.3.3. Type of Data Collected

Meteorology

10.3.4. Parameters Measured

CDF: Temperature
Relative Humidity
Wind Speed
Wind Direction

DWR: Snow Water Content
Precipitation
Temperature

10.3.5. Data Retrieval

The State of California has installed a ground receiving station in Sacramento. All collected data will be received and processed at this location.

10.4. Data Collection Platform Information

10.4.1. Number and Type

The CDF has 19 self-timed DCP's in service.

The DWR has purchased 6 self-timed DCP's.

10.4.2. Special Operating Features

None

10.4.3. Location of DCP's

CDF DCP's:

LOCATIONS OF EXISTING CDF PLATFORMS

Location	Latitude	Longitude
Eel River C.C.	40.2°	123.8°
Red Mt.	41.5°	123.9°
Mattole F.F.S.	40.2°	124.1°
Schoolhouse L.O.	41.2°	123.9°
Pratt Mt.	40.1°	123.7°
Docker Hill	39.3°	123.6°
Cold Springs L.O.	39.1°	123.5°
Bell Springs	40.0°	123.6°
Summit Valley	39.9°	123.2°
Hopland	39.0°	123.1°
Sonoma Mt.	38.4°	122.6°
Mt. Jackson L.O.	38.5°	122.9°
Crespi Ranch	38.8°	122.9°
Hot Springs Ranch	38.8°	123.1°
Berryessa L.O.	38.7°	122.2°
Soda Canyon	38.4°	122.3°
Highland Springs	38.9°	122.9°
Walker Ridge	39.1°	122.5°
Alpha	38.8°	120.2°

The CDF will purchase 80 more DCP's to complete their statewide system. The locations of a few of these additional sites are given below.

Location	Latitude	Longitude
Butcher Hill	41.7°	122.4°
Weed	41.5°	122.5°
MacDoel	41.8°	122.0°
Grasshopper	40.8°	120.7°
Big Valley Mt.	41.1°	121.1°
Westwood	40.3°	121.0°
Alturas	41.5°	120.5°
Whitemore	40.6°	121.9°
Hillcrest	40.8°	121.9°
Fawn Lodge	40.7°	122.8°
Grindstone	39.7°	122.5°
Baker	40.3°	122.5°
Lyman Springs	40.3°	121.8°
Kelly Ridge	39.5°	121.5°
Cohasset	39.9°	121.7°
Stirling City	39.9°	121.9°
Bangor	39.4°	121.4°
Dorris Ranch	39.3°	121.1°
Sierra College	38.8°	121.2°
Hughes Mill	39.1°	120.8°

DWR DCP's:

Location	Latitude	Longitude
Paradise - Tuolumne R.	38.0°	119.7°
Tuolumne Mdws. - Tuolumne R.	37.9°	119.4°
Charlotte L. - Kings R.	30.8°	118.4°
Big Mdws. - Kings R.	36.7°	118.8°
Crabtree Mdw. - Kern R.	36.6°	118.4°
Quaking Aspen - Tule R.	36.1°	118.6°

10.5. Future Plans

The CDF and DWR plan to expand the DCP network so that a statewide system is established.

11. CANADIAN MARINE DRILLING LTD.

11.1. Identification of the User

11.1.1. Name and Address

Canadian Marine Drilling Ltd. (Canmar)
P. O. Box 200
Calgary, Canada T2P 2H8

11.1.2. Contact

J. W. Steen
(Same address as above)

11.1.3. Type of Organization

Private Canadian Company

11.1.4. Funding Organization

Canmar

11.2. General Program Description

In connection with the Beaufort Sea Exploratory Drilling Operation being carried out by Dome Petroleum Ltd. and its subsidiary company Canadian Marine Drilling Ltd., an Environmental Prediction System was developed to supplement the normal meteorological parameters and forecasts supplied by the Atmospheric Environment Service of the Government of Canada. This system was deemed necessary because of the unique problems which the presence of multi-year pack ice and first year ice present to the safety of the drilling operation. The system consists of an onsite forecasting office staffed by meteorologists and ice specialists. This office has been operated by the Atmospheric Environment Service (AES) under contract to Canadian Marine Drilling Ltd. The onsite forecasting office is supported by the Arctic Weather Centre of the AES which operates a fine scale computer model of the meteorological and ice conditions of the Beaufort Sea. Canadian Marine Drilling Ltd. provides support by way of shipboard weather reports, aerial ice reconnaissance and the deployment of remote weather stations on drifting ice floes. The meteorological stations transmit to the GOES satellite operated by the NESS. These stations provide normal meteorological parameters. They are fed into the world meteorological organization as drifting buoy stations. Previously, RAMS transmitters have been used to obtain position information, but, with the life expectancy of that system being short, ARGOS transmitters will be used in the future. The GOES satellite is deemed best for our purposes for data transmission because the very short data turnaround enhances prediction capability. ARGOS offers the only reliable and economical method of positional determination.

11.3. Features of the Program

11.3.1. Type of Program

Operational/Research

11.3.2. Start of Program

Summer, 1979

11.3.3. Type of Data Collected

Meteorology

11.3.4. Parameters Measured

Wind Speed and Direction — Barometric Pressure
Compass

11.3.5. Data Retrieval

The collected data are sent to the National Weather Service who places the data on a line to the Atmospheric Environment Service in Toronto.

11.4. Data Collection Platform Information

11.4.1. Number and Type

Three self-time DCP's are used.

11.4.2. Special Operating Features

None

11.4.3. Locations of DCP's

All the platforms are located somewhere within the area bounded by the Canadian and Alaskan coastline on the south, the 74th latitude on the north, 126° west longitude on the east, and 150° west longitude on the west.

11.5. Future Plans

As well as providing information for real time prediction, positional information and the meteorological measurements will be used to support ongoing research into the movement of the Beaufort Sea pack ice. Canmar is currently implementing a model to predict the movements of Pack Ice.

12. CHILE

12.1. Identification of the User

12.1.1. Name and Address

The GOES DCS program in Chile is sponsored by the University of Chile NASA Division, Casella 5027, Santiago, Chile.

The users are:

Present:

1. Direccion General de Aguas (Governmental Organization responsible for managing water resources).

2. ENDESA (National Power Generating Enterprise).

3. Instituto Hidrografico de la Armada (Hydrographic Institute of the Navy).

4. INACH (National Antarctic Institute).

Future:

1. University of Concepcion, Department of Forestry

2. Meteorological Service of the Navy.

12.1.2. Contact

Dr. Eduardo A. Diaz, Director
(Same address as above)
Telephone 81706 - 53400 - 53371
Telex 40523 CENET CL

12.1.3. Type of Organization

State University

12.1.4. Funding Organization

The University of Chile is funding the experimental phase. The user agencies will share the expenses when the program becomes operational.

12.2. General Program Description

The Chilean DCS program, sponsored by the University of Chile NASA Division, was initiated in early 1977. It consists basically of two phases:

a. An experimental phase which includes the development of three GOES/LANDSAT DCP's loaned by the USGS and the participation of three

national organizations. The objective of this phase is to gain experience in handling a Data Collection System, test different sensors in adverse environments, and to demonstrate to the users the advantages of an automatic data collection system utilizing retransmission via satellite.

During this phase the Landsat satellite is being used to retransmit the data to the receiving station located in Peldehue (Near Santiago, Chile), which the University operates under contract for the National Aeronautics and Space Administration.

b. The next phase, which has already been initiated, consists of the implementation of a GOES receive site and the development of DCP's bought by the users. This is being considered the start of an operational system.

12.3. Features of the Program

12.3.1. Type of Program

The program is presently an experimental effort with plans for becoming operational.

12.3.2. Start of Program

January, 1977

12.3.3. Type of Data Collected

Meteorology
Oceanography
Hydrology

Seismic data are expected to be collected in the future.

12.3.4. Parameters Collected

Solar Radiation
Air Temperature
Relative Air Humidity
River Level
Tide Level
Wind Speed
Wind Direction
Atmospheric Pressure
Rain Fall
Snow Water Content

12.3.5. Data Retrieval

The experimental phase did not require real time data transmission. The data were distributed by mail at intervals specified by the user, who received the data tabulated by engineering units. Experimental links are being established at this time between the receiving/processing station and the user who requires almost real time data. The user will then receive a teletype message.

12.4. Data Collection Platform Information

12.4.1. Number and Type

Presently there are eight GOES/LANDSAT self-timed DCP's operating in the LANDSAT mode.

12.4.2. Special Operating Features

None

12.4.3. Location of DCP's

Two DCP's are located in the Andes at 3600 m altitude, one near Santiago, and one near Iquique (northern Chile); three are in the Antarctica; one is at the ocean shore (Valparaiso), one next to the Cachapoal River which is feeding the Rapel reservoir and the last one is located in the Meteorological Station of the Navy, close to Valparaiso.

12.5. Future Plans

Calendar year 1979 plans: The GOES receive and processing site during calendar year 1979 is expected to be completed. All DCP's already operating in the Landsat mode will be converted to operate through GOES to obtain more data.

The DCP installed near the Rapel reservoir will be relocated in the mountain to measure the water content of snow in the Maule basin. This parameter is of prime interest to two of the main users.

Four more DCP's will also be installed during 1979. They will measure snow and meteorological parameters in the main basins of the northern and central part of Chile.

It is also expected to resume operation with the Bolivian program once the GOES receive capability has been completed. The one year experimental project carried out with Bolivia during calendar years 1977 and 1978 was a success and demonstrated the feasibility of establishing regional programs.

The Instituto Geofisico del Peru is also interested in initiating a DCS program with the University of Chile.

13. CORPS OF ENGINEERS

13.1. Identification of the User

13.1.1. Name and Address

U.S. Army Corps of Engineers
Civil Works Directorate
Washington, D.C. 20314

13.1.2. Contact

Hydraulic-Hydrologic Branch
Engineering Division
Office of the Chief of Engineers, HQDA
DAEN-CWE-HY
(Same address as above)

(202) 693-7330

13.1.3. Type of Organization

Federal Government

13.1.4. Funding Organization

U.S. Army Corps of Engineers

13.2. General Program Description

The U.S. Army Corps of Engineers uses the GOES DCS to acquire data which is used to regulate water resource projects. These projects are primarily dams and lakes. The projects are operated to achieve a variety of Congressional authorized purposes including navigation, hydropower, recreation, flood control, water supply, and several environmental goals. Engineering decisions are made to alter a dynamic natural process, and the goal of the decision-making is to obtain the best use of the water resource over time. Environmental data categories for the decision-making process include water levels, water quality, climate, precipitation, snow and ice. Approximately eighty Corps of Engineers data collection platforms are presently active in the GOES DCS program. These platforms are self-timed and most of them transmit data every four hours. In addition to the field equipment, the Corps of Engineers has installed two ground receive sites. One is located in Vicksburg, Mississippi, and the other is in Waltham, Massachusetts. The Waltham facilities are not yet fully operational. Seven of the eleven divisions with Civil Works responsibility are participating in the GOES DCS program, and Corps of Engineers participation in the program is expected to increase significantly over the next few years.

13.3. Features of the Program

13.3.1. Type of Program

Operational

13.3.2. Start of Program

1975

13.3.3. Type of Data Collected

Hydrology
Meteorology

13.3.4. Parameters Measured

Water Levels
Precipitation
Dissolved Oxygen
Water and Air Temperatures
Wind Speed
Conductivity
pH

Not all of these items are collected at every site.

13.3.5. Data Retrieval

Collected data are normally obtained by district offices from the Vicksburg receive facilities over low speed communications terminals. Low speed dial-in to the NOAA/NESS ground facilities are used for backup. Future plans include establishing a high-speed link to NESS.

13.4. Data Collection Platform Information

13.4.1. Number and Type

The Corps of Engineers has 81 self-time active platforms as of mid-November, 1979.

13.4.2. Special Operating Features

None

13.4.3. Locations of DCP's

	ID	CHANNEL	GMT	LAT.	LONG.	STATE	LOCATION
1.	CE 483032	7	0001	381228	900541	MO	Meramec State Park
2.	CE 40010E	35	0001	383744	901047	MO	St. Louis
3.	CE 480B7A	67	0001	380452	910516	MO	Anthonies Mill
4.	CE 40EC2E	55	0001	333355	911435	MS	Arkansas City
5.	CE 400FDC	35	0002	3754f0	895110	IL	Chester
6.	CE 4816DE	67	0002	375743	911103	MO	Westover Lookout
7.	CE 401278	35	0003	371806	893105	MO	Cape Cirardeau
8.	CE 48180C	67	0003	375505	910608	MO	Berryman

	ID	CHANNEL	GMT	LAT.	LONG.	STATE	LOCATION
9.	CE 401CAA	35	0004	371300	892750	IL	Thebes
10.	CE 482D96	67	0004	381633	905618	MO	St. Clair
11.	CE 40FF58	55	0003	321845	905425	MS	Vicksburg
12.	CE 484870	67	0005	394924	903405	IL	Meredosia
13.	CE 4027E2	35	0005	370000	890945	IL	Cairo
14.	CE 402930	35	0006	361137	893908	MS	Carutherville
15.	CE 411082	55	0006	305739	913952	LA	Red River Landing
16.	CE 4846A2	7	0006	393804	911453	MO	Lock & Dam 22
17.	CE 403494	35	0007	350737	900425	TN	Memphis
18.	CE 412518	55	0008	295605	900810	LA	New Orleans
19.	CE 403A46	35	0008	343126	903502	AK	Helena
20.	CE 404CD6	35	0010	383706	892107	IL	Carlyle
21.	CE 405FA0	35	0012	360812	892544	TN	Bogota
22.	CE 4064E8	35	0013	354916	902556	AK	Lake City
23.	CE 48DD12	7	0013	324022	903254	MS	Satartia
24.	CE 406A3A	35	0014	351534	900448	AK	Riverfront
25.	CE 48D3C0	7	0014	331002	902935	MS	Belzoni
26.	CE 414E2C	55	0013	354020	902012	AK	Riverdale
27.	CE 48A550	67	0016	325129	902607	MS	Yazoo City
28.	CE 40794C	35	0016	344526	900727	MS	Arkabutla
29.	CE 4855D4	7	0016	340837	901351	MS	Crowder
30.	CE 485B06	7	0017	335835	901335	MS	Locopolis
31.	CE 48B626	67	0018	324527	922854	LA	Farmerville
32.	CE 417564	55	0018	340929	895414	MS	Enid Lake
33.	CE 4089C8	35	0018	341744	900318	MS	Batesville
34.	CE 486E9C	7	0019	300233	900735	MS	Paducah Wells
35.	CE 409ABE	35	0020	333733	900627	MS	Whaley
36.	CE 487338	7	0020	342310	925020	M&	Malvern
37.	CE 4185E0	55	0020	333117	901103	M&	Greenwood
38.	CE 487DEA	7	0021	340855	934255	AK	Muffreesboro
39.	CE 40A1F6	35	0021	333250	903235	MS	Sunflower
40.	CE 418B32	55	002f	343420	931150	AK	Hot Springs
41.	CE 419696	55	0022	340716	930246	AK	Arkadelphia
42.	CE 4883BC	7	0022	324020	904018	LA	Long Branch S.
43.	CE 419844	55	0023	335232	931816	AK	Broughton
44.	CE 41A30C	55	0024	333500	920133	AK	Warren
45.	CE 40BC52	35	0024	333549	924912	AK	Camden
46.	CE 40C410	35	0025	323019	920732	MS	Monroe
47.	CE 40CAC2	35	0026	331816	940938	TX	Wright Patman
48.	CE 499CE2	67	0027	391350	885033	IL	Cowden
49.	CE 40D766	35	0027	324213	933043	LA	Shreveport
50.	CE 40D9B4	35	0028	311846	922634	LA	Alexandria
51.	CE 4805A8	55	0028	305857	914754	LA	Simmesport
52.	CE 4204FA	35	0031	363009	964322	OK	Wister Reservoir
53.	CE 4D4162	35	0046	553637	923640	MN	Lock & Dam 3
54.	CE 43F856	55	0141	355124	802310	NC	Yadkin College
55.	CE 4C13E4	35	0340	373720	814112	OH	Clear Fork
56.	CE 4CDE40	35	0341	374855	824730	KY	Paintsville
57.	CE 4C0092	35	0342	382448	823002	WV	Lock & Dam 28
58.	CE 4BFCF0	35	0343	381125	805655	WV	Mount Lookout
59.	CE 4BF222	35	0344	373245	800030	WV	Pipe Stem

	ID	CHANNEL	GMT	LAT.	LONG.	STATE	LOCATION
60.	CE 4BEF86	35	0346	382536	800950	WV	Sharps Knob
61.	CE 4BE154	35	0347	382110	802626	WV	Red Oak Knob
62.	CE 4BDA1C	35	0348	403024	823436	OH	Kokosing Lake
63.	CE 44473E	55	0353	355624	783432	NC	Neuse River
64.	CE 4BA25E	35	0354	380020	823053	WV	Glen Hayes
65.	CE 4BB128	35	0355	383550	802936	WV	Webster Springs
66.	CE 4431AE	55	0356	265735	805839	FL	Lake Okeechobee #16
67.	CE 441742	55	0358	270506	B04715	FL	Lake Okeechobee #12
68.	CE 440434	55	0359	265857	803705	FL	Port Mayaca
69.	CE 40871A	35	0017	341050	901255	MS	Lambert
70.	CE 40946C	35	0019	335f55	901635	MS	Swan Lake
71.	CE 49C24C	35	0116	415709	770656	PA	Tioga Junction
72.	CE 49EA72	35	0117	421917	751901	NY	Unadilla
73.	CE 4A2862	35	0120	414734	770444	PA	Mansfield
74.	CE 4A132A	35	0119	421850	773905	NY	Hornell
75.	CE 49CC9E	35	0321	414555	762628	PA	Towanda
76.	CE 49F7D6	35	0322	421928	754618	NY	Greene
77.	CE 49D13A	35	0323	411924	774502	PA	South Renovo
78.	CE 4A005C	35	0324	421305	755055	NY	Chenango Forks
79.	CE 4A0E8E	35	0325	420530	760325	NY	Vestal
80.	CE 49DRE8	35	0326	405805	765225	PA	Lewisburg
81.	CE 4A1DF8	35	0327	421320	772505	NY	West Cameron

13.5. Future Plans

The Corps of Engineers is working on an "adaptive random reporting" protocol for use with GOES DCS. This application takes advantage of microprocessor technology by creating an intelligent data collection platform. With such equipment, self initiated transmission from a remote site can be adapted to conditions at the site. Transmission frequency would be based on a specified function of sensor data. Efforts to date indicate that such equipment would cost no more than existing self-timed platforms and that the equipment would cost significantly less than existing interrogable platforms.

14. DAMES & MOORE

14.1. Identification of the User

14.1.1. Name and Address

Dames & Moore
605 Parfet Street
Denver, Colorado 80215

14.1.2. Contact

Dames & Moore
510 L Street
Anchorage, Alaska 99501

Mr. Charles B. Fahl, Project Manager
Anchorage, Alaska

(907) 299-0673

14.1.3. Type of Organization

Dames and Moore is a privately owned consulting company specializing in the environmental and earth sciences.

14.1.4. Funding Organization

Dames & Moore operated this GOES DCS program for WGM, Inc., Anchorage, Alaska.

14.2. General Program Description

Dames & Moore operated a GOES DCS program in Northwestern Alaska. The meteorological data collected from this system will be used for analysis of the dispersion of pollutants from a proposed lead-zinc mine and mill. This effort is required by the U.S. Environmental Protection Agency. The Clean Air Amendments of 1977 state that a Prevention of Significant Deterioration Report be presented prior to establishing such a mine and mill.

14.3. Features of the Program

14.3.1. Type of Program

Operational

14.3.2. Start of Program

September 8, 1978

14.3.3. Type of Data Collected

Meteorology

14.3.4. Parameters Measured

Wind Speed and Direction
Air Temperature
Solar Radiation and
Relative Humidity

14.3.5. Data Retrieval

The collected data are obtained at the Dames & Moore Anchorage office via a teletype link with the National Weather Service data dissemination network.

14.4. Data Collection Platform Information

14.4.1. Number and Type

Dames & Moore operated one DCP for WGM, Inc.

14.4.2. Special Operating Features

None

14.4.3. Location of DCP's

The one DCP is located approximately 100 miles north-northwest of Kotzebue, Alaska.

14.5. Future Plans

The Dames & Moore program for use of the GOES DCS was completed in March, 1980.

15. DEPARTMENT OF NATURAL RESOURCES
WASHINGTON

15.1. Identification of the User

15.1.1. Name and Address

Division of Fire Control
Department of Natural Resources
Olympia, Washington 98504

15.1.2. Contact

Mr. James B. Tucker, Meteorologist
Division of Fire Control
(Same address as above)

(206)753-5350

15.1.3. Type of Organization

Department of State Government

15.1.4. Funding Organization

Department of Natural Resources

15.2. General Program Description

The Washington State Department of Natural Resources, Division of Fire Control plans an operational system of ten platforms, located in western Washington to replace points where we are now using drive-in manual type observations or at locations where observations are not now taken but are needed. The data will primarily be used in the Department of Natural Resources fire prevention, pre-suppression and suppression planning and evaluation in conjunction with the National Fire Danger Rating System AFFIRMS computer program. The data will be shared with other agencies such as the U.S. Forest Service for the same purpose.

The platforms will be in operation during the fire seasons each year from about May 1 to October 15.

15.3. Features of the Program

15.3.1. Type of Program

Operational

15.3.2. Start of Program

Summer, 1979

15.3.3. Type of Data Collected

Meteorology

15.3.4. Parameters Measured

Ambient Air Temperature	Wind Direction
Relative Humidity	Wind Dpeed
Fuel Temperature	Amount of Precipitation

15.3.5. Data Retrieval

The data will be obtained by dial-in to the GOES DCS computer.

15.4. Data Collection Platform Information

15.4.1. Number and Type

There will be approximately 10 DCP's in use for this program. The first unit is to be deployed in 1979 and the rest within the next five years.

15.4.2. Special Operating Features

None

15.4.3. Location of DCP's

All platforms will be fixed station and all will be located west of the Cascade crest in Washington State.

Nearest City	Latitude/Longitude
Enumclaw	47° 13'N - 121° 52'W
Camas	45° 43'N - 122° 19'W
Forks	48° 10'N - 124° 20'W
Amanda Park	47° 31'N - 123° 59'W
Raymond	46° 31'N - 123° 47'W
Castle Rock	46° 21'N - 123° 8'W
Morton	46° 33'N - 122° 12'W
Carnation	47° 41'N - 121° 44'W
Arlington	48° 14'N - 121° 56'W
Deming	48° 45'N - 122° 6'W

15.5. Future Plans

The Division of Fire Control plans to procure 10 more DCP's over the next 10 years.

16. ENVIRONMENTAL PROTECTION AGENCY

16.1. Identification of the User

16.1.1. Name and Address

Environmental Monitoring Systems Laboratory
Office of Research and Development
Environmental Protection Agency (EPA)
P. O. Box 15027
Las Vegas, Nevada 89114

16.1.2. Contact

Mr. J. Jeffrey van Ee
(Same address as above)

(702)736-2969
FTS 595-2969

16.1.3. Type of Organization

Federal Government

16.1.4. Funding Organization

Environmental Protection Agency

16.2. General Program Description

This program involves the measurement of visibility in the vicinity of National Parks and wilderness areas. This program is developed to satisfy the requirements of the Clean Air Act. This Act requires that the visibility values in these areas be protected. Most of these areas are in the western U.S. and in sparsely populated areas.

16.3. Features of the Program

16.3.1. Type of Program

Operational

16.3.2. Start of Program

Fall, 1979

16.3.3. Type of Data Collected

Air Pollution

16.3.4. Parameters Measured

Visibility	Wind Direction
Wind Speed	Solar Cell Output

16.3.5. Data Retrieval

It is planned to have the EPA computer automatically call the GOES DCS computer at NESS for the transfer of data.

16.4. Data Collection Platform Information

16.4.1. Number and Type

One self-time DCP is in use and one more is planned for monitoring noise pollution.

16.4.2. Special Operating Features

None

16.4.3. Location of DCP's

Zion National Park at Lava Point (May, 1980)

16.5. Future Plans

Future plans call for mapping visibility, i.e., air quality in the western U.S., on a near real-time basis.

17. ENVIRONMENTAL RESEARCH LABORATORIES

PROTOTYPE REGIONAL OBSERVING AND FORECASTING SERVICE

17.1. Identification of the User

17.1.1. Name and Address

Environmental Research Laboratories
Prototype Regional Observing and Forecasting Service
NOAA
Boulder, Colorado 80302

17.1.2. Contact

Administrator: Dr. Donald W. Beran

Principal Investigator: Dr. Duane A. Haugen
(Same address as above)

17.1.3. Type of Organization

Federal Government

17.1.4. Funding Organization

Environmental Research Laboratories

17.2. General Program Description

The Prototype Regional Observing and Forecasting Service (PROFS) is a NOAA-wide project jointly sponsored by the Environmental Research Laboratories and the National Weather Service. The goal of the PROFS is to improve local weather services by integrating new observation, forecasting, and dissemination techniques through an Exploratory Development Facility (EDF). A network of DCP's will be installed within a 500 km radius of Denver, Colorado. Data will be collected as frequently as every 15 minutes. The data will be used by the EDF and NWS to improve local weather services.

17.3. Features of the Program

17.3.1. Type of Program

Operational

17.3.2. Start of Program

Spring, 1980

17.3.3. Type of Data Collected

Meteorology

17.3.4. Parameters Measured

Standard Atmospheric Parameters
Solar Insolation
Soil Temperature

17.3.5. Data Retrieval

The collected data will be obtained via the Colorado State University satellite receiving station.

17.4. Data Collection Platform Information

17.4.1. Number and Type

Twenty-five self-time DCP's and fifteen interrogation type of DCP's will be used. The interrogation type will be used as self-time DCP's routinely. The DCP's will be interrogated on an unscheduled basis.

17.4.2. Special Operating Features

None

17.4.3. Location of DCP's

All DCP's will be located within 500 km of Denver, Colorado.

17.5. Future Plans

The long-term goal is to improve the local weather services by integrating new observations, forecasting, and dissemination techniques.

18. ENVIRONMENTAL RESEARCH LABORATORIES
RESEARCH FACILITIES CENTER

18.1. Identification of the User

18.1.1. Name and Address

Environmental Research Laboratories
Research Facilities Center
P. O. Box 520 197
3401 N.W. 59 Avenue
Miami, Florida 33152

18.1.2. Contact

Mr. James DuGranrut
Research Facilities Center

(305)526-2936
FTS 350-2936

18.1.3. Type of Organization

Federal Government

18.1.4. Funding Organization

Environmental Research Laboratories

18.2. General Program Description

The Research Facilities Center provides aircraft platforms for a variety of organizations involved in atmospheric and oceanographic research. Providing support to the National Hurricane Center (NHC) carries the demand that the aircraft on a reconnaissance mission provide real-time data on center position, wind speed, center pressure, temperature, and other such information describing the tropical storm or hurricane. This information has traditionally been transmitted by voice over high frequency radio. With the availability of the GOES-DCS, the data required are transmitted directly from the onboard data collection and processing systems into the DCS. The data then goes via land line to the National Hurricane Center in Miami and other National Weather Service Centers. The results of the preliminary operation of this system have shown a great potential for an efficient method of transferring more information describing the storm while the aircraft is on the scene. Although this has been the only use of the system during the past two years, since the Aircraft Satellite Data Link (ASDL) has been integrated into the aircraft data system, it can be used to provide a link between the aircraft data system and ground based centers for any user of the RFC resources requiring real time data.

18.3. Features of the Program

18.3.1. Type of Program

Experimental

18.3.2. Start of Program

September, 1977

18.3.3. Type of Data Collected

Meteorology
Upper Air

18.3.4. Parameters Measured

Air Pressure
Wind Direction
Wind Speed
Air Temperature
Dewpoint and
Reconnaissance Coded Messages

18.3.5. Data Retrieval

The collected data are forwarded from the GOES DCS Control Center in near real-time to the National Hurricane Center in Miami and other National Weather Service Centers.

18.4. Data Collection Platform Information

18.4.1. Number and Type

Three aircraft are presently equipped with self-time DCP's.

18.4.2. Special Operating Features

The DCP's are interfaced to and controlled by the computers of the aircraft data systems. The data content and format is determined by the software operating system in use for the particular mission of the aircraft.

18.4.3. Location of DCP's

The DCP's are located aboard aircraft that fly hurricane reconnaissance from Miami, Florida.

18.5. Future Plans

The ASDL system will be used again in the 1980 hurricane season with particular attention to the refinement of the data format to make the system more efficient and to make the information more usable to the NHC. It is also hoped that the data will become an input to numerical storm models in real-time. The versatility of the system should make it very attractive to other RFC users requiring real-time data transmission between the observing platform and a ground-based center.

19. ENVIRONMENTAL RESEARCH LABORATORIES
SPACE ENVIRONMENTAL LABORATORIES

19.1. Identification of the User

19.1.1. Name and Address

Environmental Research Laboratories (ERL)
Space Environment Laboratories (SEL)
Boulder, Colorado 80302

19.1.2. Contact

Mr. Charles C. Hornback
Chief, ERL/SEL Real Time Data Service
Boulder, Colorado 80302

FTS 323-3780

19.1.3. Type of Organization

Federal Government

19.1.4. Funding Organization

Various Federal Agencies

19.2. General Program Description

The ERL/SEL is participating in the International Magnetospheric Study (IMS). The purpose of this program is to perform coordinated research on well-defined problems of the terrestrial magnetosphere. A better understanding is sought of the coupling between earth and its space environment, through that region of near earth space that is controlled by an extension of the terrestrial magnetic field and the magnetosphere. A network of digital magnetometers have been installed in North America and across the mid-latitude region to support these goals.

19.3. Features of the Program

19.3.1. Type of Program

Research

19.3.2. Start of Program

The IMS was in a planning phase for several years. The National Academy of Sciences produced the first report on the program in 1973. Actual collection of data started in 1976.

19.3.3. Type of Data Collected

Magnetometer data

19.3.4. Parameters Measured

The magnetometer measures the x,y,z components of the magnetic field. Some stations have riometers and/or aurora photometer instruments.

19.3.5. Data Retrieval

The data are routed in near real-time to the ERL/SEL center in Denver, Colorado.

19.4. Data Collection Platform Information

19.4.1. Number and Type

ERL is operating 25 self-time DCP's.

19.4.2. Special Operating Features

A. A very accurate time code is continually transmitted through the GOES satellites. This time information is transmitted along with the interrogations. Actually, ERL is operating interrogation type of DCP's which make it possible to receive the time code. The code is used to maintain an accurate transmission time to within a second.

B. Magnetometer measurements require the collection of a relatively large amount of data. Several transmissions are made from a DCP each hour. It is also very important that reports are not missed.

19.4.3. Location of DCP's

NAME		W. LONG.	LAT.
JOP	Johnson Pt.	118.30	72.46
SAH	Sachs Harbor	125.30	72.00
CPY	Cape Perry	124.70	70.20
INK	Inuvik	133.30	68.25
AVI	Arctic Village	145.57	68.13
FYU	Ft. Yukon	145.28	66.57
COL	College	148.05	64.88
TLK	Talkeetna	150.10	63.30
PEB	Pelly Bay	89.51	68.53
RIT	Rankin Inlet	92.33	62.80
EKP	Eskimo Pt.	94.07	61.10
EKC	Back	94.23	57.69
GIM	Gillam	94.42	56.35
ISL	Island Lake	94.42	53.88
NOW	Norman Wells	125.5	64.9
FSP	Fort Simpson	121.23	61.75

NAME		W. LONG.	LAT.
LYN	Lynn Lake	101.06	56.45
FSM	Fort Smith	112.00	60.00
EUS	Eusebio	38.42	- 3.87
SJG	San Juan	66.15	18.12
TUC	Tucson	110.83	32.25
TAH	Tahiti	149.62	- 17.55
HON	Honolulu	158.00	21.32
MDI	Midway Is.	177.30	28.20
WKE	Wake Is.	193.30	19.20
GUA	Guam	215.13	13.58

19.5. Future Plans

The program will continue as a research effort through 1980. At that time, the program will become operational for the Space and Environmental Science Center, SEL.

19.6. Bibliography

Lanzerotti, L.J., R.D. Regan, M. Siegiura, and D.J. Williams: Magnetometer Networks During the International Magnetosphere Study. EOS, Vol. 57, No. 6, June 1976. Copyright 1976 by American Geophysical Union.

Manka, R.H.: U.S. Program for the IMS. EOS, Vol. 57, No. 2, February 1976. Copyright 1976 by American Geophysical Union.

20. ESSO RESOURCES CANADA LIMITED

20.1. Identification of the User

20.1.1. Name and Address

ESSO Resources Canada Limited
10025 Jasper Avenue
Edmonton, Alberta T5J 156

20.1.2. Contact

Mr. Robert Haagensen
(Same address as above)

(403) 420-8110

20.1.3. Type of Organization

Private company

20.1.4. Funding Organization

ESSO Resources Canada Limited

20.2. General Program Description

ESSO Resources Canada Limited has entered into a contractual agreement with General Dynamics of San Diego, whereby General Dynamics will supply a 10 meter diameter environmental buoy to ESSO Resources. The buoy will be deployed in the Davis Strait to obtain knowledge of the physical and atmospheric environment of the region. This effort is in preparation for an off-shore drilling program. After drilling has started, the data will be used as part of the weather forecasting process.

The buoys can operate with HF as well as UHF frequencies. The UHF radios have a transmit only capability and the HF radios have a transmit/receive feature. The UHF radio operates under the control of a on-board microprocessor. The HF radio will be linked to a shore station located near St. John's, Newfoundland.

The National Weather Service (NWS) and Atmospheric Environmental Service (AES) are also users of the data.

20.3. Features of the Program

20.3.1. Type of Program

Operational

20.3.2. Start of Program

Fall, 1978

20.3.3. Type of Data Collected

Oceanography
Meteorology

20.3.4. Parameters Measured

Wind Speed
Wind Direction
Air Temperature
Air Pressure
Water Temperature

In addition, a Wave Data Analyzer is included in the buoy electronics.

20.3.5. Data Retrieval

The data are forwarded to NWS who in turn route it to AES in Toronto.

20.4. Data Collection Platform Information

20.4.1. Number and Type

Four self-timed DCP's are used; two of which are placed on buoys and two are used as shore stations.

20.4.2. Special Operating Features

None

20.4.3. Location of DCP's

The 2 buoys are operated in the area 58°N 58°W and 58°N and 48°W. The 2 shore stations are located on Resolution Island: 61°35'N, 64°39'W.

20.5. Future Plans

The buoys are deployed in May and retrieved in November of every year. This schedule will be repeated in 1980, 1981, and 1982. It is planned to terminate this program in November of 1982.

21. FOREST SERVICE

21.1. Identification of the User

21.1.1. Name and Address

U.S. Department of Agriculture
Forest Service - BIFC
3905 Vista Avenue
Boise, Idaho 83705

21.1.2. Contact

Mr. John Warren
(same address as above)

(208) 384-1439
FTS: 554-1439

21.1.3. Type of Organization

Federal Government

21.1.4. Funding Organization

Forest Service

21.2. General Program Description

The Forest Service, USDA, is utilizing the GOES DCS to provide a means for acquiring meteorological data from remote or unattended sites, automatically. The data are used as inputs to the National Fire Danger Rating System (NFDRS). Prior to the use of remote automatic weather stations (RAWS), weather data were typically obtained from manual stations located near a ranger station. This posed two problems. The stations were not usually situated in the best locations, but rather were where people are available to make the manual readings. Also, in times of intense fire activity (when the data are needed most) the people may be engaged in fire-related jobs and not available to monitor the weather. The remote/automatic features eliminate both concerns. In addition the RAWS are less subject to error than manual stations.

The first RAWS station was installed in Honolulu, Hawaii, on June 5, 1978. This station has been relocated in Hawaii but is still active.

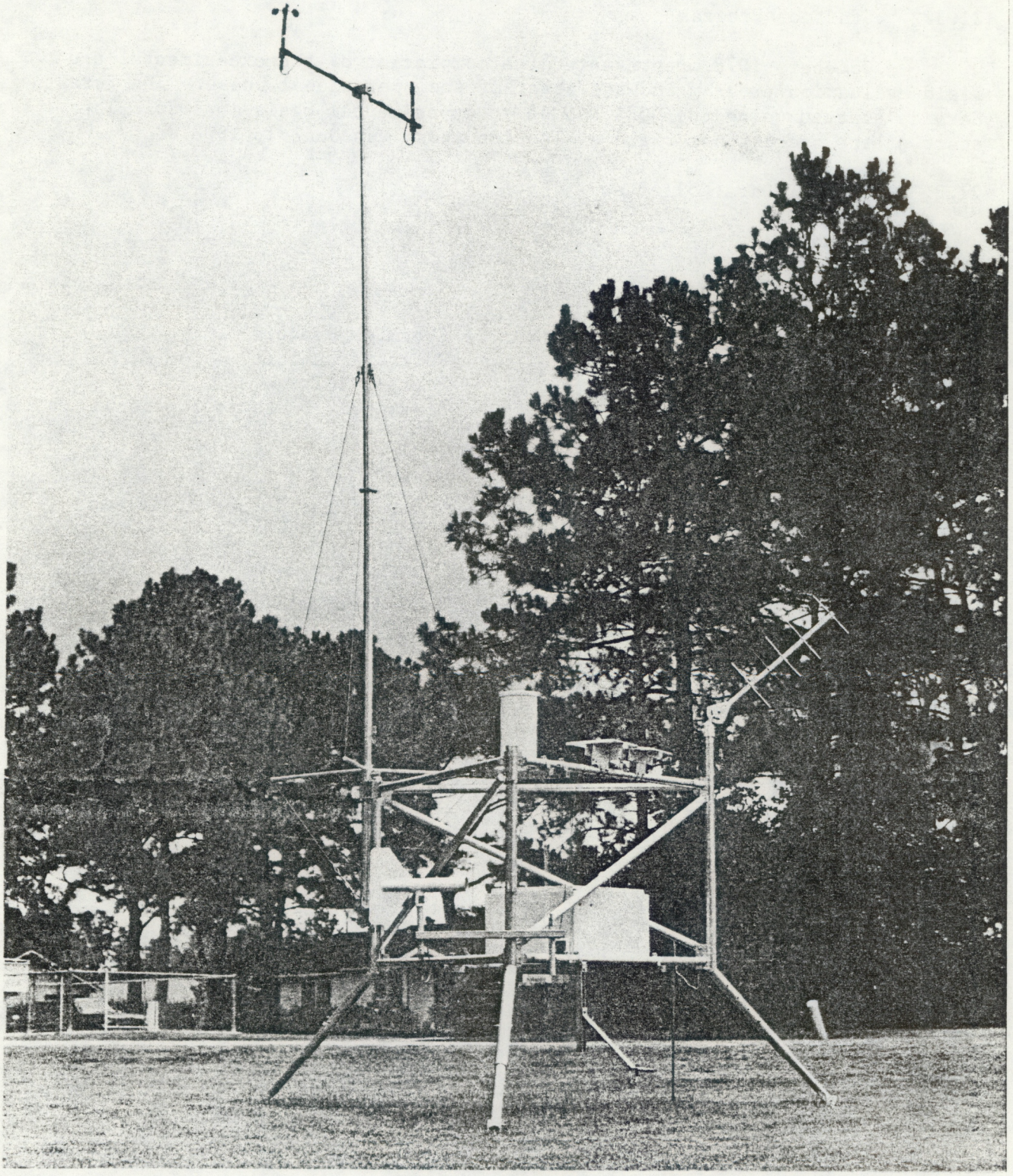

Figure 7.--RAWS station in Florida.

21.3. Features of the Program

21.3.1. Type of Program

Operational

21.3.2. Start of Program

October, 1978, represented the completion of the experimental and field evaluation program and the start of the operational phase. The Forest Service started using the GOES DCS on an experimental basis in 1976. The start of the operational field evaluation phase was June 1, 1978.

21.3.3. Type of Data Collected

Meteorology

21.3.4. Parameters Measured

Rainfall
Wind Speed
Wind Direction
Air Temperature
Fuel Temperature
Relative Humidity
Battery Voltage
Barometric Pressure (optional)

21.3.5. Data Retrieval

The collected data are retrieved by use of the 300 baud dial-in terminals.

21.4. Data Collection Platform Information

21.4.1. Number and Type

The Forest Service has ten operational DCP's in the RAWS system, two non-operational DCP's on loan from USGS, and one operational DCP used for hydrological measurements. All are self-timed.

21.4.2. Special Operating Features

None

21.4.3. Location of DCP's

Honolulu, HI
Plains, MT
Hill City, MN
Tallahassee, FL
London, NH
Catskill, NY
New Philadelphia, OH
Quenado, NM
Santa Fe, NM
Bend, OR
Riverside, CA (2, non-operational)
Petersburg, AK (hydrological)

21.5. Future Plans

Future plans for the Forest Service include procuring, locating, and operating additional RAWS nationwide as determined by the needs within the various Forest Service regions. The rate of activation and eventual quantities are unknown. This will depend upon the need, acceptance, and budgets of the Regional users. The regions are now being advised of the availability and capabilities of the RAWS. Quantities above 500 have been predicted for eventual dispersion.

22. GEOLOGICAL SURVEY

22.1. Identification of the User

22.1.1. Name and Address

U.S. Geological Survey
460 National Center
12201 Sunrise Valley Drive
Reston, Virginia 22092

22.1.2. Contact

Mr. William G. Shope
(Same address as above)

(703)860-6014
FTS 928-6014

22.1.3. Type of Organization

Federal Government

22.1.4. Funding Organization

U.S. Geological Survey

22.2. General Program Description

The Water Resources Division (WRD) of the U.S. Geological Survey (USGS) has been utilizing the NOAA/NESS GOES DCS since approximately June 1976 to evaluate satellite communications for the telemetry of hydrologic data. The WRD is currently operating approximately 110 data collection platforms (DCP) in 20 States throughout the United States, including Alaska. Data telemetry equipment, antenna, DCP's, sensors, and power systems are currently installed and operated by USGS field personnel. All facilities concerned with retrieval of data from NESS, including subsequent processing, are also operated by USGS personnel.

In addition to the collection of data via satellite, the WRD is also evaluating the procedures and performance of the GOES System. Following an evaluation of GOES, plus other DCS alternatives, a decision will be made as to the approach for implementing a fully operational system that will involve several thousand real-time hydrologic data collection sites.

Data are normally transmitted to the GOES satellites at 3-hour intervals from automated remote hydrologic data collection sites. These data are retrieved at 6-hour intervals by the USGS NOVA 840 minicomputer from the NESS computers located in the World Weather Building, Suitland, Maryland. The frequency of data retrieval from NESS will be increased to hourly cycles in the very near future. Data retrieved by the USGS minicomputer are immediately entered into the USGS WATSTORE (National Water Data Storage and Retrieval System) data base located in the Reston, Virginia,

based IBM 370/155 computers. The USGS field personnel utilize the WATSTORE System to evaluate performance of remote instrumentation and data telemetry equipment and to process the raw data for eventual publication.

22.3. Features of the Program

22.3.1. Type of Program

Experimental

22.3.2. Start of Program

June, 1976

22.3.3. Type of Data Collected

Hydrology

22.3.4. Parameters Measured

River Level
Wind Direction
Rainfall
Snow Cover
Air Temperature
Water Temperature
Conductivity
pH
Dissolved Oxygen
Reservoir Level
Seismic Data

22.3.5. Data Retrieval

Data are used to evaluate the performance of the data collection network, including performance of the telemetry equipment and sensors. Data are also used, following conversion to engineering units, to produce summaries which are then published in State reports or made available through WATSTORE to the water user community.

Some WRD users access the NESS directly using a tele-type compatible terminal. Most WRD users obtain the data following entry into the USGS WATSTORE computer system.

22.4. Data Collection Platform Information

22.4.1. Number and Type

Approximately 250 LaBarge self-timed platforms are now in the inventory of the USGS. The number of active platforms on a daily basis varies between 90 and 110.

22.4.2. Special Operating Features

DCP's contain a microprocessor, a memory, a clock, and a radio transmitter. The microprocessor controls the operation of the sensors and also the transmission of data. Data are obtained by the DCP from the sensors and stored in a buffered memory. The type of memory is circular allowing redundant messages to be stored and transmitted. This feature

of the self-timed platforms allows for error correction in the case of missing transmissions.

22.4.3. Location of DCP's

The following table shows the assigned time, transmission interval, NESS DCP ID, USGS station ID, station name, latitude/longitude, status (A-active, D-deactivated), operating agency, funding organization, and the State location.

22.5. Future Plans

The WRD is currently working on a procurement activity that would allow for contractor support of satellite data relay activities. This contract will establish a hydrologic data service involving acquisition, collection, screening, and data dissemination. The contractor will be responsible for the sensors and all components of the system including the DCP, satellite links, Earth receiving sites, computer processing, formatting, identification, and data delivery to the USGS computer banks. As presently anticipated, the WRD will not specify the type of extra terrestrial communication link to be used. The types of methods under consideration include GOES, commerical satellites, or meteor burst.

UNITED STATES GEOLOGICAL SURVEY -- WATER RESOURCES DIVISION

GOES DATA COLLECTION SYSTEM

DATE - 03/07/79
TIME - 11:49:37 (ET)

*** . CHANNEL - 03 ***

INT	DCP ID	STATION NAME	LAT	LONG	STATE
3H	16CA9CCE	PEARL RIVER AT JACKSON, MS.	321652	0901045	MISSISSIPPI
3H	16CAB4F0	MACKEYS CREEK NR DENNIS, MS.	343134	0881922	MISSISSIPPI
3H	16CACCB2	PAINT ROCK RIVER NEAR WOODVILLE, AL	343727	0861823	ALABAMA
3H	16CAD116	CAHABA RIVER AT CENTREVILLE, ALA.	325642	0870821	ALABAMA
3H	16CAE48C	CONECUH RIVER AT BRANTLEY, ALA.	313424	0861506	ALABAMA
3H	16CAF928	IN OFFICE (USED FOR TESTING)	254553	0801137	FLORIDA
3H	16CB0584				FLORIDA
3H	16CB0B56				FLORIDA
3H	16CB15F2	BARRON RIVER NR EVERGLADES, FLA.	255800	0812100	FLORIDA
3H	16CB1820				FLORIDA
3H	16CB2368				FLORIDA
3H	16CB2DDA	FAKA UNION CANAL NR COPELAND, FLA.	255759	0813023	FLORIDA
3H	16CB301E				FLORIDA
3H	16CB3ECC	FLINT CREEK NR THONOTOSASSA, FLA.	280404	0821604	FLORIDA
3H	16CB458E	REEDY CREEK NR VINELAND, FLA.	281957	0813448	FLORIDA
3H	16CB485C	HILLSBOROUGH RIVER NR TAMPA, FLA.	280125	0822541	FLORIDA
3H	16CB55F8	BROOKER CREEK NR TARPON SPRINGS, FLA.	280545	0824115	FLORIDA
3H	16CB5B2A	OCHLOCKONEE RIVER NR HAVANA, FLA.	303314	0842303	FLORIDA
3H	16CB6062	ROMP WELL NO 50 DEEP NEAR WIMAUMA, FLA	274240	0822127	FLORIDA
3H	16CB6EB0	PEBBLEDALE RD 4 MI EAST OF PIERCE, FLA	275009	0815409	FLORIDA
3H	16CB7314	10H RAINFALL AT NATURE CLASS NR THONOTOSASSA, FLA	280510	0822000	FLORIDA
3H	16CB7DC6	SWFWMD RAINFALL AT ROCK RIDGE NR PROVIDENCE, FLA	281833	0815425	FLORIDA
3H	16CB9D42	SUWANNEE RIVER AT ELLAVILLE, FLA	302304	0831019	FLORIDA
3H	16CBA57C	TAMIAMI CANAL OUTLETS, MONROE TO CARNESTOWN, FLA	255310	0811530	FLORIDA
3H	16CBB8D8	HENDERSON CREEK CANAL NEAR NAPLES, FLA.	260559	0814114	FLORIDA
3H	16CBD3EC	50S30E18 C-296	260640	0812043	FLORIDA
3H	16CBE8A4	GORDON RIVER AT NAPLES, FLA	261021	0814706	FLORIDA
3H	16CC0780	COCOHATCHEE RIVER CANAL AT WILLOUGHBY ACRE BRIDG	261621	0814553	FLORIDA
3H	16CC1A14	GOLDEN GATE CANAL AT NAPLES, FLA.	261001	0814602	FLORIDA
3H	16CC322A	C.54 GROUND WATER WELL ON ALLIGATOR ALLEY, FLA.	261000	0805200	FLORIDA
3H	16CC4A68	EVERGLADES 202-NP NEAR MIAMI FLA	253725	0804422	FLORIDA
3H	16CC6256	EVERGLADES STA 2-17 NR ANDYTOWN FLA	261650	0802510	FLORIDA
3H	16CC7FF2	EVERGLADES 201-NP NEAR MIAMI FLA	254305	0804333	FLORIDA
3H	16CC92D2	EVERGLADES P-55 NEAR HOMESTEAD, FLA.	253854	0804118	FLORIDA
3H	16CCA99A	EVERGLADES 3-62S NEAR ANDYTOWN, FLA.	261057	0804413	FLORIDA
3H	16CCC2AE	LAKE TRAFFORD NR IMMOKALEE, FLA.	262608	0812925	FLORIDA
3H	16CCDF0A	FISHEATING CREEK AT PALMDALE, FLA.	265556	0811854	FLORIDA
3H	16CCF734	EVERGLADES 206-NP NEAR MIAMI FLA	253142	0804029	FLORIDA
3H	16CD0B98	EVERGLADES 3-64S NEAR MIRAMAR, FLA.	255824	0804018	FLORIDA
3H	16CD23A6	EVERGLADES 3-63S NEAR ANDYTOWN, FLA.	261118	0803209	FLORIDA
3H	16CD3E02	EVERGLADES 159 S OF PUMP STATION6 NR ANDYTOWN	262300	0802635	FLORIDA
3H	16CD5536	EVERGLADES 20K-NP NEAR MIAMI FLA	254236	0805023	FLORIDA
3H	16CD6E7E	EVERGLADES 3-65S NEAR MIAMI, FLA.	254855	0804318	FLORIDA
3H	16CD835E	EVERGLADES P-14S NEAR HOMESTEAD, FLA.	253212	0804706	FLORIDA
3H	16CD9EFA	EVERGLADES P-37 NEAR HOMESTEAD FLA	251730	0804030	FLORIDA
3H	16CDB6C4	EVERGLADES 160 S OF PUMP STA NR LAKE HARBOR	261557	0804643	FLORIDA
3H	16CDCE86	HARPETH RIVER AT FRANKLIN, TENN	355514	0865156	TENNESSEE
3H	16CDE6B8	NEW RIVER AT CORDELL, TENN	362010	0842706	TENNESSEE
3H	16CDFB1C	CHATTAHOOCHEE RIVER AT ATLANTA, GA.	335133	0842716	GEORGIA
3H	16CE1132	BAYOU LAFOURCHE (ABOVE IWW) NEAR LAROSE	293430	0902340	LOUISIANA
3H	16CE2A7A	PEARL RIVER NEAR GAINESVILLE, MISS.	302050	0893828	MISSISSIPPI

*** CHANNEL - 13 ***

INT	DCP ID	STATION NAME	LAT	LONG	STATE
3H	16C7820C	ELKHORN CREEK NEAR FRANKFORT, KY	381607	0844853	KENTUCKY
3H	16C77C5A	CUMBERLAND RIVER NEAR HARLAN, KENTUCKY	365048	0832121	KENTUCKY
3H	16C7917A	JAMES RIVER AT CARTERSVILLE, VA	374015	0780510	VIRGINIA
3H	16C79FA8	ZAP, NORTH DAKOTA	472115	1015348	NORTH DAKOTA
3H	16C7AA32	S F SHENANDOAH RIVER NEAR LYNNWOOD VA	381921	0784518	VIRGINIA
3H	16C7B796	WIBAUX, MONTANA	470036	1040632	NORTH DAKOTA
3H	16C7C106	GENESEE RIVER AT WELLSVILLE NY	420720	0775727	NEW YORK
3H	16C7CFD4	OLENTANGY RIVER AT WORTHINGTON, OHIO	400635	0830155	OHIO
3H	16C7D270	CROTON R AT NEW CROTON DAM NR CROTON-ON-HUDSONNY	411330	0735135	NEW YORK
3H	16C7DCA2	W. BRANCH DELAWARE R. AT WALTON, N.Y.	421000	0750825	NEW YORK
3H	16C7E7EA	SCIOTO RIVER AT HIGBY, OHIO	391244	0825150	OHIO
3H	16C7F49C	JUNIATA RIVER AT NEWPORT, PA.	402842	0770746	PENNSYLVANIA
3H	16C7FA4E	SCHUYLKILL RIVER AT PHILADELPHIA, PA.	395942	0751140	PENNSYLVANIA
3H	16C80C58	JUNIATA RIVER AT MAPLETON DEPOT, PA.	402342	0775624	PENNSYLVANIA
3H	16C811FC	DELAWARE R AT TORRESDALE INTAKE, PHILA., PA.	400157	0745946	PENNSYLVANIA
3H	16C82466	JUNIATA RIVER AT HUNTINGDON, PA.	402905	0780109	PENNSYLVANIA
3H	16C82AB4	COLORADO RIVER BELOW CIBOLA VALLEY, ARIZ.	331316	1144018	ARIZONA
3H	16C839C2	SUSQUEHANNA RIVER AT HARRISBURG, PA.	401527	0765312	PENNSYLVANIA
3H	16C84180	COLORADO RIVER BELOW YUMA MAIN CANAL WASTEWAY NR	324354	1143755	ARIZONA
3H	16C852F6	RYSTWN BR JNT R BLW RYSTWN DM NR HUNTINGDON, PA.	402544	0775929	PENNSYLVANIA
3H	16C8697E	LITTLE JUNIATA RIVER AT SPRUCE CREEK, PA.	403645	0780827	PENNSYLVANIA
3H	16C8849E	FRANKSTOWN BR JUNIATA RIVER AT WILLIAMSBURG, PA.	402747	0781200	PENNSYLVANIA
3H	16C8993A	SUSQUEHANNA RIVER AT SUNBURY, PA.	405115	0764821	PENNSYLVANIA
3H	16C8B104	RAYSTOWN BRANCH JUNIATA RIVER AT SAXTON, PA.	401257	0781556	PENNSYLVANIA
3H	16C8C946	DUNNING CREEK AT BELDEN, PA.	400418	0782934	PENNSYLVANIA
3H	16C8E178	AUGHWICK CREEK NEAR THREE SPRINGS, PA.	401245	0775532	PENNSYLVANIA
3H	16C8FCDC	TIOGA RIVER NEAR ERWINS, N. Y.	420715	0770745	NEW YORK
3H	16C91306	SUSQUEHANNA RIVER AT CONKLIN, N.Y.	420207	0754812	NEW YORK
3H	16C91DD4	COLORADO RIVER NEAR CISCO UTAH	384838	1091734	UTAH
3H	16C9269C	SAN JUAN RIVER NEAR BLUFF, UTAH	370849	1095151	UTAH
3H	16C9284E	GREEN RIVER AT GREEN RIVER, UTAH	385910	1100902	UTAH
3H	16C935EA	WHITEROCKS RIVER NEAR WHITEROCKS, UTAH	403354	1095537	UTAH
3H	16C93B38	WEBER RIVER NEAR OAKLEY, UTAH	404410	1111445	UTAH
3H	16C9437A	TIOUGHNIOGA RIVER AT CORTLAND, N.Y.	423610	0760935	NEW YORK
3H	16C94DA8	BEAVER RIV NR BEAVER UTAH	381643	1123332	UTAH
3H	16C95EDE	SUSQUEHANNA RIVER NEAR WAVERLY, N.Y.	415905	0763005	NEW YORK
3H	16C976E0	CHEMUNG AT CORNING NY	420847	0770328	NEW YORK
3H	16C988B6	CHEMUNG RIVER AT CHEMUNG NY	420008	0763806	NEW YORK
3H	16C9A0B8	SUSQUEHANNA R AT WILKES BARRE (KINGSTON B), PA.	411503	0755252	PENNSYLVANIA
3H	16C9BD2C	FISHING CREEK NEAR BLOOMSBURG, PA.	410441	0762553	PENNSYLVANIA
3H	16C9D618	SUSQUEHANNA RIVER AT DANVILLE, PA.	405729	0763710	PENNSYLVANIA
3H	16C9ED50	WEST BRANCH SUSQUEHANNA RIVER AT KARTHAUS, PA.	410703	0780633	PENNSYLVANIA
3H	16CA077E	SINNEMAHONING CREEK AT SINNEMAHONING, PA.	411909	0780503	PENNSYLVANIA
3H	16CA1ADA	WEST BRANCH SUSQUEHANNA RIVER AT LOCK HAVEN, PA.	410817	0772632	PENNSYLVANIA
3H	16CA32E4	WEST BR. SUSQUEHANNA RIVER AT WILLIAMSPORT, PA.	411417	0765956	PENNSYLVANIA
3H	16CA4AA6	CAPE FEAR RIVER AT LILLINGTON, N. C.	352430	0784848	N. CAROLINA
3H	16CA59D0	SOUTH PLATTE RIVER AT HENDERSON, CO.	395519	1045200	VIRGINIA
3H	16CA6298	STAVE RUN NEAR RESTON VA. NO. 1	385656	0772216	VIRGINIA
3H	16CA921C	STAVE RUN NEAR RESTON VA. NO. 2	385656	0772216	VIRGINIA

*** CHANNEL - 35 ***

INT	DCP ID	STATION NAME	LAT	LONG	STATE
2H	CE4A4356	LACKAWANNA RIVER AT OLD FORGE, PA.	412133	0754441	PENNSYLVANIA
2H	CE4A35C6	WEST BRANCH SUSQUEHANNA RIVER AT HYDE, PA.	410016	0782725	PENNSYLVANIA
2H	CE49C24C	TIOGA RIVER AT TIOGA JUNCTION, PA.	415727	0770658	PENNSYLVANIA
2H	CE49EA72	SUSQUEHANNA RIVER AT UNADILLA, N.Y.	421917	0751901	NEW YORK
2H	CE49F904	OTSELIC RIVER AT CINCINNATUS NY	423230	0755400	NEW YORK
2H	CE4A132A	CANISTEO RIVER BELOW CANACADEA CREEK AT HORNELL,	421850	0773905	NEW YORK
2H	CE4A2862	TIOGA RIVER NEAR MANSFIELD, PA.	414734	0770444	PENNSYLVANIA
2H	CE4C7602	MARTINS FK NR SMITH, KY.	364457	0831452	KENTUCKY
2H	CE4C78D0	MARTINS FORK RES. NEAR SMITH, TAIL WTR.	364509	831531	KENTUCKY
2H	CE4A4356	LACKAWANNA RIVER AT OLD FORGE, PA.	412133	0754441	PENNSYLVANIA
2H	CE4A35C6	WEST BRANCH SUSQUEHANNA RIVER AT HYDE, PA.	410016	0782725	PENNSYLVANIA
2H	CE49C24C	TIOGA RIVER AT TIOGA JUNCTION, PA.	415727	0770658	PENNSYLVANIA
2H	CE49EA72	SUSQUEHANNA RIVER AT UNADILLA, N.Y.	421917	0751901	NEW YORK
2H	CE49F904	OTSELIC RIVER AT CINCINNATUS NY	423230	0755400	NEW YORK
2H	CE4A132A	CANISTEO RIVER BELOW CANACADEA CREEK AT HORNELL,	421850	0773905	NEW YORK
2H	CE4A2862	TIOGA RIVER NEAR MANSFIELD, PA.	414734	0770444	PENNSYLVANIA
4H	CE49CC9E	SUSQUEHANNA RIVER AT TOWANDA, PA.	414555	0762628	PENNSYLVANIA
4H	CE49F7D6	CHENANGO RIVER AT GREENE, N. Y.	421928	0754618	NEW YORK
4H	CE49D13A	WEST BR SUSQUEHANNA RIVER AT RENOVO, PA.	411928	0774503	PENNSYLVANIA
4H	CE4A005C	CHENANGO RIVER NEAR CHENANGO FORKS, N. Y.	421305	0755055	NEW YORK
4H	CE4A0E8E	SUSQUEHANNA RIVER AT VESTAL NY	420530	0760325	NEW YORK
4H	CE49DFE8	WEST BRANCH SUSQUEHANNA RIVER AT LEWISBURG, PA.	405802	0765245	PENNSYLVANIA
4H	CE4A1DF8	CANISTEO RIVER AT WEST CAMERON, N. Y.	421320	0772505	NEW YORK
4H	CE4A26B0	COHOCTON RIVER NEAR CAMPBELL, N. Y.	421510	0771300	NEW YORK
4H	CE49E4A0	UNADILLA RIVER AT ROCKDALE, N. Y.	422240	0752423	NEW YORK
4H	CE4A3B14	SUSQUEHANNA RIVER NEAR MESHOPPEN, PA	413626	0760302	PENNSYLVANIA
4H	CE4BC7B8	CUMBERLAND RIVER AT CARTHAGE, TENN.	361453	0855719	TENNESSEE
2H	CE4C7602	MARTINS FK NR SMITH, KY.	364457	0831452	KENTUCKY
2H	CE4C78D0	MARTINS FORK RES. NEAR SMITH, TAIL WTR.	364509	831531	KENTUCKY

*** CHANNEL - 47 ***

INT	DCP ID	STATION NAME	LAT	LONG	STATE
3H	16C4EE36				SOUTH DAKOTA

*** CHANNEL - 55 ***

INT	DCP ID	STATION NAME	LAT	LONG	STATE
4H	CE44473E	NEUSE RIVER NEAR FALLS N C	355624	0783432	N. CAROLINA
4H	CE4449EC	HAW RIVER NEAR BYNUM N C	354548	0790802	N. CAROLINA

*** CHANNEL - 69 ***

INT	DCP ID	STATION NAME	LAT	LONG	STATE
3H	16C03D64	TANANA R NR TANACROSS AK	632318	1434447	ALASKA
3H	15D433F4	KUSKOKWIM R AT CROOKED C AK	615210	1580642	ALASKA

*** CHANNEL - 77 ***

INT	DCP ID	STATION NAME	LAT	LONG	STATE
3H	16C0062C	BULL RUN RESERVOIR NO 2 NEAR BULL RUN, OREG.	452655	1220845	OREGON
3H	16C008FE	ARKANSAS RIVER NEAR AVONDALE, CO.	381453	1042355	COLORADO
3H	16C0155A	SOUTH PLATTE RIVER AT HENDERSON, CO.	395519	1045200	VIRGINIA
3H	16C01B88	SOUTH FORK BULL RUN RIVER NEAR BULL RUN, OREG.	452638	1220622	OREGON
3H	16C020C0	GREENS C NR JUNEAU AK	580357	1344351	ALASKA
3H	16C02E12	BETTY LK OUTLET NR PORT ARMSTRONG AK	561755	1344050	ALASKA
3H	16C033B6	CEDAR CREEK NEAR BRIGHTWOOD, OREG.	452730	1220150	OREGON
1H	16C21E7C	COAL MINE WASH TRIB NEAR KAYENTA, ARIZ	363154	1102402	ARIZONA
3H	16C04526	FLAGSTAFF FIELD CENTER	351230	1113730	ARIZONA
3H	16C04BF4	SANDY RIVER NEAR MARMOT, OREG.	452330	1220740	OREGON
1H	16C23642	COAL MINE WASH TRIB NO 2 NEAR KAYENTA, ARIZ.	363152	1102428	ARIZONA
3H	16C05882	SNAKE RIVER NEAR MURPHY, IDAHO	431730	1162512	IDAHO
3H	16C063CA	BLAZED ALDER CREEK NEAR RHODODENDRON, OREG.	452710	1215325	OREGON
1H	16C24E00	MOENKOPI WASH TRIB NO1 NR KAYENTA AZ.	036310	1102132	ARIZONA
3H	16C070BC	WHITE RIVER AT MOUTH NEAR OURAY UTAH	400354	1093806	UTAH
3H	16C07E6E	FIR CREEK NEAR BRIGHTWOOD, OREG.	452826	1220136	OREGON
1H	16C08038	COYOTE WASH NEAR BONANZA, UTAH	400200	1090800	UTAH
3H	16C08EEA	WHITE R. NR COLO. STATE LINE, UT.	400050	1090448	UTAH
3H	16C0934E	BULL RUN R NR MULTNOMAH FALLS, OREG.	452950	1220050	OREGON
3H	16C09D9C	EVACUATION CR BLW PARK CAN NR WATSON UT	395054	1090748	UTAH
3H	16C0A6D4	SAND WASH NR OURAY UT	395601	1092946	UTAH
3H	16C0A806	NO FK BULL RUN R NEAR MULTNOMAH FALLS, OREG.	452940	1220205	OREGON
3H	16C0B5A2	HILL CR NR MOUTH NR OURAY UT	395235	1094229	UTAH
3H	16C0BB70	BITTER CREEK NR BONANZA, UTAH	394512	1092115	UTAH
3H	16C0C332	LITTLE SANDY RIVER NEAR BULL RUN, OREG.	452453	1221030	OREGON
3H	16C0CDE0	WILLOW CREEK ABOVE DIVERSIONS, NEAR OURAY, UTAH	393413	1093505	UTAH
3H	16C0D044	BAXTER PASS SNOW COURSE, UTAH	393520	1090056	UTAH
3H	16C0DE96	BULL RUN RIVER NEAR BULL RUN, OREG.	452615	1221040	OREGON
3H	16C0E5DE	WASHITA RIVER NR DURWOOD, OK	341403	0965832	OKLAHOMA
3H	16C0EB0C	WEAVER RESERVOIR SNOW COURSE, UTAH	391300	1094600	UTAH
3H	16C0F87A	COAL CREEK NEAR LEHIGH, OK	342706	0961356	OKLAHOMA
3H	16C16FE2				COLORADO
3H	16C17246	NEVADA TEST SITE STATION NUMBER 1	371400	1160300	COLORADO
3H	16C17C94	NEVADA TEST SITE STATION NUMBER 2	371400	1160300	COLORADO
3H	16C182C2				COLORADO
3H	16C19F66	KINGS RIVER AB NF NR TRIMMER CALIF	365148	1190724	CALIFORNIA
3H	11111111	BULL RUN RESERVOIR NO 2 NEAR BULL RUN, OREG.	452655	1220845	ARKANSAS
3H	16C1A42E	MERCED R AT HAPPY ISLES BRIDGE NR YOSEMITE CALIF	374354	1193328	CALIFORNIA
3H	16C1AAFC	NF WILLOW CREEK NR SUGAR PINE CALIF	372352	1193355	CALIFORNIA
3H	16C1B758	LAKE ELEANOR NR HETCH HETCHY CALIF	375827	1195248	CALIFORNIA
3H	16C1B98A	TRUCKEE R NR NIXON, NV	394640	1192010	NEVADA
3H	16C1C1C8	BLANCO RIVER AT WIMBERLEY, TEX.	295933	0980528	TEXAS
3H	16C1CF1A	CHEHALIS RIVER NEAR GRAND MOUND, WASH.	464634	1230204	WASHINGTON
3H	16C1D2BE	SOUTH CASCADE GLACIER GOES PLATFORM 16C1D2BE	482152	1210353	WASHINGTON
3H	16C1E724	CEDAR R BW BEAR C, NEAR CEDAR FALLS, WASH.	472030	1213250	WASHINGTON
3H	16C1E9F6	SOUTH CASCADE GLACIER GOES PLATFORM 16C1E9F6	482153	1210353	WASHINGTON
3H	16C1FAB0	MISSISSIPPI R AT LOCK & DAM 2 AT HASTINGS, MN	444537	0925202	MINNESOTA
3H	16C203D8	STONY RIVER NEAR BABBITT, MINNESOTA	474139	0914538	MINNESOTA
1H	16C21E7C	COAL MINE WASH TRIB NEAR KAYENTA, ARIZ	363154	1102402	ARIZONA
3H	16C22534	COLORADO R AT LEES FERRY, AZ.	365153	1113515	ARIZONA
1H	16C23642	COAL MINE WASH TRIB NO 2 NEAR KAYENTA, ARIZ.	363152	1102428	ARIZONA
3H	16C23890	COLORADO R. NEAR GRAND CANYON, ARIZ.	360605	1120508	ARIZONA
3H	16C240D2	COAL MINE WASH NEAR MOUTH, NR SHONTO	362534	1102632	ARIZONA
1H	16C24E00	MOENKOPI WASH TRIB NO1 NR KAYENTA AZ.	036310	1102132	ARIZONA
3H	16C25D76	CANYON CREEK NEAR GLOBE, ARIZ.	334947	1103950	ARIZONA
1H	16C08038	COYOTE WASH NEAR BONANZA, UTAH	400200	1090800	UTAH
3H	16C27548	BLACK RIVER NEAR FORT APACHE, ARIZ.	334246	1101240	ARIZONA
3H	16C27B9A	ROCKY PASS C NR POINT BAKER AK	563703	1334410	ALASKA
3H	16C285CC	STIKINE R NR WRANGELL AK	564207	1320828	ALASKA
3H	16C28B1E	WHITE RIVER NEAR FORT APACHE, ARIZ.	334411	1100958	ARIZONA
3H	16C296BA	BIG C NR POINT BAKER AK	560754	1330836	ALASKA
3H	16C29868	FARRAGUT RIVER	571024	1330415	ALASKA
3H	16C2A320	BLACK RIVER NEAR MAVERICK, ARIZ.	334227	1092648	ARIZONA
3H	16C2ADF2	KALININ C NR SITKA	571814	1354635	ALASKA
3H	16C2B056	TONALITE C NR TENAKEE AK	574025	1351358	ALASKA
3H	16C2BE84	KADASHAN R AB HOOK C NR TENAKEE AK	573946	1351106	ALASKA
3H	16C2C6C6	PERKINS C NR METLAKATLA	545642	1321015	ALASKA
3H	16C2C814	OLD TOM C NR KASAAN AK	552344	1322425	ALASKA
3H	16C2D5B0				FLORIDA
3H	16C2DB62	IN OFFICE (USED FOR TESTING)			ALASKA
3H	16C2E02A	DICK C NR CORDOVA AK	602032	1441810	ALASKA
3H	16C2EEF8	KETA RIVER NR. KETCHIKAN, ALASKA	552113	1302656	ALASKA
3H	16C30122	WHITE CRK. NR. KETCHIKAN, ALASKA	552451	1302738	ALASKA
3H	16C31254	SUNRISE LAKE NR. WRANGELL, ALASKA	562444	1322930	ALASKA

3H 16C31CB6	BLACK MOUNTAIN, CA.		373178 1221381	CALIFORNIA
3H 16C327CE	UPPER MAHONEY LAKE OUTLET NR KETCHIKAN AK		552450 1313316	ALASKA
3H 16C334BB	MIDDLETON ISLAND, ALASKA		592705 1462102	CALIFORNIA
3H 16C34CFA	YAKUTAT, ALASKA		593204 1392030	CALIFORNIA
3H 16C37960	REDFIELD, SD EVAP STA	W3970521	445300 0982300	SOUTH DAKOTA
3H 16C38736	FRANKTOWN C NR CARSON CITY, NV		391212 1195217	NEVADA
3H 16C389E4	RAINY RIVER AT MANITOU RAPIDS, MN.		483804 0935447	MINNESOTA
3H 16C39440	102N49W32DBAC		433536 0964413	SOUTH DAKOTA
3H 16C39A92	BASSWOOD RIVER NEAR WINTON, MN.		480455 0913910	MINNESOTA
3H 16C3A1DA	EAST POPLAR RIVER AT INTERNATIONAL BOUNDARY		490000 1052430	MONTANA
3H 16C3AF08	JAMES R AT HURON, S. DAK.		442149 0981156	SOUTH DAKOTA
3H 16C3B2AC	MILK RIVER AT EASTERN CROSSING OF INT BOUNDARY		485905 1102815	MONTANA
3H 16C3BC7E	ST MARY RIVER AT INTERNATIONAL BOUNDARY		490012 1131848	MONTANA
3H 16C3F1A6	CAPE YAKATAGA, ALASKA		600410 1422511	CALIFORNIA
1H 16C21E7C	COAL MINE WASH TRIB NEAR KAYENTA, ARIZ		363154 1102402	ARIZONA
3H 16C40316	N F MILK RIVER A3 ST MARY CA, NR BROWNING, MT.		485815 1130319	MONTANA
3H 16C40DC4	FIG TREE VALLEY, CA.		334389 1165164	CALIFORNIA
1H 16C23642	COAL MINE WASH TRIB NO 2 NEAR KAYENTA, ARIZ.		363152 1102428	ARIZONA
3H 16C41E82	MILK RIVER AT WESTERN CROSSING OF INT BOUNDARY		490027 1123242	MONTANA
3H 16C425FA				CALIFORNIA
1H 16C24E00	MOENKOPI WASH TRIB NO1 NR KAYENTA AZ.		036310 1102132	ARIZONA
3H 16C4368C	ROCK CREEK NEAR CLINTON, MT.		464321 1134036	MONTANA
3H 16C4385E				CALIFORNIA
1H 16C08038	COYOTE WASH NEAR BONANZA, UTAH		400200 1090800	UTAH
3H 16C44ECE	TETON RIVER NEAR DUTTON, MT.		475545 1113312	MONTANA
3H 16C47586	IN OFFICE (USED FOR TESTING)			MONTANA
3H 16C47B54	POPLAR RIVER AT INTERNATIONAL BOUNDARY		485930 1054140	MONTANA
3H 16C48BD0	BIG HOLE RIVER NEAR MELROSE, MT.		453136 1124203	MONTANA
3H 16C49674	MARIAS RIVER NEAR SHELBY, MT.		482538 1115320	MONTANA
3H 16C498A6	MIDDLE CR WX STATION NEAR OAK CREEK, CO		402010 1070204	COLORADO
3H 16CE4F9C	LITTLE BIGHORN RIVER NEAR HARDIN, MT.		454408 1073327	MONTANA
3H 16CE5238	POWDER RIVER NEAR LOCATE, MT.		462700 1051900	MONTANA
3H 16CE5CEA	WILSON CR WX STATION NR AXIAL, CO		401820 1074926	COLORADO
3H 16CE67A2	YELLOWSTONE RIVER NEAR SIDNEY, MT.		474042 1040922	MONTANA
3H 16CE6970	N F FLATHEAD RIVER NEAR COLUMBIA FALLS, MT.		482944 1140736	MONTANA
3H 16CE99F4	NORTH MILK RIVER NEAR INTERNATIONAL BOUNDARY		490119 1125816	MONTANA

23. HANDAR

23.1. Identification of the User

23.1.1. Name and Address

Handar Company
3327 Kifer Road
Santa Clara, California 95051

23.1.2. Contact

Mr. Henry Fallek
(Same address as above)

(408)735-9544

23.1.3. Type of Organization

Private company

23.1.4. Funding Organization

Handar Company

23.2. General Program Description

The Handar Company is a NESS certified manufacturer of GOES Data Collection Platforms. They are also engaged in the development and production of new sensor interfaces, antennas, and receiver test sets for use with the GOES satellite system. This activity requires transmissions via the GOES DCS to support tests that are conducted within the laboratory and in the field.

23.3. Features of the Program

23.3.1. Type of Program

Experimental

23.3.2. Start of Program

July, 1978

23.3.3. Type of Data Collected

Test data

23.3.4. Parameters Measured

Test data

23.3.5. Data Retrieval

The test data are retrieved by use of the dial-in capability of the GOES DCS Control Center.

23.4. Data Collection Platform Information

23.4.1. Number and Type

One self-time unit for test purposes.

23.4.2. Special Operating Features

The Handar DCP's do have some unique operating features. Inquiries on these features should be made to the company.

23.4.3. Location of DCP's

Santa Clara, California

23.5. Future Plans

DCP and related equipment will stay in production. Improvements will continue to be sought to meet new user requirements.

24. INLAND WATERS DIRECTORATE

24.1. Identification of the User

24.1.1. Name and Address

Environmental Management Service
Department of Fisheries and Environment
Ottawa, Ontario K1A 0E7

24.1.2. Contact

For policy decisions:

P. I. Campbell, Chief
Applied Hydrology Division

(819)997-1472

Telex 053-3799

For operational information:

I. A. Reid, Engineer
Applied Hydrology Division
(Same address as above)

(819)997-1934

Telex 053-3799

24.1.3. Type of Organization

Federal Government

24.1.4. Funding Organization

Department of Fisheries and Environment

24.2. General Program Description

The Environmental Management Service (EMS) provides support and leadership for the conservation, management and continued productivity of Canada's forests, inland waters, wildlife and lands. The service also takes part in environmental assessments which are concerned with the protection of the quantity of the environment. In an effort to monitor the occurrence, quantity, quality, distribution, utilization, and flow of water, this Service has deployed data collection platforms (DCP's) at widely located remote locations in Canada. The numbers of DCP's will increase with the growing need for real time data and industry's ability to competitively manufacture DCP's and related sensors.

24.3. Features of the Program

24.3.1. Type of Program

Operational

24.3.2. Start of Program

1976

24.3.3. Type of Data Collected

Hydrology
Meteorology

24.3.4. Parameters Measured

Water Level
Temperature (air and water)
Water Velocity
Precipitation
Dissolved Oxygen
Chloride Concentrations
pH
Conductance
Snow Water Content (snow pillow)
Relative Humidity
Lightning Strikes

24.3.5. Data Retrieval

The Applied Hydrology Division operates a passive receiving station (LANDSAT and GOES) at Prince Albert, Saskatchewan. Data are available in engineering units by dial-up on Telex, and 110,300 baud teletype.

24.4. Data Collection Platform Information

24.4.1. Number and Type

	LANDSAT/GOES	GOES	GOES/ARGOS
Self-timed	33	2	5 on order

24.4.2. Special Operating Features

None

24.4.3. Location of DCP's

	Stations	Mode	Date Installed	Lat.	Long.
1)	Red Deer River below Burnt Timber Creek	Landsat	1978-06-02	51°39'	115°01'
2)	Mackenzie River near Fort Providence	Landsat	1978-06-10	61°15'	117°30'
3)	In Stores Calgary Test-made	Landsat			
4)	Carney Creek below Pambrum Creek	Landsat	1977-05-20	50°10'	116°35'
5)	Cheticamp River below Artemise Brook	Landsat	1978-07-20	46°37'	60°44'
6)	St. Francis River at Outlet of Glasier Lake	GOES	1977-03-22	47°12'	68°57'
7)	Ellice River near the Mouth	Landsat	1976-04-22	67°42'	104°08'
8)	In Stores Ottawa - serviceable	GOES			
9)	Root River near the Mouth	Landsat	1975-07-15	62°29'	123°26'
10)	Nahatlatch River below Tachewana Creek	Landsat	1975-10-20	49°57'	121°52'
11)	In Stores Ottawa - serviceable	Landsat			
12)	Blanche River above Englehart	GOES	1978-02-23	41°53'	79°53'
13)	McGregor River at Lower Canyon	Landsat	1977-06-07	54°16'	121°40'
14)	Instrumentation Ship - unserviceable	Landsat	1976-09-14	44°46'	79°18'
15)	In Stores - serviceable	Landsat			
16)	Battle Creek at International Boundary	Landsat	1975-10-22	40°00'	109°25'
17)	Sloan River near the Mouth	Landsat	1978-05-08	66°32'	117°16'
18)	In Stores Ottawa - serviceable	GOES			
19)	Hanbury River above Hoare Lake	Landsat	1976-07-05	63°36'	105°09'
20)	Assiniboine River at Brandon	Landsat	1977-11-08	49°51'	99°56'
21)	South Nahanni River above Virginia Falls	Landsat	1975-07-15	61°38'	125°48'
22)	In Stores Calgary - serviceable	GOES	1978-04-19	49°05'	100°57'
23)	English River at Umfreville	GOES	1978-10-08	49°52'	91°28'
24)	Red River at Emerson	GOES	1978-10-	49°01'	97°13'
25)	Souris River at Coulter	GOES	1978-10-	49°06'	100°57'
26)	Souris River near Glen Ewen	GOES	1978-10-	49°10'	102°03'
27)	Hermes Electyronics are designing and assembling Meteorological Sensors for Forest Fire Research Institute	GOES			
28)	In Stores Ottawa - serviceable	GOES			
29)	Bridge River below Bridge Glacier	GOES	1978-09-28	50°51'	123°27'
30)	Just Received		No address assigned		
31)	Just Received		No address assigned		
32)	Just Received		No address assigned		
33)	Just Received		No address assigned		
34)	Just Received		No address assigned		
35)	Just Received		No address assigned		

24.5. Future Plans

1. Test and evaluate 5 Bristol Aerospace GOES/ARGOS DCP's

2. Investigate expansion of the Prince Albert receive site, specifically with respect to receiving GOES West and one more channel on GOES East. Twelve hundred baud service will also be investigated.

25. LOUIS C. ADAMO, INC.

25.1. Identification of the User

25.1.1. Name and Address

Louis C. Adamo, Inc.
Oceanographic Consulting and Instrument Repair
533 Stevens Avenue, Suite E26
P. O. Box L
Solana Beach, California 92075

25.1.2. Contact

Louis C. Adamo
(Same address as above)

(714)755-9754

25.1.3. Type of Organization

Private company

25.1.4. Funding Organization

Corps of Engineers
San Francisco District
211 Main Street
San Francisco, CA 94105

25.2. General Program Description

This is an operational application of the WRANSAC instrument at certain "deep water" wave measurement stations in the Army Corps of Engineers' California Coastal Data Collection Program. The funding agency is the Department of the Army, San Francisco District, Corps of Engineers, 211 Main Street, San Francisco, CA, 94105, Contract #DAC07-79-C-0062. Mr. James C. Wolfe is administrator for this contract. Mr. Douglas Pirie is the project engineer and the technical liaison for the funding agency. The principal investigator is Louis C. Adamo, Louis C. Adamo, Inc., P. O. Box L, Solana Beach, CA 92075.

The purpose of the California Coastal Data Collection Program is to acquire, analyze, the make available to the public a data base comprised of wave data and coastal processes information. This data base will assist in the planning, design, and construction of coastal projects as well as provide qualitative and quantitative information to better understand coastal engineering problems for efficient coastal zone management. The data base will be available to the Corps of Engineers and other interested users through records and reports and also will be provided to users as near-real time wave statistics as necessary for use in:

Corps of Engineers operations;
National Weather Service radio transmissions;
U.S. Navy operations;
U.S. Coast Guard operations;
other service operations, such as support for coastal processes experiments.

25.3. Features of the Program

25.3.1. Type of Program

Operational

25.3.2. Start of Program

January, 1980

25.3.3. Type of Data Collected

Oceanography

25.3.4. Parameters Measured

Wave statistics are generated from analysis of wave periods and heights.

25.3.5. Data Retrieval

Data will be obtained from NESS via a 1200 baud dial-in line. Data may also be obtained by existing NWS and CofE dissemination circuits.

25.4. Data Collection Platform Information

25.4.1. Number and Type

Two self-time DCP's will be deployed.

25.4.2. Special Operating Features

None

25.4.3. Location of DCP's

Richardson Rock: 34°10.0'N
120°37.0'W

San Clemente Island: 32°34.0'N
118°31.0'W

25.5. Future Plans

Although the present contract extends through September, 1980, the program is expected to continue for 3 to 5 years.

26. MICHIGAN STATE UNIVERSITY

26.1. Identification of the User

26.1.1. Name and Address

Department of Entomology
Michigan State University
East Lansing, Michigan 48824

26.1.2. Contact

Administrative: Dr. Dean Haynes
(Same address as above)

(517)353-8709

Technical: Dr. Stuart Gage
(Same address as above)

(517)353-8709

26.1.3. Type of Organization

University

26.1.4. Funding Organization

National Science Foundation

26.2. General Program Description

The collected data are used in an environmental monitoring system of surface parameters to be integrated into a pest management control system. Three DCP's are located about the lower peninsula of Michigan in the prime grain crop growing regions.

26.3. Features of the Program

26.3.1. Type of Program

Experimental

26.3.2. Start of Program

Fall, 1976

26.3.3. Type of Data Collected

Meteorology

26.3.4. Parameters Measured

Soil Temperature

26.3.5. Data Retrieval

Data are obtained by dialing into the GOES DCS center at NESS.

26.4. Data Collection Platform Information

26.4.1. Number and Type

Three self-time DCP's are used.

26.4.2. Special Operating Features

None

26.4.3. Location of DCP's

Two DCP's are located in rural areas near Cass City and Hickory Corners (Gull Lake), Michigan. The third set is at MSU.

26.5. Future Plans

No long term plans are in effect.

27. NATIONAL CENTER FOR ATMOSPHERIC RESEARCH (NCAR)

27.1. Identification of the User

27.1.1. Name and Address

National Center for Atmospheric Research
National Scientific Balloon Facility
P. O. Box 1175
Palestine, Texas 75801

27.1.2. Contact

W. J. Snider
(Same address as above)

(214)729-0271

FTS 749-6071

27.1.3. Type of Organization

NCAR is operated under contract to the National Science Foundation (NSF) by the University Corporation for Atmospheric Research, a non-profit organization.

27.1.4. Funding Organization

The principal investigator is different on each flight and may be funded by various agencies including NSF, NASA, and others.

27.2. General Program Description

The National Scientific Balloon Facility (NSBF) is a facility of the National Center for Atmospheric Research (NCAR) and provides complete operations and engineering support to experimenters who require high altitude balloon flights to conduct experiments in a broad range of scientific disciplines. The users of this service include other groups within NCAR and scientists from universities and government agencies from the U.S. and many foreign countries.

The GOES DCS is being utilized by the NSBF to retrieve data from balloon flights in our Long Duration Ballooning Program. These flights are planned to originate in either Australia or South America and circle the earth between 20° and 40° south latitude. They will carry payloads which weigh in excess of 500 pounds at altitudes up to 130,000 feet for 60-90 days. A typical orbit will require about 12 days.

Data transmissions occur on a self-timed basis once per hour for 4 minutes 28 seconds. Each message includes housekeeping and balloon position data in addition to the experimenter's primary data.

Only engineering test flights have been flown as yet but it is hoped that fully operational flights in the southern hemisphere will soon be possible.

27.3. Features of the Program

27.3.1. Type of Program

The NSBF/GOES DCS Program is currently in the experimental phase but it is planned to become operational in the near future.

27.3.2. Start of Program

The first tests of our system were conducted in January 1978.

27.3.3. Type of Data Collected

Data collected via the GOES link will include data from experiments in infrared astronomy, x-ray astronomy, gamma-ray astronomy, cosmic ray studies, the collection of cosmic dust, and the atmospheric sciences.

27.3.4. Parameters Measured

The data collected generally pertains to the energy content of various types of radiation as outlined above. The specific parameters depend on the type of detector used in each case and whether the experiments purpose is the evaluation of known sources or sky surveys and mapping. The data are generally used in basic research as opposed to applied research.

27.3.5. Data Retrieval

A TI 742 data terminal is used to access the data via the 1200 BPS dial-in circuit.

27.4. Data Collection Platform Information

27.4.1. Number and Type

The NSBF presently has two self-timed platforms.

27.4.2. Special Operating Features

The platforms are interfaced to a PCM data encoder to provide flexibility in the type and number of input data channels which can be used.

27.4.3. Location of DCP's

The platforms are flown on free floating balloons which may be launched in the U.S. or any of several foreign countries.

27.5. Future Plans

It is anticipated that several flights will be flown in CY 1979 from the U.S. with the possibility of flights from Sicily to the U.S. in the summer of 1980.

28. NATIONAL ENVIRONMENTAL SATELLITE SERVICE

28.1. Identification of the User

28.1.1. Name and Address

National Environmental Satellite Service
Environmental Science Group
World Weather Building, Room 810
Washington, D.C. 20233

28.1.2. Contact

Mr. Donald R. Wiesnet
(Same address as above)

(301)763-8036

28.1.3. Type of Organization

Federal Government

28.1.4. Funding Organization

NOAA/NESS

28.2. General Program Description

NESS is working with NASA in collecting ground truth data. The purpose is to determine the feasibility of satellite thermal mapping capabilities when using soil moisture as a parameter.

28.3. Features of the Program

28.3.1. Type of Program

Experimental

28.3.2. Start of Program

Winter, 1979

28.3.3. Type of Data Collected

Meteorology

28.3.4. Parameters Measured

Soil Moisture
Soil Temperature
Snow Water Content

28.3.5. Data Retrieval

The data are obtained by a desk-top dial-in terminal located in the World Weather Building.

28.4. Data Collection Platform Information

28.4.1. Number and Type

One self-time DCP is used.

28.4.2. Special Operating Features

None

28.4.3. Location of DCP's

The DCP is located near Luverne, Minnesota, adjacent to the Iowa-Minnesota border. 43°30'N and 96°12'W

29. NATIONAL OCEAN SURVEY

29.1. Identification of the User

29.1.1. Name and Address

National Oceanic and Atmospheric Administration
National Ocean Survey (NOS)
Rockville, Maryland 20852

29.1.2. Contact

Mr. C. M. Roman, C2x4
(Same address as above)

301-443-8871

29.1.3. Type of Organization

Federal Government

29.1.4. Funding Organization

National Ocean Survey

29.2. General Program Description

NOS is expanding the operational capability of the recently installed NOS Water Level Telemetry System (WLTS) to accommodate satellite telemetry.

The WLTS automatically collects tidal, water level, and meteorological data from remote locations using a minicomputer-based master control station (located in Rockville, MD), controlling a network of microprocessor-based remote sites. Data is collected via conventional sensors and stored in solid state memory at the remote site. The remote site is then automatically interrogated by the master control station on a daily basis and the data transmitted via phone lines.

A primary feature of the WLTS is that the remote sites can be placed in fast scan data collection and transmission modes from the master control station, making the system very useful for the collection of tsunami and storm surge data.

Funds have recently become available from NOS/NWS to conduct a cooperative program for the collection of the aforementioned data from wide areas of interest including the Pacific Ocean.

29.3. Features of the Program

29.3.1. Type of Program

Operational

29.3.2. Start of Program

January, 1980

29.3.3. Type of Data Collected

Oceanography
Meteorology

29.3.4. Parameters Measured

Tidal, storm surge and tsunami data are measured.

29.3.5. Data Retrieval

NOS will dial-in on a 300 baud circuit to NESS.

29.4. Data Collection Platform Information

29.4.1. Number and Type

Three interrogation type of DCP's are used.

29.4.2. Special Operating Features

None

29.4.3. Location of DCP's

The first station will be tested in San Francisco and two other stations will be located in Maui, Hawaii and Pango Pango.

29.5. Future Plans

Additional DCP's will be placed in the Alaska and Pacific areas for collecting tsunami data. Tidal data will also be collected in those areas where standard communications are not available. DCP's will also be located in regions affected by hurricanes.

30. NATIONAL PARK SERVICE

30.1. Identification of the User

30.1.1. Name and Address

U.S. Department of the Interior
National Park Service
Great Smoky Mountains National Park
Uplands Field Research Laboratory
Gatlinburg, Tennessee 37738

30.1.2. Contact

Dr. Gary Larsen
(Same address as above)

30.1.3. Type of Organization

Federal Government

30.1.4. Funding Organization

U.S. Department of the Interior

30.2. General Program Description

The potential of remote sensing platforms to provide both management and theoretically oriented information to National Park Service scientists will be tested. We propose to make use of the Data Collection Systems as a method for unobtrusive long-term environmental monitoring of various watersheds which are being stressed by either natural or man-made conditions. These watersheds are located in the Great Smoky Mountains National Park. These data will form a matrix which in effect monitors water quality as related to meteorological conditions, and will be used to establish a baseline or standard from which the effects of various management practices (e.g., timber cutting, road construction or animal activity, domestic or wild) can be monitored. We anticipate that the data obtained will be used by park management as an effective tool in resource management decisions.

30.3. Features of the Program

30.3.1. Type of Program

Experimental

30.3.2. Start of Program

January, 1979

30.3.3. Type of Data Collected

Water Quality
Meteorology

30.3.4. Parameters Measured

pH	Precipitation
Conductivity	Relative Humidity Temperature
Oxygen Reduction Potential	Wind Speed
Dissolved Oxygen	Wind Direction
Temperature	Barometric Pressure

30.3.5. Data Retrieval

The data are forwarded from NESS to the U.S. Geological Survey at Reston, Virginia. The USGS facility, co-located with the National Park Service at the NSTL Station obtains the data from Reston which in turn makes it available to us.

30.4. Data Collection Platform Information

30.4.1. Number and Type

Four self-time DCP's

30.4.2. Special Operating Features

None

30.4.3. Location of DCP's

The DCP's are located in the Great Smoky Mountains National Park, Tennessee. Two are located at: 35°35'39"N and 83°42'30"W and two placed at: 35°35'25"N and 83°47'15"W.

30.5. Future Plans

At this point in time, the program is basically experimental with the object of investigating the potential of satellite systems for supporting the National Park Service mission.

31. NATIONAL WEATHER SERVICE (NWS)

The National Weather Service (NWS) has four different applications within the GOES DCS. Each program is identified below in the same manner as they are referred to at the NWS.

31.1. AHOS/S

31.1.1. Identification of the User

31.1.1.1. Name and Address

National Weather Service
8060 13th Street
Silver Spring, Maryland 20910

31.1.1.2. Contact

Mr. Allen F. Flanders, W2x1
Assistant to the Associate Director, Hydrology
National Weather Service
8060 13th Street
Silver Spring, Maryland 20910

31.1.1.3. Type of Organization

Federal Government

31.1.1.4. Funding Organization

NWS

31.1.2. General Program Description

The Automatic Hydrologic Observing System/Satellite (AHOS/S) has been established for collecting precipitation and river stage data through the GOES DCS program. Approximately 50 sites, primarily located in the Pacific Northwest, Colorado, and the Rio Grande River Basin are presently active. The data are transmitted every six hours and forwarded to the appropriate River Forecast Centers and Weather Service Forecast Offices in support of operational river and flood forecast and warning requirements.

31.1.3. Features of the Program

31.1.3.1. Type of Program

Operational

31.1.3.2. Start of Program

Fall, 1974

31.1.3.3. Type of Data Collected

Hydrology

31.1.3.4. Parameters Measured

River Level
Precipitation

31.1.3.5. Data Retrieval

The collected data are forwarded from NESS to the National Meteorological Center (NMC) on a dedicated circuit.

31.1.4. Data Collection Platform Information

31.1.4.1. Number and Type

There are 54 DCP's presently deployed: 30 interrogation type and 24 self-time DCP's.

31.1.4.2. Special Operating Features

None

31.1.4.3. Location of DCP's

LOCATION	NWS ID	NESS ID	LAT	LONG	SENSOR	PLATFORM
Anchorage 1ENE, AK	ASCA2	15D036CE	61°14'	149°50'	R	I
Stevens Village 26WSW, AK	YRBA2	15D280B4	65°53'	149°51'	R	I
Eagle River 1S, AK	ERRA2	15D09636	61°18'	149°34'	R	I
Anchorage 7SE, AK	ARGA2	15CF67BE	61°08'	149°43'	R	I
Fairbanks 39ENE, AK	FBSA2	15D4A696	64°54'	146°25'	R	I
Fairbanks 9ENE, AK	FBNA2	15D4B5E0	64°53'	147°15'	R	I
Salchaket, AK	SALA2	15D4C370	64°28'	146°58'	R	I
Harding Lake, AK	HAHA2	15D4D006	64°24'	146°57'	R	I
Nenana, AK	ENNA2	15D4E59C	64°34'	149°06'	R	I
Clifton 17NE, AZ	CFNA2	15CD92CE	33°17'	109°12'	PR	S
Drake, CO	DKEC2	15D27030	40°26'	105°20'	PR	I
Allens Park, CO	ALKC2	15CC8342	40°12'	105°32'	P	S
Cameo 7NE, CO	CAMC2	15CC23BA	39°14'	108°16'	R	S
Conifer 3NE, CO	CONC2	15D0405E	39°32'	105°16'	P	I
Lawson, CO	IDOC2	15CCB6D8	39°46'	105°38'	PR	S
Evergreen, CO	EVGC2	15CFF2DC	39°38'	105°19'	P	I
Ft. Collins 9NW, CO	FTCC2	15CC30CC	40°40'	105°13'	PR	S
Golden 3S, CO	GOLC2	15CEF026	39°42'	105°13'	P	I
Kremmeling 4SW, CO	KRMC2	15CE3538	40°42'	106°26'	P*R	S
Rollinsville, CO	RLLC2	15CCC048	39°55'	105°30'	P	S
Rustic 12WSW, CO	RFLC2	15CDD1C4	40°42'	105°48'	P	S
Northgate 4NW, CO	NGTC2	15CC465C	40°56'	106°20'	R	S
Woodland Pk 8NNW, CO	WODC2	15CC552A	39°06'	105°05'	P	S
CO-NM State Line, CO	JSOC2	15CDE45E	37°00'	105°43'	R	S
Centerville, ID	CVAI1	15CD07AC	43°54'	115°51'	P	S
Hot Springs 2S, ID	HOTI1	15CCE6A4	42°46'	115°43'	R	S
Pierce, ID	PIRI1	15CC73C6	46°30'	115°48'	P	S
Prichard 4N, ID	PRCI1	15CF973A	47°43'	115°59'	PR	I
Topaz, ID	TOPI1	15D00354	42°38'	112°05'	PR	I

LOCATION	NWS ID	NESS ID	LAT	LONG	SENSOR	PLATFORM
Eustice, ME	EUSM1	15D2F624	45°13'	70°29'	P	S
St. Pamphile, ME	ESPM1	15D2D0C8	46°57'	69°45'	P	I
Ste. Aurelie, ME	JSAM1	15D34750	46°12'	70°17'	P	I
Essex R.S., MT	ESXM8	15D0B0DA	48°17'	113°37'	P	I
Marathon, NM	CBMN5	15CC1620	32°27'	104°32'	P*	S
Carlsbad DAM3, NM	CSBN5	15CFE1AA	32°31'	104°20'	P*R	I
Gila 7NE, NM	GILN5	15CDC2B2	33°04'	108°32'	P*R	S
Pecos 9N, NM	PCON5	15CD713C	35°43'	105°41'	P*R	S
Gallop 10NE, NM	GLPN5	15CD57D0	35°37'	108°34'	P*R	S
Butte Falls 1SE, OR	BUFO3	15CD14DA	42°32'	122°33'	P	S
Halfway, OR	HWYO3	15CD2140	44°53'	117°07'	P	S
Heppner 5SSE, OR	HPRO3	15CD3236	45°17'	119°32'	P	S
Illahe, OR	ILHO3	15CD624A	42°39'	124°04'	P	S
Imnaha, OR	IMNO3	15CF5224	45°34'	116°50'	PR	I
Jewell, OR	JELO3	15D066B2	45°56'	123°32'	P	I
Joseph R.S., OR	JOSO3	15CDA754	45°23'	117°14'	P	S
Steamboat R.S., OR	STEO3	15D075C4	43°21'	122°44'	P	I
Valsetz, OR	VLZO3	15CE264E	44°51'	123°40'	P	S
Bagget Ranch, TX	JNOT2	15CD81B8	30°21'	101°02'	P*	S
Bissett Ranch, TX	BRHT2	15CCF5D2	31°00'	101°11'	P*	S
Bud Cox Ranch, TX	PBCT2	15CFD430	30°35'	101°29'	P*	I
Joe Chandler Ranch, TX	SFIT2	15CC9034	30°28'	101°43'	P*R	S
Comstock 22NE, TX	CTKT2	15CE7632	29°53'	100°54'	P*R	I
Dryden 14S, TX	DYNT2	15CF37C2	29°50'	102°10'	P*R	I
Juno 5S, TX	JNXT2	15CF0258	30°05'	101°07'	P*R	I
Pandale Crossing, TX	PDAT2	15CF74C8	30°08'	101°34'	P*R	I
Mazama, WA	MZAW1	15CE43A8	48°37'	120°24'	P	S
Lighthawk 2S, WA	NITW1	15CE50DE	48°59'	119°37'	R	S
Snowqualmie Falls, WA	SQUW1	15CE6544	47°33'	121°51'	P	S
Upper Baker Dam, WA	UBKW1	15CEE350	48°39'	121°41'	P	I

31.1.5. Future Plans

It is expected that DCP's will be added in the future.

31.2. TSUNAMI WARNING SYSTEM (TWS)

31.2.1. Identification of the User

31.2.1.1. Name and Address

National Weather Service
8060 13th Street
Silver Spring, Maryland 20910

31.2.1.2. Contact

Mr. Mark Spaeth, W161
(same address as above)

31.2.1.3. Type of Organization

Federal Government

31.2.1.4. Funding Organization

NWS

31.2.2. General Program Description

The Tsunami Warning System (TWS) has operational DCP's that can provide tide and seismic data to the TWS on demand.

31.2.3. Features of the Program

31.2.3.1. Type of Program

Operational

31.2.3.2. Start of Program

Fall, 1974

31.2.3.3. Type of Data Collected

Seismology
Tide

31.2.3.4. Parameters Measured

Seismic
Tidal

31.2.3.5. Data Retrieval

The collected data are forwarded from NESS to the NMC on a dedicated circuit.

31.2.4. Data Collection Platform Information

31.2.4.1. Number and Type

The TWS presently has three operating platforms. Two units collect tide data and the third measures seismic activity. All units are the interrogation type.

31.2.4.2. Special Operating Features

None

31.2.4.3. Location of DCP's

The tide DCP's are located at San Diego, CA, (32°43'N, 117°10'W) and Wake Island (19°17'N, 166°37'E). The seismic unit is located at the Albuquerque Seismological Center (34°57'N, 106°27'W).

31.2.5. Future Plans

The TWS is in the process of building and deploying four or five more tide DCP's, all slated for installation in South America. Approval from the host countries is presently being sought.

31.3. RAMOS/S

31.3.1. Identification of the User

31.3.1.1. Name and Address

National Weather Service
8060 13th Street
Silver Spring, Maryland 20910

31.3.1.2. Contact

Mr. Larry Murphy, W521X1
(same address as above)

31.3.1.3. Type of Organization

Federal Government

31.3.1.4. Funding Organization

NWS

31.3.2. General Program Description

The National Weather Service, as part of its Surface Weather Observing Program, operates a network of 100 automatic weather stations. Among these automatic systems are 48 Remote Automatic Meteorological Observing Systems (RAMOS).

31.3.3. Features of the Program

31.3.3.1. Type of Program

Operational

31.3.3.2. Start of Program

Fall, 1975

31.3.3.3. Type of Data Collected

Meteorology

31.3.3.4. Parameters Measured

Temperature
Dewpoint
Wind Speed
Wind Direction
Pressure
Peak Wind
Precipitation

31.3.3.5. Data Retrieval

The data are relayed from NESS to NMC. There the reports are reformatted into the standard Aviation Code and relayed to the Federal Aviation Administration's Weather Message Switching Center in Kansas City. The reports are transmitted on the Service A telecommunications circuit.

31.3.4. Data Collection Platform Information

31.3.4.1. Number and Type

There are 17 RAMOS stations that transmit their reports via GOES. All of these units are the interrogation type.

31.3.4.2. Special Operating Features

None

31.3.4.3. Location of DCP's

SITE	PLATFORM ADDRESS	LATITUDE	LONGITUDE
Mount Desert Rock, ME	15D0A3Ac	43°58'N	68°08'W
Frying Pan Shoals, NC	15D4F6EA	33°29'N	77°35'W
Clayton Lake, ME	15D57204	46°37'N	69°32'W
Clines Corners, NM	15CEA05A	34°55'N	105°35'W
Salt Point, LA	15D0C64A	29°17'N	91°18'W
Tenneco Oil Platform, LA	15CFA2A0	28°00'N	93°00'W
Lukeville, AZ	15CF24B4	31°52'N	112°52'W
Rome, OR	15D025B8	42°50'N	117°53'W
Point Retreat, AK	15CE86B6	58°24'N	134°57'W
Eldred Rock, AK	15CF4152	58°58'N	135°13'W
Andreafski, AK	15CF844C	62°03'N	163°10'W
Anakturak, AK	15CFB1D6	68°08'N	151°45'W
Nikolski, AK	15D01022	52°57'N	168°51'W
Cape Spencer, AK	15D50494	58°12'N	136°38'W
Cape Decision, AK	15D56172	56°00'N	134°08'W
Shungnak, AK	15D591F6	62°52'N	157°09'W
French Frigate Shoals, HI	15D58208	23°52'N	166°17'W

31.3.5. Future Plans

There are no plans for expansion of the network at this time.

31.4. OVERSEAS OPERATIONS

31.4.1. Identification of the User

31.4.1.1. Name and Address

Overseas Operations Division
National Weather Service
8060 13thStreet
Silver Spring, Maryland 20910

31.4.1.2. Contact

Mr. Larry Eide, W13
(same address as above)

427-7787

31.4.1.3. Type of Organization

Federal Government

31.4.1.4. Funding Organization

NWS

31.4.2. General Program Description

A GOES DCP is used in conjunction with the radar station on Galapagos Islands. Upper air data are obtained with weather balloons that transmit to the facility on the Islands. The data are then translated and fed by paper tape into the DCP. This program was developed in cooperation with Ecuador.

31.4.3. Features of the Program

31.4.3.1. Type of Program

Experimental

31.4.3.2 Start of Program

Spring, 1980

31.4.3.3. Type of Data Collected

Upper air

31.4.3.4. Parameters Measured

Air Pressure	Wind Speed
Temperature	Wind Direction

31.4.3.5. Data Retrieval

The data are placed on the Global Telecommunications System (GTS) at NMC. The data also reaches Quito, Ecuador, by the use of the Aeronautical Fixed Telecommunication Network (AFTN).

31.4.4. Data Collection Platform Information

31.4.4.1. Number and Type

One self-time DCP is used.

31.4.4.2. Special Operating Features

A paper tape input is used as interface to the DCP.

31.4.4.3. Location of DCP's

The DCP is located at the radar station on Galapagos Island.

31.4.5. Future Plans

Pending the outcome of this equipment, there will be plans for similar operations in different areas.

32. NEW ZEALAND METEOROLOGICAL SERVICE

32.1. Identification of the User

32.1.1. Name and address

New Zealand Meteorological Service
P.O. Box 722
Wellington, New Zealand

32.1.2. Contact

R. A. Pannett
Superintendent Instrument Development
New Zealand Meteorological Service
P.O. Box 722
Wellington, New Zealand

32.1.3. Type of Organization

Federal Government of New Zealand

32.1.4. Funding Organization

New Zealand Meteorological Service

32.2. General Program Description

The purpose of this program is to investigate the use of satellite systems for the collection of meteorological data from fixed land-based automatic weather stations to support a synoptic reporting network.

32.3. Features of the Program

32.3.1. Type of Program

Experimental

32.3.2. Start of Program

Summer, 1979

32.3.3. Type of Data Collected

Meteorology

32.3.4. Parameters Measured

Wind Direction and Speed	Dew point
Pressure	Accumulated Rainfall
Temperature	

32.3.5. Data Retrieval

The collected data are retrieved by 1200 baud dial-in circuits.

32.4. Data Collection Platform Information

32.4.1. Number and Type

Two self-timed DCP's

32.4.2. Special Operating Features

None

32.4.3. Location of DCP's

New Zealand Mainland

32.5. Future Plans

The future plans call for expanding the network to service areas that are difficult to access and sparsely populated.

33. NEW ZEALAND MINISTRY OF WORKS AND DEVELOPMENT

33.1. Identification of the User

33.1.1. Name and Address

Water and Soil Division
Ministry of Works and Development
P.O. Box 1479
Christchurch, New Zealand

33.1.2. Contact

Mr. G. Latimer
Ministry of Works and Development
P.O. Box 1479
Christchurch, New Zealand

33.1.3. Type of Organization

Federal Government of New Zealand

33.1.4. Funding Organization

Water and Soil Division
Ministry of Works and Development
P.O. Box 12041
Wellington, New Zealand

33.2. General Program Description

The Ministry of Works and Development is experimenting with the GOES DCS to determine the suitability of the system for collecting hydrological data in New Zealand.

33.3. Features of the Program

33.3.1. Type of Program

Experimental

33.3.2. Start of Program

Fall, 1979

33.3.3. Type of Data Collected

Hydrology

33.3.4. Parameters Measured

Water level

33.3.5. Data Retrieval

The 1200 dial-in baud circuit to NESS is used for obtaining data.

33.4. Data Collection Platform Information

33.4.1. Number and Type

Two self-time DCP's are used.

33.4.2. Special Operating Features

None

33.4.3. Location of DCP's

	East Longitude	South Longitude
DCP #1	172° 33'	42° 48'
DCP #2	173° 09'	42° 38'

33.5. Future Plans

New Zealand is interested in future expansion if the system proves acceptable for collecting hydrological data.

34. NOAA (ASDAR)

34.1. Identification of the User

34.1.1. Name and Address

National Oceanic and Atmospheric Administration
RD-4
Rockville, Maryland 20852

34.1.2. Contact

Mr. James Giraytys
ASDAR Program Manager
NOAA, OA-2
6010 Executive Boulevard
Rockville, Maryland 20852

(301)443-8811

Mr. George Smidt
NWS
8060 13th Street
Silver Spring, Maryland 20910

(301)427-7881

Telex:		
	WU (domestic)	89-406
	RCA	248-376
	ITT	440-108
	WUI	642-40

34.1.3. Type of Organization

Federal Government

34.1.4. Funding Organization

Department of Commerce

34.2. General Program Description

An Aircraft to Satellite Data Relay (ASDAR) electronics package is a special type of Data Collection Platform, utilizing the data relay capabilities of geostationary meteorological satellites. Land-based DCPs, almost without exception, use a low-powered transmitter (6-8 watts), and a high gain, usually helical, antenna to beam signals to an apparently motionless satellite. ASDAR by contrast, has an 80 watt transmitter, because it must use a small, low-gain, flat-plate antenna, mounted flush on top of an aircraft, radiating signals more or less evenly in all directions above the horizon. With omni-directional transmissions (in all upward directions), ASDAR messages will reach a satellite from any aircraft location within the satellites' field of view.

Most DCP's include sensors, which are considered a part of the platform installation. An ASDAR unit, when installed in the electronics bay of a large jet airliner, needs no sensors. Rather it has cables tied to the aircraft's Inertial Navigation System, and to a signal processor feeding data to the Crash Recorder, called a Flight Data Acquisition Unit. From these two avionics boxes, ASDAR selects out digital values for aircraft position, wind speed and direction, altitude and "static" air temperature (i.e., calculated "true" air temperature).

Over a long period, commercial airliners fly about 13 hours daily, at about 900 km/hr. ASDAR's hourly transmissions of eight data points, give data spaced about 125 km along the flight track. Data is collected during altitude changes, as well as during horizontal flight, along a track averaging 12,000 km long, daily.

34.3. Features of the Program

34.3.1. Type of Program

Operational

34.3.2. Start of Program

February, 1977

34.3.3. Type of Data Collected

Meteorology
Upper Air

34.3.4. Parameters Measured

Air Temperature
Wind Speed
Wind Direction
Altitudes

34.3.5. Data Retrieval

ASDAR data is fed, in real time, over existing circuits, to the U.S. National Meteorological Center (NMC), Washington, and to the U.S. Air Force Global Weather Central at Offutt Air Force Base, Nebraska. After processing, ASDAR reports are forwarded from NMC via the World Meteorological Organization's Global Telecommunications System links to meteorological data users throughout the Earth. Incoming ASDAR messages, relayed by satellites operated by Japan and the European Space Agency, will also be used locally, and disseminated via the GTS. Other users, such as ASDAR program managers, obtain ASDAR reports (1) via NESS's dial-in terminals, and (2) via NMC's remote computer terminals.

34.4. Data Collection Platform Information

34.4.1. Number and Type

Seven self-timed ASDAR platforms are presently in use. An additional 11 are nearing completion by a local manufacturer, and should be deployed during December 1978 and the first weeks of 1979.

34.4.2. Special Operating Features

Because ASDAR units are carried in and out of any satellite's field of view, non-reporting cannot be taken as an assurance that a platform has failed. The aircraft may be out of sight, or undergoing renovation within a hanger.

34.4.3. Location of DCP's

Deployment of ASDAR units, and their customary routes, are as follows:

Pan Am - "Clipper Arctic" (N657PA) - Europe, South America, Southwest Pacific, and Asia, including circumnavigation.

KLM - "River Donau" (PH-BUB) - Europe to North America, South America, Africa and South East Asia.

SAS - (LN-RNA) - Copenhagen to Montreal, New York and Chicago.

Lufthansa - (D-ABYL) - Europe to North America, and elsewhere.

QANTAS - Five aircraft - Australia to Japan, U.S. West Cost, Africa, South Asia and Europe via Middle East.

USAF - MAC C-141 - Charleston to Europe and other terminals.

Singapore Airlines - Three aircraft - Singapore to Japan, U.S. West Coast, and Europe via Middle East.

British Airways - Two aircraft - World-wide flights.

34.5. Future Plans

It is expected, on the basis of growing airline interest, and data-user enthusiasm for ASDAR, that the system will continue as an operational part of the global observing network for weather analysis and prediction. A first step toward operational status will be redesign of the ASDAR unit to bring it more into conformity with accepted commercial avionics standards. This will permit an expansion of the ASDAR fleet to numbers in the hundreds, and perhaps as large as 500.

Should demand warrant the step, miniaturization of the unit would then permit it to be installed on smaller aircraft, such as inter-island commuter aircraft in the Pacific.

35. NOAA DATA BUOY OFFICE

35.1. Identification of the User

35.1.1. Name and Address

NOAA Data Buoy Office (NDBO)
National Space Technology Laboratories
NSTL Station, MS 39529

35.1.2. Contact

Mr. Ray Roten
(Same address as above)

(601)688-2836

FTS 494-2836

35.1.3. Type of Organization

Federal Government

35.1.4. Funding Organization

NOAA Data Buoy Office

35.2. General Program Description

Since June, 1972 the NOAA Data Buoy Office (NDBO) has deployed environmental reporting data buoys in various gulf and ocean regions to provide synoptic data for weather reports and for scientific data archives. As of December, 1978, 19 moored buoys will be reporting environmental data on a routine basis.

Our satellite program has evolved from a simple checkerboard test message transmission to the establishment of UHF GOES telemetry stand-alone platforms. Presently, all NDBO buoys are operating via UHF GOES telmetry.

There are two general categories of communication requirements for NDBO programs. The first requirement is brought about by the timeliness feature that is required for various weather forecasting groups, including the National Weather Service (NWS). The NDBO weather message is approximately 10 seconds long when transmitted at a 100 bit per second rate, and includes air pressure and temperature, wind speed and direction, sea surface temperature, and wave data. NDBO buoys are deployed in the Atlantic Ocean, Gulf of Mexico, North Pacific, and Gulf of Alaska.

The second communication requirement is governed by the needs of the scientific community. These applications generally do not require the timeliness feature of the first type, although processed data occasionally is desired in a matter of hours. An important example of user applications would be oceanographers, who have for many years mapped ocean currents through

Lagrangian tracking techniques. These oceanographers are interested in obtaining position fixes from drifters that follow ocean currents. The length of the position-fixing message is about 1 second. Another example of scientific users would be investigators concerned with wave data. The U.S. Navy's Fleet Numerical Weather Central (FNWC) currently utilizes NDBO's wave spectral data from moored buoys as calibration points for their formulation of prediction models used to forecast sea states for the entire northern hemisphere. The length of the spectral wave data message is approximately 40 seconds. There are other important applications of buoys for scientific uses, including oil spill tracking and the first worldwide Global Weather Experiment.

35.3. Features of the Program

35.3.1. Type of Program

Primarily operational (90%) Experimental (10%)

35.3.2. Start of Program

June, 1972

35.3.3. Type of Data Collected

Meteorology
Oceanography

35.3.4. Parameters Measured

Air Pressure and Temperature (redundant pairs)
Wind Speed and Direction (redundant pairs)
Sea Surface Temperature
Wave Data

Future parameters will include ocean current and direction, and subsurface temperature.

35.3.5. Data Retrieval

Two principal routes are available for obtaining data from the DCS:

a. Operational data are sent to NMC (FOB-4) on the NWS modem in near real time. NMC processes, formats, and distributes weather and wave messages via the NWS communication network. NMC also stores all data. It is transmitted over a 2400 baud leased line to NDBO's terminal at NSTL.

b. Test data are transmitted via a 2400 baud "dial in" port to NDBO's terminal at NSTL.

35.4. Data Collection Platform Information

35.4.1. Number and Type

NDBO operates self-timed only, simple interrogate, and command repertoire platforms. The simple interrogate platforms can operate in the self-timed mode and can be interrogated via UHF to request a recent data frame. The command repertoire platforms are capable of decoding flexible command schedules via GOES in addition to providing self-timed and simple interrogate capabilities. A matrix of the operations is as follows:

Type	Number	Remarks
Self-timed only	7	1 is a special purpose platform - UHF only
Simple interrogate	11	These units also possess HF capability
Command repertoire	2	UHF only

35.4.2. Special Operating Features

See 35.4.1.

35.4.3. Location of DCP's

NDBO's platforms are deployed from 50 to 300 miles off the various coasts as follows:

a. Seven platforms are located in the Atlantic Ocean.

b. Four platforms are located in the Gulf of Mexico.

c. Eight platforms are located in the North Pacific and Gulf of Alaska.

All operational stations are ocean data buoys. NDBO also maintains bench systems at NSTL; Fort Wayne, Indiana; and San Diego, California.

The buoys deployed in the Gulf of Mexico and Pacific Ocean operate with the West GOES. The buoys deployed in the Atlantic Ocean use the East GOES.

35.5. Future Plans

The following events are planned for the near future.

a. All NDBO simple interrogate platforms will be converted to command repertoire platforms.

b. All NDBO self-timed only platforms will be upgraded to include a receive capability to provide simple interrogate operation.

c. NDBO plans to add the following stations: three in the Atlantic Ocean; one in the Gulf of Mexico; three in the Great Lakes; one in the North Pacific Ocean.

d. A special test platform, using self-timed only, will be added in the Gulf of Mexico (for ocean current sensor testing and acoustic telemetry tests).

e. NDBO plans to add a basic meteorological sensor suite with a synoptic reporting capability to approximately 10 existing Large Navigational Buoys. These buoys are on station at entrances to all major harbors in the United States.

f. A thermistor string buoy.

36. ONTARIO MINISTRY OF NATURAL RESOURCES

36.1. Identification of the User

36.1.1. Name and Address

Ministry of Natural Resources
Room 5628 Whitney Block
Queen's Park
Toronto, Ontario, Canada M7A 1W3

36.1.2. Contact

R. J. Burgar, Director
Conservation Authorities and Water Management Branch
(Same address as above)

36.1.3. Type of Organization

Provincial Government of Canada

36.1.4. Funding Organization

Ministry of Natural Resources

36.2. General Program Description

In Ontario, the Conservation Authorities Branch of the Ministry of Natural Resources is the Provincial agency responsible for issuing flood forecasts for the entire Province. The Ministry is in the process of developing a centralized, real time streamflow data acquisition and prediction system. A mini-computer will be purchased for processing collected data and for streamflow forecast computation.

36.3. Features of the Program

36.3.1. Type of Program

Operational

36.3.2. Start of Program

Fall, 1979

36.3.3. Type of Data Collected

Hydrology

36.3.4. Parameters Measured

Precipitation
Water Level

36.3.5. Data Retrieval

The computer in Toronto will retrieve the data from NESS by dial-in circuits.

36.4. Data Collection Platform Information

36.4.1. Number and Type

Two self-time DCP's have been purchased.

36.4.2. Special Operating Features

None

36.4.3. Location of DCP's

Exact locations have not been selected but the 2 DCP's will be installed near Toronto.

36.5. Future Plans

We expect to purchase 2 or 3 GOES DCP's per year.

37. PACIFIC MARINE ENVIRONMENTAL LABORATORY

37.1. Identification of the User

37.1.1. Name and Address

Pacific Marine Environmental Laboratory
Environmental Research Laboratories
3711 15th Ave., N.E.
Seattle, Washington 98105

37.1.2. Contact

R. Michael Reynolds
(Same address as above)

37.1.3. Type of Organization

Federal Government

37.1.4. Funding Organization

Environmental Research Laboratories (ERL)

37.2. General Program Description

The Pacific Marine Environmental Laboratory plans to conduct research in the mesoscale distribution of surface winds along coastlines. With the use of data from meteorological buoys, wind fields will be delineated in the region as a function of larger scale forcing and thereby achieve a link between the larger scale climatology and the local wind fields.

37.3. Features of the Program

37.3.1. Type of Program

Experimental

37.3.2. Start of Program

January, 1980

37.3.3. Type of Data Collected

Meteorology

37.3.4. Parameters Measured

Wind Speed	Air Temperature
Wind Direction	Ocean Bulk Temperature

37.3.5. Data Retrieval

The data are retrieved from NESS via the 300 baud dial-in line.

37.4. Data Collection Platform Information

37.4.1. Number and Type

A total of eight buoys are expected to be used.

37.4.2. Special Operating Features

None

37.4.3. Location of DCP's

Deployment Dates	Location	Purpose of Data
15-31 Dec. 1979	Seattle, Washington	System calibrations
10 Jan. - 10 Feb. 1980	Hawaii	Remote Sensor calibrations
15-28 February 1980	Seattle	Calibrations
10-31 March 1980	Puget Sound, WA	Mesoscale model verification and wind field study
20 April - 20 May 1980	Cook Inlet, Alaska	Oil spill, environmental assessment wind field patterns
June 1980	Hawaii	Mesoscale model verification
July 1980	Norton Sound, AK	Wind field patterns

37.5 Future Plans

It is planned to eventually apply the collected information toward the assessment of oil spills.

38. PETRO-CANADA EXPLORATION INC.

38.1. Identification of the User

38.1.1. Name and Address

Petro-Canada Exploration Inc.
650 Guinness House
727 - 7th Avenue, S.W.
Calgary, Alberta T2P 0Z6

38.1.2. Contact

Mr. R. W. Craig
Environmental and Technical Coordination Department
(Same address as above)

(403)232-8699

38.1.3. Type of Organization

Private company

38.1.4. Funding Organization

Petro-Canada Exploration Inc.

38.2. General Program Description

Petro-Canada has established a Western Sverdrup Basin Data Buoy Program for use with the GOES DCS. The collected data are primarily intended to allow a closer monitoring and correlation of ice motion and motivating forces in this area of "fast" ice and to permit the evolution of a forecasting model for ice motion in the area. Semi-concurrent analysis of data and evolution of the forecasting model would not be possible without real-time delivery of data.

Five data buoys will be used within the triangle of High Arctic Weather Stations at Resolute, Isachsen and Mould Bay. These Atmospheric Environment stations are the only data points for operational weather forecasting in the western portion of the High Arctic Islands. Therefore, considering the type of data being collected and the cost thereof, Petro-Canada has offered these data to the Canadian Atmospheric Environment Service for operational weather forecast purposes. The data are likely to cause significant upgrading of the quality of forecasts available in this portion of the High Arctic.

38.3. Features of the Program

38.3.1. Type of Program

Experimental

38.3.2. Start of Program

Fall, 1977

38.3.3. Type of Data Collected

Oceanography
Meteorology

38.3.4. Parameters Measured

Wind Speed	Sea Level Atmospheric Pressure
Wind Direction	Current Speed
Water Temperature	Current Direction

38.3.5. Data Retrieval

It is planned to recover the data at the Canadian Satellite Receiving Station at Prince Albert, Saskatchewan. That facility is presently being expanded by installation of a fixed eight meter dish antenna devoted to GOES. We will recover data from the mini-computer memory bank at Prince Albert via a 110bps dial-in circuit. Petro-Canada will interrogate that facility once per business day and build the master file of project data. Arrangements are progressing towards Atmospheric Environment Service, Arctic Weather Central, forecasting office separately interrogating the memory file at Prince Albert in order to recover the weather data for forecasting purposes. In the event of a breakdown of the facility at Prince Albert, Petro-Canada would plan to interrogate the World Weather Building file using a dial-in 110bps circuit on a once per business day basis. Under these circumstances data would not be delivered in real-time to the Atmospheric Environment Service for forecasting purposes.

38.4. Data Collection Platform Information

38.4.1. Number and Type

Five data buoys are used.

38.4.2. Special Operating Features.

The data buoys will measure position by means of an acoustic bottom reference system, will measure 2 levels of wind speed and direction (at 10 meters and 2 meters), 2 levels of temperature (at 10 meters and 2 meters), sea level atmospheric pressure, and 2 levels of ocean current speed and direction (at 2 meters and 50 meters beneath the ice). A string of 20 thermistors will be used in an attempt to remotely record the growth of ice. One of the 20 thermisistors will be sampled in sequence hourly. The five buoys will be located in areas with maximum exposure to prevailing winds. Three buoys are intended for areas where a significant "open pack" situation exists in the summer season. The precise location of these three buoys will be determined at the time of fall installation.

38.4.3. Location of DCP's

The five platforms are all located in offshore areas of the Queen Elizabeth Islands, District of Franklin, Canada. Specifically, the stations will be located as follows:

Station A: In the Prince Gustaf Adolf Sea at 78° 30'N, 108° 00'W.

Station B: In Hazen Strait at 76° 50'N, 111° 20'W.

Station C: In Byam Martin Channel. As previously described, this station will be specifically located at the time of implantation according to ice distribution. It will lie within the area bounded as follows:

77° 00'N, 107° 30'W
77° 00'N, 106° 00'W
76° 30'N, 107° 00'W
76° 30'N, 106° 00'W

Station D: Maclean Strait in the area described by:

76° 40'N, 104° 30'W
76° 40'N, 102° 30'W
76° 10'N, 103° 30'W
76° 10'N, 102° 00'W

Station E: Edinburgh Sea, in the area described by:

76° 40'N, 99° 00'W
76° 40'N, 99° 00'W
77° 10'N, 99° 00'W
77° 10'N, 97° 00'W

38.5. Future Plans

Three automatic weather stations are planned for the summer of 1980. These units will be deployed in the North Baffin Bay - Landcaster Sound area. Additional DCP's will be used in the North Labrador Sea region.

39. QUEBEC, DEPARTMENT OF NATURAL RESOURCES

39.1. Identification of the User

39.1.1. Name and Address

Quebec, Department of Natural Resources
Waters Branch
1640 Boul. de l'Entente
Quebec City, Canada G15 4N6

39.1.2. Contact

Mr. Claude Pesant
Hydrometry Service
(Same address as above)

(418)643-4553

Telex: 05131584

39.1.3. Type of Organization

Provincial Government

39.1.4. Funding Organization

Quebec, Department of Natural Resources

39.2. General Program Description

The ultimate objectives for our telemetry network are:

1. To inventory the surface water and climate in Northern Quebec.

2. To improve hydro-electric production and make better use of reservoir dams for flood reduction.

3. To develop short term flood forecasting in Southern Quebec with the help of operational hydrological models.

With the implementation of the real time data acquisition program, we intend to automate all phases of the program. A minicomputer obtains the data directly from NESS, processes the raw data, and sends out hydrological information instantly to users.

39.3. Features of the Program

39.3.1. Type of Program

Operational

39.3.2. Start of Program

May, 1977

39.3.3. Type of Data Collected

Hydrology

39.3.4. Parameters Measured

Water Level	Wind Direction
Air Temperature	Relative Humidity
Precipitation	Lightning Counter
Wind Speed	Battery Voltage

The stations that monitor these parameters are shown in table 1.

39.3.5. Data Retrieval

Data are obtained from NESS via the 300 and 1200 baud lines. The data are processed every 3 hours with a TI 990 computer.

39.4. Data Collection Platform Information

39.4.1. Number and Type

At the end of November, 1978, 30 self-time DCP's were in use.

39.4.2. Special Operating Features

None

39.4.3. Location of DCP's

See Table 1.

39.5. Future Plans

Approximately 20 new platforms were to be added in 1979. By the end of 1982, the network will consist of 115 DCP's.

39.6. Bibliography

Pesant, Claude, "Telemetry at the Service of the Hydrologist".

STATIONS DE TELETRANSMISSION PAR LE SATELLITE GOES

Services de l'Hydrométrie et de la Météorologie de la province de Québec — Novembre 1978

Numéro d'identification de NESS	Nom de la station	Longitude (Ouest)	Latitude (Nord)	Parameter								
				Water level	Temperature	Humidity	Precipitation	Wind (velocity)	Wind (direction)	Snow depth	Lighting counter	Voltage
456080B8	Aux Ecorces	71° 38' 43"	48° 10' 56"	✓	✓		✓					✓
4560DE16	Bonnard (Lac)	71° 02' 10"	50° 43' 15"	✓								✓
4560E55E	Manouane (Lac)	70° 31' 20"	50° 39' 20"	✓								✓
4560EB8C	Chamouchouane (Aval)	72° 29' 17"	48° 41' 11"	✓								✓
4560F628	Mistassini	72° 14' 49"	48° 53' 16"	✓								✓
4560F8FA	Chamouchouane (Amont)	73° 42' 36"	49° 15' 24"	✓								✓
45610456	Mistassibi	72° 12' 42"	48° 53' 58"	✓								✓
45610A84	Petite Péribonka	72° 02' 52"	48° 48' 51"	✓								✓
456117 20	Metabetchouane	71° 59' 37"	48° 22' 30"	✓								✓
456119F2	Gatineau	75° 45' 13"	47° 05' 01"	✓	✓	✓	✓	✓	✓			✓
456122BA	Dumoine	77° 48' 56"	46° 20' 45"	✓								✓
45612C68	Maganasipi	78° 20' 54"	46° 19' 54"	✓	✓	✓	✓	✓	✓			✓
456131CC	Granet	77° 33' 00"	47° 50' 39"	✓								✓
45613F1E	Darmouth	64° 41' 55"	48° 58' 47"	✓	✓	✓	✓	✓	✓			✓
4561498E	Duchesnay	71° 38' 45"	46° 51' 38"		✓		✓	✓	✓	✓	✓	✓
4561542A	Georges (Aval)	65° 09' 17"	58° 09' 17"	✓								✓
45615AF8	Georges (Amont)	64° 54' 51"	56° 47' 35"	✓	✓		✓					✓
456161B0	Caniapiscau (granite)	68° 25' 22"	55° 50' 30"	✓			✓					✓
45616F62	Swampi	68° 34' 16"	56° 38' 34"	✓								✓
456172C6	Aux Mélèzes	71° 03' 37"	57° 15' 04"	✓								✓
45402F7C	Lac Péribonka	71° 14' 30"	50° 08' 40"	✓								✓
45404A9A	La Grande	71° 11' 36"	53° 35' 58"	✓								✓
4540573E	Caniapiscau (Nouveau)	69° 15' 20"	54° 02' 34"	✓								✓
454059EC	Arnaud	71° 54' 30"	59° 59' 20"	✓								✓
454062A4	Hamelin	71° 42' 30"	59° 48' 40"	✓								✓
45406C76	Lepellé	72° 39' 38"	60° 11' 30"	✓								✓
454071D2	Aux feuilles	70° 24' 58"	58° 39' 10"	✓								✓

40. RAYTHEON COMPANY

40.1. Identification of the User

40.1.1. Name and Address

Raytheon Company
Oceanographic and Environmental Services
P.O. Box 360
Portsmouth, Rhode Island 02871

40.1.2. Contact

Mr. Ron Franklin
(Same address as above)

(401)847-8000

40.1.3. Type of Organization

Private company

40.1.4. Funding Organization

Bureau of Land Management

40.2. General Program Description

The Bureau of Land Management is sponsoring a multi-disciplined environmental study of the New Englad Outer Continental Shelf in order to satisfy the National Environmental Policy Act in relation to potential oil recovery at Georges Bank. Raytheon Company was awarded a contract to collect physical oceanographic data on the New England OCS, and our program involves three types of data-collecting activities; deployment of moored instrumentation, aerial photography of surface current tracers, and hydrographic cruises. Seven buoys will be deployed along a north-south line bisecting Georges Bank. Approximately 130 sensors of various parameters are distributed among the buoys. Continuously recorded data is to be processed in-situ into 30 minute averages and telemetered every half hour from each buoy. BLM's objective is to acquire data over a period of approximately 3 years, reduce the data, and characterize Georges Bank as a dispersive model.

40.3. Features of the Program

40.3.1. Type of Program

Experimental

40.3.2. Start of Program

Fall, 1977

40.3.3. Type of Data Collected

Oceanography

40.3.4. Parameters Measured

Current	Conductivety
Temperature	Bottom Pressure

40.3.5. Data Retrieval

Raytheon uses the 1200 baud dial-in circuits to NESS.

40.4. Data Collection Platform Information

40.4.1. Number and Type

Seven interrogation type of DCP's are used in this program.

40.4.2. Special Operating Features

The commanding feature is frequently used.

40.4.3. Location of DCP's

All platforms will be located in the Georges Bank region of the Atlantic Ocean approximately 150 miles from Chatham, Cape Cod, Massachusetts.

LOCATIONS OF MOORINGS

Number	Depth (M)	Latitude	Longitude
1	200	41° 59' N	67° 59.5' W
2	100	41° 55' N	67° 58' W
3	80	41° 53.5' N	67° 57' W
4	40	41° 31.5' N	67° 46' W
5	80	40° 55.5' N	67° 28' W
6	100	40° 45.5' N	67° 23' W
7	200	40° 30.5' N	67° 15' W

40.5. Future Plans

For 1980, 3 DCP's will be deployed off Nantucket Island with similar application as in the past.

40.6. Bibliography

LOBECKER, R. N., et al., "A Buoy System for Acquiring, Processing and Telemetering Real Time OCS Oceanographic Data". Paper presented at the 10th Annual Offshore Technology Conference, May 8-11, 1978. Raytheon Company.

LOBECKER, R. N., et al., "Real Time Oceanographic Data From Georges Bank". Raytheon Company, 1978.

41. TEXAS INSTRUMENTS, INC.

41.1. Identification of the User

41.1.1. Name and Address

Texas Instruments, Incorporated
P.O. Box 226015
Dallas, Texas 75266

41.1.2. Contact

Mr. Tom Brophy
(Same address as above)

(214)424-9511 X2265

FTS 749-1011

41.1.3. Type of Organization

Private company

41.1.4. Funding Organization

NOAA Data Buoy Office
U.S. Department of Commerce

41.2. General Program Description

Texas Instruments, Inc. (TI) is under contract with NOAA Data Buoy Office (NDBO) to integrate, test at sea, and evaluate a Current Measurement System (CMS) to provide ocean current data in near real time. To accomplish this work, the contract provides for TI to install dial-up communications equipment and software in our plant in Plano (Dallas), Texas, to receive and process test data from a buoy-installed GFE GOES Data Collection Platform (GDCP).

At the present time, a data buoy (06N11) has been delivered to TI for modifications, and NDBO has installed a GDCP which has been certified for use with the SMS/GOES system. The GDCP is presently providing meteorological data via SMS/GOES in special test (NDBOST) on channel 79 at minute 36 in the self-initiate mode. After our CMS is interfaced with the GDCP on or about January 1, 1979, the data frame will be expanded to include the current measurements. At that time we expect to begin system end-to-end checkout and operation under a multiple queue arrangement where TI will be assigned the primary user queue and NDBO the secondary.

The complete system will be deployed in the Gulf of Mexico on or about March 1, 1979, for a 10-month at-sea evaluation. In June 1979, a receiver will be installed in the GDCP to provide command capability, and TI plans to periodically request commands be sent to the buoy to evaluate system operational features.

41.3. Features of the Program

41.3.1. Type of Program

Research and Development

41.3.2. Start of Program

February, 1979

41.3.3. Type of Data Collected

Oceanographic Test Data

41.3.4. Parameters Measured

Ocean Current

41.3.5. Data Retrieval

Dial-up to NESS will be the method used for obtaining the collected data.

41.4. Data Collection Platform Information

41.4.1. Number and Type

One interrogation type DCP

41.4.2. Special Operating Features

None

41.4.3. Location of DCP's

The test buoy will be evaluated at sea in the Gulf of Mexico for a 10-month period.

41.5. Future Plans

This contract effort does not call for any plans beyond a one-year period.

42. TRANSCANADA PIPELINES

42.1. Identification of the User

42.1.1. Name and Address

TransCanada PipeLines Limited
P. O. Box 54
Commerce Court West
Toronto, Canada M5L 1C2

42.1.2. Contact

Mr. L. M. Etchegary
(same address as above)

(416)869-2111

42.1.3. Type of Organization

Private Company

42.1.4. Funding Organization

TransCanada PipeLines Limited

42.2. General Program Description

TransCanada PipeLines Limited has implemented an experimental GOES DCP station for the purpose of obtaining engineering data to assist in the design of an Arctic Port Facility. This port will support the operation of Liquefied Natural Gas (LNG) ice breaking carriers. This port will be in the Ellef Ringnes Island region which has several large natural gas fields. This area has no weather station within 250 miles. The National Weather Service also has requirements for this data.

42.3. Features of the Program

42.3.1. Type of Program

Experimental

42.3.2. Start of Program

May, 1979

42.3.3. Type of Data Collected

Meteorology

42.3.4. Parameters Measured

Ambient Temperature
Wind Speed
Wind Direction

42.3.5. Data Retrieval

The data are forwarded to the NWS for passing to the Atmospheric Environment Service in Toronto, Canada.

42.4. Data Collection Platform Information

42.4.1. Number and Type

One self-time DCP is used.

42.4.2. Special Operating Features

None

42.4.3. Location of DCP's

The unit is located on Ellef Ringnes Island in the Northwest Territories. 78°13'North, 101°00'West

42.5. Future Plans

The plans call for the present station to be replaced in 1985 by a complete meteorological station.

43. UNIVERSITY OF CALIFORNIA DEPARTMENT OF GEOGRAPHY

43.1. Identification of the User

43.1.1. Name and Address

Southern Sierra Snowmelt Project
Geography Department
University of California
Santa Barbara, California 93106

43.1.2. Contact

Dr. Jeff Dozier
(Same address as above)

(805)961-2309

43.1.3. Type of Organization

University

43.1.4. Funding Organization

This project is funded by NASA and NOAA.

43.2. General Program Description

The data from the DCP are used to measure the parameters necessary to drive an energy budget snowmelt model and to calibrate atmospheric corrections for remote sensing. These efforts are directed toward improving runoff forecasts for the southern Sierra snowpack.

43.3. Features of the Program

43.3.1. Type of Program

Experimental

43.3.2. Start of Program

Fall, 1978

43.3.3. Type of Data Collected

Micrometeorology
Hydrology

43.3.4. Parameters Measured

Variables to be measured are:

Solar radiation in 280-2800 nm and 700-2800 nm bands
long-wave radiation (4000-50,000 nm),
Air Temperature
Relative Humidity
Wind Speed
Snow/Soil Interface Temperature

43.3.5. Data Retrieval

The collected data are delivered over dial-in circuits from NESS to the PDP 11/45 computer located in the Computer Systems Laboratory.

43.4. Data Collection Platform Information

43.4.1. Number and Type

One self-time DCP is used for this program.

43.4.2. Special Operating Features

None

43.4.3. Location of DCP's

The DCP is located on Charlotte Ridge in the Kings River drainage, between Bullfrog Lake and Charlotte Lake, at an elevation of 10,900 feet, latitude 36° 46'N, 118° 25'W.

43.5. Future Plans

This program will continue for two more years.

43.6. Bibliography

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44. UNIVERSITY OF CALIFORNIA LAWRENCE LIVERMORE LABORATORY

44.1. Identification of the User

44.1.1. Name and Address

Lawrence Livermore Laboratory
Biomedical & Environmental Sciences Divisions
University of California
P.O. Box 5507
Livermore, California 94550

44.1.2. Contact

Bruce Clegg
(Same address as above)

Principal Investigator: William Robison

44.1.3. Type of Organization

University

44.1.4. Funding Organization

This program is funded by the Department of Energy and the Department of Defense.

44.2. General Program Description

This program calls for the use of GOES DCP's in the Marshall Island Radiological Survey. The DCP's will collect environmental data that will assist in the prediction of the fate of radionuclides in the Atoll ecosystem. Specifically, the data will permit the characterization of coralline hydrology and consequently, the fate of water-borne radionuclides. The collection will not be in a standard format; however, the data will be available after conversion to engineering units by LLL computers.

44.3. Features of the Program

44.3.1. Type of Program

Experimental

44.3.2. Start of Program

Summer, 1979

44.3.3. Type of Data Collected

Meteorology

44.3.4. Parameters Measured

Wind Speed and Direction	32 Soil Moisture Readings (conductivity process)
Air and Soil Temperatures	Cummulative and Instantaneous Solar Radiation
Evaporation Pan Level	Rain-Water Conductivity
Rain Gauge Accumulation	

44.3.5. Data Retrieval

Data are obtained by dial-in to NESS on a 1200 baud circuit.

44.4. Data Collection Platform Information

44.4.1. Number and Type

Two self-timed DCP's will be used.

44.4.2. Special Operating Features

None

44.4.3. Location of DCP's

The Enewetak Atoll DCP will be located at Engebi Island (11° 39.9N, 162° 14.5'E) and the Bikini Atoll DCP at Enyu Island (11° 31.0'N, 165° 33.5'E) during the period of July 1979 through August 1981. Once every six hours, 108, 8-bit ASCII bytes, data transmissions are planned by each DCP.

44.5. Future Plans

The two DCP's will be operated through August, 1981.

(Continued from inside front cover)

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NOAA SCIENTIFIC AND TECHNICAL PUBLICATIONS

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