SECTION 3

RESOURCE INFORMATION AND AGENCY PROGRAM UPDATES

The tables in this section summarize fiscal information of the federal government for Fiscal Years (FY) 1996 and 1997. The funds shown are those used to provide meteorological services and associated supporting research that has as its immediate objective the improvement of these services. Fiscal data are current as of the end of June 1996 and are subject to later changes. The data for FY 1997 do not have legislative approval and do not constitute a commitment by the U.S. Government. The budget data are prepared in compliance with Section 304 of Public Law 87-843, in which Congress directed that an annual horizontal budget be prepared for meteorological programs conducted by the federal agencies.

AGENCY OBLIGATIONS FOR METEOROLOGICAL OPERATIONS AND SUPPORTING RESEARCH

Table 3.1 contains fiscal information, by agency, for meteorological operations and supporting research. The table shows the funding level for FY 1996 based on Congressional appropriations, the budget request for FY 1997, the percent change, and the individual agencies' percent of the total federal funding for FY 1996 and FY 1997.

DEPARTMENT OF AGRICULTURE (USDA)

The USDA budget request for FY 1997 is $27.57 million for operations and supporting research and represents a decrease from the requested FY 1996 funding level of $27.73 million. The USDA assists the Department of Commerce in determining farmers' needs for weather information and in disseminating the information to them. Major USDA activities related to weather observations include incremental modernization of the snow telemetry (SNOTEL) system operated by the Natural Resources Conservation Service (NRCS) and the replacement of manual fire rating stations with remote automated weather stations (RAWS) by the Forest Service. The SNOTEL and RAWS networks provide cooperative data for NOAA's river forecast activities, the irrigation water supply estimates, and Bureau of Land Management operations. The modernization of the RAWS completed the testing phase for acceptance in operations.

For supporting research, the USDA requests $15.47 million to focus on the interactions of weather and climate with plant and animal production and water resources management. The goal of supporting research is to develop and disseminate information and techniques to ensure an abundance of high-quality agricultural commodities and products while minimizing the adverse effects of agriculture on the environment. The research budget does not include the coordinated effort with EPA on ultraviolet radiation. The Forest Service supports a research program, initiated in 1988, for a long-term monitoring network to assess potential effects of global climate change and variability on forest health and productivity. Work also continues in forestry ecological systems modeling.

DEPARTMENT OF COMMERCE (DOC)

All reported DOC meteorological activities are within the National Oceanic and Atmospheric Administration (NOAA). The NOAA FY 1997 total congressional request of $1.31 billion for meteorological programs represents a 13.7 percent increase over the FY 1996 appropriated funds. NOAA's FY 1997 operations and supporting research requests for each of the major line office activities are described below:

TABLE 3.1 METEOROLOGICAL OPERATIONS AND SUPPORTING RESEARCH COSTS*, BY AGENCY

(Thousands of Dollars)

	Operations			% of FY97	Supporting Research			% of FY97	Total			% of FY96	% of FY97
AGENCY	FY96	FY97	%CHG	TOTAL	FY96	FY97	%CHG	TOTAL	FY96	FY97	%CHG	TOTAL	TOTAL
Agriculture	12003	12105	0.8	0.6	15727	15467	-1.7	4.2	27730	27572	-0.6	1.2	1.1
Commerce/NOAA	1069760	1230276	15.0	57.7	86781	84498	-2.6	22.8	1156541	1314774	13.7	50.1	52.6
Defense(Subtot)	442846	425141	-4.0	19.9	100131	93729	-6.4	25.3	542977	518870	-4.4	23.5	20.7
Air Force	267637	259535	-3.0	12.2	50374	41691	-17.2	11.3	318011	301226	-5.3	13.8	12.0
DMSP**	42923	42424	-1.2	2.0	18213	17964	-1.4	4.9	61136	60388	-1.2	2.6	2.4
Navy	95497	99419	4.1	4.7	13946	14647	5.0	4.0	109443	114066	4.2	4.7	4.6
Army	36789	23763	-35.4	1.1	17598	19427	10.4	5.2	54387	43190	-20.6	2.4	1.7
Interior/BLM	1170	800	-31.6	0.0	0	0	0.0	0.0	1170	800	-31.6	0.1	0.0
Transportation/CG	6774	6774	0.0	0.3	0	0	0.0	0.0	6774	6774	0.0	0.3	0.3
Transportation/FAA	384460	453003	17.8	21.2	14250	5873	-58.8	1.6	398710	458876	15.1	17.3	18.3
EPA	0	0	0.0	0.0	8500	6700	-21.2	1.8	8500	6700	-21.2	0.4	0.3
NASA	4299	3453	-19.7	0.2	160800	163800	1.9	44.3	165099	167253	1.3	7.2	6.7
NRC	289	289	0.0	0.0	0	0	0.0	0.0	289	289	0.0	0.0	0.0
TOTAL	1921601	2131841	10.9	100.0	386189	370067	-4.2	100.0	2307790	2501908	8.4	100.0	100.0
% of FY TOTAL	83.3%	85.2%			16.7%	14.8%			100.0%	100.0%			

*The FY 1996 funding reflects Congressionally appropriated funds; the FY 1997 funding reflects the amount requested in the President's FY 1997 budget submission to Congress.

**DMSP is the Defense Meteorological Satellite Program that supports all DOD Components and other government agencies. It is primarily funded and managed by the Air Force

Weather Services. Funding levels for FY 1997 will decrease by 216 positions and $17.3 million as part of the transition to the modernized office structure. Operations support funds of $471.7 million (a 4.0 percent decrease over FY 1996) are programmed to operate Next Generation Weather Radar (NEXRAD), now designated as the Weather Surveillance Radar-1988 Doppler (WSR-88D), units which significantly improve severe weather warning capabilities; to prepare for the Modernization and Associated Restructuring Demonstration (MARD); to continue Stage II staffing of Weather Forecast Offices (WFO) as the Advanced Weather Interactive Processing Systems (AWIPS) are deployed; and to provide funding in support of the certification requirements of Public Law 102-567. Included in this request is a $10 million decrease pursuant to the Administration's Reinventing Government initiative.

In FY 1997, the National Weather Service (NWS) requests a decrease of $0.2M from the FY 1996 level to operate and maintain the current WSR-88D network of 120 systems, continue the WSR-88D product improvement initiative, and begin acquisition of three additional WSR-88D systems for installation in Northern Alabama, Western Arkansas, and Northern Indiana. These systems were recommended by the Secretary of Commerce as a result of the National Research Council's study regarding WSR-88D coverage and possible degradation of weather services. Funding to begin WSR-88D Acquisition Program Office closeout activities and to continue the Systems Acquisition Office's acquisition closeout efforts is also included the FY 1997 request. The FY 1997 funding for the Automated Surface Observing System (ASOS) program decreases by $6.9 million as the full-scale production phase and product improvement activities continue.

In FY 1997, an increase of $69.2 million is required to support critical AWIPS system development activities. In addition, NWS requests a $4.0 million increase to continue the upgrade of the NOAA Central Computer Facility. These funds will allow NOAA to continue meeting operational goals in atmospheric and oceanic prediction and in processing environmental information from weather and ocean data systems through the 1990's. Further, an increase of $2.9 million is requested to continue the replacement of the NOAA radiosonde network.

Environmental Satellite, Data, and Information Services. Proposed funding for FY 1997 includes an increase in the Polar-Orbiting Satellite Program of $40.6 million and an increase in the Geostationary Satellite Program of $55.8 million. These changes will allow for continuation of procurements to provide the spacecraft and instruments, launch services, and ground systems necessary to assure continuity of environmental satellite coverage. The FY 1997 budget request will maintain a system of polar-orbiting satellites that obtains global data and a system of geostationary satellites that provides near continuous observations of the Earth's western hemisphere. Funding is included for NOAA's share of the converged NOAA and Department of Defense (DOD) polar-orbiting system that will replace the current NOAA series and the DOD Defense Meteorological Satellite Program (DMSP) in the year 2007.

A reduction of $2.4 million is requested to continue the Ocean Remote Sensing Program which began in FY 1995. During the next several years, NOAA will acquire data from foreign and other non-NOAA satellites that will provide measurement of ocean currents, surface winds and waves, subsurface temperature and salinity profiles, ice thickness and flows, and other marine factors.

Increases totaling $4.6 million are requested to maintain basic mission services, including maintenance and operation of satellite ground facilities, provision of satellite-derived products, and conduct of research to improve the use of satellite data. An increase of $3.5 million is requested to initiate the NOAA Virtual Data System (NVDS). This system will modernize existing data storage and retrieval systems, and vastly improve, streamline, and simplify customer access to environmental data.

Weather Research. Requested funding for FY 1997, which includes Solar Terrestrial Services and Research, is $43.4 million--the same level as FY 1996. Covering inflationary cost increases will require a programmatic cut of $0.5 M, resulting in eliminating the WSR-88D research and development (R&D) test facility, reducing WSR-88D severe weather forecast product development, and reducing other research on such weather systems as hurricanes. In addition, the Administration has determined that improved productivity resulting from staffing decreases and more efficient administration will enable a further cut in the program of $0.9 M with no programmatic impact.

DEPARTMENT OF DEFENSE (DOD)

The DOD total budget request for FY 1997 is $518.9 million. This total represents a 4.4 percent decrease in the funding level from FY 1996. Specific highlights for each of the military departments are described below:

U.S. Air Force

U.S. Air Force resources for meteorological support fall under four categories: general operations, general supporting research, DMSP operations, and DMSP and National Polar-orbiting Operational Environmental Satellite System (NPOESS) supporting research. The Air Force request (including DMSP) for FY 1997 is $361.6 million

General Operations. The operations portion of the FY 1997 budget request is $242.9 million and represents a large portion of the environmental support to the DOD. These funds will pay for weather and space environmental support to the USAF (both active duty and reserve components), the U.S. Army, nine unified commands, and other agencies as directed by the Chief of Staff of the Air Force. Over 3,700 people conduct these activities at over 230 worldwide locations. These people include active duty military, Air Force reservists, Air National Guard weather flight personnel, weather communications and computer specialists, and civilians. General operations funds pay the salaries of these people providing weather support, and the day-to-day operations and maintenance costs for the

support they provide.

The FY 1997 request includes $16.6 million for procurement of Air Force standard weather systems needed to sustain and improve current environmental support capabilities. Procurement funding goes primarily to the Air Force Combat Climatology Center (AFCCC) Replacement program. This life-cycle replacement of mainframe computers with workstations will enable AFCCC to provide climatological data to warfighters, national programs, and other DOD and government agencies in a more timely and efficient manner.

General Supporting Research. The FY 1997 budget request for Air Force supporting research is $41.7 million. The Air Force continues R&D efforts for the Cloud Depiction and Forecast System II (CDFS II) and the Global Theater Weather Analysis and Prediction System (GTWAPS), and begins R&D efforts for the Tactical Weather Radar (TWR). CDFS II will expand the computer processing capability of the current CDFS at AFGWC and will build a high resolution, worldwide cloud database by enabling the ingest and exploitation of all weather satellite and sensor data received at AFGWC. GTWAPS will provide AFGWC and the DOD a theater modeling capability to support the warfighters. A variety of other research efforts will investigate the electrodynamics of the Sun and Earth's magnetosphere, ionospheric dynamics, mesoscale meteorology, visible and infrared properties of the environment, and cloud parameterization and prediction.

DMSP Operations. Though funding for DMSP comes from the Air Force, this system is the major source of space-borne meteorological data for the military services and other high-priority DOD programs. Through the shared processing program, the DOD provides environmental data from DMSP sensors to the NWS via the network hub at the National Environmental Satellite, Data, and Information Service, and to the Navy via the network hubs at the Fleet Numerical Meteorology and Oceanography Center (FNMOC) and the Naval Oceanographic Office (NAVOCEANO).

The operations portion of the FY 1997 budget request is $43 million. The major portion of this funding is for on-orbit operations, tactical terminal procurement, and satellite sensor integration. These funds also pay operations costs for two dedicated command and control facilities. DMSP funds for 283 military and civilian personnel associated with the operation of, and to a much smaller extent, the procurement of the DMSP system.

DMSP and NPOESS Supporting Research. The FY 1997 budget for DMSP R&D is $17.9 million. The funds will be used for launch vehicle integration; system integration and testing; and mission sensor calibration, validation, and algorithm development efforts. The FY 1997 DOD R&D budget for NPOESS is $29 million. FY 1997 funds will be used for system architecture studies, independent risk reduction and technology development efforts, and to begin critical sensor and algorithm development. NPOESS is scheduled to be available in 2007 as a backup to the final launch of the NOAA polar-orbiting satellites and DMSP satellites. This system will offer improved avionics and will exploit advanced hardware and software technologies to produce a more reliable, longer-lived spacecraft with greater mission capability.

U.S. Navy

The U.S. Navy FY 1997 funding request for meteorological programs is $114.1 million. The request includes $99.4 million for operational programs and $14.6 million for supporting research. This request reflects a slight growth from the FY 1996 appropriations of $109.4 million.

Operations Support. Operational support for the Navy and Marine Corps includes the day-to-day

provision of meteorological and oceanographic (METOC) products and services. Navy METOC support continues to evolve with the shift in U.S. military operational focus to expeditionary warfighting support. As Naval operations in the littoral increases, Navy METOC support is being focused on providing on-scene capabilities for warfighters that directly furnish environmental data to sensors and weapons planning and employment systems.

In addition to aviation and marine METOC support, the Navy provides a variety of unique services on demand, such as acoustic propagation models and products, METOC-sensitive tactical decision aids, and global sea ice analyses and forecasts. The primary program direction continues to be improvements in data collection and processing capabilities for on-scene METOC support in the littoral zones.

The FY 1996 operational program increase from the $89.3 million requested in the President's budget to the appropriated $95.5 million was primarily due to a realignment of funds rather than real program growth. Administrative and communications functions, originally categorized as base support, have been recategorized as mission and are now considered part of the operational program.

Systems Acquisition. Major systems undergoing procurement or upgrades in FY 1996 and FY 1997 include:

» Tactical Environmental Support System (TESS(3)).
» Naval Integrated Tactical Environmental Sub-System (NITES).
» Mobile Oceanography Support System (MOSS).
» Primary Oceanographic Prediction Systems at NAVOCEANO (POPS-I) and FNMOC (POPS-II).

Research and Development (R&D). This area is not generally system specific; instead, Navy R&D efforts typically have applications to one or more meteorological, oceanographic, or tactical systems. Navy's tabulation of these data includes R&D funding for exploratory research, demonstration, validation, and engineering and manufacturing development.

Initiatives of the Navy and Marine Corps, under sponsorship of the Oceanographer of the Navy, transition projects from exploratory development to operational Navy systems. Such efforts include advances in the Navy's numerical METOC forecasting capability, expansion in communications and data compression techniques, further development and improvement of models to better predict METOC parameters in littoral regions, and an improved understanding of the impact these parameters have on sensors, weapon systems, and platform performance.

U.S. Army

The U.S. Army is requesting $23.7 million for operational support and $19.6 million for R&D in FY 1997. Operational support decreased by about $13 million, or about 35 percent from FY 1996 funding levels. Operational manning will drop from 380 to 329, or about 13 percent from FY 1996. Much of the funding decrease is caused by ending two acquisition programs, by downsizing the numbers of Army divisions, and by the reduction in the size of artillery meteorological teams as a modern, smaller upper air sounding system completes fielding in FY 1997. Operational meteorological support at the test ranges and R&D facilities continues to decrease to account for most of the rest of the reduction in funding.

The tactical weather equipment procurement costs for the Field Artillery Meteorological Hydrogen Generator (MHG) and the Integrated Meteorological Systems (IMETS) are both scheduled to complete programmed funding for a reduced number of units. Fielding of some completed systems will continue

into the next fiscal year. The MHG will complete the program in FY 1997 with funding of $7.2 million; the IMETS will be completed with funding of $3.1 million. The IMETS will be fielded to major combat units, but most aviation brigades are not programmed to receive the system because of funding reductions below the Army authorized object of one system for each Army weather team. The Communications and Electronics Command, Intelligence and Electronic Warfare (CECOM IEW) Directorate supports the CECOM Level II manager and the Project Director, Integrated Meteorological Systems with technical management of programs under their control. The total funding for IEW Directorate internal support for FY 1997 is $1.2 million.

Training and Doctrine Command (TRADOC) and U.S. Army Pacific Command (USARPAC) will have small increases in costs associated with new service or equipment for forecasting and observing at new locations. USARPAC will increase direct Staff Weather Officer (SWO) support to U.S. Army, Japan, and procure deployable weather terminals to support Joint Task Force exercises and contingencies. U.S. Army Europe (USAREUR) and Seventh Army will slightly increase funding to purchase a stand-alone satellite receiver system to access weather data from commercial satellites. Other FY 1997 USAREUR costs are for weather data transmission and leasing dial-up radar.

In operational support for Research, Development, Test, and Evaluation (RDTE), Army Matériel Command funding for the Test and Evaluation Command (TECOM) Meteorological (Met) Teams in FY 1996 was $7.02 million for basic operations supporting 11 Army test ranges and R&D sites. FY 1997 funding is $6.83 million, but is a combination of direct and reimbursable funding from users. Meteorological instrumentation will be acquired through other Army technical development resources or through direct funding from RDTE projects for test specific or unique requirements rather than mission funds.

In weather R&D, the Army Research Laboratory, Battlefield Environment Directorate has under gone mission funding decreases in the past two fiscal years. These funding decreases have resulted in personnel cuts of 25 percent from 124 to 93. FY 1995 mission funding of $12.8 million decreased to $8.3 million in FY 1996 and recovers slightly with $9.7 million requested in FY 1997. This funding level is not sufficient to cover internal labor and overhead costs, so the directorate will pursue customer funding in order to maintain R&D mission support with the current staff.

An increase in funding for the meteorological research program budget of the Army Research Office (ARO) is programmed from $920,000 in FY 1996 to $1.07 million in FY 1997 by changes in the Environmental Sciences Branch budget. The individual investigator program is dependent on the merit and relevance of proposals submitted under the ARO Broad Agency Announcement. The additional funding will permit new initiatives in stable boundary layer processes. The Augmentation Award for Science and Engineering Research and Training funds have been committed for up to 3 years at present levels. This Congressionally mandated program will continue through FY 1997 on funds provided in previous years.

DEPARTMENT OF THE INTERIOR (DOI)

The DOI funding request for FY 1997 is $970,000. This figure is for meteorological operations and support for the Bureau of Land Management's remote sensing requirements for Remote Automatic Weather Station (RAWS) and Lightning Detection programs. Normal operations and maintenance for the RAWS program is $870,000 annually (personnel, vehicles, per diem, normal procurement costs, and facilities). Starting in FY 1997, the BLM will begin a "downsizing" effort in RAWS to reduce the station number by one-third. Subsequent cost savings in operations costs will be used to replace aging equipment and upgrade sensor packages. Proposed changes in lightning detection operations will further reduce the out-year expenditures in this program. Coordination between DOI agencies and the USDA

Forest Service regarding combined meteorological requirements for the National Wildfire support function is ongoing. During the coming downsizing efforts, interagency RAWS replacement coordination will continue to maximize National Fire Danger Rating System sampling points and minimize the total number of systems required in the West.

DEPARTMENT OF TRANSPORTATION (DOT)

The meteorological programs for the U.S. Coast Guard and the Federal Aviation Administration for FY 1996 and FY 1997 are described below.

U.S. Coast Guard (USCG)

All of USCG's funding for meteorological programs is for operations support. In FY 1997, the requested funding level is $6.77 million. Among the Coast Guard's activities are the collection and dissemination of meteorological and iceberg warning information for the benefit of the marine community. The Coast Guard provides coastal and marine weather observations to NOAA's NWS, radio transmission of NWS weather warnings to marine users, the use of buoy tender facilities to support the activities of the National Data Buoy Center, and the management and operation of the International Ice Patrol that provides warnings to mariners of the presence of icebergs in the North Atlantic shipping lanes.

Federal Aviation Administration (FAA)

The total FAA request for aviation weather in FY 1997 is $458.9 million for both operations and supporting research; the FAA funding for FY 1996 for aviation weather was $398.7 million. The increase in the budget is principally in operations which will rise from the appropriated $384.5 million to the requested $453.0 million. Funding for supporting research will decrease about 58 percent to $5.9 million.

The FAA is principally concerned with aviation weather. The FAA role is limited to the observation and dissemination of aviation weather information and to short-range automated warnings and forecasts. FAA's aviation weather programs are directed at improving the timeliness and accuracy of weather information to the aviation user when and where it is needed. The FAA also supports research in those areas that involve improvements to the observation, data dissemination, and forecasting of aviation weather. The end users of the resulting products include pilots, dispatchers, and air traffic controllers.

The FY 1997 increases are in Systems Acquisition and Operational Support with system acquisition funding increasing by 39 percent to $147.7 million. Acquisition programs with significant increases are the Operational and Supportability Implementation System, the Weather and Radar Processor, and the Integrated Terminal Weather System. Lesser acquisition increases are in the Low Level Windshear Advisory System, Digital Altimeter Setting Instrument, and Next Generation Runway Visual Range. Decreases to acquisition programs are associated with completion or near completion of the programs. Appendix C contains descriptions for these systems.

Individual system acquisition and operational programs with changes greater than $2 million are listed below:

Program	**Change ($ Millions)**
Systems Acquisition:	
Automated Surface Observing System	2.8

Weather and Radar Processor	17.0
Terminal Doppler Weather Radar	- 2.7
Operational and Supportability Implementation System	23.0
Next Generation Weather Radar	-12.8
Integrated Terminal Weather System	14.6
National Airspace Data Interchange Network	- 3.9
Low Level Wind Shear Advisory System	2.4
ASR-9 Weather Systems Processor	5.6
Operations Support:	
Flight Service Stations Operations	4.7
Contract Aviation Weather Observations	16.6

The FY 1997 funding request for operational support increases by $25.3 million to $301.4 million, which reflects modest increases for leased communications and certain maintenance functions and significant increases in Flight Service Station operations and Contract Weather Observations. The large increase in operations support are associated with FAA's broadened role and responsibility for surface observations, ASOS observer augmentation, and staffing for the Aviation Weather Division.

Supporting research funding decreases from $14.3 million in FY 1996 to $5.9 million in FY 1997. This significant program decrease is associated with the movement of the Integrated Terminal Weather System to the acquisition list.

The number of personnel expected to be engaged in FAA's aviation weather program is up to 3433. This modest increase is related to: (a) increases in maintenance support and special projects and some small cuts in supporting research and (b) an increase in the percentage used to compute the weather-related duties of personnel, such as flight service specialists.

ENVIRONMENTAL PROTECTION AGENCY (EPA)

All of the EPA's funding of meteorological programs is for supporting research. The anticipated funding level in FY 1997 for directed meteorological research is $6.7 million, which is 21.2 percent less than the funding level for FY 1996.

To promote excellence in environmental science and engineering, EPA established a new national fellowship program and substantially increased its support for investigator-initiated research grants. The increase in funding for grants (with reliance on quality science and peer review) and for graduate fellowships (to support the education and careers of future scientists) will provide for a more balanced, long-term capital investment in improved environmental R&D.

The funding for the grants program increased from $44 million in FY 1995 to $80 million in FY 1996, and will increase again by a yet undetermined amount in FY 1997. The augmented grants program will fund research in the areas including ecological assessment, air quality, environmental fate and treatment of toxic and hazardous wastes, and exploratory research. The portion of these grants that will be awarded for meteorological research during FY 1997 cannot be foreseen, but it is certain that the grant awards will increase the base amount of $6.7 million listed above for directed meteorological research.

The EPA is continuing its development and validation of air quality dispersion models for air pollutants on all temporal and spatial scales as mandated by the Clean Air Act, as amended. Research will focus on indoor, urban, mesoscale, and regional models which will be used to develop air pollution control strategies, and human and ecosystem exposure assessments. There will be increased emphasis placed on meteorological research into regional and urban transport of ozone and particulate pollution, while research into acid deposition model development and evaluation winds down. Increased efficiency of computation and interpretation of results are being made possible by means of high performance computing and scientific visualization techniques.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA)

Nearly all of NASA's funding in meteorology is for supporting research. The requested funding for supporting research in FY 1997 is $164.8 million, which is 1.9 percent higher than the FY 1996 funding level. These funding levels are composed of the estimated meteorology share of the supporting research and analysis programs, to include the Earth Observing System (EOS) and Earth Probe instruments, EOS science, and the EOS Data and Information Systems (EOSDIS). The FY 1997 level reflects a near 10 percent increase in the EOS and EOSDIS funding levels, respectively, from the corresponding FY 1996 levels. The Earth Probes line for FY 1997 is nearly the same as that for FY 1996. This line reflects reductions due to recent launch of NASA Scatterometer (NSCAT) and Total Ozone Mapping Spectrometer (TOMS) and the upcoming launch of the Tropical Rainfall Measuring Mission (TRMM). This reduction is offset by the initiation of the New Millennium Program (NMP) and the Earth System Science Pathfinders (ESSP). NMP provides for the infusion of innovative new technologies in to the second and third series of EOS measurements, and will emphasize fast-track development and low cost demonstration missions. ESSP features an expedited procurement process, accelerated development schedules, low life-cycle costs, peer-reviewed science, and missions based on best science value.

NUCLEAR REGULATORY COMMISSION (NRC)

The NRC requested funding is for meteorological operations. The FY 1997 request is essentially unchanged from the FY 1996 request.

The meteorological support program in the U.S. Nuclear Regulatory Commission is focused solely on obtaining and analyzing meteorological data and information to be utilized in atmospheric transport and dispersion models used in dose projections, plume pathway characterizations, and concentration estimates related to the safe operation of nuclear facilities and the protection of public health and safety and the environment. Obtaining current, accurate, and relevant meteorological information on a real-time basis for use during emergencies is the primary consideration. The NRC budget in this area reflects this priority.

AGENCY FUNDING BY BUDGET CATEGORY

Table 3.2 depicts how the agencies plan to obligate their funds for meteorological operations broken down by "budget category." The two major categories are "Operations Support" and "Systems Acquisition." To a large degree, these categories correspond to non-hardware costs (Operations Support) and hardware costs (Systems Acquisition). For agency convenience in identifying small components that do not fit into these two major categories, a third category is added called "Special Programs." Programs that provide support to several government agencies such as the Air Force's DMSP are listed on a separate line.

Table 3.3 describes how the agencies plan to obligate their funds for meteorological supporting research

according to the budget categories. The agencies' supporting research budgets are subdivided along similar lines--Research and Development (non-hardware), Systems Development (hardware), and Special Programs for those items that do not easily fit into the first two categories.

AGENCY FUNDING BY SERVICE CATEGORY

Table 3.4 summarizes how the agencies plan to obligate operational funds for basic and specialized meteorological services; Table 3.5 is a similar breakout for supporting research funds. Table 3.4 reveals that "basic" services require approximately 56 percent of the total operational costs while aviation services require about 37 percent. The remaining 7 percent is used to support the other specialized services. The definitions of specialized and basic services are described below.

TABLE 3.2 AGENCY OPERATIONAL COSTS, BY BUDGET CATEGORY

(Thousands of Dollars)

	Operations Support		Systems Acquisition		Special Programs		Total			% of FY96
AGENCY	FY96	FY97	FY96	FY97	FY96	FY97	FY96	FY97	% CHG	TOTAL
Agriculture	12003	12105	0	0	0	0	12003	12105	0.8	0.6
Commerce/NOAA	580203	586878	467658	630760	21899	12638	1069760	1230276	15.0	57.7
Defense(Subtot)	395534	388571	47144	36328	168	242	442846	425141	-4.0	19.9
Air Force	255147	242896	12490	16639	0	0	267637	259535	-3.0	12.2
DMSP*	23302	26682	19621	15742	0	0	42923	42424	-1.2	2.0
Navy	94681	98784	816	635	0	0	95497	99419	4.1	4.7
Army	22404	20209	14217	3312	168	242	36789	23763	-35.4	1.1
Interior/BLM	870	600	300	200	0	0	1170	800	-31.6	0.0
Transportation/CG	6774	6774	0	0	0	0	6774	6774	0.0	0.3
Transportation/FAA	276142	301399	105803	147660	2515	3944	384460	453003	17.8	21.2
EPA	------ Not Applicable ------									
NASA	3383	3403	916	50	0	0	4299	3453	-19.7	0.2
NRC	289	289	0	0	0	0	289	289	0.0	0.0
TOTAL	1275198	1300019	621821	814998	24582	16824	1921601	2131841	10.9	100.0
% of FY TOTAL	66.4%	61.0%	32.4%	38.2%	1.3%	0.8%	100.0%	100.0%		

*DMSP is the Defense Meteorological Satellite Program that supports all DOD Components and other government agencies. It is primarily funded and managed by the Air Force.

TABLE 3.3 AGENCY SUPPORTING RESEARCH COSTS, BY BUDGET CATEGORY

(Thousands of Dollars)

	Research & Development		Systems Development		Special Programs		Total			% of FY96
AGENCY	FY96	FY97	FY96	FY97	FY96	FY97	FY96	FY97	%CHG	TOTAL
Agriculture	15727	15467	0	0	0	0	15727	15467	-1.7	4.2
Commerce/NOAA	55798	56278	26633	23870	4350	4350	86781	84498	-2.6	22.8
Defense(Subtot)	95631	88729	4500	5000	0	0	100131	93729	-6.4	25.3
Air Force	50374	41691	0	0	0	0	50374	41691	-17.2	11.3

DMSP*	18213	17964	0	0	0	0	18213	17964	-1.4	4.9
Navy	13946	14647	0	0	0	0	13946	14647	5.0	4.0
Army	13098	14427	4500	5000	0	0	17598	19427	10.4	5.2
Interior/BLM	------ Not Applicable ------									
Transportation/CG	------ Not Applicable ------									
Transportation/FAA	12965	5873	1285	0	0	0	14250	5873	-58.8	1.6
EPA	8500	6700	0	0	0	0	8500	6700	-21.2	1.8
NASA	118600	118000	42200	45800	0	0	160800	163800	1.9	44.3
NRC	------ Not Applicable ------									
TOTAL	307221	291047	74618	74670	4350	4350	386189	370067	-4.2	100.0
% of FY TOTAL	79.6%	78.6%	19.3%	20.2%	1.1%	1.2%	100.0%	100.0%		

*DMSP is the Defense Meteorological Satellite Program that supports all DOD Components and other government agencies. It is primarily funded and managed by the Air Force.

TABLE 3.4 AGENCY OPERATIONAL COSTS, BY SERVICE
(Thousands of Dollars)

	Basic Meteorology		Aviation		Marine		Agriculture & Forestry		General Military		Other		Total	
AGENCY	FY96	FY97	FY96	FY97	FY96	FY97	FY96	FY97	FY96	FY97	FY96	FY97	FY96	FY97
Agriculture	0	0	0	0	0	0	12003	12105	0	0	0	0	12003	12105
Commerce/NOAA	1008280	1168796	35596	35596	24945	24945	2795	2795	0	0	2500	2500	1074116	1234632
Defense(Subtot)	17189	16901	296511	290606	28363	27837	0	0	96599	83766	4184	6031	442846	425141
Air Force	0	0	267637	259535	0	0	0	0	0	0	0	0	267637	259535
DMSP*	0	0	0	0	0	0	0	0	42923	42424	0	0	42923	42424
Navy	17189	16901	28649	30820	28363	27837	0	0	18144	18890	3152	4971	95497	99419
Army	0	0	225	251	0	0	0	0	35532	22452	1032	1060	36789	23763
Interior/BLM	0	0	0	0	0	0	1170	2000	0	0	0	0	1170	2000
Transportation/CG	5730	5730	0	0	1044	1044	0	0	0	0	0	0	6774	6774
Transportation/FAA	0	0	384460	453003	0	0	0	0	0	0	0	0	384460	453003
EPA	------ Not Applicable ------													
NASA	0	0	0	0	0	0	0	0	0	0	4299	3453	4299	3453
NRC	199	199	0	0	0	0	0	0	0	0	90	90	289	289
TOTAL	1031398	1191626	716567	779205	54352	53826	15968	16900	96599	83766	11073	12074	1925957	2137397
% of FY TOTAL	53.6%	55.8%	37.2%	36.5%	2.8%	2.5%	0.8%	0.8%	5.0%	3.9%	0.6%	0.6%	100.0%	100.0%

*DMSP is the Defense Meteorological Satellite Program that supports all DOD Components and other government agencies. It is primarily funded and managed by the Air Force.

TABLE 3.5 AGENCY SUPPORTING RESEARCH COSTS, BY SERVICE
(Thousands of Dollars)

	Basic Meteorology		Aviation		Marine		Agriculture & Forestry		General Military		Other		Total	
AGENCY	FY96	FY97	FY96	FY97	FY96	FY97	FY96	FY97	FY96	FY97	FY96	FY97	FY96	FY97
Agriculture	0	0	0	0	0	0	15727	15467	0	0	0	0	15727	15467
Commerce/NOAA	85156	82873	1625	1625	0	0	0	0	0	0	0	0	86781	84498
Defense(Subtot)	1484	1675	50374	41691	13946	14647	0	0	34312	35901	200	0	100316	93914
Air Force	0	0	50374	41691	0	0	0	0	0	0	0	0	50374	41691

DMSP*	0	0	0	0	0	0	0	0	18213	17964	0	0	18213	17964
Navy	0	0	0	0	13946	14647	0	0	0	0	0	0	13946	14647
Army	1484	1675	0	0	0	0	0	0	16099	17937	200	0	17783	19612
Interior/BLM	------ Not Applicable ------													
Transportation/CG	------ Not Applicable ------													
Transportation/FAA	0	0	14250	5873	0	0	0	0	0	0	0	0	14250	5873
EPA	0	0	0	0	0	0	0	0	0	0	8500	6700	8500	6700
NASA	0	0	0	0	0	0	0	0	0	0	160800	163800	160800	163800
NRC	------ Not Applicable ------													
TOTAL	86640	84548	66249	49189	13946	14647	15727	15467	34312	35901	169500	170500	386374	370252
% of FY TOTAL	22.4%	22.8%	17.1%	13.3%	3.6%	4.0%	4.1%	4.2%	8.9%	9.7%	43.9%	46.0%	100.0%	100.0%

*DMSP is the Defense Meteorological Satellite Program that supports all DOD Components and other government agencies. It is primarily funded and managed by the Air Force.

Basic Services

Basic services provide products that meet the common needs of all users and include the products needed by the general public in their everyday activities and for the protection of lives and property. "Basic" services include the programs and activities that do not fall under one of the specialized services.

Specialized Meteorological Services

Aviation Services. Those services and facilities established to meet the requirements of general, commercial, and military aviation.

Marine Services. Those services and facilities established to meet the requirements of the DOC, DOD, and DOT on the high seas, on coastal and inland waters, and for boating activities in coastal and inland waters. The civil programs which are directly related to services solely for marine uses and military programs supporting fleet, amphibious, and sea-borne units (including carrier-based aviation and fleet missile systems) are included.

Agriculture and Forestry Services. Those services and facilities established to meet the requirements of the agricultural industries and federal, state, and local agencies charged with the protection and maintenance of the Nation's forests.

General Military Services. Those services and facilities established to meet the requirements of military user commands and their component elements. Programs and services which are part of basic, aviation, marine, or other specialized services are not included.

Other Specialized Services. Those services and facilities established to meet meteorological requirements that cannot be classified under one of the preceding categories; such as, space operations, urban air pollution, global climate change, and water management.

PERSONNEL ENGAGED IN METEOROLOGICAL OPERATIONS

Table 3.6 depicts agency staff resources in meteorological operations. The total agency staff resources requested for FY 1997 is 15,942. This total represents a decrease of 4.8 percent from FY 1996.

INTERAGENCY FUND TRANSFERS

Table 3.7 summarizes the reimbursement of funds from one agency to another during FY 1996. Agencies routinely enter into reimbursable agreements when they determine that one agency can provide the service more efficiently and effectively than the other. While specific amounts may vary from year-to-year, the pattern shown is essentially stable and reflects a significant level of interagency cooperation.

Department of Commerce. The NWS will reimburse DOT $25,000 for Alaska housing utilities and technological advances. NASA will receive $60,000 for stratospheric studies and a total of $305.2 million for satellite acquisition and launching--polar orbiting ($132.8 million) and geostationary ($172.4 million).

Department of Defense. The Air Force will reimburse DOC a total of $3.86 million for WSR-88D Operational Support Facility support ($2.1 million), COMET participation ($950,000), Shared Processing Program ($162,000), OFCM support ($140,000), and supporting research ($515,000). The Navy will reimburse DOC $532,000 for climatological analysis and forecasting. The Army reimbursements to DOC include $650,000 to maintain precipitation reporting stations. The Army will also reimburse the U.S. Geological Survey $410,000 for operations and maintenance of hydrologic and precipitation reporting stations. Additionally, the Army will reimburse NASA $185,000 for basic supporting research.

Department of Transportation. The FAA will reimburse NOAA $5.5 million in FY 1997 for procurement of WSR-88D and ASOS systems. Additionally, NOAA will receive $24.5 million for operational support--$7 million for WSR-88D and ASOS maintenance, $7.7 million for aviation weather observations, $7.6 million for the Center Weather Service Units at all Air Route Traffic Control Centers, $1.4 million to establish the World Area Forecast System, $360,000 for meteorological instructors at the FAA Academy, and $300,000 for studies and dissemination.

The FAA will reimburse the National Science Foundation (NSF) and National Aeronautics and Space Administration (NASA) a total of $11.9 million for supporting research. The NSF will receive $10.6 million and NASA will receive $1.28 million for aeronautical hazards.

TABLE 3.6 PERSONNEL ENGAGED IN METEOROLOGICAL OPERATIONS

(Units are Full Time Equivalent Staff Years)*

AGENCY	FY 1996	FY 1997	%CHG	% of FY 1997 TOTAL
Agriculture	98	98	0.0	0.6
Commerce/NOAA	6549	6297	-9.0	39.5
Reimbursed**	210	200	-4.8	1.3
Defense(Subtotal)	6344	5789	-8.7	36.3
Air Force	4179	3701	-11.4	23.2
DMSP*	283	283	0.0	1.8
Navy	1502	1476	-1.7	9.3
Army	380	329	-13.4	2.1
Interior/BLM	13	12	-7.7	0.1
Reimbursed**	8	6	-25.0	0.0
Transportation/CG	106	106	0.0	0.7

Transportation/FAA	3417	3433	0.5	21.5
EPA	0	0	0.0	0.0
NASA	0	0	0.0	0.0
NRC	1	1	0.0	0.0
TOTAL	16746	15942	-4.8	100.0

* Numbers of personnel are rounded to nearest whole number.

** "Reimbursed" are personnel funded by other agencies.

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National Aeronautics and Space Administration (NASA). The Air Force will receive reimbursement of $1.13 million for observations and forecasts. NOAA's National Data Buoy Center will receive reimbursements of $97,000 for operations of data buoys; NWS will receive $1.16 million for spaceflight weather support and $20,000 for upper-air analyses.

Environmental Protection Agency (EPA). NOAA's Air Resources Laboratory (ARL) will be reimbursed $5.2 million for development, evaluation, and application of air quality dispersion models, and for providing meteorological expertise and guidance for EPA policy development activities.

Department of Energy (DOE). The NOAA/OAR will be reimbursed $4 million to support the Nuclear Support Office at the Nevada Nuclear Test Site.

Nuclear Regulatory Commission (NRC). The NRC will reimburse NOAA's ARL ($89,000) and DOE ($90,000) for technical assistance.

FACILITIES/LOCATIONS for TAKING METEOROLOGICAL OBSERVATIONS

Table 3.8 indicates the number of facilities or platforms at which the federal agencies carry out (or supervise) the various types of weather observations.

TABLE 3.7 INTERAGENCY FUND TRANSFERS FOR METEOROLOGICAL OPERATIONS AND SUPPORTING RESEARCH

			FY 1996 Funds ($K) Estimated or Planned		
Agency Funds Transferred from:	**Agency Funds Transferred to:**		**Operations**		**Supporting Research**
Commerce/NOAA	DOT/USCG		25		
	NASA Studies		60		
	NASA (Procurement)		305,202		
Defense/Air Force	DOC		3,345		515
Defense/Navy	DOC/NOAA/NCDC		532		

Defense/Army	DOC/NOAA/NWS	650	
	DOI/USGS	410	
	NASA/GFSC/GISS		185
Transportation/FAA	DOC/NOAA	24,571	
	DOC/NOAA (Procurement)	5,500	
	NSF		10,634
	NASA		1,281
NASA	DOD/USAF	1,131	
	DOD/NOAA/NWS	1,175	
	DOC/NOAA/NDBC	97	
EPA	DOC/NOAA/ARL		5,200
DOE	DOC/NOAA/OAR	4,000	
NRC	DOC/NOAA/ARL	89	
	DOE	90	

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