# INVESTING IN AMERICA

## NOAA's Science, Service and Stewardship in Action

December 2024

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# FOREWORD

Every day, NOAA protects the lives of all Americans, supporting public safety and sustainable commerce; providing for life-saving weather predictions, safe navigation, a viable seafood industry, and disaster mitigation and response.

The incredible professionals at NOAA are responsible for these services and more, along with environmental stewardship and world class science that shapes so many aspects of our lives. Over the last several years, I've witnessed this team do exceptional, even previously unimaginable things, in the face of unique challenges.

Team NOAA also embraced extraordinary opportunities, like the unprecedented $6B in new investments that we're using to build a Climate Ready Nation. Thanks to this funding, we've restored thousands of acres of habitat and waterways, helped people across the country make climate-smart investments in their communities and coasts, and improved the climate data and services we provide to decision makers, families, communities, and businesses.

We've designated three new national marine sanctuaries, thus protecting the marine environment and stimulating local economies. We've also helped permit the most offshore wind renewable energy projects in history.

Our ability to predict severe weather has taken a significant step forward with investments in high-performance computing power and new satellites. Our ability to gather environmental intelligence will continue to grow as we add four new state-of-the-art ships that we're building from the keel up, multiple new aircraft received or under construction and new pier facilities in South Carolina and Rhode Island.

We've provided unparalleled support to tribal nations and underserved communities to bolster resilience in the face of climate change. We've provided tools to community leaders facing sea level rise and other challenges like excessive heat. And we've recommitted ourselves to equity and making our own NOAA workforce reflective of the nation we serve.

As the Biden-Harris Administration comes to a close, I'm proud to say our communities are more prepared for climate change, our observation and prediction tools are more powerful, and our core values of innovation, integrity, and inclusion are central to our mission of science, service and stewardship.

Dr. Richard W. Spinrad
Under Secretary of Commerce for Oceans and Atmosphere
NOAA Administrator

# EXECUTIVE SUMMARY

Over the last four years, the National Oceanic and Atmospheric Administration (NOAA) has profoundly impacted Americans' lives through its mission of **science**, **service** and **stewardship**. NOAA has advanced its world-class science through groundbreaking research and expanded operational capabilities, helping our nation become safer, healthier and more prosperous.

As part of the Biden-Harris Administration's Investing in America Agenda, NOAA has invested billions of climate-smart dollars via the Bipartisan Infrastructure Law (BIL) and Inflation Reduction Act (IRA) into communities nationwide, including tribal and underserved areas. Programs like the $575M Climate Resilience Regional Challenge have helped the nation's coastal communities assess their risks to extreme weather and flooding risks, implement locally-designed solutions, upgrade aging infrastructure, and build resilience capacity. Thanks to the $60M Climate Ready Workforce program, thousands of people are being trained and placed in climate jobs that help coastal and Great Lakes states, tribes and territories adapt to climate change. Over $600M in habitat restoration grants is being invested to help communities improve natural areas and local fisheries, and to recover and conserve endangered species, with a special focus on tribal fisheries. Nearly $500M is being invested to improve fish passage and stream restoration, which will contribute to the removal of dams and other barriers to fish passage and increase access to migratory pathways and healthy habitat for fish species.

Through this funding, NOAA delivered its scientific expertise in bigger, broader, and bolder ways than ever before. IRA and BIL investments were used to expand and enhance data, products, services, and expertise to address rapidly increasing user needs resulting from increasing climate impacts. **These historic investments in America's climate resilience empowered local leaders and decision makers** to understand, prepare for and mitigate climate impacts unique to their communities. BIL and IRA-funded opportunities, coupled with the agency's perennial programs, facilitated the construction of a **Climate Ready Nation**, the growth of the **New Blue Economy**, and the enhancement of our **operational excellence**, all with a reaffirmed commitment to **serving all Americans**.

In 2023 — the Earth's warmest year on record — the U.S. experienced 28 billion-dollar disasters, costing $92.9 billion. With record-breaking heat affecting both land and ocean, NOAA has embraced extraordinary opportunities and unprecedented funding to help build a **Climate Ready Nation**. The agency has worked to expand its climate services, provide equitable access to the

most up-to-date and accurate climate and weather data, and work one-on-one with communities to build up resilience in response to unique challenges. These improvements support public safety, provide life-saving weather predictions, ensure safe navigation, and strengthen disaster mitigation and response. NOAA's once-in-a-generation programs and investments have helped prepare American communities and leaders for the challenges of tomorrow's planet.

America's **New Blue Economy** looks to the sea to address societal challenges and inspire their solutions. Under NOAA's stewardship, the traditional blue economy has developed into a more sustainable and equitable ocean and coastal economy that optimizes advances in science and technology to create new opportunities and solutions for climate-driven conflicts. By gathering and revolutionizing the application of ocean data within multiple sectors, NOAA has expanded ocean and coastal observations, improved resilience for coastal communities and economies, and restored marine life and ocean, coastal, and Great Lakes ecosystems. NOAA has also worked tirelessly to support the responsible growth of the offshore wind sector, advancing renewable energy while safeguarding marine biodiversity. Under the Biden-Harris Administration's America the Beautiful initiative, new marine sanctuaries have been designated to protect species close to extinction, preserve historically significant shipwrecks, and provide natural classrooms for students of all ages.

As NOAA continues to monitor, research and forecast our planet's ever-changing conditions, we have made **critical upgrades and additions to our fleet and technology**. Next-generation aircraft have taken to the sky to support coastal mapping, emergency response, and data collection missions, among others. NOAA's fleet of oceanographic research and coastal mapping vessels have docked at upgraded pier facilities that support enhanced economic security, public safety and at-sea data collection. State-of-the-art geostationary satellites monitor our planet, providing life-saving data and insights on weather and environmental trends.

In the face of previously unimaginable challenges like the COVID-19 pandemic, NOAA's diverse team of over 12,000 individuals has embraced Inclusion, Innovation and Integrity in order to bolster our science. From groundbreaking discoveries in the deepest depths of the ocean to pioneering satellite technology for severe weather monitoring, NOAA has introduced new innovations on air, land and sea to protect people, property and livelihoods across the nation. "**Investing in America: NOAA's Science, Service and Stewardship in Action**" outlines NOAA's transformative work to build a Climate Ready Nation, accelerate the growth of an information-driven Blue Economy, and upgrade operational capabilities through critical investments in our facilities, marine fleet and aircraft — all of which are enhanced by a focus on **serving all Americans**.

# BUILDING A CLIMATE READY NATION

NOAA is tasked with building a Climate Ready Nation that depends upon a shared understanding of — and collective action to reduce — the impacts of climate change. By providing essential climate data, tools and services nationwide, NOAA empowers local leaders, emergency managers and vulnerable communities to take informed and proactive steps to combat the climate crisis.

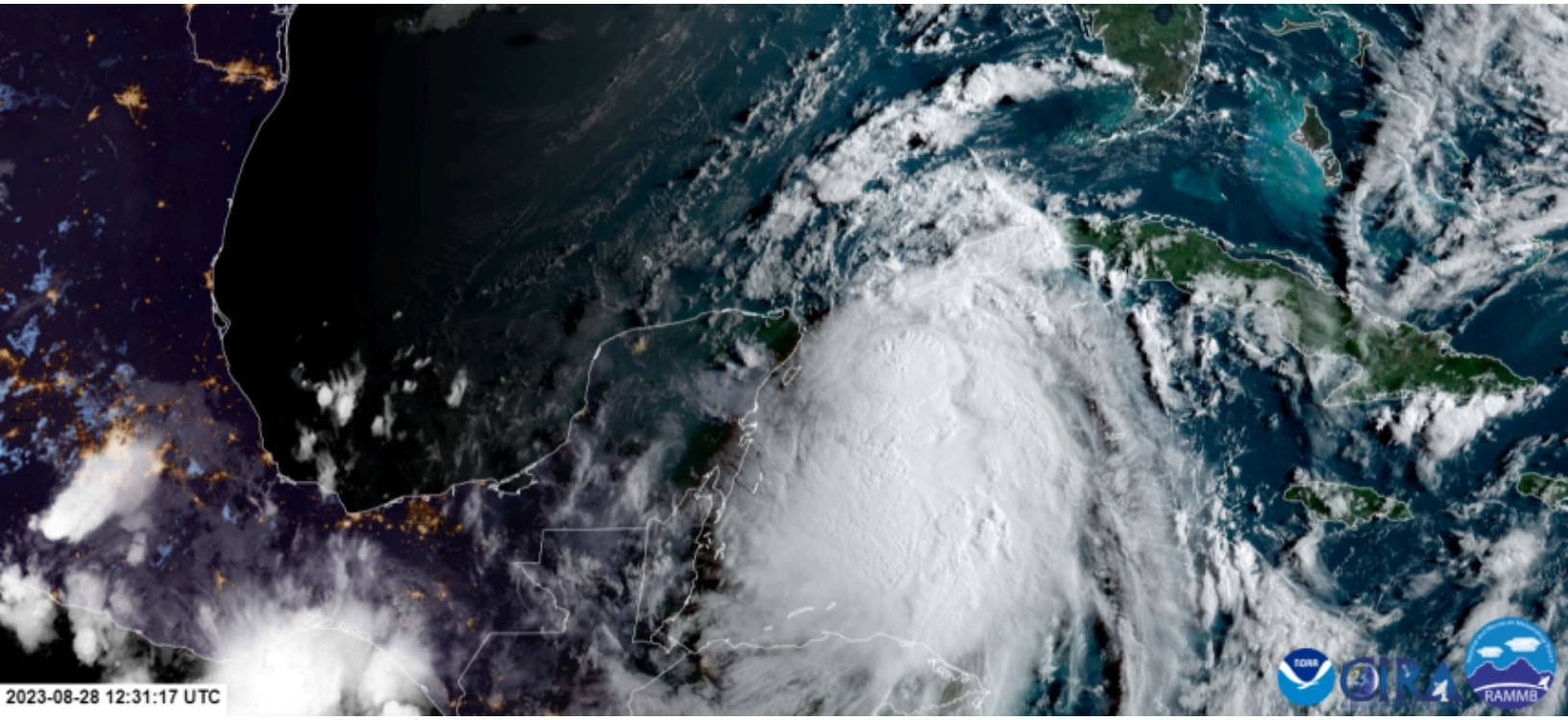
> "By partnering with NOAA, Climate Mayors across the country will gain access to insightful climate data and services — enhancing their ability to prepare for and respond to a changing climate. This partnership will ensure that all communities, especially those most at risk, have the opportunity to bolster resilience and build a safer tomorrow."
>
> - Kate Wright, Executive Director, Climate Mayors

Equitable access to climate and weather information is key for successful climate preparation and mitigation. Through initiatives like the Inflation Reduction Act's Industry Proving Grounds (IPG), NOAA is preparing communities for compounding risks from extreme weather, water and climate events. IPG has connected major U.S. industries like architecture & engineering, re/insurance and retail with actionable climate data to better support decision making and long-term climate resilience planning.

The climate economy is projected to expand rapidly, with green jobs in the U.S. expected to reach nearly 24 million by 2030, or 14% of total U.S. employment. In 2023 alone, clean energy jobs in the U.S. grew at more than twice the rate of overall job growth across all states and sectors. Cross-sector and global partnerships stemming from initiatives like IPG are essential in creating the jobs of tomorrow. NOAA has placed a $60M down-payment on a Climate Ready Workforce to train tomorrow's workers in climate-smart tools, technology and insights.

These tools have broken new ground in severe weather forecasting and prediction — down to

local levels. As NOAA delves deeper into the science of our dynamic ocean planet, the agency is forecasting weather phenomena further in advance than ever before. Americans are benefiting from increased safety measures and targeted local guidance, thanks to NOAA's innovative models, like the newly customized LightningCast model, which provides advanced warnings of lightning activity in a given area. The agency's latest global forecasts now provide up to a year's advance notice of marine heatwaves, which dramatically affect ocean ecosystems, coastal communities and fisheries.




*Idalia forms in the Atlantic Ocean. (Image credit: NOAA)*

Through strong partnerships, NOAA has shed light on some of our planet's oldest weather mysteries, leading to stronger predictions and forecasts. As major storms made landfall, NOAA captured the world's first footage from inside of a category 4 hurricane, paving the way for improved severe storm forecasting. Our collaborative suite of tools for emergency managers and community leaders is expansive, meeting the needs of a wide range of communities. One key initiative, the National Centers for Environmental Information (NCEI) Billion-Dollar Disaster Risk Mapping Tool, now incorporates U.S. Census tract data and covers over 100 combinations of weather and climate hazards, offering local officials community-level insights into risk, exposure, and vulnerability.

As our nation adapts to climate change, NOAA's National Weather Service continues to protect lives and property in harm's way. Our 122 local Weather Forecast Offices are part of a broad team who work diligently to deliver the most accurate and up-to-date weather, water and climate data,

forecasts and warnings directly to community members across multiple platforms. NOAA empowers individuals to take preventative measures in the face of climate change through accessible tools like Heat.gov, the nation's premier hub for heat and health information.


*NOAA Ship Reuben Lasker and Saildrone off the coast of California. (Image credit: NOAA)*

*Accomplishments highlighted in green were funded in part or in full by the Bipartisan Infrastructure Law (BIL) and/or the Inflation Reduction Act (IRA).*

# FY24 Accomplishments

## BUILDING A CLIMATE READY NATION

- **Increased protection from flooding**: NOAA delivered a high-resolution, near-real time flood inundation mapping (FIM) capability that provides National Weather Service Forecast Offices with more detailed information to assess flood damage and forecast future flood risk. Neighborhood-level FIM services are now serving 30% of the U.S. population.
- **Improved protection from wildfires**: NOAA advanced its wildfire warning capabilities to address the urgent needs of firefighters, first responders and NWS Incident Meteorologists (IMETS), who provide support during fire events. NOAA also developed and demonstrated a customized version of the LightningCast model, which is optimized for wildfire incident awareness and provides advance warning before the onset of lightning.
- **Strengthened bipartisan connections to community leadership**: NOAA formalized a partnership with the Climate Mayors, a bipartisan network of over 350 mayors who are committed to taking climate action in their communities. This new partnership reinforces a shared commitment to enhance climate resilience across U.S. cities. Together, NOAA and the Climate Mayors are working to provide city leaders with the tools and information they need to protect their communities from extreme weather, rising sea levels and other climate impacts.
- **Expanded community access to climate data**: NOAA's National Integrated

*IMET Lisa Kriederman uses a portable weather station to gather observations to support wildfire suppression at the Pine Gulch Fire north of Grand Junction, CO, August 2020. (Image credit: NOAA)*

*NOAA and the Climate Mayors sign an MOU. (Image credit: NOAA)*

Drought Information System (NIDIS) and its partners launched ClimateEngine.org. This innovative tool provides satellite and climate data in a user-friendly manner to facilitate water conservation, wildfire risk management, agricultural productivity monitoring and ecological restoration.

- **Enhanced water prediction information**: NOAA expanded water prediction information and services through the deployment of the National Water Prediction Services (NWPS) hub. This update includes new flood inundation mapping, National Water Model forecast information and other data services, all available to the public in a modern user interface.
- **Improved environmental conditions**: Observed in part by NOAA's Global Monitoring Laboratory, the 2024 Antarctic ozone hole has ranked 7th-smallest since recovery efforts began following the passage of the Montreal Protocol in 1992. NOAA's Chemical Sciences Laboratory has played a lead role in the Montreal Protocol Ozone Assessment Reports, which explain that the recovery is partially due to the fact that the ozone-depleting and heat-trapping impacts of hydrochlorofluorocarbons (HCFCs) peaked five years earlier than projected.

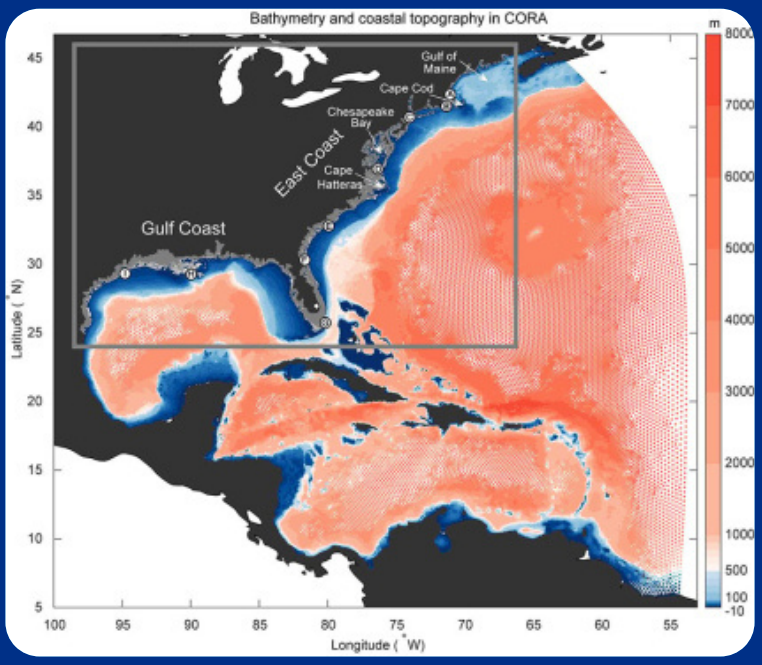
*Scientists launch a NOAA ozonesonde, frost point hygrometer, and POPS aerosol particle counter on a balloon to monitor the Antarctic Ozone Hole. (Image credit: William Brotman/United States Antarctic Program)*

- **Improved fire weather forecasts**: NOAA implemented an enhanced Spot program, allowing partners to request specialized fire weather forecasts that provide incident commanders and fire behavior analysts with meteorological intelligence. NOAA also implemented an Advanced Weather Interactive Processing System (AWIPS) remote access solution for NWS IMETS. AWIPS has expanded its user base to include the NWS Center Weather Service Units (CWSUs), among other constituents, to increase support for fire weather forecasting and Impact-based Decision Support Services.


*NWS AWIPS services. (Image credit: NOAA)*

- **Expanded cross-sector access to NOAA's science**: NOAA and the Reinsurance Association of America signed a memorandum of understanding to address the risks faced by communities nationally and internationally. This MOU improves the usefulness of NOAA's products and services to the insurance and reinsurance industries.

- **Strengthened climate-ready fisheries**: NOAA Fisheries released a revised Ecosystem-Based Fisheries Management (EBFM) Road Map, which clarifies links between EBFM and the climate initiatives that have emerged since its initial publication in 2016. It better integrates socio-economic, habitat, ecological and ocean information throughout all EBFM Guidelines, particularly the need for climate-ready fisheries.
- **Improved safety for coastal communities**: NOS addressed coastal inundation at climate timescales by releasing new Coastal Ocean Reanalysis datasets, which provide more than 40 years of modeled historical water levels and wave information for locations every 500 meters along the coast. NOAA also contributed to the beta release of the Federal Flood Standard Support Tool, which enables federal agencies and partners to determine if actions are located in a designated floodplain.

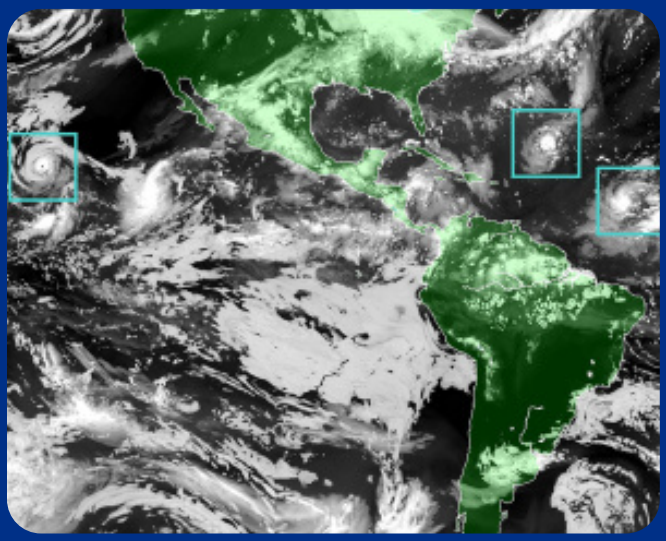



*New Coastal Ocean Reanalysis datasets from NOS. (Image credit: NOAA)*

# FY23 Accomplishments

## BUILDING A CLIMATE READY NATION

- **Protected communities from hurricane impacts**: After years of research and development by NOAA's Office of Oceanic and Atmospheric Research (OAR) and Cooperative Institute partners, the National Hurricane Center (NHC) and the Environmental Modeling Center (EMC) released the Hurricane Analysis and Forecast System (HAFS). HAFS improves track and intensity forecasts and allows Impact-based Decision Support Services (IDSS) to be shared with decision makers ahead of landfalling tropical cyclones. Additional upgrades to NOAA's storm surge models have improved inundation mapping tools for decision makers.
- **Increased community resilience to climate impacts**: NOAA supported substantial advancements in national climate science and community resilience. NOAA's Climate Program Office awarded millions to projects advancing the understanding of wildfire pollutants, improving modeling of atmospheric aerosols and refining the understanding of aerosols' role in potential climate intervention, among other projects. NOAA's Center for Satellite Applications and Research (STAR) also completed the development of the NextGen Climate Data Record (CDR) to make climate data more discoverable, accessible and usable.



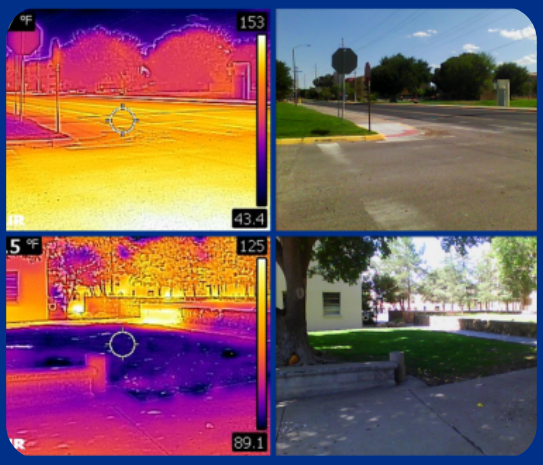
*The Hurricane Analysis and Forecast System (HAFS) "moving nest" Model. (Image credit: NOAA)*

*Inside the New Observatory — diverse instruments analyze clean air supplied from the sampling tower. Some instruments measure concentrations of atmospheric gases. Others count and analyze air particles known as aerosols. Records span nearly 50 years, showing long-term trends that would be impossible to discern over a short period. (Image credit: NOAA)*

- **Advanced fire weather research**: NOAA successfully generated, tested and delivered two non-standard low-resolution grids for short range fire weather. This is the first step towards creating high-resolution modeling improvements and data assimilation activities to improve urban-scale forecasts of smoke, fire weather and fire behavior impacts for at-risk communities. This research contributes to advanced fire weather and behavior forecasts for fire operations.
- **Revitalized carbon dioxide removal research**: NOAA released its carbon dioxide removal strategy, the first U.S. agency blueprint for researching the efficacy and potential negative impacts of technologies that remove carbon dioxide from the atmosphere. Carbon dioxide removal is an essential component of successful strategies for limiting warming to mitigate climate change impacts.
- **Improved weather forecasts and predictions**: NOAA expanded the capacity of the nation's Weather and Climate Operational Supercomputing System (WCOSS) by 20%. Faster supercomputing and increased storage space allow NOAA to run more complex forecast models with greater amounts of data, helping weather forecasters deliver more accurate predictions.
- **Protected Americans from extreme heat impacts**: NOAA, in collaboration with other National Integrated Heat Health Information System (NIHHIS) partners, launched Heat.gov. Since its launch, the nation's premier source of heat and health information has seen over half a million visits.

*Twin supercomputers Dogwood and Cactus are the newest additions to NOAA's weather and climate operational supercomputing system. (Image credit: General Dynamics Information Technology (GDIT))*

- **Strengthened Climate Ready Coasts**: NOAA's National Ocean Service (NOS) allocated nearly $141M in BIL funding towards 51 competitive projects in 27 states and territories, addressing coastal resilience, restoration and tribal priorities. NOS also invested $22.6M in noncompetitive funds into state-managed Coastal Zone Management programs and National Estuarine Research Reserves, as well as approximately $285M toward the National Fish and Wildlife Foundation. IRA-funded opportunities included the $575M Climate




*NOAA and NIHHIS Heat.gov heat mapping tool in action. (Image credit: NOAA)*

Resilience Regional Challenge and the $60M Ocean-Based Climate Resilience Accelerators program.

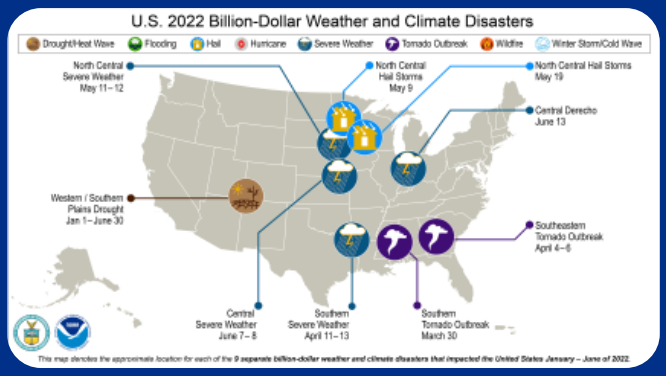
- **Protected coastal communities from flooding impacts**: NOS expanded its suite of flooding products and predictions with the release of the Monthly High Tide Flooding Outlook. The Monthly High Tide Flooding Outlook shares the daily likelihood of high tide flooding at locations nationwide in an interactive, geospatial format. NOAA also released a new guide to help coastal communities adapt to climate change.
- **Alerted communities about harmful algal blooms**: In summer of 2022, scientists detected a massive harmful algal bloom in the Bering Strait region of western Alaska, which posed significant risks of toxins accumulating in marine animals and human-consumed seafoods. NOAA and partners responded to this event by developing a response plan that resulted in a harmful algal bloom advisory being issued in the summer of 2023 advising against the consumption of marine wildlife resources. The Bering Strait region does not have comprehensive monitoring or toxin testing for subsistence foods, so cooperative efforts like these are essential to reducing harmful algal bloom-related risks.
- **Empowered decision makers with real-time data access**: NOAA implemented the operational use of NWSChat 2.0 with Slack, transforming the way that the National Weather Service (NWS) communicates with decision makers. An initial operational deployment of NWSChat 2.0 was successful in the Pacific Region, and over 18,000 users nationwide have joined the new platform.

*A photo collage of some of the projects being recommended for funding under BIL, IRA and NOAA's Climate-Ready Coasts initiative. (Image credit: NOAA)*

# FY22 Accomplishments

## BUILDING A CLIMATE READY NATION

- **Helped decision makers plan for natural disasters**: NOAA's National Centers for Environmental Information (NCEI) released the Billion-Dollar Disaster Risk Mapping Tool, an innovative instrument that provides county-level information on natural disaster hazards nationwide. The tool now includes U.S. Census tract data to enable community-level awareness of hazard risk, exposure and vulnerability. NCEI's enhanced maps built upon previous county-level data and now provide metrics for over 72,000 U.S. census tracts, covering more than 100 combinations of weather and climate hazards.




*A map of the United States plotted with 15 weather and climate disasters each costing $1 billion or more that occurred between January and September 30, 2022. (Image credit: NOAA)*

- **Revolutionized greenhouse gas measurement**: The NOAA Unique Combined Atmospheric Processing System (NUCAPS) made vertical profile and trace gas products to improve global measurements of greenhouse gasses from space in the NESDIS Common Cloud Framework. NUCAPS is the operational NOAA system used to derive radiance products and vertical profiles of temperature, as well as water vapor, ozone and trace gas products. These advancements complement NOAA's decades-long monitoring and research of GHGs and global understanding of carbon cycle feedbacks.

*Forecasters at NOAA's National Severe Storm Laboratory in Norman, Oklahoma, working on the JPSS Convective Applications experiment of the Experimental Warning Program in the NOAA Hazardous Weather Testbed (HWT) at the National Weather Center. (Image credit: NOAA)*

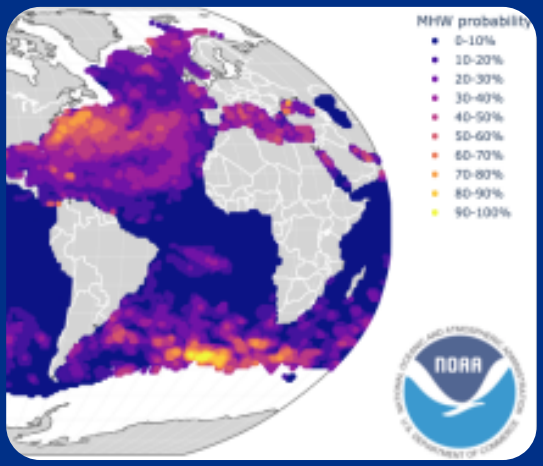
- **Helped communities mitigate flood impacts and water emergencies**: NOAA's Center for Satellite Applications produced improved flood depth and mapping products to help

to help communities mitigate immediate and longer-term flood impacts. NOAA also established the Cooperative Institute for Research to Operations in Hydrology to research and develop state-of-the-science water analysis, forecasts and guidance, as well as train the next generation of scientists focused on addressing water issues and emergencies

- **Prepared communities for inundation risks**: NOAA produced an array of new and improved tools to help coastal decision-makers understand inundation risks. These tools included the 2022 Interagency Sea Level Rise Technical Report, interactive versions of the Sea Level Trends map and State of High Tide Flooding and Annual Outlook, a data update to the Sea Level Rise Viewer and improved Great Lakes information for the Coastal Flood Exposure Mapper and Coastal Inundation Dashboard.

*Frequently inundated area. (Image credit: NOAA)*

- **Prepared communities for weather events in advance**: The Excessive Rainfall Outlook was experimentally extended up to five days, improving lead time for severe rainfall events from the former 3-day outlook. The Outlook is a synthesis product that provides a "heads-up" for extreme rainfall. NOAA also developed new global forecasts that can provide up to a year's advance notice of marine heatwaves, which can dramatically affect ocean ecosystems, coastal communities and fisheries.
- **Improved weather and climate forecasting**: Two new Weather and Operational Supercomputing System (WCOSS) supercomputers, called Dogwood and Cactus, went live. The system supports 24/7 weather and climate forecasting capabilities, numerical environmental prediction model development and testing. The WCOSS also disseminates operational products covering global weather, space weather, water and climate forecasts, warnings and analyses for users.




*The latest global marine heatwave forecast showing the predicted probability of marine heatwaves for September 2022. Forecasts are experimental guidance, providing insight from the latest climate models. (Image credit: NOAA)*

- **Enhanced risk communication during weather events:** The Extreme Weather and Society Dashboard interface was successfully implemented on the NOAA Virtual Lab Cloud production platform. Developed in partnership with the University of Oklahoma, the dashboard is an interactive tool that will allow NWS forecasters, partners and policymakers to

access and explore data from the Weather Survey for training and performance evaluation.

- **Improved ocean observations**: NOAA captured the world's first footage from inside of a category 4 hurricane with Saildrone Explorer. Data collected from drone deployments is critical for improving storm forecasting and hurricane preparedness.
- **Improved fire weather monitoring**: One of NOAA's High Resolution Rapid Refresh Smoke models was transferred to NWS to become fully operational. The model predicts the movement of smoke across the country over 48 hours, providing valuable insights for firefighters, first responders and NWS Incident Meteorologists, among other users. NOAA also launched a wildfire website to serve as a new hub for fire weather science and products — consolidating the best available tools and services for communities, leaders and fire responders.
- **Connected Americans to climate information**: NOAA redesigned the Climate.gov hub to integrate artificial intelligence and connect Americans to climate explainers, data dashboards and classroom-ready teaching resources. NOAA also launched the Climate Mapping for Resilience and Adaptation Assessment Tool to help planners understand and act on future climate challenges.
- **Collaborated with federal partners to improve climate resilience:** The U.S. Environmental Protection Agency is using NOAA atmospheric measurements to support the national inventory of hydrofluorocarbon emissions. NOAA provided climate data and expertise to the U.S. Department of Transportation to increase the resilience of national transportation infrastructure via $8.7B in PROTECT Resilience Grant Program funding. NOAA is also providing data and tools to the National Telecommunications and Information Administration to help make $48.2B in broadband investments climate-resilient.


*NOAA captured the world's first footage from inside of a category 4 hurricane with Saildrone Explorer. (Image credit: Saildrone Inc.)*

# FY21 Accomplishments

## BUILDING A CLIMATE READY NATION

- **Expanded accurate positioning information for all Americans**: NOAA flew 14 missions over the remote Aleutian Islands in Alaska for the Gravity for the Redefinition of the American Vertical Datum (GRAV-D) project, mapping approximately 78,000 square miles of shoreline. By incorporating this data into a new national geoid model, NOS' mean sea level model will have more precise surface elevations.
- **Advanced offshore wind development**: Secretaries Haaland and Raimondo announced approval of Vineyard Wind 1, the first commercial-scale offshore wind project in the U.S. Outer Continental Shelf. Since this project, NOAA has joined the Bureau of Ocean Energy Management (BOEM) in 10 Records of Decision that total 15 gigawatts of approved offshore wind projects.
- **Improved weather forecasting systems**: NOAA developed an Earth Prediction Innovation Center (EPIC) to advance community-developed enhancements to the Next Generation Global Prediction System. EPIC will oversee the creation of a publicly accessible community earth system model.

*A NOAA aircraft used in GRAV-D collection efforts in the hangar.*
*(Image credit: NOAA)*

# STRENGTHENING THE NEW BLUE ECONOMY

Under NOAA's leadership, the U.S. is advancing a New Blue Economy — a sustainable ocean and coastal economy that embraces innovation in ocean technology, resource management and logistics. The New Blue Economy protects marine habitats and species while promoting the responsible use of ocean resources for economic growth, improved livelihoods and job creation. Through NOAA's work, coastal communities are more empowered to harness the potential of our oceans and coasts in local climate adaptation and mitigation strategies.

Home to over 127 million people, our nation's coastal communities represent approximately 40% of the entire population. NOAA's transformative stewardship of the New Blue Economy has supported over 2.4 million jobs and contributed over $397 billion to the nation's gross domestic product through tourism, shipping, transportation, power generation, and the ever-growing seafood industry, to name a few. These coastal industries continue to thrive with sustainability as a top priority, with demand for maritime commerce expected to triple by 2030.


*A NOAA Hydrographic Survey Vessel collecting data. (Image credit: NOAA)*

The success of the New Blue Economy is dependent upon a robust understanding of our ocean planet — and over the last several years, NOAA has made great strides in navigation, observations and positioning to meet this need. NOAA has expanded coastal, ocean and Great Lakes observing systems, which play a critical role in data collection to inform severe storm forecasts, among a myriad of other uses. As of January 2023, a record 50% of U.S. waters have been mapped to 100m resolution, greatly enhancing marine navigation. In the air, NOAA completed its groundbreaking 15-year effort to collect gravity data over the entire area of U.S. states and territories, which will support improved floodplain mapping, coastal resource management and emergency evacuation planning.

These critical advances have laid the foundation for the New Blue Economy's conservation and recovery efforts. As reported in the 2023 Status of the Stocks, 94% of the stocks managed with known status are not subject to overfishing. Since 2000, NOAA has rebuilt 50 fish stocks, supporting a $321 billion commercial and recreational fishing industry that sustained 2.3 million jobs in 2022.

As stocks have recovered, NOAA has reopened fishing areas that have been closed for decades, revitalizing local economies and recreational fishing. NOAA has also designated more national marine sanctuaries than in any other four-year period in agency history, protecting diverse underwater habitats and assets like archaeological sites, shipwrecks, submerged aircraft, coral reefs, seamounts and abyssal plains for generations to come.

> "Southeastern Lake Ontario has a thriving tourism industry led by a world-class sport fishery…supplemented by historical attractions, boating, outdoor adventure opportunities, snowmobiling, agri-tourism, and welcoming downtowns. A National Marine Sanctuary based on our maritime heritage and shipwrecks will add significantly to this diversity of attractions and strengthen the tourism industry by luring a whole new population of visitors to our communities."
>
> - Philip R. Church, Administrator, Oswego County

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*Offshore wind turbines. (Image credit: NOAA)*

*Accomplishments highlighted in green were funded in part or in full by the Bipartisan Infrastructure Law (BIL) and/or the Inflation Reduction Act (IRA).*

# FY24 Accomplishments

## STRENGTHENING THE NEW BLUE ECONOMY

- **Strengthened offshore wind sector while protecting marine species**: In partnership with the Bureau of Ocean Energy Management (BOEM), NOAA continued to strengthen the nation's offshore wind sector while protecting and preserving marine species and habitats. Together, the agencies supported the approval of the nation's 10th offshore wind project. NOAA and BOEM released a final joint strategy to promote the recovery of endangered North Atlantic right whales while responsibly developing the offshore wind sector. The strategy incorporates tribal and public feedback to build on existing measures to protect North Atlantic right whales while supporting the Administration's goal of developing 30 gigawatts of offshore wind by 2030. NOAA developed a spatial suitability model that informed the designation of four wind energy areas in the Gulf of Mexico. The areas have the potential to produce enough renewable energy to power more than three million homes. NOAA also found and adapted new ways of collecting data in areas where survey vessels and aircraft can no longer operate, supporting marine resource management and conservation efforts. Other partnerships with BOEM advanced fisheries survey mitigation and implemented a strategy to promote recovery of North Atlantic right whales while responsibly developing offshore wind. NOAA's collaborations with other partners helped advance air-sea interface wind understanding and support a Sea Grant Offshore Wind Liaison.

*North Atlantic right whale feeding. (Image credit: Christin Khan/NOAA Fisheries)*

- **Fully connected the Klamath River watershed after a century:** NOAA opened 420 miles of salmon habitat in the Klamath River watershed in California and Oregon via the world's largest dam removal project. For the first time since 1918, the Klamath River watershed is fully connected as a result of NOAA's Klamath River Renewal Project.
- **Protected marine species, resources and ecosystems**: In support of the America the Beautiful Initiative, which aims to conserve and restore 30% of U.S. lands and waters by 2030, NOS formally designated 1,722 square miles of New York's eastern Lake Ontario as the new Lake Ontario National Marine Sanctuary. The sanctuary protects diverse underwater assets—including archaeological sites, shipwrecks, and submerged aircraft—that cover more than two centuries of the nation's modern history. NOS also announced nearly $238M in funding towards 91 competitive projects in 35 states and territories for locally driven, community-based marine debris removal and interception projects. 81,858 pounds of marine debris have been removed in Florida and North Carolina, and seven additional projects are now actively removing marine debris.

*Salmon migrating upstream. (Image credit: Mid-Klamath Watershed Council)*

*The Papahānaumokuākea Marine Debris Project team removes debris from Kamokuokamohoali'i, 2024. (Image credit: The Papahānaumokuākea Marine Debris Project)*

- **Boosted local economies**: NOAA reopened approximately 2,400 square miles of the Non-Trawl Rockfish Conservation Area off California and Oregon, granting access to historically important fishing grounds that had been closed since 2002. NOAA also removed Cowcod Conservation Area restrictions for non-trawl groundfish fisheries areas off southern California, opening roughly 4,600 square miles of historical fishing grounds that had been closed since 2001.

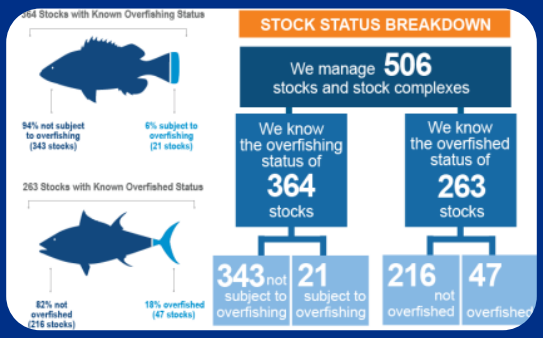
*A commercial non-trawl fisherman, Crescent City, California with his fishing gear and sablefish catch. (Image credit: NOAA)*

- **Supported tribal fish hatcheries**: NOAA invested an unprecedented $240M through the Inflation Reduction Act to support fish hatcheries in Oregon that produce Pacific salmon and steelhead. Fish hatcheries in the Pacific Northwest support essential subsistence, ceremonial and economic benefits for Tribal communities, as well as fulfilling Treaty-reserved fishing

rights.

- **Rebuilt critical stocks**: The Status of the U.S. Fisheries report for 2023 shows the number of stocks on the overfishing and overfished lists decreased, with the number of stocks on the overfishing list reaching an all-time low. 94% of the stocks managed with known status are not subject to overfishing and nearly 82% are not overfished. Over 94% did not exceed their annual catch limits. 50 stocks have been rebuilt since 2000, supporting $321B of commercial and recreational sales and 2.3M jobs in 2022. In a major milestone for NOAA, Pacific bluefin tuna has exceeded international targets a decade ahead of schedule in partnership with the International Science Council. NOAA also announced more than $105M in recommended funding for 14 new and continuing salmon recovery projects and programs. These state and tribal efforts will be funded by BIL and IRA dollars as part of the Pacific Coastal Salmon Recovery Fund, supporting habitat restoration, stock enhancement, sustainable fisheries and research & monitoring.
- **Revolutionized fisheries science**: NOAA Fisheries tested a new barcoding system onboard the NOAA Ship Oregon II. The system increases efficiency, consistency and accuracy in the fisheries data collection process, providing a unique identifier for each fish measured, weighed and sexed.
- **Helped communities recover from disasters**: After the Francis Scott Key Bridge collapsed, NOAA's efforts to detect debris, measure water depth, collect aerial imagery and operate the Chesapeake Bay PORTS® enabled the establishment of auxiliary navigation channels around the wreckage and facilitated the removal of debris and hazardous materials. Following the

*Tulalip tribal youth singers and dancers kicked off the celebration of new federal funding for tribal fish hatcheries. (Image credit: NOAA)*




*Status of the Stocks 2023 Overview. (Image credit: NOAA)*

*NOAA Fisheries tests a new barcoding system onboard the NOAA Ship Oregon II. (Image credit: NOAA)*

*View from NOAA King Air N68RF aircraft of the Francis Scott Key Bridge in Baltimore. (Image credit: NOAA)*

Maui wildfires in December 2023, NOAA also supported the U.S. Coast Guard's efforts in safely recovering over 10,000 gallons of petroleum products and 24,000 pounds of hazardous waste from surrounding areas.

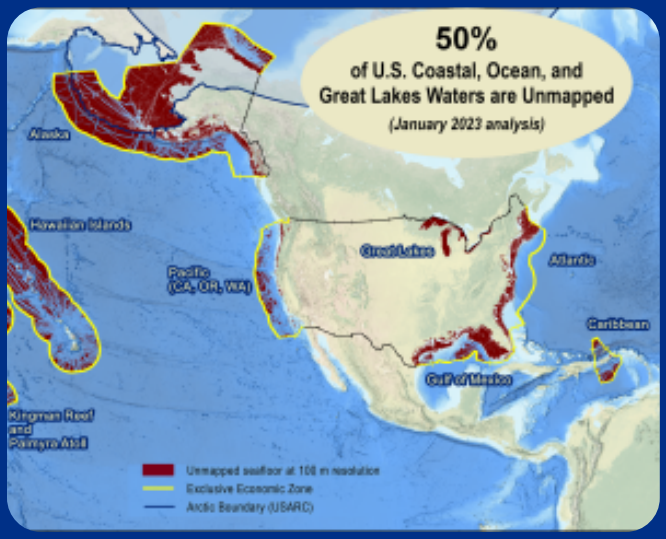
- **Helped fisheries manage climate impacts**: NOAA launched a new dashboard on the National Marine Ecosystem Status website to deliver snapshots of ocean acidification status in different marine ecosystems for natural resource managers. Scientists from NOAA's Alaska Fisheries Science Center also developed a new method to address climate-driven mismatches between fish spawning times and Alaska pollock survey timing. Climate change can affect the timing of when fish aggregate in areas where surveys are conducted to monitor their abundance. Additionally, NOAA Fisheries and the U.S. Department of Agriculture Agricultural Research Service launched a new Northeast Oyster Breeding Center to support shellfish farming in the Northeast by breeding disease-resistant oysters that are resilient in the face of current and changing environmental conditions.
- **Restored fish passage**: NOAA distributed $158M in BIL and IRA funding for 27 projects selected through the Restoring Fish Passage through Barrier Removal funding opportunity. These projects will help restore access to healthy habitat for migratory fish across the country. Additionally, NOAA distributed more than $81M in funding for 19 projects selected through the Restoring Tribal Priority Fish Passage through Barrier Removal funding opportunity. These projects will support tribes in their role as managers and stewards of resources for cultural, spiritual, economic, subsistence and recreational purposes.
- **Protected marine species, resources and ecosystems:** NOAA will exceed its target of advancing formal designation and expansion processes for marine sanctuaries. The initial goal of 590,000 square miles of marine sanctuaries is set to be surpassed by 3,582 square miles with the future designation of Chumash Heritage National Marine Sanctuary, growing national protections for nationally significant natural, historical, archeological and cultural resources.

*Aerial view of Government Point, located within Point Conception State Marine Reserve and Chumash Heritage National Marine Sanctuary. This marine protected area contains kelp forests, surfgrass beds, and rocky reefs surrounded by sandy seafloor. It also hosts an abundance of diverse fish, invertebrates, birds, and marine mammals. (Image credit: NOAA)*

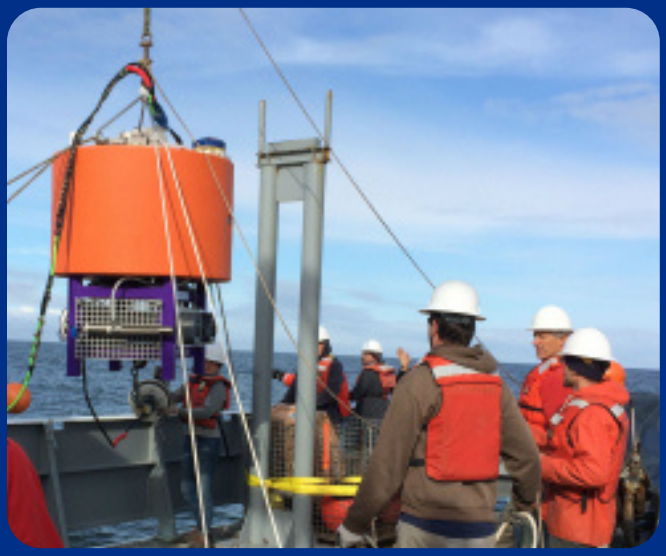
# FY23 Accomplishments

## STRENGTHENING THE NEW BLUE ECONOMY

- **Improved Earth observations, positioning and navigation safety**: By the end of 2023, NOAA mapped a record 52% of U.S. waters to 100m resolution. The agency also completed its 15-year effort to collect gravity data over all U.S. states and territories, which supports improved floodplain mapping, coastal resource management, construction, agriculture and emergency evacuation planning. NOAA also established the 38th Physical Oceanographic Real-time System (PORTS®) system in Freeport, Texas. The PORTS® system now supports nearly 87 of the top 175 U.S. seaports.
- **Monitored oceans and coasts to keep communities safe**: The Integrated Ocean Observing System (IOOS) and coastal observing systems received critical improvements and advancements. BIL funds were used to enhance coastal, ocean, and Great Lakes observing systems, while IRA dollars were used to deliver non-competitive funds to the eleven IOOS Regional Associations.
- **Recovered critical stocks**: NOAA announced more than $106M in recommended funding for 16 West Coast and Alaska state and tribal salmon recovery programs and projects under the Pacific Coastal Salmon Recovery Fund (PCSRF). $34.4M in BIL funding and




*January 2023 Unmapped EEZ. (Image credit: NOAA)*



*A joint deployment of an environmental sensor processor off the Washington coast by NOAA and the Northwest Association of Networked Ocean Observing Systems, one of the certified IOOS regional associations. The sensor has a special sampling package on board designed to detect early signs of harmful algal blooms (HABs). (Image credit: Stephanie Moore/NOAA NW Fisheries Science Center)*

$7.5M in IRA funding will support the recovery, conservation and resilience of Pacific salmon and steelhead.

- **Removed dams and barriers to restore fish passage:** NOAA distributed $87M in funding for 23 projects selected through the Restoring Fish Passage through Barrier Removal funding opportunity. More than $16M in funding was distributed to 13 projects selected through the Restoring Tribal Priority Fish Passage through Barrier Removal funding opportunity.
- **Strengthened the seafood industry**: NOAA Fisheries released its National Seafood Strategy and the Seafood Strategy Implementation Plan. These documents outline the agency's actionable support of the U.S. seafood economy and the resilience of the seafood sector in the face of challenges.
- **Advanced offshore wind development:** NOAA strengthened its collaboration with the lead federal agency for offshore compliance, the Bureau of Safety and Environmental Enforcement (BOEM). NOAA delivered four models to support siting, development and management of offshore wind in the Gulf of Mexico, Gulf of Maine and Pacific Northwest. BOEM and NOAA also announced a Federal Survey Mitigation Strategy to address impacts of offshore wind energy development on scientific surveys.
- Addressed unique needs of fisheries: NOAA consolidated existing Caribbean fishery management plans into three island-based fishery management plans for Puerto Rico, St. Thomas &
- St. John and St. Croix. This new island-based approach added 32 stocks and stock complexes to NOAA's list of managed stocks and is more attentive to the unique biological, economic and cultural attributes of each island or island group. NOAA Fisheries also updated the National Saltwater Recreational Fisheries Policy to guide the development and maintenance of recreational and non-commercial saltwater fisheries.


*Seafood in open air market. (Image credit: NOAA)*

*Block Island wind turbine construction. (Image credit: NOAA Fisheries)*

# FY22 Accomplishments

## STRENGTHENING THE NEW BLUE ECONOMY

- **Strengthened the seafood industry via aquaculture**: NOAA released two Aquaculture Atlases that were developed with over 200 data layers accounting for key environmental, economic, social and cultural considerations. NOAA also formed an interagency working group with state and federal aquaculture regulators to improve aquaculture permitting efficiency in Alaska. To guide applicants through the aquaculture leasing and permitting process in Alaska, the working group developed the Alaska Aquaculture Permitting Portal and the Alaska Aquaculture Permitting Guide. From 2018 to 2022, the National Sea Grant College Program has invested an average of $16.3 million to strengthen U.S. aquaculture that has resulted in a yearly average of $69.6 million in economic impact.

*Divers maintain an open water net pen below the surface. The monitoring of fin fish grown within the natural environment ensures the health of the fish and of the surrounding ecosystem. (Image credit: Sea Grant)*

- **Conserved critical species**: NOAA played an instrumental role in a landmark decision to adopt the first management procedure for Atlantic bluefin tuna during the annual meeting of the International Commission for the Conservation of Atlantic Tunas (ICCAT). U.S. leadership also played a key role in new bycatch mitigation measures for sea turtles and management decisions regarding ICCAT fisheries.

*Bluefin tuna. (Image credit: NOAA)*

- **Advanced offshore wind development:** NOAA and BOEM signed an interagency memorandum in support of the Biden-Harris Administration's goal to responsibly advance

offshore wind energy while protecting biodiversity and promoting cooperative ocean use. NOAA supported BOEM's offshore wind energy siting decisions by identifying more than 730,000 acres that could power over three million homes. On the West Coast, NOAA published the distributions of 33 species of marine birds to inform siting of offshore wind farms.

- **Protected marine species, resources and ecosystems**: NOAA designated the new Connecticut National Estuarine Research Reserve and initiated processes to designate three new National Marine Sanctuaries: Papahānaumokuākea, Chumash Heritage and Hudson Canyon. NOAA recovered $114M in settlements to support restoration of areas impacted by oil spills and hazardous waste. NOAA also announced $58M in competitive BIL funding to remove marine debris with proven interception technologies. To increase preparedness for future freshwater spills in the Great Lakes, the agency also launched a full refresh of its Environmental Sensitivity Index data.

*A view of the proposed Chumash Heritage National Marine Sanctuary near Montana de Oro State Park in San Luis Obispo County, California. (Image credit: Robert Schwemmer/NOAA)*

# FY21 Accomplishments

## STRENGTHENING THE NEW BLUE ECONOMY

- **Improved Earth observations, positioning and navigation safety**: NOAA's Marine Navigation hub compiled various agency navigation resources to provide mariners with a one-stop shop for critical, relevant and timely information. NOAA's Precision Marine Navigation program introduced two new visualization tools to the hub, the Data Gateway and the Data Dashboard, to support the maritime industry in making safe, efficient and educated navigation decisions. NOAA collaborated with partners nationwide to expand existing PORTS® and add new sensors to systems, providing vessel operators with quality controlled real-time status of environmental parameters.


*Container ship. (Image credit: NOAA)*

- **Advanced offshore wind development**: NOAA worked with BOEM to provide geophysical assessments of the seafloor and its living resources and create models to predict the broader spatial and temporal distribution and abundance of fish, birds, corals, and marine mammals. NOAA also conducted social value surveys measuring coastal community support for offshore wind energy development.

*Wind farm off the coast of Block Island, Rhode Island. (Image credit: NOAA)*

- **Protected marine species, resources and ecosystems:** NOAA designated a 962-square-mile area of Lake Michigan as Wisconsin Shipwreck Coast National Marine Sanctuary with widespread support. The sanctuary protects and celebrates the region's maritime cultural

heritage and creates unique research, educational, recreational and tourism opportunities as the area contains a collection of shipwrecks, with many still undiscovered.

- **Diversified oyster industries**: Louisiana Sea Grant facilitated the expansion of alternative oyster culture through a $3 million, three-year aquaculture grant program launched in 2021. Louisiana Sea Grant is helping oyster growers explore this new method as a means of diversifying the state's traditional, reef-based oyster industry, which is facing increasing threats from habitat loss and declining water quality.
- **Strengthened the seafood industry**: In 2021, the U.S. commercial fishing industry netted 8.5 billion pounds of seafood at a value of $6.2B, clocking in at an additional 116M lbs and 30% value increase since 2020. With the help of partners like Google, SAIC and Spring ML, NOAA's pilot Global Seafood Data System will also provide advanced analytics, reporting, machine learning and artificial intelligence capabilities for users. The pilot allows programs like the U.S. Seafood Import Monitoring Program to leverage import and export trade data to respond to inquiries more efficiently and monitor potential illegal, unreported and unregulated (IUU) fishing practices and shipments.

*Offloading frozen Pacific cod. (Image credit: NOAA)*

# ENHANCING OPERATIONAL EXCELLENCE

NOAA's transformative efforts to build a Climate Ready Nation, center equity and sustain the New Blue Economy rely on a durable fleet, enhanced computing power and best-in-class monitoring tools.

Our fleet in the sky continues to grow, advancing our capabilities for hurricane reconnaissance and research, marine mammal and fisheries assessment, and coastal mapping. At sea, NOAA operates one of the largest fleets of federal research ships nationwide, conducting critical hydrographic surveys, oceanographic and climatic research and fisheries surveys. New, state-of-the-art ships are being constructed from the keel up to explore the deepest parts of the ocean and conduct a wide range of marine activities and research. NOAA's oceanographic vessels are further supported by the design and construction of new pier facilities around the nation, which are equipped to accommodate multiple large vessels, provide shoreside power and support smaller vessels, in addition to other critical infrastructure upgrades.

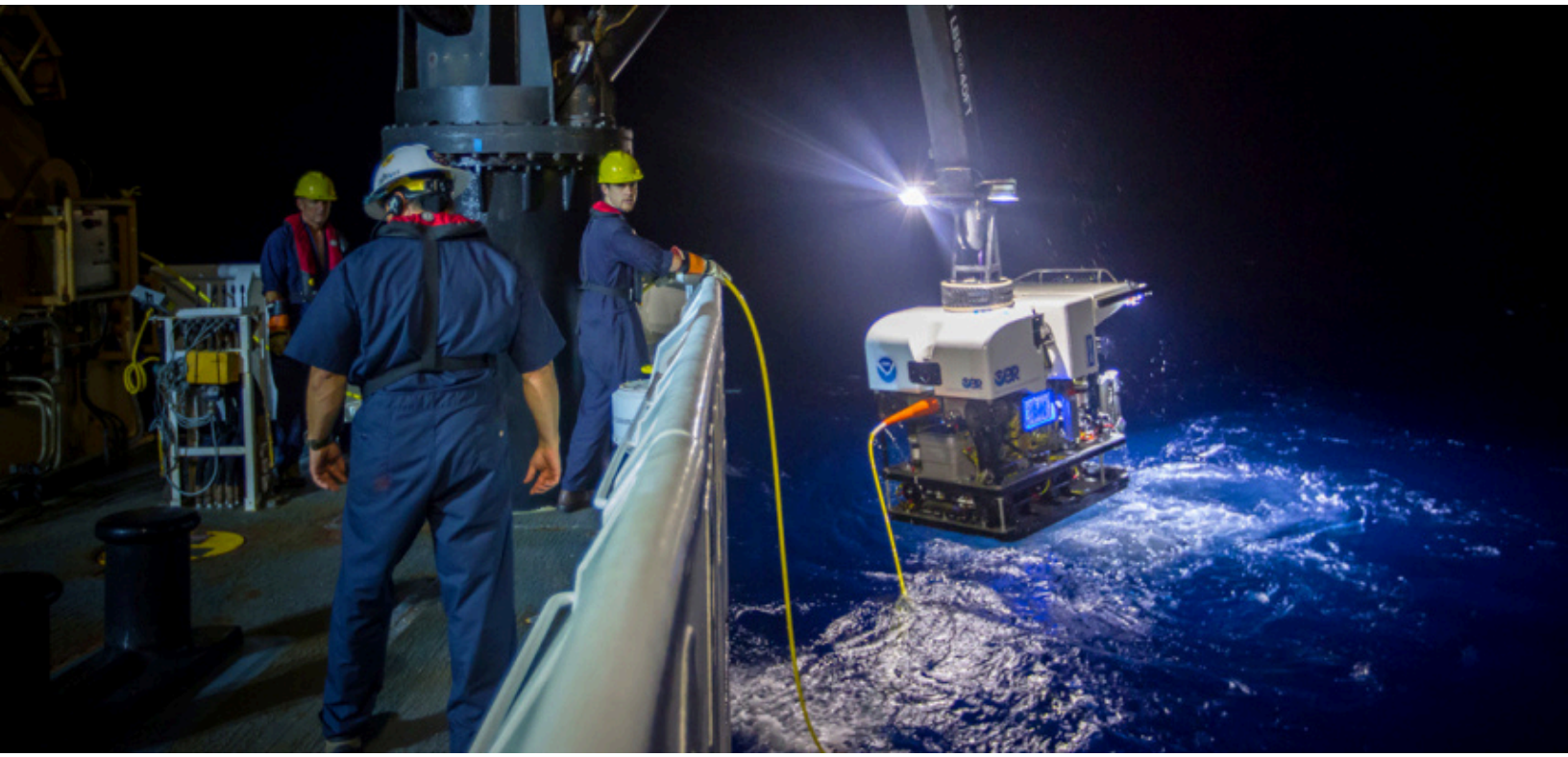
> "NOAA has the best eyes and ears on what's happening to the systems of the Earth. We have relied on NOAA for decades, and we're still alive because of them. NOAA is the single most important tool of information to make decisions, and it has kept us out of the storms."
>
> - Nainoa Thompson, CEO, Polynesian Voyaging Society

Our eyes in the sky — satellites — are advancing rapidly in both number and instrumentation. In 2023, NOAA's satellites helped rescue 350 people from an array of life-threatening situations in the U.S. and surrounding waters. NOAA's latest generation of Geostationary Operational Environmental Satellites (GOES-R Series) provide unprecedented climate and weather data to scientists and forecasters. With the successful launch of GOES-18 and GOES-19, NOAA now monitors environmental phenomena with even greater precision, improving public safety, protection of property, and our nation's economic health and prosperity. The GOES-19 satellite

features NOAA's first-ever solar coronagraph, an instrument that will capture imagery and data on coronal mass ejections to monitor the outer layer of the sun, enabling early detection of significant solar eruptions. Additionally, NOAA is streamlining safety, sustainability and international cooperation in space through unprecedented mechanisms like the Traffic Coordination System for Space (TraCSS), which issues potential collision alerts to beta users and space operators representing some 1,000 satellites.

*GOES-T launches. (Image credit: United Launch Alliance)*

Advancements in uncrewed and machine learning technology have unlocked new monitoring and research capabilities in previously inaccessible areas. Uncrewed marine and aircraft systems provide essential observations to meteorological and oceanographic research, ocean exploration and characterization, and marine resource management. Through its new Generative Artificial Intelligence (AI) Pilot Program and Working Group, NOAA has developed over 70 projects to safely and ethically innovate with AI. New high-performance computing systems have been brought into production around the nation, enhancing NOAA's capacity for complex mathematical computations and supporting advancements in AI and machine learning.

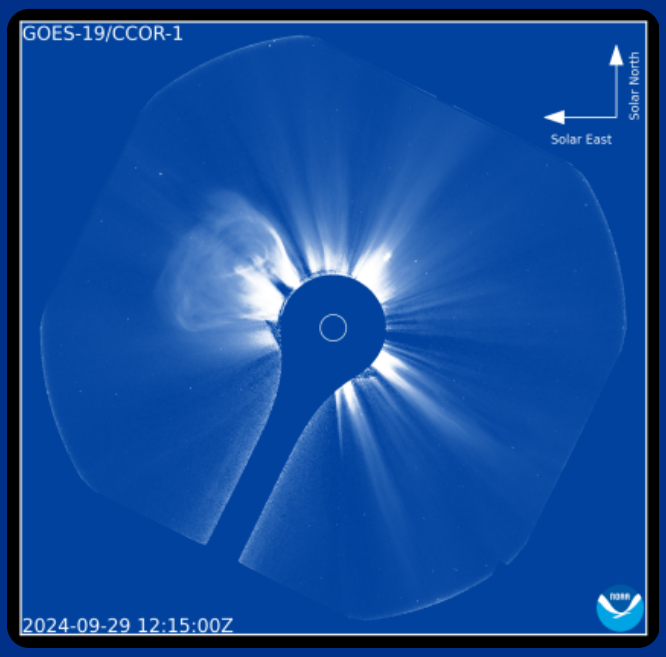


*Aboard the Okeanos Explorer. (Image credit: NOAA)*

# FY24 Accomplishments

## ENHANCING OPERATIONAL EXCELLENCE

- **Powered next-gen environmental monitoring**: NOAA launched the GOES-U satellite, the fourth and final satellite in the Geostationary Operational Environmental Satellites (GOES)-R Series. GOES-U — now on station and renamed GOES-19 — features NOAA's first-ever solar coronagraph, an instrument that will provide coronal mass ejections imagery to monitor the outer layer of the sun and help detect large solar eruptions. Once operational, GOES-19 will also provide critical data for atmospheric weather, environmental hazards, ocean conditions and space weather to support advanced detection and monitoring of environmental phenomena.




*September 19, 2024: First images from NOAA's Compact Coronagraph (CCOR1) onboard the GOES-19 satellite. (Image credit: NOAA Satellites)*

- **Improved hurricane reconnaissance**: NOAA awarded a contract for two specialized Lockheed C-130J Hercules aircraft to become the next generation of NOAA hurricane hunter aircraft. The four-engine aircraft is a proven platform for hurricane reconnaissance. The planes will be modified to serve as flying laboratories in support of NOAA's hurricane and environmental research.

*Artist's rendering of a NOAA C-130J Hercules hurricane hunter aircraft. (Image credit: NOAA)*

- **Strengthened international space partnerships**: NOAA's Office of Space Commerce (OSC) organized a series of collaborative international space dialogues with nations of the African Union Commission, Singapore, South Korea, India, Canada, Australia, India, Japan, France, New Zealand, Germany and Japan to promote international business partnerships.

- **Enabled commercial space innovation**: NOAA supported the rollout and initial implementation of the Biden-Harris Administration's U.S. Novel Space Activities Authorization and Supervision Framework and companion legislation, which aim to enable commercial space innovation by providing entrepreneurs and investors with the regulatory clarity and certainty they need to succeed. NOAA's Office of Space Commerce also announced the modification of operating licenses of multiple commercial satellite imaging systems, cutting significant red tape for the U.S. space industry and strengthening international competitiveness.


*The Inaugural Advisory Committee on Excellence in Space convenes. (Image credit: NOAA)*

- **Enabled commercial space safety**: NOAA's Office of Space Commerce released Phase 1.0 of its Traffic Coordination System for Space (TraCSS) to a set of beta users representing some 1,000 satellites in space. The system issues alerts to space operators of potential collisions in order to promote space safety, sustainability, and international cooperation.


*TraCSS logo. (Image credit: Office of Space Commerce/NOAA)*

- **Recapitalized aircraft to deliver critical data and observations**: NOAA added a second G-550 to its airborne fleet. The G550 offers enhanced data collection technologies including those for advanced climate data.

*Artist concept of NOAA G550 courtesy Gulfstream. (Image credit: Gulfstream)*

- **Increased high performance computing:** The OAR High Performance Computing (HPC) program brought a new system into production, adding 11 petaflops of computing capacity. New systems integrated graphical processing units to facilitate AI and machine learning requirements through increased mathematical computation. NOAA Cloud HPC usage also increased in both capacity and complexity, allowing testing and surge compute capacity for mission-critical programs.
- **Innovated with AI**: NOAA established a Generative AI Pilot Program and Working Group to develop an enterprise approach to implementing Generative AI within the NOAA community, resulting in 72 projects that promote modernization and innovation in a safe, ethical and secure manner.

- **Helped remove microplastics from water**: An awardee of Sea Grant's Marine Debris Challenge Competition, PolyGone Systems, is piloting new technology to remove microplastics from treated wastewater in New Jersey before it is discharged into the ocean. Sea Grant has invested over $50 million in projects across the country to advance marine debris prevention and removal technologies and works closely with the NOAA Marine Debris Program to address marine debris challenges in marine, coastal and Great Lakes environments.
- **Supported oceanographic missions through facility improvements:** A new NOAA Marine Operations Center-Atlantic facility, funded in part by IRA, broke ground in Newport, RI. The facility will include a pier to accommodate four large vessels, a floating dock for smaller vessels, space for vessel repairs and parking and a building to be used for shoreside support and as a warehouse. NOAA conducted the ground-breaking ceremony in North Charleston, SC for the Pier Romeo Recapitalization project, which was partially funded by IRA dollars. The new pier will include shoreside power for ships, as well as a warehouse, sea wall and other supporting infrastructure.

*Groundbreaking ceremony for NOAA Marine Operations Center-Atlantic on May 6, 2024. (Image credit: NOAA)*

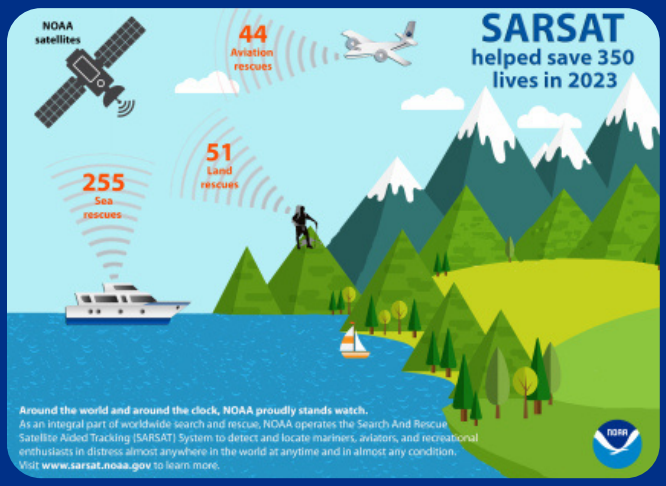
- **Modernized weather observations**: The Radar Operation Center completed the 9-year $150 million service life extension program for NEXRAD radars. NOAA's National Weather Service and Grand Sky Airfield Operations, LLC, also signed a two-year Cooperative Research and Development Agreement to deploy uncrewed aircraft systems to gather and evaluate upper air data to determine how it could aid in weather forecasting. Additionally, NOAA announced BIL funding of $30M to modernize and replace the equipment on the Deep-ocean Assessment and Reporting of Tsunamis (DART) Ocean Observing System to improve tsunami detection and warning.

*NOAA DART buoy floating in the water. (Image credit: NOAA)*

# FY23 Accomplishments

## ENHANCING OPERATIONAL EXCELLENCE

- **Saved lives via satellites**: NOAA's satellites, known for their pivotal role in tracking weather and climate, were behind the rescue of 350 people from life-threatening ordeals in the U.S. and its surrounding waters in 2023. NOAA's polar-orbiting and geostationary satellites are part of the global Search and Rescue Satellite Aided Tracking system, or COSPAS-SARSAT, which uses a network of U.S. and international spacecraft to detect and locate distress signals sent from 406MHz emergency beacons onboard aircraft, boats and handheld personal locator beacons worldwide.




*A graphic showing three categories of satellite-assisted rescues that took place in 2023: Of the 350 lives saved, 255 people were rescued at sea, 44 were rescued from aviation incidents and 51 were rescued from incidents on land. (Image credit: NOAA)*

- **Strengthened domestic space partnerships**: NOAA's Office of Space Commerce (OSC) supported the Deputy Secretary's participation in the December 2023 meeting of the Vice President's National Space Council and in monthly meetings with Space Council staff to update members on the advancement of U.S. leadership in space commerce.

*NOAA's Office of Space Commerce (OSC) supports the Deputy Secretary's participation in the December 2023 meeting of the Vice President's National Space Council. (Image credit: NOAA)*

- **Increased high performance computing**: The NOAA OAR HPC program added more than 8 petaflops of computing capacity across Oak Ridge and Mississippi State University. The program increased network capability and redundancy for all sites and doubled the archive capacity for research computing. Incubator awards for novel and cutting-edge AI/machine learning research projects increased by 50%.
- Connected users to NOAA data: NOAA Open Data Dissemination (NODD) increased its data holdings by 78%. The technical team improved visualization and access to the NODD metrics

portal, which provides information on data usage to data managers and owners. In addition, the team generated a new engagement approach to bring together NOAA scientists, data experts, cloud partners and customers to give better insight into NOAA data usage.

- **Strengthened international space partnerships**: NOAA led a second Track 1.5 session as part of the U.S.-Japan Comprehensive Space Dialogue. The agency arranged similar space engagements with Singapore, Korea and Italy. NOAA also promoted commercial space interests in civil space dialogues with India, Canada and Argentina; at the Commercial Space Stakeholders Meeting with the African Union; the Space Five meeting with Australia, Canada, New Zealand and the United Kingdom; and at forums including the U.S.-Africa Leaders' Summit, the Space Symposium and the International Astronautical Congress.

*NOAA led a second Track 1.5 session as part of the U.S.-Japan Comprehensive Space Dialogue. (Image credit: NOAA)*

- **Recapitalized fleet to deliver critical data and observations**: NOAA awarded a $624.6M contract to design and build two cutting-edge coastal mapping and charting research vessels. The new ships will focus primarily on ocean mapping and nautical charting to help mariners safely navigate the nation's ports and harbors.


*NOAA Ship Fairweather in the Gulf of Alaska with namesake Mt. Fairweather. (Image credit: NOAA)*

- **Modernized missions via uncrewed systems**: NOAA advanced the transition of missions to uncrewed marine and aircraft systems (UxS). NOAA also established a new capability to centrally manage and fund acquisition vehicles for uncrewed marine system data-as-a-service projects to support meteorological and oceanographic observations, ocean exploration and characterization, and living marine resource management.

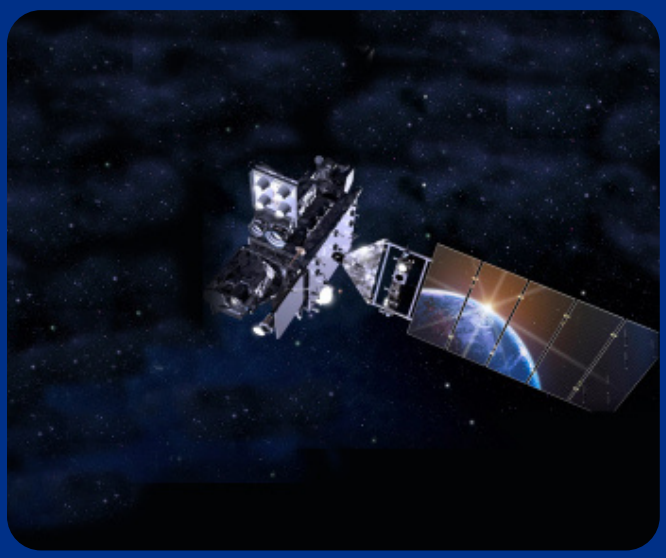
*A collage of images of uncrewed systems. (Image credit: NOAA)*

# FY22 Accomplishments

## ENHANCING OPERATIONAL EXCELLENCE

- **Recapitalized fleet to deliver critical data and observations**: Named Oceanographer and Discoverer, two new oceanographic research ships support a wide variety of missions, ranging from general oceanographic research and exploration to marine life, climate and ocean ecosystem studies. NOAA held a keel-laying ceremony for the Oceanographer.
- **Powered next-gen environmental monitoring**: NOAA successfully launched the GOES-T satellite, which was renamed GOES-18 once it reached orbit. The GOES-18 satellite went into operational service as NOAA's GOES West satellite, detecting and monitoring environmental phenomena. NOAA also launched the JPSS-2 satellite, which was renamed NOAA-21 once in orbit. NOAA-21 is the third of five satellites in NOAA's latest generation of polar-orbiting satellites, the Joint Polar Satellite System, that globally monitor short- and long-term weather forecasts, extreme weather events and climate change impacts. Additionally, NOAA initiated the Geostationary Extended Observations (GeoXO) program, which will advance Earth observations from geostationary orbit.

*A welder from Thoma-Sea Marine Constructors, LLC, welds the initials of the Oceanographer's sponsor, Linda Kwok Schatz, onto a steel plate that will be incorporated into the ship in keeping with maritime tradition. (Image credit: NOAA)*



*Artist's rendering of NOAA's GOES-T, which provides coverage of the western U.S., Alaska, Hawaii, the eastern and central Pacific Ocean to New Zealand. (Image credit: NOAA)*

- **Demonstrated commercial space safety and technology**: NOAA's Office of Space Commerce conducted a pilot project involving 12 commercial space situational awareness (SSA) providers to explore how their services can be used to augment or replace government services for space traffic coordination in geostationary Earth orbit (GEO) and medium Earth orbit (MEO). This collaboration informed the eventual development of the Traffic Coordination System for Space (TraCSS). NOAA's Office of Space Commerce (OSC) also participated in the development of the National Orbital Debris Mitigation Plan, which outlines space sustainability priorities to mitigate, track and remediate debris. Additionally, OSC and the National Institute of Standards and Technology (NIST) developed common SSA standards, best practices and guidelines.
- **Strengthened domestic and international space partnerships**: OSC collaborated with the Government of France and the space industry to organize the first-ever "Track 1.5" policy discussion session as part of the first U.S.-France Comprehensive Dialogue on Space. OSC supported the Department of Commerce Secretary and Deputy Secretary at the first two meetings of the National Space Council. The office participated in decision processes that led to the release of the U.S. Space Priorities Framework, which lays the foundation for the advancement and synchronization of civil, commercial and national security space activities.
- **Reinvigorated the National Weather Service**: Shortly after Ken Graham was named the new NWS director, he convened 10 teams across NWS to create action plans to position NWS for future success. Teams worked to expand operational efficiency, improve recruitment and retention and redesign the flagship NWS website.

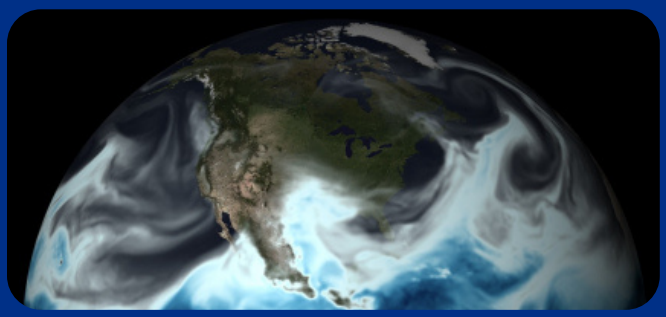
# FY21 Accomplishments

## ENHANCING OPERATIONAL EXCELLENCE

- **Recapitalized aircraft to deliver critical data and observations**: NOAA's new aircraft, a Beechcraft King Air 350, was outfitted with remote sensing equipment to measure the water content of snow and soil — data that is used for flood, river level and water supply forecasts, coastal mapping and aerial surveys of post-storm damage. NOAA also continued its acquisition of a new Gulfstream G550 aircraft, which will collect advanced climate data. Another new King Air aircraft was outfitted with remote sensing equipment to measure snow water equivalent data for flood, river level and water supply forecasts.

*The G-IV is a twin-engine jet piloted by NOAA Corps officers and crewed by NOAA civilian engineers and meteorologists. Its primary mission is to fly tropical cyclone surveillance missions. (Image credit: NOAA)*

- **Enhanced global forecasts for a wide range of weather**: OAR labs provided critical development and testing of NOAA's upgraded Global Forecast System (GFS). GFS was coupled with WaveWatchIII, a global wave model extending wave forecasts from 10 days out to 16 days and improved prediction of ocean waves forced by the atmosphere. This update consolidated atmospheric and wave forecast data and distributed them together. The GFS resolution increased by doubling its number of vertical levels.



*NOAA's powerful Global Forecast System model was upgraded, providing forecasters with a more accurate 4D picture of how a weather system will evolve. (Image credit: NOAA)*

- **Strengthened domestic space policy and partnerships**: OSC supported the Commerce Secretary at the December National Space Council meeting, participating in decision processes that led to the release of a new National Space Policy and Space Policy Directives 6 and 7. OSC also collaborated with NIST and the Department of Homeland Security to organize a virtual cybersecurity symposium focused on standards and best practices for space commercial actors.

- **Connected users to critical weather datasets**: The Big Data Program (BDP) team provided public data dissemination services to NOAA line and program offices and the public. To date there are over 13 petaflops and 220 datasets in the BDP.
- **Powered next-gen environmental monitoring**: NOAA completed the Mission Concept Review and Key Decision Point-A for the GeoXO satellite program. GeoXO will continue to expand observations provided by the GOES-R Series, introducing new capabilities to address emerging environmental issues and challenges.
- **Released new space weather model**: NOAA's new WAM-IPE Model combined the Whole Atmosphere Model and the Ionosphere Plasmasphere Electrodynamics Model to predict how Earth's upper atmosphere responds to solar and geomagnetic conditions. The WAM-IPE Model helps forecasters provide better information about the potential impacts of solar storms to assist with communications, satellite and airline operations and human space flight.
- **Helped communities prepare for and mitigate adverse water impacts**: The National Water Model was upgraded to provide improved hourly forecasts and analyses for streamflow and other hydrologic information to a variety of users. The Nearshore Wave Prediction System was upgraded to continue providing the best on-demand, high-resolution nearshore wave model guidance to U.S. coastal Weather Forecast Offices. The upgrade included the first-ever hourly probabilistic hazardous rip current guidance and probabilistic erosion and overwash guidance, both up to six days out for select regions. The upgrade also included an enhanced wave system identification method, an improved view of wave guidance along high-impact tracks and a new modeling approach to better represent coastal geography and conditions.


*NOAA's Geostationary Extended Observations (GeoXO) satellite system is the ground-breaking mission that will advance Earth observations from geostationary orbit. (Image credit: NOAA/NESDIS)*

# SERVING ALL AMERICANS

The need for equitable investments in communities is visible even from our geostationary satellites in space. To leave behind a healthier planet, the needs of underserved and vulnerable communities must be addressed. Our understanding of the impacts of climate, weather, oceans and coasts is incomplete without input from groups experiencing disproportionate impacts of climate change. As a Climate Ready Nation takes shape, NOAA has broken down barriers to make our science communicable, accessible and cross-disciplinary through Climate Equity Pilots, equity-driven BIL and IRA investments, our new Equitable Climate Services Action Plan, and more.

> "Addressing current and long-term challenges facing communities across the nation and globe from extreme weather events requires close collaboration among the science and engineering communities. We are delighted and honored to work in partnership with NOAA to combat these challenges with solutions that will ensure our critical infrastructure networks are safe, efficient, sustainable and reliable for everyone."
>
> - Tom Smith, Executive Director, American Society of Civil Engineers (ASCE)

Different regions experience climate change uniquely, and vulnerable communities often bear the heaviest burdens. Since 2021, NOAA has strengthened its commitment to incorporating equity into our tools and service delivery. Our scientists and researchers have published standardized, accessible climate projections by region through 2050, providing local leaders with region-specific climate risk information. In partnership with the Centers for Disease Control and Prevention (CDC), NOAA expanded the availability of HeatRisk, a tool offering guidance and social understanding resources on heat risk to protect those most vulnerable to extreme heat. After decades of manually translating weather forecasts and warnings in Spanish, the National Weather Service capitalized on advancements in AI to share weather, water and climate information in other languages, with further plans to expand language offerings to ensure that critical, life-saving information is available to everyone.

*A NOAA hydrologist analyzes data. (Image credit: NOAA)*

NOAA has also approached its partnerships through an equitable lens. Through regional and interagency collaborations, NOAA has provided climate mitigation resources to tribes around the nation and engaged in dialogues like the Alaska Native Tribal Health Consortium's (ANTHC) first Tribal Climate Initiatives Gathering, where participants addressed Alaska Native communities' climate realities and planned mitigation strategies. The agency has broadened the range of voices that contribute to its science and policies through initiatives like the eeBLUE Young Changemakers Fellowship, which connects students directly to NOAA leaders and empowers young people to take action on ocean and environmental issues. Additionally, NOAA's newest Citizen Science Action Plan advances public participation in NOAA's mission — ensuring that collaboration, inclusivity, and data integrity remain foundational to NOAA's work.


*Americans can get involved with NOAA science in their backyards via Citizen Science. (Image credit: NOAA)*

NOAA has turned inward to cultivate a more diverse, equitable and inclusive workplace, essential for delivering tools and services that are accessible to all. While formally established in October 2024, NOAA's core values of integrity, inclusion, and innovation have long guided our commitment to fostering trust, transparency, and accountability. Furthermore, through the first-ever NOAA Equity Framework, our team continues to transform organizational culture, build trusting relationships with historically underserved and tribal communities, and work to avoid biases in research and data collection, centralizing equity in our approach to scientific integrity.

*Accomplishments highlighted in green were funded in part or in full by the Bipartisan Infrastructure Law (BIL) and/or the Inflation Reduction Act (IRA).*

# FY24 Accomplishments

## SERVING ALL AMERICANS

- **Supported Tribal communities in becoming climate-resilient**: NOAA's Alaska Regional Collaboration Team supported the Alaska Native Tribal Health Consortium's (ANTHC) first Tribal Climate Initiatives Gathering in Anchorage. The event drew in over 100 participants with Tribal leadership from 10 regions, as well as federal and state representatives. Participants learned about the regional realities of climate change facing Alaska Native communities and explored collaborative mitigation strategies.


*NOAA's Alaska Regional Collaboration Team supported the Alaska Native Tribal Health Consortium's (ANTHC) first Tribal Climate Initiatives Gathering in Anchorage. (Image credit: NOAA)*

- **Bolstered salmon resilience in Tribal communities**: The Federal Task Force on the Northern Bering Sea Climate Resilience Area and the Bering Intergovernmental Tribal Advisory Council signed a historic joint vision statement to develop a Salmon Resilience Plan. The statement outlines a vision to restore, conserve and protect salmon populations and promote resilience of Tribal communities dependent on them. The joint vision statement builds on more than two years of collaboration between Tribal representatives and the agencies pursuant to Executive Order 13754, which created the Northern Bering Sea Climate Resilience Area.

*Coho salmon. (Image credit: John R. McMillan/NOAA Fisheries)*

- **Protected communities from extreme heat**: NOAA's West, Southeast, and Caribbean Regional Collaboration Teams executed tabletop exercises nationwide to better understand

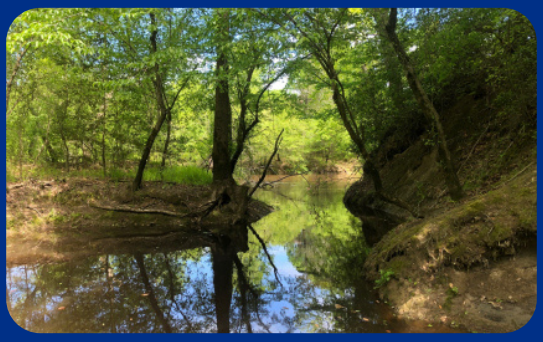
and prepare for local-scale impacts of extreme heat. NOAA released new resources via heat.gov to help decision-makers manage heat risk and plan their own tabletop exercises. NOAA also established two new National Integrated Heat Health Information System (NIHHIS) Centers of Excellence to improve community heat resilience efforts through community science projects. The Centers incorporate and share collaborative heat health approaches, policies, protocols and lessons.


*Las Vegas community members work together to brainstorm heat resilience strategies during a tabletop exercise. (Image credit: NOAA)*

- **Promoted space workforce diversity**: NOAA supported the Deputy Secretary's participation in public events promoting space workforce diversity, including Women in Space Commerce, Black Space Week, the Interagency Convening on Equitable Economic Growth and a Department-hosted space fellowships summit for racial and gender minority students. NOAA also co-sponsored the Diverse Dozen program at the ASCEND space conference.
- **Connected decision makers with ocean and coastal data**: NOAA and Esri formally partnered in 2024 to develop a one-of-a-kind platform to provide equitable, actionable and ready-to-use ocean and coastal data to users. Combining NOAA's ocean and coastal expertise with Esri's long history of user-centered tools will unlock the true value of these data in the hands of the communities that need them most.
- **Integrated equity into internal and external policies & programs**: NOAA unveiled the Equity Framework, a foundational guide aimed at integrating equity-focused practices into NOAA's policies and programs. The framework supports the agency's commitment to inclusivity, ensuring equitable access to resources and addressing disparities in service delivery. NOAA Fisheries also released its first national Equity and Environmental Justice (EEJ) Strategy accompanied by 11 regional- and program-office level implementation plans, that identify specific actions that will be taken across the nation to incorporate EEJ into the vital services NOAA Fisheries provides to all communities. NOAA formally joined forces with the

Aquarium Conservation Partnership to promote ocean conservation, resilience, and community engagement through a shared commitment to the America the Beautiful initiative. This partnership emphasizes the importance of amplifying Indigenous voices and involving historically excluded communities in conservation efforts.

- Uplifted Inclusion, Innovation and Integrity: NOAA's newly established Core Values—Inclusion, Innovation, and Integrity—have long served as guiding principles that share NOAA's approach to science, service, and stewardship. These values reinforce a culture of accountability and commitment to the agency's mission, ensuring that all employees work towards a common goal that benefits the communities NOAA serves.
- **Supported Climate Ready Coasts**: NOS announced nearly $238M in funding for locally driven, community-based coastal projects, many of which are directly benefiting underserved and/or tribal communities. As an example, the Upper Mattaponi Tribe preserved and protected 853 acres of culturally significant territory within the Chesapeake Bay watershed, honoring the tribe's heritage and rekindling its role as an environmental steward.



*The Mattaponi River, the tribe's namesake, runs through the culturally and ecologically significant land. (Image credit: Upper Mattaponi Tribe)*

- **Connected Americans with historical and real-time weather and climate data**: The Scientific Center in Kuwait became the home of the 200th Science on a Sphere exhibit. NOAA also expanded access to SOS Explorer®, offering historical and real-time weather and climate data in an intuitive and captivating format for both PC and mobile users. In an effort co-led by NOAA, the U.S. Global Change Research Program also released the third edition of the nation's climate literacy guide. While the first edition of the guide provided information about climate literacy tailored for all forms of education, the new edition expanded this standard to embrace physical science as well as local and Indigenous Knowledge, social sciences, climate solutions and climate justice.


*Staff from BWC Visual Technology, a distributor for Science On a Sphere, pose with the 200th Science On a Sphere at The Scientific Center, Kuwait, (Image credit: John Marciniak/BWC Visual Technology)*

- **Helped all communities prepare for climate and weather events**: NOS announced new high-resolution land cover data for coastal communities, including those within Alaska and U.S. territories. The one-meter resolution product, an improvement from the previous 30-meter resolution, helps communities access enhanced sea level rise projections, plan for

flooding events, inform restoration projects and more. This data represents an important advancement in scientific equity, as some areas, such as Alaska, are mapped for the first time.


*NOS announced new high-resolution land cover data for coastal communities. (Image credit: NOAA/NOS)*

# FY23 Accomplishments

## SERVING ALL AMERICANS

- **Empowered youth leaders in science**: NOAA launched the eeBLUE Young Changemakers Fellowship, a program connecting youth perspectives to agency leaders. NOAA and the North American Association for Environmental Education selected nine high school students for the program's pilot year, empowering youth to take action on environmental issues and incorporate their perspectives into NOAA's decision-making process.
- **Advanced public participation in NOAA's mission**: NOAA released the new Citizen Science Action Plan, which details how the agency will advance public participation in NOAA's mission. The plan ensures that collaboration, inclusiveness and data quality remain core considerations of the projects that NOAA offers.
- **Strengthened agency-Indigenous relationships**: NOAA reaffirmed its commitment to strengthen its relationship with Indigenous peoples by releasing its updated NOAA Tribal Consultation Handbook, Indigenous Knowledge guidance documents and Policy on Government-to-Government Consultation with Federally Recognized Indian Tribal Governments (NAO 218-8a).
- **Provided immersive views into environmental justice**: A cross-NOAA team from the OEd, NESDIS, and OAR showcased the Washington, D.C. urban heat islands virtual reality experience during the 2023 ESRI Federal GIS Conference, COP 27, and the White House Demonstration Day. Projects like these position NOAA as an innovator in the use of

*The inaugural cohort of the eeBLUE Young Changemakers Fellowship gathers for a three-day summit in Washington, DC. (Image credit: NOAA)*

*Citizen scientist collage showcasing CrowdMag (a citizen science project that uses your mobile phone), marine debris removal in Hawaii and water sample testing by citizen scientists. (Image credit: NOAA)*

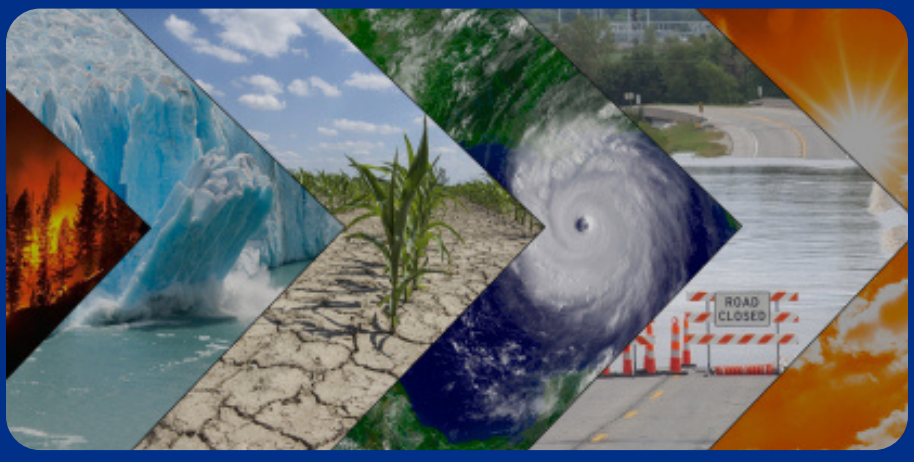
*Members of the Chumash community paddle a traditional redwood plank canoe, called a tomol. (Image credit: Robert Schwemmer/NOAA)*

emerging technologies used to rethink science communication.

- **Reached Spanish and Simplified Chinese speakers with crucial weather warnings**: The National Weather Service began providing weather warnings in Spanish and Simplified Chinese for certain regions with the support of artificial intelligence. This experimental project improved service equity, with more languages set to be added in the future.
- **Prepared communities for climate change**: The Biden-Harris Administration and the U.S. Global Change Research Program released the Fifth National Climate Assessment (NCA5) to advance climate change preparation and response. NOAA's contributions to the report included 35 authors, 13 chapter leaders and coverage of the agency's work on regionally based climate resiliency, community engagement and environmental justice.


*A cross-NOAA team showcases the Washington, D.C. urban heat islands virtual reality experience. (Image credit: NOAA)*


*The National Weather Service's new Spanish and Chinese translation services are powered by Lilt's AI language model. (Image credit: NOAA/NWS)*




*A collage of typical climate and weather-related events: floods, heatwaves, drought, hurricanes, wildfires and loss of glacial ice. (Image credit: NOAA)*

# FY22 Accomplishments

## SERVING ALL AMERICANS

- **Collected unprecedented marine data**: NOAA completed a first-of-its-kind mission to conduct ocean mapping and coral reef surveys in remote Pacific ecosystems aboard NOAA Ship Rainier. The mission collected data from areas that, in some cases, had not been surveyed in over 80 years, if ever, and contributed key information on corals, fish and habitats.

*The NOAA Ship Rainier operating in the Mariana Islands. (Image credit: NOAA Fisheries)*

The National Weather Service developed the NWS Service Equity Framework and Action Plan, laying the groundwork for a future NWS Community Engagement Program and advancing diverse staffing in operational units conducting community engagement. NWS deployed BIL funding to develop requirements and use cases for the NOAA Social and Behavior Observation Database.

- **Helped communities become climate-resilient**: NOAA launched seven Climate Equity Pilots around the country to support equitable climate resilience for communities facing impacts from climate change. These place-based pilots focus on underserved communities facing climate change impacts like coastal and river flooding, extreme heat and erosion.

*NOAA launched seven Climate Equity Pilots around the country to support equitable climate resilience for communities facing impacts from climate change. (Image credit: NOAA)*

- **Helped students and teachers tackle local environmental issues**: The NOAA Bay Watershed Education and Training program published "An Educator's Guide to the Meaningful

Watershed Educational Experience.” This cornerstone of the B-WET program has evolved into a robust, learner-centered framework that focuses on students investigating local environmental issues and taking informed action, with over 61,000 students participating in the program in 2021.

- **Centered Tribal priorities**: NOAA appointed its first-ever Senior Advisor on Tribal Engagement and Fisheries.
- **Provided clean drinking water in the Great Lakes**: The world’s largest source of fresh water, the Great Lakes, provides drinking water to more than 40 million people in the U.S. and Canada. In the first study of its kind, researchers supported by Wisconsin Sea Grant have demonstrated that tributary rivers feeding Lake Michigan play an important role in bringing the human-made group of chemicals known as per- and polyfluoroalkyl substances (PFAS) to the Great Lakes system. These chemicals pose risks to the environment and human health. Study results are being used to provide guidance on contamination cleanup.

*Teachers on dock at Virginia Commonwealth University's Rice Rivers Center conducting water quality testing with Dr. Elizabeth Edmondson and Dr. James Vonesh. This project was funded by Chesapeake B-WET. (Image credit: Terry Brown)*

# FY21 Accomplishments

## SERVING ALL AMERICANS

- **Supported student research and training**: The Educational Partnership Program with Minority Serving Institutions (EPP/MSI) is NOAA's largest STEM education and future workforce program. Over the last two decades, EPP/MSI supported more than 5,600 students with majors aligned with NOAA's mission, 75% of whom self-identified as being from a community traditionally underrepresented in and historically excluded from these disciplines.
- **Built stronger partnerships with Tribal Nations**: NOAA's North Atlantic Regional Team (NART) contracted with the Udall Foundation's National Center for Environmental Conflict Resolution to conduct an independent, neutral assessment of the needs, issues and opportunities associated with the agency's relationships with Tribal nations and organizations in NOAA's North Atlantic region. The National Center interviewed representatives from 13 tribal nations and a representative from United South and Eastern Tribes, Inc. The final report outlined successes, recommendations for improvement and opportunities for future engagement.

*EPP/MSI scholars during their scholarship orientation. From left to right, Christian Schnell, Courtney White, Martin Gonzalez, Alison Novara, Ingrid Martinson, Kiah Matthews, Michaela Wong, Hailey Poole, Richarde Graham II, and Alexandria Tennant. (Image credit: Elvis Efamba/Office of Education)*

*Dr. Spinrad's visit with the Mashpee Wampanoag Tribe. (Image credit: NOAA)*

**Reduced barriers for underserved communities**: NOAA developed a pilot Service Equity Assessment around the use of the Office for Coastal Management's coastal resilience planning tool, the Sea Level Rise Viewer and associated resources. The assessment identified barriers

to the use of the tool by underserved communities and outlined recommendations for increasing service equity, helping NOAA reduce barriers that may exist within associated agency products and services.

- **Prepared communities for climate impacts**: NOAA developed standardized and accessible climate projections for the next several decades with co-developed society-relevant data delivery services to improve climate risk information equity and assist decision making across a wide range of constituents and economic sectors. This fills a critical need for improved projections of how the climate will change on regional scales through 2050.

# CONCLUSION

Over the last four years, NOAA's science, service and stewardship have continued to facilitate a shared understanding and drive for conservation of the dynamic ocean planet that we call home. The agency has made significant strides in bolstering climate resilience, protecting all people and property in the face of disasters, sustainably growing the New Blue Economy, and deploying transformational new tools and technologies to carry out its mission.

Thanks to the Biden-Harris administration's commitment to building a Climate Ready Nation, billions of dollars invested via the Bipartisan Infrastructure Law and the Inflation Reduction Act have helped preserve our planet's natural resources and provide communities with timely scientific information to inform local decision-making. These historic investments allowed NOAA to build on its mission to help Americans prepare, adapt, and build resilience to weather and climate events, particularly Tribal communities and vulnerable populations.

As we reflect on the last four years and look ahead to the next, our workforce is more diverse, our observation tools are more powerful, and our commitment to protecting lives, lifestyles and livelihoods with a renewed focus on equity remains central to our duties.