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Research Bulletin

Route to:

A Publication from INPUT's Federal Information Technology Market Program

Agency Profile—National Oceanic and Atmospheric Administration

Mission

It is the mission of the National Oceanic and Atmospheric Administration to explore, map, and chart the global ocean and its living resources. It oversees conservation of ocean resources and assesses the consequences of environmental developments over time. Further, NOAA describes, monitors, and predicts conditions in the atmosphere, ocean, sun, and space environment, and issues warnings against impending destructive natural events.

Organization

The National Oceanic and Atmospheric Administration falls within the Department of Commerce. The Administration is directed by the Under Secretary and Administrator whose headquarters office is located in Washington D.C. Roughly 30% of the NOAA's 15,000 employees are located in the headquarters location. Exhibit 1 shows the organizational structure of the Administration.

Program Activities

a. National Ocean Service - Responsibilities of this program include navigation management,

environmental assessment, and natural resources management for the global oceans and the Nation's coasts.

b. National Marine Fisheries Service - Provides for the management and conservation of the Nation's living marine resources and their environment.

c. Oceanic and Atmospheric Research - Provides for the development of understanding and approaches to improve NOAA services, environmental systems, and use of oceanic resources.

d. National Weather Service - Provides timely and accurate meteorological, hydrological, and oceanographic warning, forecasts, and planning information to ensure the safety of the population, mitigate property losses, and improve economic efficiency of the Nation.

e. National Environmental Satellite, Data, and Information Service - Provides global environmental data and information products and services to users in commerce, industry, agriculture, science and engineering, the public, and regional governments through various satellite operations.

Exhibit 1

National Oceanic and Atmospheric Administration Organizational Chart

Staff Functions

Administration Staff Offices

Comptroller

Public Affairs

General Counsel

External Affairs

Regional Administrative Support Centers

I. Central: Kansas City, Missouri

II. Eastern: Norfolk, Virginia

III. Mountain: Boulder, Colorado

IV. Western: Seattle, Washington

Program Offices

- National Weather Service

I. Headquarters: Silver Spring, Maryland

II. Alaska Region: Anchorage, Alaska

III. Central Region: Kansas City, Missouri

IV. Eastern Region: Bohemia, New York

V. National Meteorological Center:
Camp Springs, Maryland

VI. Pacific Region: Honolulu, Hawaii

VII. Southern Region: Fort Worth, Texas

VIII. Western Region: Salt Lake City, Utah

- National Marine Fisheries

I. Headquarters: Silver Spring, Maryland

II. Alaska Region: Juneau, Alaska

III. Northwest Region: Seattle, Washington

IV. Northeast Region: Gloucester, Massachusetts

V. Southeast Region: Saint Petersburg, Florida

VI. Southwest Region: Long Beach, California

Source: Government Manual, INPUT

Exhibit 1 (Cont.)

National Oceanic and Atmospheric Administration Organizational Chart

Program Offices

- | | |
|--|---|
| - National Environmental Satellite Data, and Information Service | <ul style="list-style-type: none"> I. Headquarters: Camp Springs, Maryland II. National Climatic Data Center: Asheville, North Carolina III. National Geophysical Data Center: Boulder, Colorado IV. National Oceanographic Data Center: Washington, DC |
| - National Ocean Service | <ul style="list-style-type: none"> I. Headquarters: Silver Spring, Maryland II. Alaska Region: Anchorage, Alaska III. Pacific Region: Seattle, Washington IV. Key Largo National Marine Sanctuary: Miami, Florida V. Other Sanctuaries: Washington, DC |
| - Office of Oceanic and Atmospheric Research | <ul style="list-style-type: none"> I. Headquarters: Silver Spring, Maryland II. Atlantic Oceanographic and Meteorological Laboratory: Miami, Florida III. Geophysical Fluid Dynamics Laboratory: Princeton, New Jersey IV. Great Lakes Environmental Research Laboratory: Ann Arbor, Michigan V. Pacific Marine Environmental Research Laboratory: Seattle, Washington VI. National Severe Storms Laboratory: Norman, Oklahoma VII. Environmental Research Laboratories: Boulder, Colorado |
| - National Corps Operations Centers | <ul style="list-style-type: none"> I. Atlantic Marine Center: Norfolk, Virginia II. Commissioned Personnel Center: Rockville, Maryland III. Pacific Marine Center: Seattle, Washington |

Source: Government Manual, INPUT

f. Program Support - Provides overall NOAA management and administration as well as the operational and logistics support of ships, marine centers, and aircraft supporting NOAA missions.

Program Budget

Overall program budgets (other than IT budget) shows a decrease in anticipated spending in FY 1994 after an increase for FY 1993, as reported in last year's Budget of the United States Government (Exhibit 2). Reduction in program support has been continuous for the three-year period and is felt across all other program areas. Major spending anticipated for National Weather Service satellite upgrades in FY 1993 is continuing in FY 1994 with only a slight decrease.

Information Technology Budget

While program operations budget levels are down for FY 1994, overall information technology budgets are expected to increase steadily through FY 1998 (Exhibit 3). Commercial services budgets represent the largest growth through FY 1998.

Major Information Technology Acquisition Plans

The following top program activities have been identified by INPUT through agency planning documents and information technology budget submissions.

a. Advanced Weather Interactive Processing System for the 1990s - Provides for the development of AWIPS to replace the current

Exhibit 2

National Oceanic and Atmospheric Administration Program Budgets

Program	\$ Thousands		
	FY92 Actual	FY93 Est.	FY94 Est.
National Oceanic Service	157,881	184,272	148,826
National Marine Fisheries Service	219,191	238,081	148,043
Oceanic and Atmospheric Research	211,386	207,667	188,497
National Weather Service	453,605	553,798	546,510
National Environmental Satellite, Data and Information Service	355,481	358,122	352,973
Program Support	150,174	147,321	145,109

Source: Budget of the United States Government: Fiscal Year 1994, April 8, 1993.

Exhibit 3

NOAA Information Technology Budget

	\$ Millions					
	FY1993	FY1994	FY1995	FY1996	FY1997	FY1998
<u>Capital Investments</u>						
Purchase of Hardware	58.7	85.3	88.1	91.1	94.4	97.8
Purchase of Software	10.0	8.8	9.4	10.0	10.4	10.7
Site or Facility	3.5	5.0	5.0	5.1	5.3	5.5
Personnel	55.9	62.7	61.7	60.1	59.0	57.2
<u>Equipment Rental, Space, and other Operating Costs</u>						
Lease of Equipment	6.9	9.5	9.6	9.8	10.0	10.3
Lease of Software	2.6	2.9	2.7	2.6	2.5	2.3
Space	2.4	2.7	2.7	2.8	2.8	2.8
Supplies & Other	6.0	6.6	7.2	7.8	8.2	8.2
<u>Commercial Services</u>						
ADPE Time	1.0	.7	.7	.7	.6	.6
Leased Voice Telecom	9.3	10.4	12.6	15.2	17.9	21.0
Leased Data Telecom	16.6	20.1	20.6	21.2	22.5	24.1
Operations & Maintenance	25.4	31.8	31.9	32.3	33.1	34.2
Systems Anal/Prog./Dsgn./Eng.	57.6	76.7	85.3	92.1	100.0	108.0
Studies & Other	5.6	7.0	6.3	6.3	6.2	6.1
Significant Use of Info Tech	1.5	2.2	2.4	2.7	3.1	3.5
Total Obligations	263.1	332.4	346.5	360.0	375.8	392.2

Source: NOAA, INPUT

Automation of Field Operations and Services System (AFOS).

b. Earth Systems Data and Information Management - Provides for the development and implementation of a system to process, store, and manage access and distribution of NOAA's global observation products and data.

c. Information Technology Systems Requirements for the NWS/MNC FB4 Computer Facility - Provides system enhancements and operational maintenance of the NWS/MNC FB4 Computer Facility.

d. Polar Satellite Ground System - Provides a Polar Satellite Ground System to: command, control, and monitor the orbiting spacecraft; acquire instrument data from the satellite; and distribute the data to processing centers.

e. Telecommunications Requirements for the National Weather Service - Will upgrade, lease, and maintain NWS telecommunications system.

f. Information Technology Upgrade (IT-95) - Provides the National Marine Fisheries Service with hardware, peripherals, software, training, maintenance, and other services to replace and upgrade the existing computer systems used for mission support.

g. Satellite Information Processing System - Provides operations and maintenance support, systems enhancements and upgrades to serve the ongoing requirements of the Meteorological Satellite Data Processing Services Subsystem.

h. Next Generation Weather Radar Depot Maintenance (NEXRAD) - Will increase the repair capacity and capability for support of new radars.

i. Geostationary Ground System (GOES) - GOES will provide system refurbishment, product production facilities, system operation and control, and support systems.

j. Class IV Computing Requirements for the GFDL Facility - Provides for the acquisition of supplies and services to support the Class IV computer lease.

k. Weather Surveillance Radar 1988 Doppler (WSR-88D) Operational Support Facility - Provides telecommunications and ADP support for operation of WSR-88D systems.

INPUT's Procurement Analysis Reports (PAR) program currently tracks 11 active program contracts. Exhibit 4 identifies these programs and their status.

Current Issues at NOAA

1. NOAA plans to spend an estimated \$4.6 billion on its modernization of observational, information processing, and communications systems over a ten-year period. The central system in this upgrade is the Advanced Weather Interactive Processing Systems. AWIPS alone would cost the agency about \$467 million. Delays in implementing this upgrade and escalating costs have caused serious concerns with the Congress. A General Accounting Office report identified potential risks: unclear definition of the responsibilities of NOAA and its contractor; vague specifications for data portability; unstructured approach to software development; the lack of configuration management plan for NOAA-developed software; and NOAA's involvement in testing.

2. NOAA has signed a five-year, \$46 million lease agreement with Cray Research Inc. for the installation and maintenance of a Cray C90 supercomputer for its National Meteorological Center in Suitland, MD. The agency has decided to lease the new Cray because of financial considerations based on the belief that after five years the residual value of the processor if purchased would be zero.

3. The new Deputy Undersecretary of Commerce for Oceans and Atmosphere is in

Exhibit 4

NOAA Contracts

Program	Type	Status	Size	Comment
1. Next Generation Weather Radar Program Support (NEXRAD)	Prof. Svcs. Hardware	Award'd	\$800m 10 yrs.	Unisys provides design, development, & demonstration of hardware & software to modernize the existing weather system.
2. Advanced Weather Interactive Processing System (AWIPS-90)	H/W, S/W Prof. Svcs.	Award'd	\$226m 10 yrs.	Will provide a nationwide system that will analyze & forecast local weather conditions. PRC is the contractor.
3. Information Technology Upgrade (IT-95) for NMFS	Communication Hardware & Prof. Svcs.	Award'd	\$13m 6 yrs.	Will provide hardware, software, & telecomm equipment for a nationwide network.
4. Systems Engineering & Technical Assistance	Prof. Svcs.	Selec. 9 yrs.	TBD	Provides SETA services to ASOS, AWIPS-90, NEXRAD, GOES, & others.
5. World Area System Forecast	Commun. Svcs.	Selec.	TBD 5 yrs.	Will provide NWS with satellite communications services.
6. Front end Processor System	Hardware	Selec.	TBD 5 yrs.	Will provide NESDIS with data processing capabilities for environmental data.
7. Fleet Replacement and Modernization (FRAM)	Hardware	Pre RFP	\$1.5b 15 yrs.	NOAA will modernize its vessel research fleet. This includes new ships and hi-tech oceanographic instrumentation. Will be procured through several contracts.
8. Engineering and Technical Support Services for FRAM	Prof. Svcs.	Award'd	\$4m 5 yrs.	Will provide engineering and technical support services for the NOAA Corps Operations Office in support of the FRAM. The contractor is RCL.
9. Large Scale Scientific Computing	Supercomputer Prof. Svcs.	Award'd	\$46m 5 yrs.	Cray Research will provide the National Meteorological Center with a Class VII computer system
10. Earth Systems Data and Information Management	Prof. Svcs.	Award'd	\$141m 5 yrs.	Will develop systems to manage NOAA's global observational data
11. National Climatic Data Center (NCDC)	Facil. Mgmt.	Award'd	\$23m 5 yrs.	The NCDC collects and stores national weather and climate data generated from NOAA. Services are provided by The Orkand Corp.

Source: INPUT

charge of all main NOAA departments, including advanced systems such as AWIPS and NEXRAD. Diana Josephson had been in charge of business development activities related to earth-orbiting spacecraft for one of NOAA's contractors. Previously, she served as deputy assistant administrator for policy and planning at the NOAA. In her new post she will oversee the modernization of the National Weather Service's systems and will participate in the High-Performance Computing and Communications and National Information Infrastructure initiatives.

4. The basis for the modernization effort at NOAA is that the agency is more than 20 years old and much of its information technology is antiquated. The National Weather Service is the most significant part of these efforts. The service is replacing old radar and automating surface observing systems. Meteorologists now access radar, satellite, and surface data from workstations that visualize the data. NOAA is focusing on network interoperability and connectivity, enterprisewide networks, open systems and high-performance computing. Data management remains its greatest challenge as the volume of incoming data continues to increase dramatically. The agency cannot risk losing this valuable data to technologies that promise favorable storage and retrieval benefits but have not been thoroughly tested in the field.

5. NOAA's National Marine Fisheries Service is using an innovative image analysis application to find and identify endangered marine life. The system, attached to an airplane, tracks territorial ranges and calculates

population changes so that the service can better protect endangered species. Digitized images are analyzed for things such as size and location. The system separates different species by highlighting identifying marks on their bodies.

This Research Bulletin is issued as part of INPUT's Federal Information Technology Market Program for the information services industry. If you have questions or comments on this bulletin, please call your local INPUT organization or Bob Deller at INPUT, 1953 Gallows Road, Suite 560, Vienna, VA 22182, Telephone (703) 847-6870, Fax (703) 847-6872.