

THE FEDERAL METEOROLOGICAL ENTERPRISE

*Fiscal Year 2022
Budget and
Coordination
Report*

The Federal Meteorological Enterprise: Fiscal Year 2022 Budget and Coordination Report

INTERAGENCY COUNCIL FOR ADVANCING
METEOROLOGICAL SERVICES (ICAMS)

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Preface

This year's Budget and Coordination Report (BCR) introduces a streamlined, tabular format: the *FY2022 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: FY22 requests along with enacted funding for two previous fiscal years.

This report is the first 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 FY2022 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: FY2022 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 services² 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;
- Effective cross-agency coordination and external engagement are critical to success;

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.

- 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) 2022 ICAMS Budget Crosscut by Agency

ICAMS AGENCY or DEPARTMENT	FY20 Actual (\$0.01M)	FY21 Actual (\$0.01M)	FY22 Request (\$0.01M)
Department of Agriculture (USDA)	154.54	162.19	177.33
Department of Commerce (DOC)	3172.21	3149.17	3839.76
Department of Defense (DOD)	299.80	383.45	369.93
Department of Energy (DOE)	272.89	266.47	330.87
Department of Health and Human Services (HHS)	0.00	0.00	0.00
Department of Homeland Security (DHS)	32.20	32.20	32.20
Department of the Interior (DOI)	56.50	75.98	90.58
Department of State (DOS)	24.68	25.77	38.10
Department of Transportation (DOT)	279.60	285.70	314.90
Environmental Protection Agency (EPA)	7.70	7.37	8.17
National Aeronautics and Space Administration (NASA)	300.75	297.24	338.02
Nuclear Regulatory Commission (NRC)	0.63	0.68	0.74
National Science Foundation (NSF)	291.59	294.55	349.62
National Transportation Safety Board (NTSB)	0.00	0.00	0.00
TOTAL (ICAMS)	4893.09	4980.77	5890.22

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

FY2022 ICAMS Horizontal Budget Table							
ICAMS AGENCY or DEPARTMENT	FY20 Actual (\$0.01M)	FY20 CARES Act Actual (\$0.01M)	FY21 Actual (\$0.01M)	FY22 Request (\$0.01M)	FY22 Request - Link to Agency Budget Document that describes the programs in Column E (page references as necessary)	Program List (programs that comprise the budget totals in column E)	Clarification Notes
ALL ICAMS Departments and Agencies	4893.09	2.20	4980.77	5890.22			
USDA	154.54	0	162.19	177.33	https://www.usda.gov/sites/default/files/documents/2022-budget-summary.pdf	Operations and Research	
Department of Commerce	3172.21	2.20	3149.17	3839.76			
National Institute of Standards and Technology (NIST)	1.14	0	1.02	1.27	https://www.noaa.gov/sites/default/files/2021-09/NOAA%20FY22%20CJ_508%20Compliant.pdf	National Windstorm Impact Reduction Program (NWIRP), National Construction Safety Team (NCST) Hurricane Maria investigation, Disaster and Failure Studies program	
National Oceanic and Atmospheric Administration (NOAA)	3171.07	2.20	3148.15	3838.49			
National Weather Service (NWS)	1263.19	1.07	1223.08	1328.75	https://www.noaa.gov/sites/default/files/2021-06/NOAA%20FY22%20CJ.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. NWS began FY21 with \$5.67M in CARES Act funding. NOAA redirected \$4.6M of the NWS allotment to OMAO to improve its testing protocols.
National Environmental Satellite, Data, and Information Service (NESDIS)	1508.28	1.13	1504.77	2029.04	NOAA FY22 CJ, pg. 797	Includes NESDIS' current and next-generation satellite acquisition 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)	199.30	0	200.90	222.20	https://www.noaa.gov/sites/default/files/2021-06/NOAA%20FY22%20CJ.pdf	NOS pg. 10-22 includes the entire Geodesy Base and Shoreline Mapping budget lines within the Navigation, Observation, and Positioning PPA. pg. 10-14, 1617 includes the entirety of the M&C Base and Hydro Contracts Priorities PPA pg. 10-16 Navigation Services pg. 12-14 Ocean and Coastal Observations (NWLON, PORTS) pg. 10-12 and 19-20 is the core funding to the 11 IOOS Regional Associations from the IOOS Regional Observations PPA	
Office of Oceanic and Atmospheric Research (OAR)	200.30	0	219.40	258.50	https://www.noaa.gov/sites/default/files/2021-06/NOAA%20FY22%20CJ.pdf	FY22 President's Budget references: Climate Research (OAR 12 - 20); Weather and Air Chemistry Research (OAR 61 - 68)	
Department of Defense (DOD)	299.80	0	383.45	369.93	Please see TAB 2 for a detailed breakdown of budget documents and links		
United States Army (USA)	22.20	0	24.00	22.00	Please see TAB 2 for a detailed breakdown of budget documents and links		
United States Air Force (USAF)	154.10		227.25	220.03	Please see TAB 2 for a detailed breakdown of budget documents and links		
United States Marine Corps (USMC)					Please see TAB 2 for a detailed breakdown of budget documents and links		within Navy budget
United States Navy (USN)	123.50	0	132.20	127.90	Please see TAB 2 for a detailed breakdown of budget documents and links		
United States Space Force (USSF)					Please see TAB 2 for a detailed breakdown of budget documents and links		within Air Force budget
Department of Energy (DOE)	272.89	0	266.47	330.87	https://www.energy.gov/sites/default/files/2021-06/doe-fy2022-budget-in-brief-v4.pdf	DOE conducts meteorological services and supporting research and related activities within several DOE entities: the Office of Science/Biological and Environmental Research (BER), the National Nuclear Security Administration (NNSA) for emergency operations and in the Office of Energy Efficiency and Renewable Energy (EERE) for the Wind Energy Technologies Office (WETO).	The Office of Science's Earth and Environmental Systems Sciences Division (EESSD) activity supports basic research involving atmospheric and ecological sciences as well as research on integrative Earth system modeling and analysis. DOE/NNSA coordinates and supports operational meteorological programs at Defense Nuclear Facilities (DNF). DOE-EERE programs support DOE National Laboratories' support of the Offshore Wind Resource Science project, an offshore field observational study of coastal and marine atmospheric boundary layer, wave-atmosphere interactions, and factors that control wind speeds within the marine boundary layer, including cloud cover, land-ocean coupling that drives coastal meteorology.
Department of Health and Human Services (HHS)	0	0	0	0			
National Institutes of Health (NIH)							No response
Centers for Disease Control and Prevention (CDC)	0	0	0	0			CDC reported that that it does not receive any funding for meteorological services

ICAMS AGENCY or DEPARTMENT	FY20 Actual (\$0.01M)	FY20 CARES Act Actual (\$0.01M)	FY21 Actual (\$0.01M)	FY22 Request (\$0.01M)	FY22 Request - Link to Agency Budget Document that describes the programs in Column E (page references as necessary)	Program List (programs that comprise the budget totals in column E)	Clarification Notes
Department of Homeland Security (DHS)	32.20	0	32.20	32.20			
Federal Emergency Management Administration (FEMA)	1.80	0	1.80	1.80	federal_emergency_management_agency_0.pdf (dhs.gov) page 85	All funding for meterologocal services are part of the O&S Planning and Excercises cost driver	
United States Coast Guard (USCG)	30.40	0	30.40	30.40	FY2022 USCG Congressional Justification (page: O&S - 5)	All funding for meteorological services is part of the operations and support (O&S) appropriation.	
Departement of the Interior (DOI)	56.50	0	75.98	90.58			
United States Geological Survey	47.37	0	67.51	82.24	2022 U.S. Geological Survey Greenbook (amazonaws.com)	Landslide Hazards Program-page 85, Coastal/Marine Hazards and Resources Program-page 91,Geomagnetism Program-page 95, Federal Priority Streamgages-page 111, National Groundwater Monitoring Network-page 113, National Atmospheric Deposition Network-page 121, Next Generattion Water Observing System-page 114	
Bureau of Land Management (BLM)	4.89	0	4.80	4.93	https://www.doi.gov/budget/appropriations/2022	Wildland Fire Preparedness Program and the BLM's Natural Resource Programs	
National Park Service (NPS)	3.62	0	3.28	2.93	Pg ONPS-16 https://www.doi.gov/sites/doi.gov/files/fy2022-nps-budget-justification.pdf	Natural Resource Stewardship - Air Resource Management and Research	The NPS budget request and enacted funding is not this granular - Natural Resource Stewardship is the lowest level in the authorized budget. The allocations estimated here are based on internal assessment of needs and are not explicitly indicated by Congress.
Bureau of Ocean Energy Management (BOEM)	0.62	0	0.39	0.48	https://www.boem.gov/sites/default/files/documents/about-boem/2022-BOEM-Greenbook.pdf pages 56,100,101	BOEM's Environmental Studies Program	Spending estimates match those reported to the NSF Survey of Federal Funds for Research and Development in the Atmospheric Science and Meteorology field of science.
U.S. Fish and Wildlife Service (FWS)	0	0	0	0			FWS had no inputs to report
Department of State (DOS)	24.68	0	25.77	38.10			
Bureau of Oceans and International Environmental and Scientific Affairs (OES)	24.68	0	25.77	38.10	FY 2022 Appendix 2	IPCC, UNFCCC, WMO (which includes: Global Climate Observing System (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)	279.60	0	285.70	314.9			
Federal Aviation Administration (FAA)	278.10	0	284.60	313.90	FY2022 Budget Estimates Facilities & Equipment 2A13 – NWP Pages 81-83 2C01 – ASOS Pages 138 -139 Research Engineering & Development A11k Weather Research Pages 35-36 A11r Weather Technology in the Cockpit Pages 52-54 Please note: The FAA will not provide the link to documents. However, included are page numbers from which the data was extracted.	Operations (OPS):Center Weather Unit, Weather Systems-AOS/ALDAR, Facilites and Equipment next Geneneration Weather Processor (NWP) (2A13), Research Engineering & Development: Weather Research (RE&D) (A11k) Weather Programs (A11r)	The F&E and RE&D numbers were pulled from the FY2022 Budget Estimates Book and OPS numbers came from Gylane Smith,AJG-R35
Federal Highway Administration (FHWA)	1.50	0	1.10	1.00	FHWA FY 2021 Budget Estimates	Section IV Research, Development and Education • Highway Research and Development Program • Intelligent Transportation Systems	The current transportation authorization, the Fixing America's Surface Transportation (FAST) Act, allocates funds for Research, Technology and Education. This authorization includes core Highway Research and Development as well as Intelligent Transportation Systems (ITS).
Environmental Protection Agency (EPA)	7.70	0	7.37	8.17	https://www.epa.gov/sites/default/files/2021-05/documents/fy-2022-epa-bib.pdf, p. 28 and https://www.epa.gov/system/files/documents/2021-07/fy22-cj-03-science-technology.pdf, p. 75	EPA's Science and Technology (S&T) Portion of the Air & Energy (A-E) Program	
National Aeronautics and Space Administration (NASA)	300.75	0	297.24	338.02	NASA FY22 PBS; Pages ES-1 to ES-114	Earth Science Research; Earth Systematic Missions; Earth System Science Pathfinder; Earth System Explorers; Earth Science Data Systems; & Earth Science Technology	

ICAMS AGENCY or DEPARTMENT	FY20 Actual (\$0.01M)	FY20 CARES Act Actual (\$0.01M)	FY21 Actual (\$0.01M)	FY22 Request (\$0.01M)	FY22 Request - Link to Agency Budget Document that describes the programs in Column E	Program List	Clarification Notes
					(page references as necessary)	(programs that comprise the budget totals in column E)	
Nuclear Regulatory Commission (NRC)	0.63	0.00	0.68	0.74	https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1100/v37/index.html . The program activities can be found at: (1) Operating Reactor Major Activities (see pages 13, 17-18) and (2) New Reactor Activities (see pages 33, 35-36)	The NRC activities that comprise the budget totals in column E are as follows: (1) Updating Standard Review Plan Meteorological Sections and Developing Precipitation Guidance. (2) Radiation Protection Dispersion and Consequence Computer Codes Analysis & Maintenance (Operating and New Reactor Business Lines) (3) Hydrometeorology, Water Resource Services & Nuclear Power Plant Licensing (ongoing research related to extreme weather conditions)	
National Science Foundation (NSF)	291.59	0	294.55	349.62	https://www.nsf.gov/about/budget/fy2022/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/activities. Physical and Dynamic Meteorology, Climate and Large-scale Dynamics, Atmospheric Chemistry, National Center for Atmospheric Research, Facilities 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, and the National Solar Observatory’s Integrated Synoptic Program.	(2) New Reactor Activities (see pages 33, 35-36)
National Transportation Safety Board (NTSB)	0	0	0	0			reported no inputs that apply

Service	Type	Program	FY21 Actual	FY22 Request	Link
AF	O&M	Depot Maintenance (weather)	61.988	77.586	https://www.saffm.hq.af.mil/Portals/84/documents/FY22/OM_FY22PB%20Volume%20II%20-%20AF%20-%20FINAL%20to%20OSD.pdf?ver=_gffmhpe-G_mWpdc5r2_8w%3d%3d
AF	O&M	Depot Maintenance (weather systems software)	72.562	59.439	https://www.saffm.hq.af.mil/Portals/84/documents/FY22/OM_FY22PB%20Volume%20II%20-%20AF%20-%20FINAL%20to%20OSD.pdf?ver=_gffmhpe-G_mWpdc5r2_8w%3d%3d
AF	O&M	Weather - Combat related operations, Global ISR and Support	20.875	19.976	https://www.saffm.hq.af.mil/Portals/84/documents/FY22/OM_FY22PB%20Volume%20I%20-%20AF%20-%20FINAL%20to%20PRINT.pdf?ver=nG3_2x9uiQDjsAlpiP1DEQ%3d%3d
AF	O&M	Weather Service Global ISR (equipment purchase)		0.74	https://www.saffm.hq.af.mil/Portals/84/documents/FY22/OM_FY22PB%20Volume%20I%20-%20AF%20-%20FINAL%20to%20PRINT.pdf?ver=nG3_2x9uiQDjsAlpiP1DEQ%3d%3d
AF	O&M	Weather Service Global ISR (contractor support)		2.7	https://www.saffm.hq.af.mil/Portals/84/documents/FY22/OM_FY22PB%20Volume%20I%20-%20AF%20-%20FINAL%20to%20PRINT.pdf?ver=nG3_2x9uiQDjsAlpiP1DEQ%3d%3d
AF	Procurement	Weather observation forecast	33.021	32.376	https://www.saffm.hq.af.mil/Portals/84/documents/FY22/PROCUREMENT_FY22%20DAF%20J-Book%20-%203080%20-%20Other%20Proc.pdf?ver=HxV5mzuwk9uLTVgFFaamHA%3d%3d
AF	RDTE	AF Weather Services	2.234	0.986	https://www.saffm.hq.af.mil/Portals/84/documents/FY22/RDTE_FY22_PB_RDTE_Vol-I.pdf?ver=DGijGVofWq4jnTnOLuU5Bg%3d%3d
AF	RDTE	Weather Services	36.573	26.228	https://www.saffm.hq.af.mil/Portals/84/documents/FY22/RDTE_FY22_PB_RDTE_Vol-I.pdf?ver=DGijGVofWq4jnTnOLuU5Bg%3d%3d
AF TOTAL			227.253	220.031	

Army	O&M	Training, Development, Equipment	11.5	10	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	Acquisitions		0.4	0.3	Army Justification Book of Other Procurement
Army	RDT&E	Modeling Development, Intelligence	12.1	12.1	Army Justification Book of Research, Development, Test & Evaluation Army RDT&E – Volume I, Budget Activity 1; p45, p110. Army Justification Book of Research, Development, Test & Evaluation Army RDT&E – Volume I, Budget Activity 2; p254, p290, p312. Army Justification Book of Research, Development, Test & Evaluation Army RDT&E – Volume I, Budget Activity 3; p355.
Army	Total		24	22.4	

Navy	O&M	Meteorological Operations	82.2	82.2	https://www.secnav.navy.mil/fmc/fmb/Documents/22pres/OMN_Book.pdf
Navy	O&M; OPN	Meteorological Acquisition	21.3	19.0	
Navy	RDTE	Supporting Meteorological Research	28.7	26.7	https://www.secnav.navy.mil/fmc/fmb/Documents/22pres/RDTEN_BA1-3_Book.pdf
Navy Total			132.2	127.9	