THE FEDERAL METEOROLOGICAL ENTERPRISE

Fiscal Year 2023 Budget and Coordination Report

The Federal Meteorological Enterprise:

Fiscal Year 2023 Budget and Coordination Report

INTERAGENCY COUNCIL FOR ADVANCING METEOROLOGICAL SERVICES (ICAMS)

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Preface

The Budget and Coordination Report (BCR) provides a streamlined, tabular format for the *FY2023 ICAMS Horizontal Budget Table,* reporting the Federal Meteorological Enterprise's by-agency budget information related to advancing meteorological services and scientific research using an earth systems approach. The table reflects the agencies' "top line" budget numbers for meteorological science and services: FY23 requests along with enacted funding for two previous fiscal years.

This report is produced under the *Interagency Council for Advancing Meteorological Services (ICAMS)*, and satisfies the requirements of Public Law 87-843, Section 304, which calls for an annual cross-agency view of resources applied to meteorological services and supporting research. Where applicable, the table includes amplifying program information.

The BCR was previously produced under the Federal Committee for Meteorological Services and Supporting Research (FCMSSR) and Interdepartmental Committee for Meteorological Services and Supporting Research (ICMSSR), with the support of the Office of the Federal Coordinator for Meteorology. The new ICAMS has evolved to incorporate all the activities and responsibilities of these former organizations. This report has been compiled through the efforts of many agency budget experts and meteorology-related functional experts. As ICAMS continues to strengthen, IMCO will continue efforts to enhance the report's utility by addressing the 2017 Weather Research and Forecasting Innovation Act (PL 115-25, section 402) which calls for the coordination of top forecast needs against budget requests and program initiatives from the participating ICAMS agencies. My sincere thanks to our agency partners for their efforts in preparing this report.

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Purpose

This annual report is prepared for the Office of Management and Budget and the Congress to satisfy the requirements of PL 87-843 section 304, in which Congress directed that OMB prepare an annual horizontal budget for meteorological programs conducted by the Federal agencies.

The budgetary information in this report provides a 'horizontal' look at the meteorological funding requested in the FY2023 President's Budget Request and the funding enacted over the previous two fiscal years. The specifics of the budgetary information requested from the agencies are outlined in an OMB-OSTP coordinated, input guidance document that was provided to the agencies as part of the annual data call.

This report consists of budgetary information compiled in the enclosed budget table: FY2023 ICAMS Horizontal Budget Table.

Interagency Council for Advancing Meteorological Services (ICAMS)

The Interagency Council for Advancing Meteorological Services (ICAMS) is chartered under authority of the Director of the Office of Science and Technology Policy (OSTP) to serve as the Interagency Committee for Advancing Weather Services pursuant to Public Law No. 115-25, title IV, sec. 402 (Apr. 18, 2017), 15 U.S.C. § 8542.

As a continuation of the mandate in Public Law No. 87-843, title III, sec. 304 (Oct. 18, 1962), 68 Stat. 1114, and consistent with Public Law No. 115-25, ICAMS leads the annual development of an interagency budget review of programs supporting meteorological services and supporting research and annual implementation plans.[1]

ICAMS is the formal mechanism by which all relevant Federal departments and agencies (Ds/As) coordinate implementation of policy and practices to ensure U.S. global leadership in the meteorological services[2] enterprise. ICAMS also informs the development of relevant Federal policies via the National Science and Technology Council (NSTC) and within individual Ds/As.

The following set of principles guides the work of ICAMS:

- The meteorological enterprise is a national asset for ensuring personal and community safety, economic success, national security, and education;
- Individuals, and their creativity and dedication, are the greatest asset of the U.S. meteorological enterprise;

[1] DoD will participate to the limits imposed by the Federal Acquisition Regulations.

[2] Consistent with the World Meteorological Organization, “meteorological services” reflect an Earth system approach and encompass weather, climate, hydrological, ocean, and related environmental services. The term “services” broadly includes all relevant activities that provide value to society whether over land, at sea or in the air, including for the protection of life and property, personal and public health, quality of life, sustainability of the natural world, and economic and national security.

- Effective cross-agency coordination and external engagement are critical to success;
- Success for individuals and organizations is achieved via success of the enterprise as a whole;
- Efficiency is foundational to the stewardship of taxpayer dollars;
- Research, operations, and applications are mutually beneficial, mutually reinforcing, and equally important for realizing ICAMS goals;
- Open debate and a diversity of opinions promote excellence and teamwork; and
- Excellence results in quality and promotes public trust.

The creation of ICAMS enables the following aspirational goal:

The United States will lead the world in meteorological services via an Earth system approach, providing societal benefits with information spanning local weather to global climate.

(The preceding text is an excerpt from the ICAMS charter. The entire charter can be found on the ICAMS website.)

Fiscal Year (FY) 2023 ICAMS Budget Crosscut by Agency

ICAMS AGENCY or DEPARTMENT	FY21 Actual ($M)	FY22 Actual ($M)	FY23 Request ($M)
Department of Agriculture (USDA)	162.19	226.36	239.30
Department of Commerce (DOC)	3149.17	3360.62	4104.81
Department of Defense (DOD)	383.45	659.95	587.69
Department of Energy (DOE)	266.47	346.71	397.35
Department of Health and Human Services (HHS)	0	0	0
Department of Homeland Security (DHS)	32.20	32.56	32.54
Department of the Interior (DOI)	75.98	103.34	127.81
Department of State (DOS)	25.77	32.10	38.17
Department of Transportation (DOT)	285.70	305.45	265.01
Environmental Protection Agency (EPA)	7.37	7.46	7.83
National Aeronautics and Space Administration (NASA)	297.24	316.33	386.84
Nuclear Regulatory Commission (NRC)	0.68	0.50	0.65
National Science Foundation (NSF)	294.55	304.22	310.54
National Transportation Safety Board (NTSB)	0	0	0
TOTAL (ICAMS)	**4980.77**	**5695.59**	**6498.54**

(See attached ICAMS budget table for detailed agency budget and program information)

TABLE 1: ICAMS Horizontal Budget

ICAMS AGENCY or DEPARTMENT	FY22 Actual ($M)	FY22 Supplemental Actual DRSA*	FY22 Supplemental Actual BIL**	FY22 Supplemental Actual IRA***	FY23 Request ($M)	FY23 Request - Link to Agency Budget Document that describes the programs in Column E (please provide page references as necessary)	Program List (please identify all programs that comprise the budget totals in column E)	Clarification Notes (to be filled in by ICAMS Department and Agencies)
ALL ICAMS Departments and Agencies	**5695.59**	**32.76**	**172.11**	**47.34**	**6498.54**			
USDA	**226.36**	**0**	**0**	**0**	**239.30**			
Office Of the Chief Economist	1.14	0	0	0	1.19	https://www.usda.gov/sites/default/files/documents/2023-usda-budge summary.pdf	Joint Agricultural Weather Facility (JAWF)	
NRCS/Snow Survey and Water Forecasting	9.49	0	0	0	16.75	https://www.usda.gov/sites/default/files/documents/29-2024-NRCS.pd	Snow Survey and Water Supply Forecasting	
National Institute of Food and Agricultur	168.40	0	0	0	175.31	https://www.usda.gov/sites/default/files/documents/22-2024-NIFA.pc	25 separate programs including Hatch Ac	
Agricultural Research Service	30.73	0	0	0	30.73	https://www.usda.gov/sites/default/files/documents/21-2023-ARS.pd	Research and Development	
Forest Service	16.61	0	0	0	12.91	https://www.usda.gov/sites/default/files/documents/30a-2024-NRE.pdf	Threat Characterization and Management Program FPL: Building and Fire Sciences Program	
Risk Management Agency	0.00	0	0	0	2.40	https://www.usda.gov/sites/default/files/documents/28-2023-RMA.pd	PRISM	
Department of Commerce	**3360.62**	**30.70**	**170.18**	**47.34**	**4104.81**			
National Institute of Standards and Technology (NIST)	0	0	0	0	0			
National Oceanic and Atmospheric Administration (NOAA)	3360.62	30.70	170.18	47.34	4104.81			
National Weather Service (NWS)	1309.17	17.90	155.69	47.34	1323.41	https://www.noaa.gov/sites/default/files/2022-04/FY23_NOAAPresidents_Budget_508Compliant.pdf	ORF: Observations; Central Processing; Analyze, Forecast and Support; Dissemination; Science and Technology Integration PAC: Observations, Central Processing, Dissemination, Facilities	This is the entire NWS budget because all NWS programs meet the definition of Meteorological Services. Both BIL and IRA include 5-year funding. The IRA amounts include funding for all five years but is subject to change as spend plans are finalized. The BIL amounts are for FY22 and 23. The FY24 and 25 spend plans are not complete at this time.
National Environmental Satellite, Data, and Information Service (NESDIS)	1598.45	5.30	12.49	0.00	2282.90	https://www.noaa.gov/sites/default/files/2022-04/FY23_NOAAPresidents_Budget_508Compliant.pdf	Includes NESDIS' current and next-generation satellite acquisitio programs for low Earth orbit, geostationary orbit and space weather observations; common ground services; satellite operations; products and services; and data stewardship and archive.	
National Ocean Service (NOS)	203.5	0	0	0	239			
Office of Oceanic and Atmospheric Research (OAR)	249.5	7.5	2	0	259.5	https://noaa.gov/sites/default/files/2022-04/FY23_NOAAPresidents_Budget_508Compliant.pdf	The Climate Research Laboratories & Cooperative Institutes PPA. All four Weather Research PPAs (i.e. Weather Research Labs & CIs, USWRP, Tornado/Severe Storm Research (PAR) and JTTI).	
Office of Marine and Aviation Operations (OMAO)	0	0	0	0	0			
Department of Defense (DOD)	**659.95**	**0.00**	**0**	**0**	**587.69**			
United States Army (USA)	19.9	0	0	0	18.8	Army Justification Book of Research, Development, Test & Evaluation, Army RDT&E - Volume 3a, FY23, page145; Army Communications and Electronics Equipment, Budget Activity 2; p148, p332, p383. Operation and Maintenance - Volume I, Operation and Maintenance, Army Justification Of Estimates, Operation and Maintenance, Army Budget Activity 01: Operating Forces Activity Group 13: Land Forces Readiness Support Detail by Subactivity Group 131: Base Operations Support, p198. Army Justification Book of Research, Development, Test & Evaluation Army RDT&E – Volume I, Budget Activity 1; p72, p85, p150. Army Justification Book of Research, Development, Test & Evaluation Army RDT&E – Volume I, Budget Activity 2; p229, p336, p363 Army Justification Book of Research, Development, Test & Evaluation Army RDT&E – Volume I, Budget Activity 3; p215, p435 XW9 R-FORM	ATEC 4-Dimensional Weather (4DWX) model sustainment and development; R-FORM Title: Contractor Meteorological; The U.S. Army funds meteorological support for developmental and operational tests and evaluations at ranges across CONUS, Alaska and Panama to provide essential information to acquisition decision makers and commanders. The Army also funds systems which provide highly accurate meteorological dat for long range missile systems, ballistic missile defense systems, and government and commercial space mission tests as well as for operational employment of Field Artillery weapon systems. In its civil operational activities, the U.S. Army Corps of Engineers (COE) funds an extensive network of land-based gages collecting hydrologic and meteorological data used in support of COE major water projects, flood control, navigation, hydroelectric power, irrigation, water supply, and water quality. Within the Army's Training and Doctrine Command, funds are provided to conduct meteorological education and training at several Centers of Excellence.	
United States Air Force (USAF)	204.81	0.00	0	0	183.42	https://www.saffm.hq.af.mil/FM-Resources/Budget/Air-Force-Presidents-B	Weather Service/Weather Observation Forecasts	USSF investment have transferred starting in FY23
United States Marine Corps (USMC)	0.038	0	0	0	0.04			
United States Navy (USN)	219.6	0.0	0	0	242.5	https://www.secnav.navy.mil/fmc/fmb/Documents/23pres/RDTEN_BA4_Book.pdf, p. 129, https://www.secnav.navy.mil/fmc/fmb/Documents/23pres/OMN_Book.pdf, p. 184, p. 222, https://www.secnav.navy.mil/fmc/fmb/Documents/23pres/OPN_BA3_Book.pdf, p. 175, https://www.secnav.navy.mil/fmc/fmb/Documents/23pres/OPN_BA5-8_Book.pdf, p. 247, https://www.secnav.navy.mil/fmc/fmb/Documents/23pres/OPN_BA2_Book.pdf, p. 631	Decision Support Products & Dissemination Research and Development, METOC Data Acquisition Research and Development, METOC Data Assimilation and Modeling Research and Development, Tactical Environmental Support Research and Development, Operational Meteorology & Oceanography Operations and Maintenance, Combat Communications and Electronic Warfare Operations and Maintenance, Cyberspace Activities Operations and Maintenance, Meteorological Equipment Procurement, Environmental Support Equipment Procurement, General Purpose Electrical Test Equipment	
United States Space Force (USSF)	215.6	0.00	0	0	142.95	https://www.saffm.hq.af.mil/FM-Resources/Budget/Air-Force-Presidents Budget-FY23/	SBEM Programs - Electro-Optical/Infrared Weather System (EWS) & Weather Satellite Follow-on (WSF)	New USSF POC is SAF/SQSI: SAF.SQS.SQSI@us.af.mil or 703-693-5085
Departmet of Energy (DOE)	**346.71**	**0**	**1.93**	**0**	**397.35**			
Office of Science	341.4	0	0	0	382.5	https://www.energy.gov/sites/default/files/2022-04/doe-fy2023-budget-ir brief-v6.pdf		
NNSA - Office of Emergency Operations - NA-40	0.05	0	0	0	0.05			

Energy Efficiency and Renewable Energy (EERE) (EE-4WE	5.26	0	1.93	0	14.8			
Department of Health and Human Services (HHS	**0**	**0**	**0**	**0**	**0**			
National Institutes of Health (NIH)	0	0	0	0	0			
Centers for Disease Control and Prevention (CDC)	0	0	0	0	0			CDC does not receive funding dedicated to meteorology services
Department of Homeland Security (DHS	**32.56**	**0**	**0**	**0**	**32.54**			
Federal Emergency Management Administration (FEMA)	2.16	0	0	0	2.14	PDF Page 154: https://www.dhs.gov/sites/default/files/2022-03/Federal%20Emergency%20Management%20Agency_Remediated.pdf	All funding for meteorological studies and services are part of Planning & Exercises National Hurricane Program O&S funding.	
United States Coast Guard (USCG)	30.4	0	0	0	30.4	FY 2023 USCG Congressional Justification	All funding for meteorological services is part of the operations and support (O&S) appropriation. The Coast Guard also disseminates a variety of weather forecast products and warnings to the maritime community via radio transmissions. Coast Guard shore stations often serve as sites for NWS automated coastal weather stations, and the National Data Buoy Center provides logistics support in deploying and maintaining NOAA offshore weather buoys from Coast Guard cutters. The International Ice Patrol conducts iceberg surveillance operations and provides warnings to mariners on the presence of icebergs in the North Atlantic shipping lanes. Coast Guard efforts in meteorological operations and services have not changed significantly during recent years.	For Fiscal Year (FY) 2023, the funding level is an estimated $30.4 million, which represents no change from the FY 2022 enacted estimate. The Coast Guard does not have a specific program and budget for meteorology—all meteorological activities are accomplished as part of general operations. The Coast Guard does not track meteorological costs at an organizational level, so the funding level is a service-wide estimate. The Coast Guard's activities include the collection and dissemination of meteorological and iceberg warning information for the benefit of the maritime community. The Coast Guard also collects coastal and marine observations from its shore stations and cutters and transmits these observations daily to the Navy's Fleet Numerical Meteorology and Oceanography Center and NOAA's National Weather Service. These observations are used by both the Navy and NOAA in generating weather forecasts.
Deparment of the Interior (DOI	**103.34**	**2.06**	**0.00**	**0.00**	**127.81**			
United States Geological Survey (USGS)	96.07	2.06	0	0	119.99			
Landslide Hazards Program	8.3	1.5	0	0	14.43	2023 U.S. Geological Survey Greenbook (amazonaws.com) pdf page 95	Landslide Hazards Program	
Geomagnetism Program	4.67	0	0	0	5.76	2023 U.S. Geological Survey Greenbook (amazonaws.com) pdf page 103	Geomagnetism Program	
Coastal/Marine Hazards and Resources Program	0.54	0.56	0	0	0.54	2023 U.S. Geological Survey Greenbook (amazonaws.com) pdf page 107	Coastal/Marine Hazards and Resources Program	
Federal Priority Streamgages	25.22	0	0	0	30.32	2023 U.S. Geological Survey Greenbook (amazonaws.com) pdf page 123	Groundwater and Streamflow Information Program	
National Groundwater Monitoring Network	3.93	0	0	0	3.93	2023 U.S. Geological Survey Greenbook (amazonaws.com) pdf page 123	Groundwater and Streamflow Information Program	
National Atmospheric Deposition Network	1.71	0	0	0	1.71	2023 U.S. Geological Survey Greenbook (amazonaws.com) pdf page 117	National Water Quality Program	
Next Generation Water Observing System	29	0	0	0	30.9	2023 U.S. Geological Survey Greenbook (amazonaws.com) pdf page 123	Groundwater and Streamflow Information Program	
National Land Imaging Program Science Resarch and Investigations (SRI)	22.7	0	0	0	32.4	2023 U.S. Geological Survey Greenbook (amazonaws.com) pdf page 129	National Land Imaging Program	
Bureau of Land Management (BLM)	4.89	0	0	0	4.93	https://www.doi.gov/budget/appropriations/2023	Wildland Fire Preparedness Program and the BLM's Natura Resource Programs	
National Park Service (NPS)	0	0	0	0	0			
Bureau of Ocean Energy Management (BOEM)	2.38	0	0	0	2.89	https://www.boem.gov/about-boem/budget/fy-2023-boem-congressiona justification (Renewable Energy - pages 25-54; Environmental Programs - pages 105-126)	Portions of Renewable Energy and Environmental Programs	
U.S. Fish and Wildlife Service (FWS)	0	0	0	0	0			
Department of State (DOS)	**32.1**	**0**	**0**	**0**	**38.17**			
Bureau of Oceans and International Environmental and Scientific Affairs (OES)	32.1	0	0	0	38.17	FY 2023 Apendix 2	IPCC, UNFCCC, WMO (which includes: Global Climate Observing Systmes (GCOS) and Group on Earth Observations (GEO))	Includes both Assessed and Voluntary contributions from the CIO and IO&P funding accounts
Department of Transportation (DOT	**305.45**	**0**	**0**	**0**	**265.01**			
Federal Aviation Administration (FAA)	304.45	0	0	0	264.11	**Omnibus** - F&E - NG Weather Processor - P. 19; Aviation Surface Observation System - P. 21; (RE&D) Weather Programs - P. 27; Weather-in-the-Cockpit - P. 28		
Federal Highway Administration (FHWA	1	0	**0**	0	0.9			
Environmental Protection Agency (EPA	**7.46**	**0**	**0**	**0**	**7.83**			
Environmental Protection Agency (EPA)	7.46	0	0	0	7.83	https://www.epa.gov/system/files/documents/2022-04/fy-2023 congressional-justification-all-tabs.pdf, p. 141	EPA's Science and Technology (S&T) Portion of the Air, Climate & Energy (ACE) Program	
National Aeronautics and Space Administration (NASA	**316.33**	**0**	**0**	**0**	**386.84**			
National Aeronautics and Space Administration (NASA)	316.33	0	0	0	386.84	NASA FY23 PBS: Pages ES-2 to ES-111	Earth Science Research; Earth Systematic Missions; Earth System Science Pathfinder; Earth System Explorers; Earth Science Data Systems; & Earth Science Technology	
Nuclear Regulatory Commission (NRC)	**0.50**	**0.00**	**0.00**	**0.00**	**0.65**			
Nuclear Regulatory Commission (NRC)	0.50	0	0	0	0.65	https://www.nrc.gov/docs/ML2208/ML22089A188.pdf. The program activties can be found at: (1) Operating Reactor Major Activities (see pages 17-18), (2) New Reactor Activities (see pages 33-34)	The NRC activites that comprise the budget totals in column E are as follows: (1) Radiation Protection Dispersion and Consequence Computer Codes Analysis & Maintenance (Operating and New Reactor Business Lines) (2) Use of National Centers for Environmental Prediction (NCEP) data to support severe accident consequence analysis at locations without onsite meteorological data	

National Science Foundation (NSF	**304.22**	**0**	**0**	**0**	**310.54**			
National Science Foundation (NSF)	304.22	0	0	0	310.54	https://www.nsf.gov/about/budget/fy2023/index.jsp	NSF support includes investments from the following programs/activities. Note that in some cases, the NSF total only includes a portion of the following programs/activites. Physical and Dynamic Meteorology, Climate and Large-scale Dynamics, Atmospheric Chemistry, National Center for Atmospheric Research, Facilties for Atmospheric Research and Education, Aeronomy, Space Weather, Magnetospheric Physics, Geospace Facilities and Arecibo, Hydrology, Instrumentation and Facilities, Critical Zone Observatories, Physical Oceanography, Ocean Sciences Ship Operations, Coastlines and People, Navigating the New Arctic, Earthcube, SBE Core Programs, Antarctic Facility Operations, Arctic Observing Network, Ocean and Atmospheric Sciences, National Solar Observatory's Integrated Synoptic Program, Small Business Innovation Research/ Small Business Technology Transfer Programs, and the Convergence Accelerator Program	While some NSF programs counted in this exercise have been characterized as contributing to ICAMS 100%, it should be recognized that some projects within the programs may be characterized as exploratory research addressing emerging science frontiers, while others might be closer to contributing directly to services relevant to the ICAMS goals.
National Transportation Safety Board (NTSB)	**0**	**0**	0	0	**0**			
* Disaster Relief Supplemental Act (DRSA)								
** Bipartisan Infrastructure Law (BIL								
*** Inflation Reduction Act (IRA								