



# NOAA Fleet Update

## August 2016

The following update provides the status of NOAA's fleet of ships and aircraft, which play a critical role in the collection of oceanographic, atmospheric, hydrographic, and fisheries data. NOAA's current fleet of 16 ships – the largest civilian research and survey fleet in the world – and nine aircraft, are operated, managed, and maintained by NOAA's Office of Marine and Aviation Operations ([OMAO](#)). OMAO includes civilians, mariners, and officers of the United States NOAA Commissioned Officer Corps ([NOAA Corps](#)), one of the nation's seven Uniformed Services.



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# OMAO and the NOAA Corps – In the News

## ['Ghost Fish' Discovery in Mariana Trench Thrills Scientists \(PHOTOS\)](#)

-The Weather Channel

A rare "ghost fish" was discovered during a NOAA research mission, the federal agency announced on Friday. Scientists have been investigating deepwater environments around the Mariana Trench Marine National Monument and the Commonwealth of the Northern Mariana Islands with the NOAA Ship *Okeanos Explorer* and happened upon this unusual sea creature — described as having "transparent, gelatinous skin" — which had never before been spotted alive...

## [Deep sea explorers spot underwater volcanic activity](#)

-AOL News

Experts have suspected that underwater volcanic activity occurred not long ago near the Mariana Islands. Recently, a dive performed as part of the NOAA Ship *Okeanos Explorer* mission confirmed that there had, indeed, been such an event. Footage captured of the area, specifically the crater of Daikoku Seamount, shows volcanic smoke is still present, and venting is ongoing. Plumes of likely sulfur and carbon dioxide flow from the openings in crater's lower wall and rim. The sulfur-heavy ground has drawn a diverse group of aquatic life...

## [NOAA officer honored underwater](#)

-Savannah Morning News

Jared Halonen was honored in a surprise (to him) underwater ceremony during a recent cruise of the NOAA research vessel *Nancy Foster*. Halonen, a Gray's Reef National Marine Sanctuary's Operations Officer, received a NOAA Corps Directors Ribbon for his support of the NOAA Corps Officer Recruiting Branch. He assisted when someone in the Savannah area was interested in joining NOAA Corps, by meeting with them...In the attached video you can see the ribbon in the bag that almost floated away from them. Gray's Reef Superintendent Sarah Fangman, who thought up the idea of the underwater ceremony and is shown giving Halonen the ribbon, made a waterproof copy of the certificate that she also presented underwater. Halonen knew nothing about it...



# Secretary of Commerce



## Attends NOAA Ship *Ferdinand R. Hassler* Change of Command

On July 21, 2016 Secretary of Commerce Penny Pritzker had the honor of attending a NOAA ship Change of Command Ceremony in Norfolk, Virginia. NOAA's ship, *Ferdinand Hassler*, and their many other assets are critically important in collecting environmental data that help promote more resilient communities, preserve our natural resources, and protect our nation's economic security. During the ceremony Secretary Pritzker thanked Lieutenant Commander Briana Welton for her record of service as commanding officer and praised Lieutenant Commander Matthew Jaskoski for assuming his new leadership mantle and continuing their mission of exploration and scientific discovery.

Secretary Pritzker hosted the Department of Commerce's first ever Instameet with seven Instagram followers last Thursday. The Instagrammers in attendance documented the change-of-command ceremony and their time with Secretary Pritzker using #HasslerInstameet.



# Unmanned Systems

At first glance they might be mistaken for toys, but these remote-controlled devices aren't for play. Unmanned aircraft and watercraft are being put to work by NOAA scientists to gather astonishing new data from our wildlands and waterways. Cost-effective and easy to deploy, these new technologically advanced tools are expanding our knowledge of the environment while minimizing the potentially harmful human footprint that we leave behind when studying remote areas and the sensitive plants and animals that live there.

Here are 3 ways NOAA is using unmanned systems from sea and sky:

## **1. Tracking Arctic change on the high seas**

A Saildrone looks like a recreational catamaran. Instead of catching waves, this bright orange vessel captures data from the Arctic, where extreme cold, rough seas and remote locations make research hazardous and expensive, and beams it back to scientists at NOAA's Pacific Marine Environmental Laboratory.

## **2. Checking whale health from high above**

John Durban from NOAA's Southwest Fisheries Science Center has been using a small unmanned hexacopter to photograph and gather breath from whales. The quiet hexacopter, which uses six small propellers to fly, allows him to get closer to whales without disturbing them. By using the aircraft, he can check on the nutritional status and reproductive success of endangered killer whales off the Pacific Northwest as well as assess the health effects of entanglements in fishing gear to endangered North Atlantic right whales.

## **3. Mapping marshes where humans shouldn't go**

At NOAA's Northern Gulf Institute, Robert Moorhead has been launching unmanned aircraft from a small boat, so his team of researchers can map marshes without dragging heavy equipment over the fragile landscapes. The aerial images his team collected in 2015 helped determine what the conditions were like immediately following a large marsh fire along the Mississippi coast after a lightning strike.

Other data gathered by unmanned systems might potentially be used to improve flood forecasts and enhance the emergency response to chemical spills in remote areas.



**A Saildrone, seen with the NOAA Ship Oscar Dyson, studies ocean conditions in the Bering Sea this summer**

[Photo: NOAA]



# NOAA Basic Officer Training Class (BOTC) 128

NOAA Corps BOTC 128 reported to the NOAA Corps Officer Training Center in New London, CT on July 27, 2016. The 15 new NOAA officers are gearing up for the indoctrination period, where they will join their 95 USCG shipmates in the first phase of training.



**BOTC 128 taking the Oath of Office**

[Photo: ENS DeCastro/NOAA]

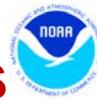
## **NOAA Commissioned Officer Corps Officer Candidates BOTC 128**

Ololade N. Ajilore - *Chantilly, VA*  
Hunter L. Brendel - *Corpus Christi, TX*  
Sydney M. Catoire - *Virginia Beach, VA*  
Sean E. Digre - *Seattle, WA*  
Christopher K. Dunn - *Mount Pleasant, WI*  
Garrison L. Grant - *Monroeville, NJ*  
Timothy J. Holland - *Houston, TX*  
Patrick T. Lawler - *Raleigh, NC*

Vanessa C. Oquendo - *Anchorage, AK*  
Brianna D. Pacheco - *Mount Laurel, NJ*  
Chelsea L. Parrish - *Augusta, GA*  
Lee T. Shoemaker - *Jacksonville, FL*  
Peter R. Siegenthaler - *San Francisco, CA*  
Brandon W.H. Tao - *Circleville, OH*  
Collin H. Walker - *Liberty, MO*



# OMAO's Ships and Centers



OMAO's [Ship Tracker](#) (screen shot below) shows information about the location - present and past - of our fleet of research and survey ships. Please note: To access Ship Tracker you must create an account with a .gov or .mil email address. All other access is restricted.



OMAO's ships and related Marine Centers are listed below based on the geographical location of the vessels' homeports starting in the Northeast and ending in the Pacific.

## New Castle, NH

### NOAA Ship *Ferdinand R. Hassler*

**Commanding Officer:** LCDR Matthew Jaskoski  
**Primary Mission Category:** Hydrographic Surveys  
**DEPART:** Charleston, South Carolina **ARRIVE:** Charleston, South Carolina  
**DEPART:** Charleston, South Carolina **ARRIVE:** Charleston, South Carolina

**Project:** Approaches to Wilmington

**Objective:** To support safe navigation through the acquisition and processing of hydrographic survey data for updating nautical charts and by the identification and dissemination of dangers to navigation, as identified during the course of survey operations.

## Newport, RI

### NOAA Ship *Henry B. Bigelow*

**Commanding Officer:** LCDR Jeff Taylor  
**Primary Mission Category:** Fisheries Research  
**DEPART:** Woods Hole, Massachusetts **ARRIVE:** Newport, Rhode Island

**Project:** AMAPPS Abundance Survey

**Objectives:** Determine the distribution and abundance of marine mammals, sea turtles and sea birds within the study area. Collect vocalizations of cetaceans using passive acoustic hydrophones. Determine the distribution and relative abundance of plankton using bongo nets with CTDs, midwater trawls, visual plankton recorder and EK-60. Collect hydrographic and meteorological data, and when possible, collect biopsy samples and photo-identification pictures of cetaceans.

## Davisville, RI

### NOAA Ship *Okeanos Explorer*

**Commanding Officer:** CDR Mark Wetzler  
**Primary Mission Category:** Oceanographic Exploration and Research

**Depart:** Kwajalein, Marshall Islands  
**Depart:** Apra Harbor, Guam

**Arrive:** Apra Harbor, Guam  
**Arrive:** Pearl Harbor, Hawaii

**Project:** CAPSTONE

**Objectives:** CAPSTONE is a three year initiative to collect critical baseline NOAA science and management needs in largely unknown areas of U.S. waters in the Pacific. Operations conducted during this campaign support NOAA missions to understand and predict changes in climate, weather, oceans and coasts, and share that knowledge and information with others. Much of this work associated with CAPSTONE will contribute to and complement Deep Sea Coral Research and Technology Program's three-year Pacific Islands Regional Initiative.

### **Norfolk, VA**

**NOAA Ship *Thomas Jefferson***

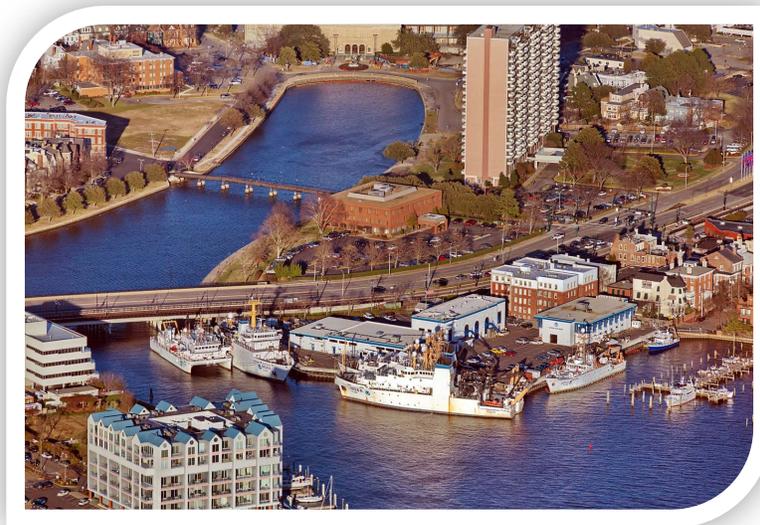
**Commanding Officer:** CDR Christiaan Van Westendorp  
**Primary Mission Category:** Hydrographic Surveys

**Ship Status:** Alongside US Coast Guard Yard Curtis Bay - Baltimore, Maryland, for scheduled maintenance, repairs, scientific data processing, crew rest, and training.

### **OMAO'S MARINE OPERATIONS CENTER – ATLANTIC (MOC-A)**

**CAPT Scott Sirois, Commanding Officer MOC-A**

MOC-A serves as a homeport for one NOAA ship, and manages the day-to-day operations and provides administrative, engineering, maintenance, and logistical support for the research and survey ships in NOAA's Atlantic fleet. Each year these ships conduct dozens of missions to assess fish and marine mammal stocks, conduct coral reef research, collect seafloor data to update nautical charts, and explore the ocean.



**Marine Operations Center-Atlantic as seen from above.**

[Photo: Ron Brown/Aerophoto America]

### **Charleston, SC**

**NOAA Ship *Nancy Foster***

**Commanding Officer:** LCDR Jeffrey Shoup  
**Primary Mission Category:** Oceanographic Research, Environmental Assessment  
**Depart:** Galveston, Texas  
**Depart:** Key West, Florida  
**Arrive:** Key West, Florida  
**Arrive:** Charleston, South Carolina

**Project:** Florida Keys National Marine Sanctuary Reef Assessment

**Objectives:** Project will focus on the waters of the Florida Keys, Marquesas, Dry Tortugas and Warsaw Hole. Two primary 'daytime' projects are proposed: (1) fish sampling, acoustic tagging, acoustic array receiver servicing in the Florida Keys, Dry Tortugas and Marquesas Keys., and (2) ROV and drop camera deployments on Warsaw Hole, Riley's Hump, and Marquesas. One additional 'daytime' activity includes two deployments of a Wave Glider. Multi-beam and fishery sonar surveys will be conducted primarily during nighttime hours, but will have occasional daytime requirements.



**NOAA Ship *Nancy Foster* as seen underway during sea trials in New York Harbor.**

[Photo: ENS Maginn/NOAA]

**NOAA Ship *Ronald H. Brown***

**Commanding Officer:** CAPT Robert Kamphaus  
**Primary Mission Category:** Oceanographic Research, Environmental Assessment

**Ship Status:** At dry dock in Vallejo, California for scheduled maintenance, repairs, scientific data processing, crew rest, and training.

***Pascagoula, MS***

**NOAA Ship *Pisces***

**Commanding Officer:** CDR William Mowitt  
**Primary Mission Category:** Fisheries Research  
**DEPART:** Morehead City, N Carolina **ARRIVE:** Newport, Rhode Island  
**DEPART:** Newport, Rhode Island **ARRIVE:** Newport, Rhode Island

**Project 1: Ecomon**

**Objectives:** Assess the hydrographic, planktonic and pelagic components of the Northeast U.S. Continental Shelf Ecosystem. Specifically we will quantify the spatial distribution of the following parameters: water currents, water properties, phytoplankton, microzooplankton, mesozooplankton, sea turtles and marine mammals. The project will use traditional and novel techniques and instruments. A broad array of measurements of the pelagic ecosystem will be made.

**Project 2: Deep Sea Corals**

**Objectives:** Survey suspected deep-sea coral habitats associated with deepwater canyons off the coast of North Carolina, a team of scientists will conduct a program having the following objectives; survey canyon area and intercanyon slope habitats using the AUV Sentry; with concurrent sampling of environmental factors (i.e. depth, salinity, turbidity and hydrography) to characterize benthic habitats and identify areas of coral presence; conduct multi-beam mapping in areas where data are missing or incomplete; and assess geological features and characterize canyon morphology

**NOAA Ship *Oregon II***

**Commanding Officer:** Master Dave Nelson  
**Primary Mission Category:** Fisheries Research

**DEPART:** Pascagoula, Mississippi

**ARRIVE:** Mayport, Florida

**DEPART:** Mayport, Florida

**ARRIVE:** Pascagoula, Mississippi

**Project:** Shark Redsnapper Longline

**Objectives:** Sample the U.S. Atlantic and northern Gulf of Mexico for data concerning the distribution and abundance of shark and red snapper populations to aid in stock assessments. Collect morphological measurements and biological samples to facilitate life history studies. Conduct conductivity, temperature and depth casts to profile water column temperature, salinity, transmissivity, dissolved oxygen concentrations and fluorometry.

### **NOAA Ship *Gordon Gunter***

**Commanding Officer:** Master Donn Pratt

**Primary Mission Category:** Fisheries Research

**DEPART:** Charleston, South Carolina **ARRIVE:** Pascagoula, Mississippi

**Project:** Southeast Mammal and Seabird

**Objectives:** To better understand offshore cetacean stock structures in the US north Atlantic Exclusive Economic Zone (EEZ), the primary objective of this cruise will be to conduct a dual team visual and acoustic line transect survey of these waters. The primary survey area will occur in waters between 28°N and 38°N, and from 50m water depth to the boundary of the US EEZ. Secondary objectives will include cetacean tissue biopsies and the recovery and redeployment of a deep water autonomous acoustic recorder.

### **San Diego, CA**

#### **NOAA Ship *Reuben Lasker***

**Commanding Officer:** CDR Kurt Dreftak

**Primary Mission Category:** Fisheries Research

**DEPART:** Newport, Oregon **ARRIVE:** San Francisco, California

**DEPART:** San Francisco, California **ARRIVE:** San Diego, California

**Project:** Summer California Current Ecosystem Survey

**Objectives:** Assess the biomasses, distributions, and biological compositions of sardine, anchovy, hake, and other Coastal Pelagic Species (CPS) populations in U.S. and Canadian waters off the Pacific coast. The primary goal of the survey is to estimate the biomasses, distributions, and biological compositions of populations of CPS and hake using data from an integrated acoustic and trawl survey. Also, a small portion of the survey will be devoted to testing and evaluation of acoustic and optical instrumentation, and a remotely operated vehicle.

### **Newport, OR**

#### **NOAA Ship *Rainier***

**Commanding Officer:** CDR E.J. van den Ameele

**Primary Mission Category:** Hydrographic Surveys

**DEPART:** Dutch Harbor, Alaska **ARRIVE:** Dutch Harbor, Alaska

**Project:** Arctic Alaska

**Objective:** To support safe navigation through the acquisition and processing of hydrographic survey data for updating nautical charts and by the identification and dissemination of dangers to navigation, as identified during the course of survey operations.

### **NOAA Ship *Bell M. Shimada***

**Commanding Officer:** CDR Paul Kunicki

**Primary Mission Category:** Fisheries Research

**DEPART:** Seattle, Washington **ARRIVE:** Newport, Oregon

**DEPART:** Newport, Oregon **ARRIVE:** San Diego, California

**Project 1:** Hake Survey Methods

**Objectives:** Investigations of Pacific hake (*Merluccius productus*) and joint survey methods, life history, and associated ecosystem components (trophic structure and oceanography). Use paired midwater trawls to evaluate potential selectivity of Pacific hake age/size classes by different codend liners. Test a larger kite on the Aleutian Wing Trawl for stability and ease of use with headrope sensors. The project will continuously sample multi-frequency acoustic backscatter data using the ship's Simrad EK60, EK80, and ME70 scientific echo sounder systems to estimate the distributions and abundances of hake, myctophids, gelatinous zooplankton, and krill.

**Project 2: ESA-listed Cetacean Survey: Passive Acoustic Survey of Cetacean Abundance Levels**

**Objectives:** The primary objective of this project is to estimate density of beaked whales and other acoustically surveyable species (e.g., sperm whales *Physeter macrocephalus*, and pygmy and dwarf sperm whales (genus *Kogia*)) throughout the California Current ecosystem using new survey technology and increased acoustic sampling effort compared to past large-scale transect surveys (which have been more visually focused). PASCAL is expected to provide far more acoustic detections than during previous large-scale cetacean assessment surveys, thus providing improved estimates of density (and in turn, improving existing spatial models and trend estimates).

**OMAO'S MARINE OPERATIONS**

**CAPT Todd Bridgeman, Director of Marine Operations**

OMAO's Marine Operations over-sees operations of the three regional Centers, including the Marine Operations Center-Pacific, Marine Operations Center-Atlantic, and Marine Operations Center-Pacific Islands.

## OMAO'S MARINE OPERATIONS CENTER – PACIFIC (MOC-P)

### CDR Brian Parker, Commanding Officer MOC-P

MOC-P serves as a homeport for two NOAA ships, and manages the day-to-day operations and provides administrative, engineering, maintenance, and logistical support for the research and survey ships in NOAA's Pacific fleet. Each year these ships conduct dozens of missions to assess fish and marine mammal stocks, conduct coral reef research, collect seafloor data to update nautical charts, and explore the ocean.

### *Ketchikan, AK*

#### **NOAA Ship *Fairweather***

<b>Commanding Officer:</b>	LCDR Mark Van Waes
<b>Primary Mission Category:</b>	Hydrographic Surveys
<b>Depart:</b> Dutch Harbor, Alaska	<b>Arrive:</b> Dutch Harbor, Alaska

#### **Project:** Fishpac

**Objective:** Collect acoustic data for essential fish habitat characterization and improved stock assessments. Three different sonars will be used to collect acoustic backscatter and bathymetry along tracklines defined by bottom-trawl-survey stations on the shelf. The three systems are a hull-mounted hydrographic-quality multi-beam echo-sounder and a prototype towed long-range side-scan sonar system that includes an independent single-beam echo-sounder. Ground-truthing will be conducted on a daily basis to support interpretation of the backscatter data. Although primarily a scientific study, the FISHPAC project will also provide hydrographic-quality bathymetric data to the NOAA Pacific Hydrographic Branch (PHB) for updating nautical charts in areas with outdated or non-existent information.

### *Kodiak, AK*

#### **NOAA Ship *Oscar Dyson***

<b>Commanding Officer:</b>	LCDR Michael Levine
<b>Primary Mission Category:</b>	Fisheries Research
<b>Depart:</b> Dutch Harbor, Alaska	<b>Arrive:</b> Dutch Harbor, Alaska
<b>Depart:</b> Dutch Harbor, Alaska	<b>Arrive:</b> Dutch Harbor, Alaska

#### **Project 1:** Summer Pollock-Bering Sea

**Objective:** Collect acoustic-trawl (AT) data necessary to determine the distribution, biomass, and biological composition of walleye pollock, including regularly deploying a stereo-camera system (CamTrawl) in the midwater trawl to optically sample fish. Collect target strength data using hull-mounted transducers for use in converting acoustic data to estimates of absolute abundance. Calibrate the shipboard EK60 and a temporarily-installed broadband system using standard sphere calibration techniques. Collect physical oceanographic data (temperature, salinity, fluorescence and oxygen profiles with associated water samples) at selected sites, and continuously collect sea surface temperature, salinity, and fluorescence.

#### **Project 2:** FOCI Bearing Sea

**Objective:** This research area is focused on improving and reducing uncertainty in stock assessment models of important commercial fish species in the Bering Sea through the collection of acoustics information, fish and zooplankton samples, and fisheries oceanographic indices.



**NOAA Ship Oscar Dyson dressed out for her Change of Command Ceremony earlier this field season.**

[Photo: Tammie Johnson/NOAA]

### **Honolulu, HI**

#### **NOAA Ship Hi'ialakai**

**Commanding Officer:** CDR Elizabeth Kretovic  
**Primary Mission Category:** Oceanographic Research, Environmental Assessment  
**Depart:** Pearl Harbor, Hawaii      **Arrive:** Pearl Harbor, Hawaii

**Project:** Hawaiian Archipelago RAMP

**Objective:** The Hawaiian Archipelago Reef Assessment and Monitoring Program (HARAMP) is a component of an integrated coral reef ecosystem assessment led by the Coral Reef Ecosystem Program (CREP) of the Pacific Island Fisheries Science Center in some 50 U.S.-affiliated Pacific Islands. This comprehensive, multi-agency research and education effort is sponsored by NOAA's Coral Reef Conservation Program (CRCP), a partnership between the National Marine Fisheries Service, National Ocean Service, and other NOAA agencies with the objective of improving understanding and management of coral reef ecosystems. Scientists will collect data to monitor nearshore physical and ecological factors associated with ocean acidification and general water quality, including data on water temperature, salinity, and other physical and biological characteristics of the coral reef environment using an assortment of oceanographic sampling and monitoring instruments, including systems deployed from the ship, underwater moored instruments, and sensors on the ship.

#### **NOAA Ship Oscar Elton Sette**

**Commanding Officer:** LCDR Donald Beaucage  
**Primary Mission Category:** Fisheries Research  
**DEPART:** Pearl Harbor, Hawaii      **ARRIVE:** Pearl Harbor, Hawaii

**Project:** Hawaiian Monk Seal Assessment

**Objectives:** The operating area includes the main Hawaiian Islands and Papahānaumokuākea Marine National Monument from the island of Hawaii to Kure Atoll with Hawaiian monk seal surveys and/or camp recovery at Ni'ihau Island, Nihoa Island, Necker Island, French Frigate Shoals, Laysan Island, Lisianski Island, Pearl and Hermes Reef, Midway Atoll, and Kure Atoll.



The NOAA Ship *Oscar Elton Sette* wardroom poses after the Change of Command ceremony.

[Photo: NOAA]

**OMAO'S MARINE OPERATIONS CENTER – PACIFIC ISLANDS (MOC-PI)**

**CDR Matthew Wingate, Commanding Officer MOC-PI**

MOC-PI serves as a homeport for two NOAA ships, and manages the day-to-day operations and provides administrative, engineering, maintenance, and logistical support for the ships in NOAA's Pacific Islands' fleet.



# OMAO's Aircraft



## Tampa, Florida

### WP-3D (N42RF) – “Hurricane Hunter”

**Temporary Base:** Naval Air Station Jacksonville, FL

**Current Mission:** Scheduled Maintenance - Until September 2016

The aircraft is at the Naval Air Station Jacksonville, Florida undergoing an extensive refurbishment period which will include replacing the wings and upgrading various components. This effort will extend the useful life of the aircraft for another 15-20 years.

### WP-3D (N43RF) – “Hurricane Hunter”

**Current Mission:** 2016 Hurricane Season - June through November 2016

June 1 marked the beginning of the 2016 Hurricane Season and the NOAA Hurricane Hunter aircraft are ready to respond. Radar reconnaissance missions on the NOAA WP-3D aircraft will be conducted to support tropical cyclone forecasting and the Hurricane Forecast Improvement Project. These flights will use the WP-3D's tail Doppler radar system to obtain high-density, three-dimensional measurements of the inner core wind structure of each tropical cyclone, potentially throughout its full life cycle. The hurricane research missions will also use the WP-3D to support the calibration/validation of satellite measurements and instrumentation development for the tropical cyclone environment and sampling of other aspects of the tropical cyclone inner core. These measurements will be used to enhance the accuracy of track and intensity guidance generated by NOAA's numerical weather prediction models. They will also be used directly by NOAA's National Weather Service hurricane specialists with the ultimate outcome being improved accuracy of intensity and track forecasts, extended forecast/warning lead-times and improved confidence levels by decision makers.

### Jet Prop Commander (N45RF)

**Temporary Base:** Various locations

**Current Mission:** GRAV-D-Mid July through mid-September

The aircraft will be supporting NOAA's National Geodetic Survey (NGS) on the Gravity for the Redefinition of the American Vertical Datum (GRAV-D) project. This project launched in 2007 and will conclude in 2022. When complete, the National Spatial Reference System will have a new, more accurate, gravity-based vertical datum. Vertical heights will be known throughout the US at a 2-cm accuracy, a vast improvement over the current vertical datum. Accurate height measurement is essential to accurate mapping and surveying, as well as floodplain mapping and management nationwide.

### Gulfstream IV (N49RF)

**Current Mission:** 2016 Hurricane Season - June through November 2016

NOAA's Gulfstream IV aircraft will support operational tropical cyclone forecasting and the Hurricane Forecast Improvement Project. The G-IV will be the primary aircraft for surveillance missions with the Air Force's WC-130J and NOAA's WP-3D aircraft serving as backup platforms. The radar reconnaissance missions will use the G-IV's Tail Doppler Radar (TDR) system to obtain high-density, three-dimensional measurements of the inner core wind structure of tropical cyclones, potentially throughout its full life cycle. NOAA's National Weather Service is seeking to gather data on the performance of the TDR observation system and will work with the Hurricane Research Division to develop observing strategies for maximizing the utility of the TDR with the goal of improving hurricane track and intensity forecasts.

### Twin Otter (N46RF)

**Temporary Base:** Northeast US Coast

**Current Mission:** Northeast AMAPPS

The aircraft will be supporting the NMFS Atlantic Marine Assessment Program for Protected Species (AMAPPS) project in the Northeast US. This survey helps to develop models and tools to provide seasonal density estimates incorporating habitat characteristics of marine mammals, turtles, and seabirds in the western North Atlantic Ocean. The project will provide data essential to supporting conservation initiatives mandated under the National Environmental Policy Act (NEPA), Marine Mammal Protection Act (MMPA), Migratory Bird Treaty Act (MBTA), and Endangered Species Act (ESA).

### **King Air (N68RF)**

**Temporary Base:** Various locations

**Current Mission:** Continuous Coastal Mapping

Coastal Mapping is an on-going mission of NOAA's National Geodetic Survey (NGS) to survey approximately 95,000 miles of United States coastline providing the Nation with an accurate, up-to-date and seamless database of the national shoreline. This data is used as the baseline for defining America's marine territorial limits, including its Exclusive Economic Zone, and for the geographic reference needed to manage coastal resources and support marine navigation. Stereo photogrammetry and LiDAR are used to produce a digital database. In addition, the Coastal Mapping Program supports NOAA's homeland security and emergency response requirements by rapidly acquiring and disseminating a variety of datasets to federal, state, and local government agencies as well as the general public.

### **Twin Otter (N48RF)**

**Temporary base:** Various locations

**Current Mission:** Soil Moisture Surveys

NOAA aircraft use specialized detection equipment to make accurate, real-time measurements of soil moisture content across the country. This information is critical for managers and others to make optimal decisions supporting river, flood, and water supply forecasting, agriculture and forest management, recreation and winter tourism, and the commerce, industry, and transportation sectors of the Nation's economy. The benefits of accurate soil moisture measurements are immense and NOAA aircraft are uniquely capable to provide this information.

### **Twin Otter (N56RF)**

**Temporary base:** Deadhorse, Alaska

**Current Mission:** Greenhouse Gases

There are significant amounts of methane and carbon dioxide being emitted from the North Slope region in late summer. It is believed these emissions are biogenic and not being emitted as a result of fires or fossil fuel extraction. This survey will measure methane, carbon dioxide and other gas concentrations to better understand the source and distribution of emissions in the region.

### **Twin Otter (N57RF)**

**Temporary base:** Florida Keys

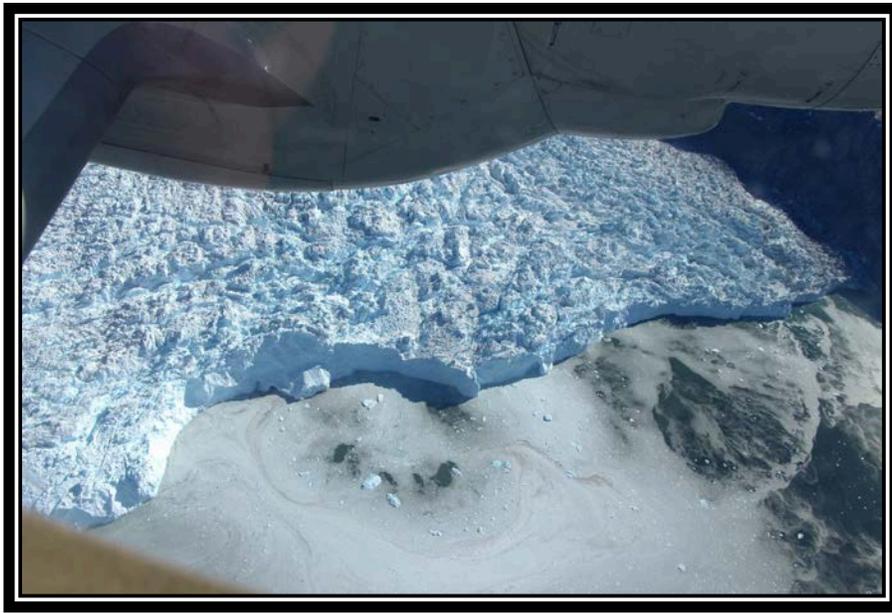
**Current Mission:** Coastal Mapping TopoBathy Lidar and Florida Keys National Marine Sanctuary surveys.

The Coastal Mapping mission will use a TopoBathy lidar sensor to collect topographic and bathymetric data in the coastal zone. Data will be used to produce the most up-to-date- and accurate marine navigation charts and for other Integrated Ocean and Coastal Mapping (IOCM) applications. The data collected will also directly support the Florida Keys National Marine Sanctuary (FKNMS). In conjunction with the mapping surveys, the FKNMS will acquire data providing a greater understanding of usage patterns within the sanctuary and surrounding waters. This information is essential to sanctuary managers and will allow them to better manage resources, modify or create new marine zones, and improve the sanctuary management plan.

### **OMAO'S AIRCRAFT OPERATIONS CENTER (AOC)**

**CAPT Michael Silah, Commanding Officer AOC**

The AOC, located at MacDill Air Force Base in Tampa, Florida, serves as the main base for OMAO's fleet of nine aircraft and provides capable, mission-ready aircraft and professional crews to the scientific community. Whether studying global climate change or acid rain, assessing marine mammal populations, surveying coastal erosion, investigating oil spills, flight checking aeronautical charts, or improving hurricane prediction models, the AOC flight crews continue to operate in some of the world's most demanding flight regimes.



Operation IceBridge, NASA's airborne survey of polar ice, shows the calving front of Sermeq Kujatdleq glacier from NOAA's P-3 aircraft.

[Photo: John Sonntag/NASA]



# Unmanned Systems Support



## NASA Global Hawk

**Location:** NASA Wallops Flight facility

**Mission:** SHOUT (Sensing Hazards Operationally using Unmanned Technology)

On August 1<sup>st</sup> this year's hurricane surveillance campaign began. This joint NASA and NOAA funded project is entering its third year. The Global Hawk will base out of Edwards Air Force Base until mid-August followed by a lengthy deployment to Wallops, VA. The NOAA partnership with NASA to utilize the Global Hawk will allow NOAA scientists and forecasters the capability to expand operational areas of interest in the Atlantic, Caribbean, and Gulf of Mexico as well as spend added time on station over hurricanes. Additionally, with the Global Hawk's high altitude capability, NOAA researchers will attain unique datasets to profile hurricanes from the upper levels of the atmosphere.

## APH-22 Hexacopter

**Location:** Vancouver Island, British Columbia, Canada

**Mission:** Orca Whales

The Southwest Fisheries Science Center (SWFSC) is utilizing the APH-22 airframe to survey Orca Whales from a small boat in Queen Charlotte Strait, in the northern part of Vancouver Island, British Columbia, Canada. The objective of this study is to assess the body condition and nutritional status of the Northern Resident killer whales. Specifically, measurements of length and width from vertical aerial photographs to be used in estimating the long-term growth trends and current nutritional status which are related to trends in returning Chinook salmon (their principal prey) in past decades. In addition to the killer whale photogrammetry, humpback whales will also be opportunistically photographed during this study. This will allow for a health comparison between North East Pacific and Atlantic humpback whales.



**A six-bladed hexacopter flies over a pod of killer whales and gathers data on their health status and whether they are bearing young.**

[Photo: NOAA/Vancouver Aquarium]

**Location:** Atlantic Northeast, Cape Cod vicinity

**Mission:** Atlantic Menhaden

The North East Fisheries Science Center (NEFSC) is collaborating with the South East Fisheries Science Center (SEFSC) and University of New Hampshire to develop aerial and underwater acoustical methods that will improve fisheries-independent estimates of Atlantic Menhaden abundance and biomass on the East Coast. The project is being funded through NOAA Fisheries Office of Science and Technology. Operations will consist of launching and deploying an APH-22 from the small boat F/V Lily.

**Location:** Pribilof Islands, Alaska  
**Mission:** Pribilof Fur Seals

The National Marine Fisheries Service (NMFS), Marine Mammal Laboratory (MML) is utilizing the APH-22 Hexacopter to photograph northern fur seal rookeries in the Pribilof Islands: St Paul, St. George, Otter, and Walrus Island. The Eastern Pacific northern fur seal stock is managed by NMFS and listed as depleted under the Marine Mammal Protection Act. Photographic survey flights will be flown above the targeted animals at a height of 100 feet. The captured images will be used to update historical photographs of rookery spaced used by northern fur seals. Additionally, opportunistic surveys of Steller sea lions will be collected to gather population data and catalog permanent markings of individuals.

**Location:** Northwestern Hawaiian Islands (NWHI)  
**Mission:** Hawaiian Monk Seals

The Pacific Islands Fisheries Science Center (PIFSC) Hawaiian Monk Seal Research Program (HMSRP) seek to utilize the APH-22 to conduct beach counts and individual identification that will enhance the ability of HMSRP to maintain accurate population data the informs the research program. Additionally the APH-22 would be used to assess the size and condition of individual animals. A frequent accurate measurement of all individuals throughout their lives is not possible. Utilizing the APH-22 platform to measure individuals to assess size and nutritional condition will add to the population dataset.

**Location:** Descanso Ranch Jamul, California  
**Mission:** Training/ Experimental Equipment Testing

The Southwest Fisheries Science Center (SWFSC) plans to utilize the Descanso Ranch in Jamul, California as a testing and training facility for the APH-22 Hexacopter. Testing and training activities with the APH-22 platform will include flight maneuvers, take-off and landing drills, aerial mapping, photogrammetry and experimental equipment testing. The training and platform testing will increase the proficiency of the pilots and increase the capabilities of the APH-22 platform.

### ***MD4-1000/DJI S-1000***

**Location:** Knoxville, Tennessee  
**Mission:** MD4-1000 Evaluation

NOAA's Air Resources Laboratory, Atmospheric Turbulence and Diffusion Division (NOAA/ARL/ATDD) seeks to utilize the NOAA National Marine Fisheries Center for Cooperative Unmanned Technologies (NOAA/NMFS/CCUT) MD4-1000 and DJI S-1000 airframes to perform instrument testing to verify its performance prior to the upcoming VORTEX-SE 2017 field study. Two iMet-XQ temperature/pressure/relative humidity sensors will be flown on the MD4-1000 for inter-comparison with the existing DJI S-1000 platform.

### ***SenseFly eBee RTK***

**Location:** Corbin, Virginia – Duck, North Carolina  
**Mission:** Training and Operational Development

The Remote Sensing Division (RSD) and the Office of National Marine Sanctuaries (ONMS) have been funded to operate the SenseFly eBee RTK to further the development of UAS operational procedures specifically related to coastal and habitat mapping, living marine resource surveys, as well as a range of emergency preparation, response and recovery requirements. The project consists of the initial acquisition, flight training and system acceptance. Upon completion of the training/system acceptance segment several operational missions will take place during the fall to begin the development of procedures and protocols for integrating eBee operations and data collection into existing RSD and ONMS programs.



# OMAO Partnerships



## ***United States Senate Committee on Commerce, Science, and Transportation***

**Location:** Washington, DC

**Detail:** LCDR Wendy Lewis, NOAA Commissioned Officer Corps

LCDR Lewis is currently on detail to the Committee with the staff of the Chair, Senator John Thune (R-SD), where she is assisting on activities pertaining to oceans, atmosphere, and fisheries policy, as well as other matters within the Committee's jurisdiction.

## ***National Science Foundation***

**Location:** Antarctica

**Mission:** LTJG Rafael Klein, NOAA Commissioned Officer Corps

Members of the NOAA Commissioned Officer Corps carry out NOAA's mission in remote locations across the globe. LTJG Klein is assigned to Antarctica where he serves as the Station Chief for NOAA's Atmospheric Research Observatory (ARO) at the Amundsen-Scott South Pole Station. The ARO at the Amundsen-Scott South Pole Station is a National Science Foundation facility used in support of scientific research related to atmospheric phenomena.

## ***Department of Defense - U.S. Pacific Command (USPACOM)***

**Location:** Honolulu, Hawaii

**Embedded Liaison:** CAPT Barry Choy, NOAA Commissioned Officer Corps

The U.S. Pacific Command (USPACOM) area of responsibility encompasses approximately half the earth's surface and more than half of its population. The 36 nations that comprise the Asia-Pacific include: two of the three largest economies and nine of the ten smallest; the most populous nation; the largest democracy; the largest Muslim-majority nation; and the smallest republic in the world. The region is a vital driver of the global economy and includes the world's busiest international sea lanes and nine of the ten largest ports. By any meaningful measure, the Asia-Pacific is also the most militarized region in the world, with seven of the world's ten largest standing militaries and five of the world's declared nuclear nations. Under these circumstances, the strategic complexity facing the region is unique. CAPT Choy is linked closely with the activities within the region allowing for identification of opportunities and cooperation between USPACOM and NOAA, and better overall government function situational awareness in the region.

## ***Department of Defense - U.S. Navy***

**Location:** Washington, DC

**Embedded Liaison:** LCDR Jason Mansour, NOAA Commissioned Officer Corps

LCDR Jason Mansour serves as NOAA liaison to the Oceanographer of the Navy and is an important interface between the U.S. Navy and other U.S. federal agencies, including NOAA. As NOAA Liaison, LCDR Jason Mansour serves as the Head of the Interagency Policy Branch of the International and Interagency Policy Division, Office of the Oceanographer of the Navy, located at the U.S. Naval Observatory. The mission of this Division is to coordinate and execute the Oceanographer of the Navy functions related to policy and programs involving international and/or interagency oceanography. Oceanography includes meteorology, oceanography, mapping, charting and geodesy, astronomy, and precise time and time interval.

**Location:** Stennis Space Center, Mississippi

**Embedded Liaison:** LTJG Laura Dwyer, NOAA Commissioned Officer Corps

Embedded in the Navy's Naval Oceanography Mine Warfare Center, LTJG Laura Dwyer works side by side with Navy officers operating Unmanned Underwater Vehicles worldwide and is currently stationed at Stennis Space Center. This collaboration will provide knowledge and experience that will keep NOAA on the cutting edge of this emerging technology as well as strengthen the partnership between NOAA and the Navy.

## ***Department of Homeland Security - U.S. Coast Guard***

**Location:** Washington, DC

**Embedded Liaison:** CDR G. Mark Miller, NOAA Commissioned Officer Corps

As the NOAA liaison to the United States Coast Guard (USCG), CDR Miller maintains a current and comprehensive knowledge of interagency activities and policies related to the USCG and NOAA. He identifies potential conflicts or benefits issues for analysis and evaluation, conducts appropriate assessments and studies, and serves as the interface between NOAA and the USCG. CDR Miller initiates, designs, and implements strategies through federal agency liaison and coordination that results in cooperative arrangements for maritime security, oceanographic research, hazardous materials spill response, and many other activities.



# Teacher at Sea Program



The mission of the [Teacher at Sea](#) (TAS) program is to give teachers a clearer insight into our ocean planet, a greater understanding of maritime work and studies, and to increase their level of environmental literacy by fostering an interdisciplinary research experience. The program provides a unique environment for learning and teaching by sending kindergarten through college-level teachers to sea aboard NOAA research and survey ships to work under the tutelage of scientists and crew. Then, armed with new understanding and experience, teachers bring this knowledge back to their classrooms. Since its inception in 1990, the program has enabled more than 600 teachers to gain first-hand experience of science and life at sea. By participating in this program, teachers enrich their classroom curricula with knowledge that can only be gained by living and working side-by-side, day and night, with those who contribute to the world's body of oceanic and atmospheric scientific knowledge. Below is a list of the NOAA Teachers at Sea for the current monthly update for the 2016 Field Season. Once they have embarked on their cruise, you can gain access to their [blogs](#) which document their missions at sea and offer a wealth of information about the research being conducted as well as personal stories.

- Teacher at Sea Sandra Thornton from Broadwater Academy, Exmore, VA will sail on PolarTREC research cruise on USCG Healy in and out of Seward, AK
  - <https://teacheratsea.wordpress.com/category/2016/sandra-thornton-2016/>
- Teacher at Sea Cathrine Prenot from Estacado High School, Lubbock, TX will sail on a hake cruise from Newport, OR to Seattle, WA on NOAA Ship *Bell M. Shimada*
  - <https://teacheratsea.wordpress.com/author/cathrineprenot/>



**Teacher-At-Sea, Sandra Thornton on Arctic ice with USCGC HEALY in background.**

[Photo: Sandra Thornton]



# OMAO - NOAA Dive Program



OMAO manages and implements [NOAA's Dive Program](#) (NDP), which trains and certifies scientists, engineers, and technicians from federal, state, tribal governments, and the private sector to perform the variety of tasks carried out underwater to support NOAA's mission. NDP also has cooperative diving agreements with over 100 government agencies and academic institutions. NOAA has more than 400 divers who perform over 14,000 dives per year. The NDP is headquartered at the NOAA Diving Center at the NOAA Western Regional Center in Seattle, Washington.



**NOAA Divers use lift bags to remove a tangle of derelict fishing nets to the surface in the Northwestern Hawaiian Islands.**

[Photo: Kyle Koyanagi /NOAA]



# OMAO Small Boat Program



OMAO manages NOAA's [Small Boat Program](#) and sets policy and provides safety inspections for almost 400 small boats operated by the various Line and program offices throughout NOAA, which support fisheries laboratories, dive support, nautical charting, ocean and Great Lakes research, and more.



**NOAA small boats support many diverse operations across the country.**

[Photos: NOAA]



# Office of Marine and Aviation Operations



*Providing Environmental Intelligence for a Dynamic World*

The personnel, ships, and aircraft of NOAA play a critical role in gathering environmental data vital to the nation's economic security, the safety of its citizens, and the understanding, protection, and management of our natural resources. The NOAA fleet of ships and aircraft is managed and operated by the Office of Marine and Aviation Operations (OMAO), an office comprising civilians, mariners, and officers of the NOAA Commissioned Officer Corps, one of the seven uniformed services of the United States. NOAA's roots trace back to 1807, when President Thomas Jefferson ordered the first comprehensive coastal surveys. Those early surveys ensured safe passage of ship-borne cargo for a young nation. As the needs of the nation have grown, so too have OMAO's responsibilities. Today, OMAO civilians and NOAA Corps officers operate, manage, and maintain NOAA's active fleet of 16 research and survey ships and nine specialized aircraft. Together, OMAO and the NOAA Corps support nearly all of NOAA's missions.



NOAA has the largest fleet of federal research and survey ships in the nation. The fleet ranges from large oceanographic ships capable of exploring and charting the world's deepest ocean, to smaller vessels responsible for surveying the shallow bays and inlets of the United States. The fleet supports a wide range of marine activities including fisheries surveys, nautical charting, and ocean and climate studies. Based throughout the continental United States, Alaska, and Hawaii, the ships operate in all regions of the nation and around the world.

NOAA's aircraft provide a wide range of airborne capabilities. Our highly specialized Lockheed WP-3D "Hurricane Hunter" aircraft are equipped with an unprecedented variety of scientific instrumentation, radars, and recording systems for both in situ and remote sensing measurements of the atmosphere, the Earth, and its environment. Equipped with both C-band weather radar and X-band tail Doppler radar systems, the WP-3Ds have the unique ability to conduct tropical cyclone research in addition to storm reconnaissance. Together with NOAA's Gulfstream IV-SP hurricane surveillance jet, these aircraft greatly improve our physical understanding of hurricanes and enhance the accuracy of tropical cyclone forecasts. NOAA's light aircraft also play a vital role in monitoring our environment. Our King Air, Commander and Twin Otter aircraft support marine mammal population studies, shoreline change assessments, oil spill investigations, and water resource/snowpack surveys for spring flood forecasts.



The NOAA fleet provides immediate response capabilities for unpredictable events. For example, in November 2014, our aircraft flew missions over upstate New York after the record snow falls of up to seven feet and conducted airborne Snow Water Equivalent (SWE) and soil moisture measurements. Airborne SWE measurements are used by NOAA's National Weather Service when issuing river and flood forecasts, water supply forecasts, and spring flood outlooks.

After Hurricane Sandy in 2012, NOAA ships Thomas Jefferson and Ferdinand R. Hassler conducted emergency bathymetric surveys to locate possible submerged navigational hazards in the ports of New York and Virginia. These surveys enabled the ports to reopen quickly. Aerial images of storm-stricken regions, taken by NOAA aircraft, helped residents and emergency workers to quickly assess the condition of houses, bridges, and vital infrastructure. In 2010, the NOAA fleet and the NOAA Corps played a major role in the response to the BP Deepwater Horizon oil spill. NOAA's entire Atlantic fleet and over a quarter of the total strength of the NOAA Corps were deployed to the Gulf following the spill, developing mission plans and assisting response efforts.

While manned aircraft and sea-going vessels have been, and will continue to be, a primary source of environmental data, new technology will have a significant role to play in the future NOAA fleet. OMAO, in coordination with other NOAA offices and federal agencies, is evaluating and deploying remotely piloted underwater and aircraft systems that could significantly contribute to environmental observations. OMAO's ongoing challenge is to meet the growing demand for in situ scientific data while providing the highest level of service. To better serve the needs of the nation, NOAA is examining the composition of the fleet through an exhaustive and critical review of at-sea science and observation requirements. Our objective is to develop a clear, cost-efficient path forward to ensure that the NOAA fleet can continue to conduct at-sea surveys and research vital to fisheries management, updating nautical charts, responding to natural and manmade disasters, and understanding coastal and marine systems more fully. Meeting these requirements is essential to developing sustainable, science-based management and conservation plans that protect the health and resiliency of these resources over the long-term.

We continue our efforts to build a civilian and NOAA Corps officer work force that is uniquely qualified to gather critical environmental intelligence and be adaptive and responsive to a changing world and work to expand our partnerships with other federal agencies. For example, NOAA Corps officers are currently assigned to work in the Department of Defense, National Science Foundation, and the U.S. Senate among others where they lend their expertise and service. We also continue to strengthen our partnership with the U.S. Coast Guard. Our basic NOAA Corps officer training class is held at the U.S. Coast Guard Academy, where newly commissioned officers train alongside Coast Guard officer candidates, developing skills and professional relationships that will benefit both services, especially during challenging times. Active collaboration among the Federal family is critical to ensuring the long-term capability and success of the federal ocean infrastructure. Our partners' success is our success. The men and women of OMAO and the NOAA Corps provide environmental intelligence for a dynamic world as they serve our nation every day from the farthest seas to the highest skies.

# NOAA Commissioned Officer Corps

– Honor, Respect, Commitment –



The NOAA Commissioned Officer Corps (NOAA Corps) is one of the United States' seven Uniformed Services and as commissioned officers serve with the 'special trust and confidence' of the President. NOAA Corps officers are an integral part of the National Oceanic and Atmospheric Administration (NOAA), an agency of the U.S. Department of Commerce. With an authorized strength of 321 officers, the NOAA Corps serves throughout the agency's Line and Staff Offices to support nearly all of NOAA's programs and missions. The combination of commissioned service and scientific expertise makes these officers uniquely capable of leading some of NOAA's most important initiatives.

The NOAA Corps is part of NOAA's Office of Marine and Aviation Operations (OMAO) and traces its roots back to the former U.S. Coast and Geodetic Survey, which dates back to 1807 and President Thomas Jefferson. In 1970, NOAA was created to develop a coordinated approach to oceanographic and atmospheric research and subsequent legislation converted the commissioned officer corps to the NOAA Corps. The NOAA Corps today provides a cadre of professionals trained in engineering, earth sciences, oceanography, meteorology, fisheries science, and other related disciplines. Corps officers operate NOAA's ships, fly aircraft, manage research projects, conduct diving operations, and serve in staff positions throughout NOAA.

## Benefits of the NOAA Corps to the Nation

The combination of commissioned service with scientific and operational expertise, allows the NOAA Corps to provide a unique and indispensable service to the nation. Discipline and flexibility are inherent in the NOAA Corps personnel system. Officers are trained for positions of leadership and command in the operation of ships and aircraft; in the conduct of field projects on land, at and under the sea, and in the air; in the management of NOAA observational and support facilities; as members or leaders of research efforts; and in the management of various organizational elements throughout NOAA. NOAA Corps officers must be technically competent to assume positions of leadership and command in NOAA and Department of Commerce programs and in the Armed Forces during times of war or national emergency. NOAA Corps officers enable NOAA to fulfill mission requirements, meet changing environmental concerns, take advantage of emerging technologies, and serve as environmental first responders.

- In 2015, NOAA aircraft conducted research and surveillance missions into some of the planet's most extreme weather, ranging from Hurricane Patricia, the strongest on record in the Western hemisphere, to severe storms over the U.S. Great Plains region. In addition, NOAA aircraft responded to unprecedented flooding in South Carolina using advanced sensors and imaging technology to provide emergency response managers with critical real-time information needed to respond to this disaster.
- In 2015, several ships conducted monitoring of an extensive harmful algal bloom (HAB) extending from California to the Gulf of Alaska. The 2015 HAB was the largest in more than a decade, affecting sea birds, sea lions, and triggered closures of commercial shellfish fisheries along the U.S. west coast. Observations help scientists understand HABs and help predictive modeling for the future.
- After Hurricane Sandy in 2012, NOAA Ships *Thomas Jefferson* and *Ferdinand R. Hassler* conducted emergency bathymetric surveys to locate possible submerged navigational hazards in the ports of New York and Virginia. These surveys enabled the ports to reopen quickly. Aerial images of storm-stricken regions, taken by NOAA aircraft, helped residents and emergency workers to quickly assess the condition of houses, bridges, and vital infrastructure.
- After Hurricane Irene in 2011, the NOAA Ship *Ferdinand Hassler* and team completed 300 lineal nautical miles of survey work in less than 48 hours providing a damage assessment that enabled the U.S. Coast Guard to reopen ports and restore more than \$5M per hour in maritime commerce less than three days after the storm.
- In 2010, the NOAA fleet and the NOAA Corps played a major role in the response to the BP Deepwater Horizon oil spill in the Gulf of Mexico. NOAA's entire Atlantic fleet and over a quarter of the total strength of the NOAA Corps were deployed to the Gulf following the spill, developing mission plans and assisting response efforts.