THE FEDERAL PLAN FOR METEOROLOGICAL SERVICES AND SUPPORTING RESEARCH
FISCAL YEAR 2001
EXECUTIVE SUMMARY

For Fiscal Year (FY) 2001, the President's budget requests $2.68 billion for meteorological services and supporting research. Of the total requested, $2.24 billion is designated for operations and $436 million for supporting research. Table ES-1 lists a breakout of the FY 2001 budget proposal.

As in previous years, 91 percent of the total requested funds will go to the Departments of Commerce (DOC), Defense (DOD), and Transportation (DOT). The distribution among these three departments is DOC 53.7 percent, DOD 19.8 percent, and DOT 17.4 percent. The other federal agencies will share the remaining 8.9 percent.

In comparison to the $2.5 billion appropriated in FY 2000, the FY 2001 request represents an increase of 7.2 percent. The three major departments request increases of 8.3 percent for DOC, 11.6 percent for DOD, and 5.2 percent for DOT. The DOC increase is attributable to requests for increase by NWS, NESDIS, and OAR. The DOD increases are attributable to DMSP--46.9 percent in DMSP operations and 19.6 percent in supporting research; Army systems acquisition--37.4 percent increase and an Army offset (decrease) of 18.1 percent in supporting research. DOT's increase is mainly associated with FAA supporting research request.

The budget requests for the other departments are as follows: Department of the Interior (DOI), Department of Agriculture (USDA), and Environmental Protection Agency (EPA) no change; National Aeronautics and Space Administration (NASA) a decrease of 4.0 percent; and Nuclear Regulatory Commission (NRC) a decrease of 35 percent.

Figure ES-1 depicts each agency's proportion of the requested FY 2001 federal budget for meteorological operations and supporting research. Each agency's portion of the requested funding for meteorological operations is shown in Figure ES-2. Of the $2.24 billion requested for meteorological operations, DOC, DOD, and DOT account for slightly over 99 percent of the funds. Overall, operational costs increased by 8.7 percent.

Table ES-1. Federal Budget for Meteorological Operations and Supporting Research, FY 2001 (in thousands of dollars)

Agency	Operations	% of TOTAL	Supporting Research	% of TOTAL	TOTAL	% of TOTAL
Agriculture	$12,600	0.6	$15,500	3.6	28,100	1.0
Commerce	1,349,401	60.2	92,599	21.2	1,442,000	53.7
Defense	440,610	19.7	90,505	20.8	531,115	19.8
Interior	1,100	0.0	0	0.0	1,100	0.0
Transportation	433,242	19.3	32,342	7.4	465,584	17.4
EPA	0	0.0	6,400	1.5	6,400	0.2
NASA	3,960	0.2	198,650	45.6	202,610	7.6
NRC	117	0.0	0	0.0	117	0.0
TOTAL	2,241,030	100.0	435,996	100.0	2,677,026	100.0

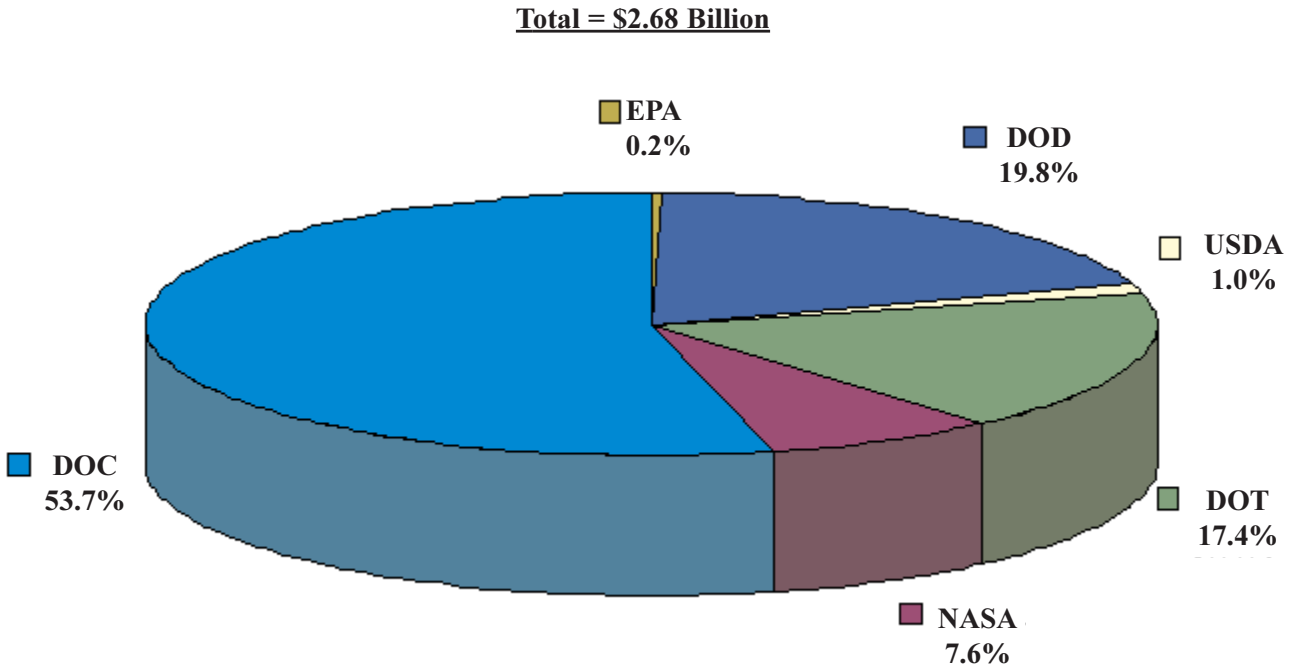

Figure ES-1. Agency Percent of Total Federal Budget for Meteorological Operations and Supporting Research, FY 2001.

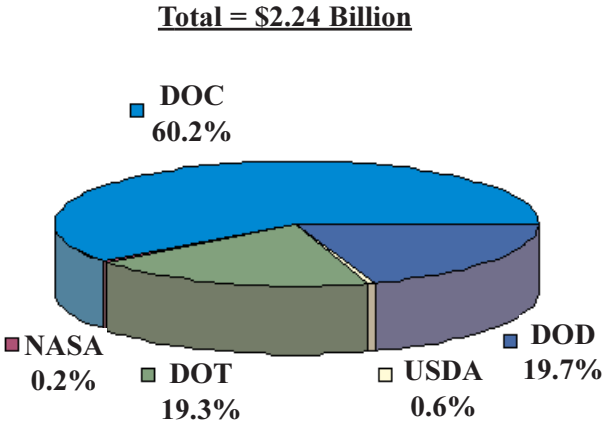

Figure ES-2. Agency Percent of Federal Budget for Meteorological Operations, FY 2001

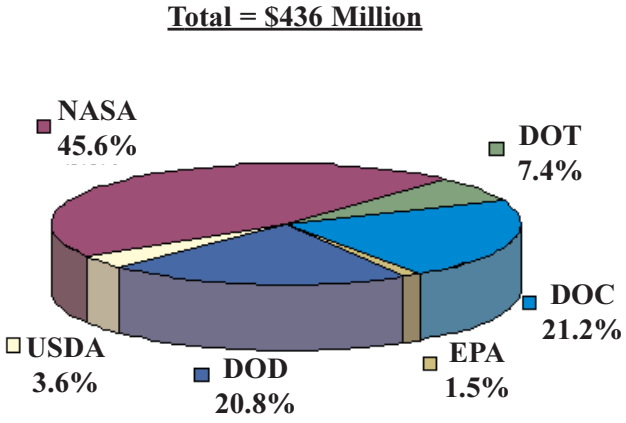

Figure ES-3. Agency Percent of Federal Budget for Supporting Research, FY 2001

Figure ES-3 depicts each agency's portion of the proposed federal supporting research budget. Unlike operations, DOC, DOD, and NASA account for the major share (87.6 percent) of the supporting research budget. Requests for increases in supporting research funds are: DOC 4.6 percent and DOT 26.5 percent. The DOD and NASA requests for supporting research funds decreases by 1.1 and 4.1 percent, respectively.

All agencies project a personnel total of 14,492 full-time equivalent (FTE) to be employed in federal meteorological operations in FY 2001. This figure represents a decrease of less than 1 percent from the 14,503 FTE employed in FY 2000.

MAJOR PROGRAMS--DOC, DOD, and DOT

Next Generation Weather Radar (NEXRAD). The NEXRAD Program which began in FY 1981 was responsible for procurement, installation, and operation of the Weather Surveillance Radar-1988 Doppler (WSR-88D). The first limited production WSR-88D system was installed at Oklahoma City, Oklahoma in May 1990 and commissioned 4 years later in February 1994. The original program plan called for a total of 161 radars. In response to a National Research Council report, three additional radars were added and raised the total to 164 radar sites. The last system in the basic procurement schedule was installed in June 1996.

By agency, as of June 2000, the DOC/National Weather Service had commissioned 123 sites, the DOD (USAF and Army) had commissioned 31 sites (within the states and overseas), and the DOT/FAA had commissioned 12 sites. DOD has three systems at Keesler AFB, Mississippi, for training; DOC/NWS has one each at the National Reconditioning Center, and NWS Training Center in Kansas City, Missouri and at the Operational Support Facility, Oklahoma City, Oklahoma.

Automated Surface Observing System (ASOS). The ASOS program, began in 1983, as a joint development effort between the DOC, DOD, and DOT/FAA. Installation of ASOS units started in 1991. As of June 2000, a total of 994 units have been purchased. The NWS has purchased, accepted, and commissioned 314 sites. The FAA has purchased 569 units, accepted 567 units, and commissioned 454 sites. The Navy has purchased, accepted, and commissioned 77 sites. The Air Force has purchased, accepted, and commissioned 34 sites. Collectively, a total of 879 ASOS sites have been commissioned.

Automated Weather Information Systems (AWIS). The DOC, DOD, and DOT require AWISs to facilitate the collection, processing, and interpretation of meteorological data. AWISs are being procured to provide an automated, high-speed, user-friendly man/machine interface to access and process large volumes of sophisticated meteorological data. AWIS supports the timely production of accurate and geographically precise warnings, forecasts, and special tailored products. They also provide the communications capability for expeditious product dissemination.

Major agency systems classified as AWISs are: NOAA's Advanced Weather Interactive Processing System (AWIPS), FAA's Weather and Radar Processor (WARP); Air Force's New-Tactical Forecasts System (N-TFS) and Operational Weather Squadron Production System, Phase 2 (OPS-II); and Navy's Naval Integrated Tactical Environmental Subsystem (NITES).

In February 1997, the Secretary of Commerce approved the limited deployment of AWIPS. This decision authorized NOAA to procure and deploy 21 systems. The group of 21 limited deployment systems were installed in November 1997 through March 1998. A second group of 19 limited deployment systems were installed in June through August 1998. On April 9, 1998, the Secretary authorized full scale production and deployment of AWIPS, through Build 4.2, for the remaining 95 systems. Installation of these 95 systems began in September 1998 and was completed in June 1999. An Operational Test and Evaluation of the commissioning software (Build 4.2) was successfully conducted from mid-May through June 1999. AWIPS commissioning began in January 2000 and, as of June 2000, NWS had commissioned 141 AWIPS systems located at 121 Weather Forecast Offices (WFOs), 13 River Forecast Centers (RFCs), and 7 national centers.

The FAA's Weather and Radar Processor (WARP) will greatly enhance the dissemination of aviation weather information throughout the NAS. WARP will automatically create unique regional, WSR-88D-based, mosaic products and send these products, along with other time-critical weather information, to controllers through the Advanced Automation System (AAS) as well as to pilots via the aeronautical data link.

The Air Force is modernizing and improving strategic, operational, and combat level systems. Modernization programs include the Observing System 21st Century (OS-21), N-TFS, OPS-II, Tactical Weather Radar, and Small Tactical Terminal which provides a single system for both garrison and deployed operations. These systems will replace AWDS and serve as an in-garrison system as well as a deployable "first-in" combat weather forecast capability. OS-21 will provide a much needed state-of-the-art life-cycle replacement for Air Force observing equipment. OS-21 includes five different configurations: fixed, deployable, remote, manual, and upper air. The manual section is intended for tactical operations and will continue upgrades begun under the Manual Observing System and Tactical

Meteorological Observing System modification programs. The Air Force purchased commercial off-the-shelf remote miniature weather sensors to provide accurate real-time weather information from forward unmanned locations to support Kosovo operations. OS-21 will continue to expand this capability.

The Navy continues procurement or upgrades of the five subsystems to the Naval Integrated Tactical Environmental System (NITES). These subsystems include: NITES I – Tactical Environmental Support System (TESS/NC), NITES II - Joint TESS Remote Workstation (J-TRWS) and Joint METOC Segment (JMS), NITES III - METOC Integrated Data Display System (MIDDS), NITES IV - Interim Mobile Oceanography Support System (I-MOSS), and NITES V - Allied Environmental Support System (AESS).

OTHER AGENCY PROGRAMS

For FY 2001, the Department of Agriculture (USDA) requested $28.1 million for meteorological operations ($12.6 million) and supporting research ($15.5 million). Operationally, the USDA supports specialized weather observation networks and also conducts an active supporting research program to ensure an abundance of high-quality agricultural commodities while minimizing the adverse effects of agriculture on the environment. Under supporting research, USDA focuses on the interactions of weather and climate with plant and animal production and water resources management.

The Department of the Interior's (DOI) FY 2001 request is $1.1 million primarily to support the Bureau of Land Management's remote automatic weather station (RAWS) program.

The budget request for the Environmental Protection Agency (EPA) remains level at $6.4 million to provide user-appropriate and scientifically credible air-quality meteorological programs to support regulatory applications.

Nearly all of NASA's funding in meteorology is for supporting research. The requested funding for supporting research in FY 2001 is $163 million, which is nearly 5 percent lower than the FY 2000 funding level. These funding levels are composed of the estimated meteorology share of the supporting research and analysis programs as well as Earth Observing System (EOS) and Earth Probe instruments, EOS science, and the EOS Data Information System elements of the NASA Office of Earth Science budget. Included in NASA's request is $35.25 million for special programs under the category of aviation weather supporting research.

The Nuclear Regulatory Commission's (NRC) request for $117,000 is mainly for operations. The NRC will dedicate these funds to obtain and analyze meteorological data and information related to the safe operation of nuclear facilities, and the protection of the environment, public health, and safety.

FEDERAL COORDINATION ACTIVITIES

Natural Disaster Reduction-OFCM hosted the 54th Interdepartmental Hurricane Conference, February 14-18, 2000 in Houston, Texas, to review the nation's hurricane forecast and warning program and to recommend program improvements. Houston, Texas was chosen to commemorate the 100th anniversary of the 1900 hurricane which devastated the Galveston/Houston area. The theme for the conference was "*20th Century Highlights and Prospects for the Future*". An important objective of the conference was to more closely link hurricane operations with ongoing research efforts. A ceremony commemorating the 1900 storm was planned in conjunction with the Galveston Historical Foundation and hosted by the Honorable Roger Quiroga, Mayor of Galveston, on Thursday afternoon, February 17, 2000.

Weather Information for Surface Transportation. The OFCM and Department of Transportation Federal Highway Administration (FHWA) co-sponsored "*Symposium on Weather Information for Surface Transportation: Delivering Improved Safety and Efficiency for Tomorrow*" was held November 30-December 2, 1999, at the Holiday Inn, Silver Spring, Maryland. This first event of its kind was attended by more than 120 individuals. Keynote speakers were Dr. Stephen Van Beek, Associate Deputy Secretary of Transportation, and Dr. D. James Baker, Under Secretary of Commerce for Oceans and Atmosphere. The goal of the symposium was to establish the national needs and requirements for weather information. An initial draft of a requirements document will be completed Fall 2000.

Aviation Weather Forum. The OFCM and Department of Transportation Federal Aviation Administration (FAA) co-sponsored user forum "*Aviation Weather: Opportunities for Implementation*" was held July 25-26, 2000, at the Bethesda Ramada Hotel and Conference Center, Bethesda, Maryland. The forum brought together key government agency representatives, as well as a cross section of professionals representing commercial, business, and general aviation. Keynote speakers were Mr. Peter H. Challan, Deputy Associate Administrator for Air Traffic Services, FAA, and Mr. Scott B. Gudes, Deputy Under Secretary for Oceans and Atmosphere, Department of Commerce. The goal of the forum was to highlight work accomplished, identify opportunities for immediate or near-term implementation, and assess

where user and industry efforts are helping government agencies achieve the National Aviation Weather Program objectives.

Workshop on Multiscale Atmospheric Dispersion Modeling within the Federal Community. The OFCM sponsored "*Workshop on Multiscale Atmospheric Dispersion Modeling within the Federal Community*" was held June 6-8, 2000, at the Town Center Hotel, Silver Spring, Maryland. The workshop was attended by over fifty participants who represented nine federal agencies involved in dispersion modeling. The goal of the workshop was to bring users and developers of dispersion models together to improve the coordination in the development and operational use of dispersion models. This workshop provided an opportunity to assess the current state of dispersion modeling and to identify barriers that need to be overcome in order to meet the wide range of requirements.

Space Weather. During FY 2000, OFCM space weather groups prepared a second edition of the *National Space Weather Program Implementation Plan*. It was developed concurrently with the National Security Space Architect's Space Weather Architecture and describes the linkage to and incorporation of that architecture into the National Space Weather Program. It also builds on the previous Implementation Plan and reports on the significant accomplishments in research, operations, technology transition, education, and outreach. The Plan also updates the program's timelines and offers specific recommendations to carry the program forward.

National Hurricane Conference. OFCM worked with the National Weather Service to organize a panel on "*Improving Public Response to Hurricane Warnings*" for the April 17-21, 2000, National Hurricane Conference in New Orleans, Louisiana. The purpose of the panel was to elicit suggestions from the panel members and the conference attendees on how to improve public response. The panel encouraged cross-cutting participation by several conference groups (meteorology, emergency management, universities, media, Red Cross, insurance companies, etc.). Dr. D. James Baker, Under Secretary of Commerce for Oceans and Atmosphere, was a keynote speaker for the National Hurricane Conference.

National Research Council/National Academy of Sciences. The first joint meeting between the Federal Committee for Meteorological Services and Supporting Research (FCMSSR) and National Research Council National Academy of Sciences Board on Atmospheric Sciences and Climate (BASC) was held October 25, 1999, at the National Academy of Sciences Main Building on Constitution Avenue, Washington, District of Columbia. The meeting was co-chaired by Dr. D. James Baker, Under Secretary of Commerce for Oceans and Atmosphere and FCMSSR Chairman, and Dr. Eric J. Baron, Professor at Pennsylvania State University and Co-chair of BASC. The meeting provided an opportunity to strengthen ties between the federal meteorological community, academia, and the private sector. Actions are being worked on and will be reported at the upcoming November 14, 2000, FCMSSR meeting, which will be attended by the Co-chair and Director of BASC.

BASC 21st Century Report Recommendation--A Strategy for Atmospheric Information. OFCM is planning a workshop to respond to and address Leadership and Management Recommendation 1 of the BASC report *The Atmospheric Sciences Entering the Twenty-First Century.* Important issues include: What criteria should govern the design of an optimal atmospheric information system? Should the government seek to recover costs of observations from the public by mechanisms other than taxes? Who is to be responsible for forecasts for critical activities such as agriculture and aviation? Should federal agencies be responsible for supporting research to improve forecasts for such critical activities? What is the appropriate role for academic research, both basic and applied, in such an evolving weather information system, and how should such research be supported so that it remains vigorous and contributes to national goals?

Committee on Environment and Natural Resources. OFCM continued to develop its interactions with the Committee on Environment and Natural Resources (CENR) Subcommittee on Natural Disaster Reduction (SNDR). OFCM and SNDR will co-sponsor a workshop on Risk Assessment and Cost-Benefit Analysis in late January or early February 2001. Also, regarding risk assessment, an OFCM senior meteorologist helped conduct a panel session on risk assessment for natural disasters at the 25th Annual Hazards Research and Applications Workshop, July 9-12, 2000, in Boulder, Colorado. An OFCM senior meteorologist will also serve on a two day focus group September 28-29, 2000, at FEMA's Emergency Management Institute in Emmitsburg, Maryland, to develop a classroom based, upper division college course on "Hazards Risk Assessment."

Department of Energy Meteorological Coordinating Council. OFCM continued its close liaison with the DOE Meteorological Coordinating Council (DMCC). OFCM plans to attend the joint meeting of the Subcommittee on Consequence Assessment and Protective Actions (SCAPA), the DMCC, and the Nuclear Utility Meteorological data User Group (NUMUG) in Las Vegas, Nevada, October 16-20, 2000. During the DMCC portion of the meeting,

OFCM will brief on OFCM activities, and results and actions from the OFCM sponsored "*Workshop on Multiscale Atmospheric Dispersion Modeling within the Federal Community*" which was held June 6-8, 2000, in Silver Spring, Maryland.

American Meteorological Society and *The Weather Channel* Forum. OFCM participated in the "*Workshop on Policy Issues in Hurricane Preparedness and Response*" developed by the Atmospheric Policy Program of the American Meteorological Society and sponsored by *The Weather Channel*, June 6-7, 2000, at The National Press Club, Washington, District of Columbia. The workshop considered the following question: What policy changes are needed to produce weather services, media communications, and emergency management decisions that will optimize hurricane preparedness and response? The opening address of the workshop was given by Dr. D. James Baker, Under Secretary of Commerce for Oceans and Atmosphere. An OFCM senior meteorologist briefed the forum on the recent National Hurricane Conference panel on Improving Public Response to Hurricane Warnings to assist the forum's deliberations concerning hurricane response.

American Meteorological Society. During FY 2000, OFCM joined eleven leading environmental science and service corporations in supporting undergraduate scholarships in the atmospheric and related oceanic and hydrologic sciences. The scholarships, awarded for the junior and senior years, are designed to encourage outstanding undergraduates to pursue careers in the fields covered by the awards. OFCM plans to continue this support in FY 2001. OFCM also supports American Meteorological Society endeavors by participating in AMS conferences and workshops and other environmental science education and outreach programs.

NATO Meeting. OFCM hosted a meeting of the NATO Military Committee Meteorological Group (MCMG) Working Group for Operations, Plans and Communications (OPC), June 27-30, 2000. MCMG is composed of national representatives and representatives of major NATO Commanders which provides meteorological policy guidance to the Military Committee, the major NATO Commanders, and the NATO nations. OPC addresses planning and operational issues for meteorological support to NATO exercises and operations and develops meteorological communications capabilities and standard procedures for communications and exchanging meteorological data.

Publications and OFCM's Website. The following plans and publications were prepared in hardcopy form and also placed on OFCM's website (*www.ofcm.gov*):

- *The Federal Plan for Meteorological Services and Supporting Research--FY 2000*
- *National Hurricane Operations Plan*
- *The National Space Weather Program: Implementation Plan (2nd Edition)*
- *54th Interdepartmental Hurricane Conference (Minutes)*
- *Proceedings for the Symposium "Weather Information for Surface Transportation: Delivering Improved Safety and Efficiency for Tomorrow"*
- *Proceedings of the "Workshop on Multiscale Atmospheric Dispersion Modeling within the Federal Community"*
- *Proceedings of the Aviation Weather User Forum "Aviation Weather: Opportunities for Implementation"*

The following documents are planned for publication during FY 2001:

- *National Plan for Post-Storm Data Acquisition*
- *A National Framework for Volcanic Ash Hazards to Aviation*
- *The Federal Plan for Meteorological Services and Supporting Research--FY 2001*
- *National Hurricane Operations Plan*
- *55th Interdepartmental Hurricane Conference (Minutes)*
- *Proceedings for 2nd Symposium on Weather Information for Surface Transportation*
- *Proceedings for Risk Assessment and Cost-Benefit Analysis Workshop*
- *Proceedings for Severe Local Weather Workshop*
- *Proceedings for Workshop on BASC 21st Century Report Recommendation--A Strategy for Atmospheric Information*

During FY 2000, OFCM continued to make substantial progress on its use of the Internet. In addition to information about the office, OFCM has placed its current publications on its website, and keeps the website current with information regarding workshops and symposia being conducted by the office. OFCM will continue to make information available on the Internet during FY 2001.