



*Supporting Elected Officials
and the Public on Climate Issues*

The President's budget proposes to terminate or reduce in scope, as detailed in the NOAA budget (<https://www.corporateservices.noaa.gov/nbo/>), 30 projects that are related to climate change mitigation, adaptation and research, extreme weather warning systems, resources and facilities for climate information, and climate gathering instruments: resulting in the President proposing to eliminate \$354,201M (7% of NOAA's 2019 enacted budget) and 176 positions (32% of NOAA's 2019 enacted budget) from the NOAA budget.

The termination and reduction in scope of these projects place a severe risk to the security of this nation: the proposed budget submitted by NOAA will impact the capability to prepare for and deal with the expected frequency and intensity of extreme storms, storm surges, floods, drought, temperature rise, and sea level rise from the effects of climate change. All affecting our military, infrastructure, areas of commerce, and the ability to feed this nation.

NATIONAL OCEAN SERVICE (NOS) PROGRAM

Terminate National Centers for Coastal Ocean Service -94 Positions -\$23,664

NOAA requests to terminate the National Centers for Coastal Ocean Service (NCCOS) while sustaining its most important research areas. NOAA will retain \$8.8 million of funding and personnel to sustain key components of the NCCOS science portfolio; specifically, harmful algal bloom, hypoxia, and pathogen research, prevention, and forecasting; habitat and species forecasting; and marine aquaculture siting science and tool development.

Response: What is discarded are services that, using natural buffers, help protect 124 million people who live in U.S. coastal counties (~39% of the U.S. population) from sea level rise and storm surges: including children, the elderly, households where English isn't the primary language, and those in poverty. This is a cost-effective program as revealed by these specifics.

- Acting as natural buffers from storm surges, coastal wetlands prevented more than \$625 million in property damages during Hurricane Sandy in 2012 and reduced property damages throughout the Northeast by 10 percent on average – savings worth ~3 times the cost of the yearly NCCOS program.
- With more frequent and more intense storms expected with climate change this program could save countless lives and billions from government emergency funding required to repair storm damage in the future.
- NCCOS is helping communities mitigate and adapt to climate change by conducting research on detecting and assessing change in coastal ecosystems. Coastal decision makers need to understand the risks and vulnerabilities facing their communities and ecosystems in order to help them become resilient with the effects of climate change.

References: <https://coastalscience.noaa.gov/>

<https://blog.nature.org/science/2017/08/31/coastal-wetlands-prevented-625m-in-property-damage-during-hurricane-sandy/>

Eliminate NCCOS competitive funding support for research on ecological threats 0 Positions / -\$18,000

NOAA proposes to eliminate the NCCOS Competitive Research program, which provides grants to academic institutions to conduct ecological research that advances NOAA's missions.

Response: These grants provide the critical information and predictive capabilities required to manage the nation's coastal resources in an ecosystem context supporting the NCCOS activities per above. These issues typically require multi-disciplinary research teams and a significant long-term commitment of resources because of their complexity and the effort required to reach a new level of

understanding sufficient to support NOS priorities and drive future coastal management decisions.

References: <https://coastalscience.noaa.gov/>
<https://blog.nature.org/science/2017/08/31/coastal-wetlands-prevented-625m-in-property-damage-during-hurricane-sandy>

Eliminate funding support for Integrated Water Prediction 0 Positions / -\$2,576

NOAA proposes to eliminate funding for the NOS portion of the Integrated Water Prediction (IWP) project. With this reduction, NOS will continue to engage in the NOAA Water Team, but would significantly curtail development of new products and services for end users.

Response: The Integrated Water Prediction (IWP) project will deliver a suite of more holistic water intelligence products to help communities and industries make better-informed decisions about water management and how to prepare for and respond to extreme water events. Specifics:

- IWP specifically brings together the National Weather Service (NWS) and the National Ocean Service (NOS) to transform the nation's water prediction capabilities, particularly at the coast.
- IWP will provide new information vital for decision making both during high-impact events (e.g., hurricanes, nor'easters, storm surge) and for routine water management (e.g., ecosystem health, low flow, transportation, agriculture).

Reference: <https://sab.noaa.gov/sites/SAB/.../FINAL%20Integrated%20Water%202-pager.pdf>

Eliminate Coastal Zone Management Grants 0 Positions / -\$75,500

NOAA requests a decrease to eliminate grants within the Coastal Zone Management (CZM) Program that support actions of states and other grantees authorized under the Coastal Zone Management Act (CZMA). NOAA will continue to support states' participation in the National CZM program by reviewing and supporting implementation of states' management plans, supporting Federal consistency reviews, and providing technical assistance services.

Response: The program provides critical grants to address coastal development, water quality, public access, habitat protection, energy facility siting, ocean governance and planning, coastal hazards, and climate change. These efforts are necessary to mitigate against increasingly damaging coastal storms. Specifics:

- The Coastal Zone Enhancement Program within the CZM provides incentives to states to enhance their state programs within nine key areas: wetlands, coastal hazards, public access, marine debris, cumulative and secondary impacts, special area management planning, ocean and Great Lakes resources, energy and government facility siting, and aquaculture.
- The program is currently run with both state and federal funding. Federal funding is requested to be terminated.

Reference: <https://coast.noaa.gov/czm/about/?redirect=301ocm>

Eliminate Federal Funding Support for National Estuarine Research Reserve System 0 Positions / -\$27,000

NOAA proposes to discontinue NOAA grants to state agencies and academic institutions that support operations of the National Estuarine Research Reserve System (NERRS). Under this proposal, NOAA will continue to provide national-level system coordination and in-kind support to state agencies and academic institutions that choose to continue operating the reserves using state funds.

Response: The National Estuarine Research Reserve System is a network of 29 areas representing different biogeographic regions of the United States. Their work must be continued to accomplish their long-term research on: water quality, habitat monitoring, education, coastal stewardship, biophysical and social degrading impacts of increasing storms and temperatures on estuarine systems and coastal communities. Specifics:

- Estuaries and surrounding wetlands serve as important buffers against storm damage, absorbing the extra water with minimal damage to the environment.
- Estuaries and surrounding wetlands serve as spawning grounds for most fish and shellfish eaten in the United States, including salmon, herring, American shad, Atlantic menhaden, striped bass, and oysters.

References: <https://coast.noaa.gov/nerrs/research/science-collaborative.html>
<https://oceanservice.noaa.gov/ecosystems/nerrs/>
<https://www.neefusa.org/nature/water/estuaries-offer-protection-storms>
<https://ocean.si.edu/holding-tank/beaches/estuary-storm-buffer>
<https://www.neefusa.org/nature/water/estuaries-offer-protection-storms>

OCEANIC AND ATMOSPHERIC RESEARCH (OAR) PROGRAM

Climate Laboratories and Cooperative Institutes Decrease 0 Positions -\$498

NOAA will decrease the funding within the OAR Climate Laboratories. These activities include socioeconomic studies on the localized impacts of severe weather and seasonal

to decadal climate work to help NOAA meet its mission responsibilities to inform long-term planning and preparedness.

Response: Through Climate Laboratories & Cooperative Institutes PPA (Program, Project, or Activity) NOAA provides the research and technology development necessary to improve the agency's weather and climate services, solar-terrestrial forecasts, and marine services. Specifics:

- These activities provide the scientific basis for national policy decisions in key environmental areas such as climate change, disaster reduction, air quality, non-indigenous species, and stratospheric ozone depletion.

Reference: <https://cpo.noaa.gov/Our-Work/Partnerships/Cooperative-Institutes>

Arctic Research Elimination 0 Positions / -\$1,940

NOAA will eliminate Arctic research within the Climate Laboratories & Cooperative Institutes PPA. NOAA will terminate some Arctic research products and improvements to operational sea ice modeling and predictions.

Response: The Geophysical Fluid Dynamics Laboratory has developed an operational sea ice modeling and predictions system that produces seasonal Arctic sea-ice extent. Large year-to-year fluctuations occur on top of the long-term decline, such as the 1996 maximum, and the 2007 and 2012 minima. Predicting these fluctuations is critically important to improve management of ocean and coastal resources in the Arctic.

References: <https://www.gfdl.noaa.gov/arctic-sea-ice-predictions/>
<https://cpo.noaa.gov/Our-Work/Partnerships/Cooperative-Institutes>

Arctic Research Elimination 0 Positions / -\$3,745

NOAA will eliminate Arctic research within the Regional Climate Data & Information PPA. NOAA will terminate some Arctic research products and improvements to operational sea ice modeling and predictions.

Response: The Geophysical Fluid Dynamics Laboratory has developed an operational sea ice modeling and predictions system that produces seasonal Arctic sea-ice extent. Large year-to-year fluctuations occur on top of the long-term decline, such as the 1996 maximum, and the 2007 and 2012 minima. Predicting these fluctuations is critically important to improve management of ocean and coastal resources in the Arctic.

Reference: <https://www.gfdl.noaa.gov/arctic-sea-ice-predictions/>

Eliminate Climate Competitive Research Funding -10 Positions / -\$20,760

NOAA will eliminate climate competitive research activities in the Regional Climate Data and Information PPA, terminating the Regional Integrated Sciences and Assessments Program (RISA) program, and eliminating NOAA's portion of the funding for the National Climate Assessment. NOAA will continue to support NIDIS and other high priority programs.

Response to Termination of funding for the The National Climate Assessment (NCA): The National Climate Assessment (NCA) and the follow-on reports at the State level are important inputs to local decision makers. These reports are critical for local, state, and federal government decision makers for near-term and long-term mitigation and adaptation to climate change. Specifics:

- With contributions from 14 government agencies, the NCA is mandated by congress to report to the President and the Congress at least every four years the effects of global change (i.e., climate change) and how it may alter the capacity of the Earth to sustain life with projections for 25 and 100 years:
 - Temperature
 - Sea Level Rise
 - Natural environment
 - Agriculture
 - Energy production and use
 - Land, oceans, and water resources
 - Transportation
 - Human health and welfare
 - Human social systems
 - Biological diversity

Response to Termination of the Regional Integrated Sciences and Climate Assessment (RISA): NOAA's Regional Integrated Sciences and Assessments (RISA) program supports research teams that help expand and build the nation's capacity to prepare for and adapt to climate variability and change. Specifics

- RISAs work closely with applied scientists who provide predictions and projections of weather and climate, with cooperative extension and outreach professionals, and communications experts including. Services include:
 - Climate impacts training
 - Climate outlooks and outlook fora
 - Climate extension
 - Communication tools (visualization, white papers, report, etc.)
 - Decision support tools and information systems for drought, climate, water supply and availability, agriculture and other impacts

References: <https://www.globalchange.gov/about>

<https://cpo.noaa.gov/Meet-the-Divisions/Climate-and-Societal-Interactions/RISA/About-RISA>

Climate Competitive Research PPA Elimination -15 Positions / -\$40,048

NOAA will eliminate the Climate Competitive Research PPA, which will terminate all climate research programs within the Climate Program Office with the exception of NIDIS, and reduce competitive research grants to cooperative institutes, universities, NOAA laboratories and other partners.

Response: NOAA's Regional Integrated Sciences and Assessments (RISA) program supports research teams that help expand and build the nation's capacity to prepare for and adapt to climate variability and change. Specifics

- RISAs work closely with applied scientists who provide predictions and projections of weather and climate, with cooperative extension and outreach professionals, and communications experts including. Services include:
 - Climate impacts training
 - Climate outlooks and outlook fora
 - Climate extension
 - Communication tools (visualization, white papers, report, etc.)
 - Decision support tools and information systems for drought, climate, water supply and availability, agriculture and other impacts

Reference: <https://cpo.noaa.gov/Meet-the-Divisions/Climate-and-Societal-Interactions/RISA/About-RISA>

Air Resources Laboratory Closure -34 Positions / -\$4,843

NOAA will close the Air Resources Laboratory and eliminate ARL's research on air chemistry, mercury deposition, and atmospheric dispersion of harmful materials in order to fund other priority programs. Program priorities will be folded into other NOAA labs.

Response: ARL develops and improves atmospheric dispersion and air chemistry models by collecting and analyzing essential data of surface and near surface weather and climate conditions.

- Provides high quality, reference-grade measurements of critical climate parameters.
- No information provided regarding where the program priorities and funding will be "folded" into other NOAA labs. Funding would also be required to transfer and/or purchase equipment for the target lab and the and transfer of the 34 personnel.

Reference: <https://www.arl.noaa.gov/>

The Vortex-Southeast Termination 0 Positions / -\$4,966

NOAA will terminate Vortex-Southeast (VORTEX-SE), a project that seeks to improve tornado forecasts in the southeastern U.S.

Response: The number of killer tornadoes in the Southeastern U.S. is disproportionately large when compared to the overall number of tornadoes throughout the country. VORTEX-SE is an effort to understand how environmental factors characteristic of the southeastern U.S. affect the formation, intensity, structure, and path of tornadoes in this region. Specifics:

- This is an opportunity to learn more about tornadoes—still poorly understood in any region—and learn how people become aware of their threat and respond in ways that can protect their lives and property.

Reference: <https://www.nssl.noaa.gov/projects/vortexse/>

Weather Laboratories and Cooperative Institutes Decrease 0 Positions / - \$4,762

NOAA will decrease the funding used to advance priority activities in its Weather Labs and CIs funding line, including High Performance Computing recapitalization of the Boulder jet supercomputer, Forecasting a Continuum of Environmental Threats (FACETs), data assimilation initiatives, and other activities that support implementation of the Weather Act.

Response: FACETs is a proposed next-generation severe weather watch and warning framework that is modern, flexible, and designed to communicate clear and simple hazardous weather information to serve the public and aid forecasters' decisions making.

- FACETs will introduce new computer-model predictions of storm-specific hazards such as tornadoes large hail, and extreme local rainfall from NOAA's Warn-on-Forecast research project
- FACETs support NOAA's Weather-Ready Nation initiative to build community resilience in the face of increasing vulnerability to extreme weather and water events

Reference: <https://www.nssl.noaa.gov/projects/facets/>

Airborne Phased Array Radar (APAR) Termination 0 Positions / -\$2,600

NOAA will terminate research and development on improving the detection and understanding of severe weather with a new airborne phased array radar (APAR) and other airborne measurements.

Response: The goal of the APAR program is to provide a “quantum leap” in the accuracy of forecasts of severe weather (e.g., hurricane tracks, hurricane intensity, tornadoes, severe precipitation events) by developing an advanced airborne radar: greatly improving measurements of the atmospheric state for input to forecast models.

- Development has been a partnership between NOAA and the National Center for Atmospheric Research (NCAR), with design, hardware development, and testing conducted at NCAR, including planned use of the NSF/NCAR C-130 aircraft.
- The program has been jointly funded by NOAA and NSF and includes participation by Colorado State University and the University of Oklahoma.
- Various design and development milestones have been reported by NCAR for 2016-18.

References: <https://www.eol.ucar.edu/instruments/airborne-phased-array-radar-apar>
<https://www.geosci-instrum-method-data-syst.net/7/21/2018/gi-7-21-2018.pdf>
https://www.washingtonpost.com/news/capital-weather-gang/wp/2014/08/19/airborne-phased-array-radar-could-spur-a-quantum-leap-in-hurricane-forecasts/?utm_term=.0fc8c39db026
<https://meetingorganizer.copernicus.org/EGU2019/EGU2019-8368.pdf>

Infrasonic Weather Monitoring Research Termination 0 Positions / -\$2,000

With this reduction, NOAA will conclude infrasonic monitoring research. NOAA has completed an evaluation of this technology using congressionally directed funding in FY 2016, FY 2017, and FY 2018.

Response: Advanced infrasound signal processing methodologies and studies, deployed through a network of infrasound arrays to detect tornadoes and hurricanes, have the potential to improve forecast accuracy. This program develops and deploys instruments that detect and monitor low-frequency sound generated by several processes, including hazardous geophysical phenomena in order to improve basic knowledge and early warnings. Ongoing and potential studies, often carried out in collaboration with other organizations, include methods to reduce audible noise (such as along highways) using both active and passive techniques, researching earthquake precursors, assisting with the Nuclear Test Ban treaty monitoring system, and ocean wave generated infrasound with a focus on tsunami detection.

- It has demonstrated that avalanches in the Rocky Mountains can be detected and located using an infrasonic array on the plains near Boulder, CO.
- Using a similar array, it demonstrated that tornadoes on the high plains can be detected several minutes before they touch down, thus demonstrating a valuable tool to provide advanced warning for residents in tornado-prone regions.

References: <https://www.esrl.noaa.gov/psd/programs/infrasound/>

<https://www.aip.org/fyi/2017/fy18-appropriations-bills-national-oceanic-and-atmospheric-administration>

U.S. Weather Research Program (USWRP) Decrease 0 Positions / -\$4,863

NOAA will decrease the funding used to advance priority activities in U.S. Weather Research Program, which in FY 2019 included: economic studies, initiating EPIC, and establishing capability to develop and evaluate the National Water Model.

Response: The National Water Model (NWM) is a hydrologic model that simulates observed and forecast streamflow over the entire continental United States (CONUS). The NWM will support decision makers when flooding is threatened. Specifics:

- The NWM simulates the water cycle with mathematical representations of the different processes and how they fit together. This complex representation of physical processes such as snowmelt and infiltration and movement of water through the soil layers varies significantly with changing elevations, soils, vegetation types and a host of other variables. Additionally, extreme variability in precipitation over short distances and times can cause the response on rivers and streams to change very quickly. Overall, the process is so complex that to simulate it with a mathematical model means that it needs a very high powered computer or super computer in order to run in the time frame needed to support decision makers when flooding is threatened.

References: <https://water.noaa.gov/about/nwm>

<https://www.pmel.noaa.gov/tao/epic/>

[https://www.google.com/search?q=enos+Eastern+Pacific+Investigation+of+Climate+\(EPIC\)&tbm=isch&source=iu&ictx=1&fir=YGhWftyzd4OcJM%253A%252Crc8Z-84sI_5Y5M%252C_&vet=1&usg=AI4_-kQLMuYyu1XFf6RAzF5gqFyRV8_Z9A&sa=X&ved=2ahUKEwjUmu_InsLhAhWInp4KHeSfAoQQ9QEwCHoECAkQBA#imgcr=YGhWftyzd4OcJM:](https://www.google.com/search?q=enos+Eastern+Pacific+Investigation+of+Climate+(EPIC)&tbm=isch&source=iu&ictx=1&fir=YGhWftyzd4OcJM%253A%252Crc8Z-84sI_5Y5M%252C_&vet=1&usg=AI4_-kQLMuYyu1XFf6RAzF5gqFyRV8_Z9A&sa=X&ved=2ahUKEwjUmu_InsLhAhWInp4KHeSfAoQQ9QEwCHoECAkQBA#imgcr=YGhWftyzd4OcJM:)

National Sea Grant College Program Termination -18 / -\$80,071 *

NOAA will terminate the National Sea Grant College Program Base and Marine Aquaculture Program. This will eliminate NOAA funding for the network of 33 Sea Grant programs located in coastal States and territories, and withdraw support for the larger cross-NOAA Aquaculture Program.

Response: The National Sea Grant College Program supports the work of thousands of scientists and researchers in a wide variety of disciplines from hundreds of institutions: supporting cutting-edge research in the areas of coastal processes, hazards, energy sources, climate change, storm water management and

tourism. When urgent new questions arise, Sea Grant can call on this network of scientists for information and science-based solutions.

- * Note: the National Sea Grant College Program enacted budget for FY 2019 was \$68,000 (excluding the cross-NOAA Aquaculture Program). Based on budget numbers, the proportion of positions deleted for Sea Grant is defined at 15.

References: <https://seagrants.noaa.gov/>
<https://research.noaa.gov/External-Affairs/Budget>

Integrated Ocean Acidification Decrease 0 Positions / -\$3,994

NOAA will reduce funding for the Integrated Ocean Acidification Program that conducts research on ocean and coastal acidification (OA) and its impacts on marine resources, coastal communities, and economies.

Response: The Ocean Acidification Program (OAP) is helping mitigate economic impacts with real-time data that signal the approach of acidified seawater one to two days before it arrives, helping shellfish hatchery managers time to take action to save crops.

- Ocean acidification is progressing at record pace and has the potential to fundamentally change the ocean, its habitats, food webs, marine life (such as corals, oysters, clams, and mussels), and shell fish hatcheries.
- Efforts of OAP will help our nation begin to understand how to address this problem on a global scale and help reverse it.

Reference: <https://ioos.noaa.gov/project/ocean-acidification/>

Sustained Ocean Observation and Monitoring Decrease 0 Positions / -\$6,007

NOAA will reduce external grant funding that is used to leverage partnerships to develop a sustained, comprehensive, and responsive global ocean observing system. NOAA currently maintains about 50 percent of the world's ocean observing platforms. This reduction will reduce the number of platforms NOAA and its partners can help maintain.

Response: The Ocean Observing and Monitoring Division (OOMB) addresses a wide range of needs for climate and environmental information to understand past and present conditions, as well as foundational information for predicting future changes. Specifics:

- OOMB's activities also contribute significantly towards fulfilling the requirements of key international programs to provide essential ocean, Arctic, and climate observations and information to enable effective decisions on the part of resource managers and decision/policy makers.

Reference: <https://cpo.noaa.gov/Meet-the-Divisions/Ocean-Observing-and-Monitoring>

NATIONAL WEATHER SERVICE (NWS) PROGRAM

Reduce Surface Observations 0 Positions / -\$12,500

NOAA will reduce the National Mesonet Program, which gathers “mesoscale meteorological” observation. NOAA will reduce the geographic scope from all 50 states to prioritize states most susceptible to tornadoes and severe weather and limit the observations to surface meteorological observations and lightning.

More details needed to be obtained from NOAA to define what states will be deleted and determined with state impute if they will be impacted.

Reduce Marine Observations Tropical Atmosphere Ocean Platform 0 Positions – \$1,300

NOAA will reduce the Tropical Atmosphere Ocean (TAO) Platform 55-buoy array by 15 moorings, while maintaining 80 percent availability for the remaining network. This reduction may delay recognition of the onset of an El Niño and the Southern Oscillation (ENSO) phenomenon.

Response: The TAO/TRITON Array was designed to better understand and predict climate variations related to El Niño and the Southern Oscillation (ENSO). Identifying the onset is critical in preparing the nation for ENOS events, which will save property losses and lives. Specifics

- ENSO events significantly disrupt normal patterns of weather variability, affecting agriculture, transportation, resource management, energy production, and the lives of millions of people around the globe and affects Pacific marine ecosystems and commercially valuable fish stocks such as tuna and anchovy.
- A delay in recognition of the onset of ENSO events would impact the preparation for these events.

Reference: <https://www.pmel.noaa.gov/gtmba/pmel-theme/pacific-ocean-tao>

Reduce Upper Air Observations 0 Positions / -\$2,271

NOAA will reduce the geographic scope and purchase of observations performed by aircraft and will eliminate the aircraft observations over other parts of the oceans and in other continents. NOAA will reduce the number of reserve radiosondes, to an amount needed for daily operations only.

Response: The National Weather Service (NWS) Upper-air Observations Program oversee the operation of 92 Radiosonde stations in North America and the Pacific Islands and supports the operation of 10 stations in the Caribbean. Radiosondes provide upper-air data that are essential for weather forecasts and research. Along with the Aircraft Based Observation (ABO) Dataset (from measurements made on commercial aircraft in airlines covering the globe), this program provides critical upper-air data that are essential for global weather forecasts and research.

- More than 600,000 wind and temperature observations are available per day, 450,000 of which are over the continental United States.
- These data come from approximately 5,000 aircraft from both domestic and international airlines including: American, Delta, Federal Express, Northwest, United, United Parcel Service, South West Airlines, and Mesaba, BA, KLM, Air France, SAS, Lufthansa, Qantas, Air New Zealand, South African Air, Air Namibia, AeroMexico and LATAM Airlines.

References: https://madis.noaa.gov/madis_acars.shtml
<https://www.weather.gov/upperair/>
<https://aerospaceamerica.aiaa.org/features/danger-in-the-air/>

Slow Advanced Hydrologic Prediction System Expansion 0 Positions / -\$2,000

NOAA will slow the expansion of new technology at AHPS forecast locations, reducing training and implementation support. Without additional funding, NOAA will delay/forgo aspects of the planned research and development needed to address known limitations in HEFSv1 – such as the ability to incorporate the effects of reservoir regulation and improve performance for large precipitation events.

Response: These graphical products are useful planning tools for economic and emergency managers and enable government agencies, private institutions, and individuals to make informed decisions about risk-based policies and actions to mitigate the dangers of floods and droughts and water reservoir regulation.

Specifics:

- The AHPS web site displays information regarding the magnitude and uncertainty of the occurrence of floods or droughts, from hours to days and months in advance.

Reference: <https://toolkit.climate.gov/tool/advanced-hydrologic-prediction-service>

Consolidate Climate Prediction Center/Weather Prediction Center Functions -8 Positions / -\$1,200

NOAA will create one national center spanning the continuum of prediction services from the present through existing sub-seasonal and seasonal time domains. This consolidation

will limit some of NOAA's products and services such as climate prediction products with domains over hemispheres other than North America/Arctic.

Response: The US presence is throughout the globe. These predictions are critical for humanitarian and military exercises. They have been and are being used by military commanders in hotspots throughout the globe. By not including climate and weather prediction information for other hemispheres outside of North America, information may not be available for decision makers regarding US global interests (commercial, private, government).

Reduction to Office of Water Prediction Center Staffing Support 0 Positions / - \$1,500

By FY 2020, the directed hiring for the Water Prediction Operations Division (WPOD) at the National Water Center will be completed. NOAA is committed to maintaining these staffing levels in the WPOD. However, this funding level could not be maintained in the FY 2020 President's Budget. Difficult decisions were made and staffing may be reduced within other areas of the Office of Water Prediction.

Response: The Office of Water Prediction (OWP) collaboratively researches, develops and delivers state-of-the-science national hydrologic analyses, forecast information, data, decision-support services and guidance to support and inform essential emergency services and water management decisions. The National Water Model is a major product of OWP and supports decision makers when flooding is threatened: from short-range forecasts executed hourly, medium-range forecasts out to 10 days, and long-range forecast to 30-day.

- In partnership with NWS national, regional, and local offices, the OWP coordinates, integrates and supports consistent water prediction activities from global to local levels.
- The NWM will provide complementary hydrologic guidance at current National Weather Service (NWS) river forecast locations and significantly expand guidance coverage and type in underserved locations.

References: <https://water.noaa.gov/about/nwm>
<https://water.noaa.gov/>

Reduce the Investment in Numerical Weather Prediction Modeling 0 Positions / - \$2,101

NOAA will slow development of the Next Generation Global Prediction System and Hurricane Forecast Improvement Project by reducing research grants for the collaborative research activities and NOAA's testbeds. This reduction in may be offset by the Earth

Prediction Innovation Center, established in the National Integrated Drought Information System Reauthorization Act of 2018, and funded within OAR.

Response: Research funding for the Next Generation Global Prediction System and Hurricane Forecast Improvement Project not included in this budget within OAR, Earth Prediction Innovation Center.

References: <https://www.noaa.gov/media-release/noaa-to-develop-new-global-weather-model>

<https://www.gfdl.noaa.gov/next-generation-hurricane-forecast-system/>

Terminate Hydrology and Additional Water Resources 0 Positions / -\$6,000

NOAA will terminate the program to collaborate with external academic partners to improve fine- and large-scale measurements of snow depth and soil moisture data in order to improve the National Water Model.

Response: The National Water Model is a major product of Office of Water Prediction (OWP) and supports decision makers when flooding is threatened: from short-range forecasts executed hourly, medium-range forecasts out to 10 days, and long-range forecast to 30-day. The OWP collaboratively researches, develops and delivers state-of-the-science national hydrologic analyses, forecast information, data, decision-support services and guidance to support and inform essential emergency services and water management decisions.

- In partnership with NWS national, regional, and local offices, the OWP coordinates, integrates and supports consistent water prediction activities from global to local levels.
- The NWM will provide complementary hydrologic guidance at current National Weather Service (NWS) river forecast locations and significantly expand guidance coverage and type in underserved locations.

References: <https://water.noaa.gov/about/nwm>

<https://water.noaa.gov/>

NATIONAL ENVIRONMENTAL SATELLITE SERVICE (NESDIS) PROGRAM

Regional Climate Centers Termination 0 Positions / -\$3,650

Terminate the Regional Climate Centers (RCCs) that provides climate services tailored to the specific needs of the region within which it is located. RCCs respond to emerging issues, such as droughts and floods and each RCC is located at six universities and research institutions that are responsible for managing the RCC resources from NOAA and non-NOAA sources alike.

Response: The RCCs computer-based infrastructure, tools and programs to integrate data from the National Center for Environmental Information (NCEI) with regional non-NOAA data; providing climate information to decision makers from various sectors, state climatologists, and the public. NCEI updates and archives NOAA climate data but does not have the software, tools, and programs to provide these services.

- The western United States consists of complex terrain, where local precipitation and temperature can vary dramatically across short distances, which in turn impacts local drought conditions. The Western Regional Climate Center West Wide Drought Tracker (WWDT) provides climate datasets with fine-scale drought monitoring and climate to help inform decisions on issues such as drought early warning, water management, and energy usage.
- The Vegetation Impact Program (VIP) provides current susceptibility and climate-related impacts on vegetation.
- The RCC developed Applied Climate Information System (ACIS) provides users throughout the country with precipitation, temperature, heating and cooling degree days, and a standardized precipitation index over various time intervals and spatial scales.
- The Climate Annual Comparison Tool is designed to let users compare the current year's accumulated precipitation, maximum temperature, and minimum temperature with up to three previous years. Data can be chosen for a specific zip code, city or county.
- The Automated Weather Data Network provides climate information within the High Plains Region to stakeholders in agriculture and related fields.
- Other products include frost/freeze monitoring tools as well as stress degree-days that monitor heat stress to corn and chilling hours that impact dormant season recovery of small fruits gridded data values.

Reference: <https://www.ncdc.noaa.gov/customer-support/partnerships/regional-climate-centers>

Other Reductions 0 Positions / -\$4,913

NOAA requests small decreases to the Office of Satellite and Product Operations, Product Development, Readiness & Application, and the National Centers for Environmental Information which will impact those programs by less than 5% of each subactivity.

Response to decrease funding to NOAA's Office of Satellite and Product Operations (OSPO): OSP manages and directs the operation of the central ground facilities which ingest, process, and distribute environmental satellite data and derived products to domestic and foreign users. OSPO serves as the primary operating level interface with civil sector users of data from operational environmental satellites.

Response to decrease funding to NOAA's National Centers for Environmental Information (NCEI): NCEI is responsible for preserving, monitoring, assessing, and providing public access to the Nation's treasure of climate and historical weather data and information. Preservation and access these data are required to develop weather and climate models. Examples of data products include:

- When to Expect Your Last Spring Freeze: based on 30 years of climate records, our map shows when you can expect to see temperatures dip to 32°F or below for the last time
- Value of the Data: U.S. Drought Monitor: cattle ranchers and federal agencies manage drought impacts using NOAA NCEI data via the U.S. Drought Monitor.

References: <https://www.ncei.noaa.gov/news/last-spring-freeze>

<https://www.ncei.noaa.gov/news/value-of-data-USDM>

<https://www.ospo.noaa.gov/Organization/About/mission.html>

<https://www.ncdc.noaa.gov/>

OFFICE OF MARINE AND AVIATION OPERATIONS (OMAO) PROGRAM

Eliminate Atmospheric Rivers Flight Hours 0 Positions / -\$1,000

NOAA requests a decrease to reduce additional congressionally-directed funds provided in FY 2019 for the monitoring of atmospheric rivers.

Response: Atmospheric rivers (ARs) are narrow conveyor belts of water vapor in the atmosphere that can extend thousands of miles and are responsible for delivering much of the water vapor associated with major storms along the West Coast – particularly California. These storms an contain the large amounts of water vapor and the strongest winds can create extreme rainfall and floods, often by stalling over watersheds vulnerable to flooding. The combined air, ship, and land-based measurements will help researchers understand the scientific ingredients that contribute to atmospheric rivers: improving our understanding of atmospheric rivers to help us produce better forecasts of where they will hit and when, and how much rain and snow they will deliver.

- These measurements can be used to improve short- and long-term predictions of precipitation, and to develop decision support tools for extreme precipitation events, hazard response, and water supply for more effective water resource management.
- In California, it's critical to understand if precipitation will arrive as snow—often good news, because it can "store" water in slow-melting mountain snowpack—or rain, which can increase flood risk.

References: <https://www.esrl.noaa.gov/psd/news/2015/011615.html>

<https://www.noaa.gov/stories/what-are-atmospheric-rivers>