NOAA Fleet Update
November 2017

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.

Find us on Facebook for the latest news and activities.
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OMAO and the NOAA Corps – In the News

**NOAA Ship Surveys Channel Islands to Gather Mapping Data, Support Safe Navigation**
-Noozhawk.com
The near-shore areas of the Channel Islands' underwater topography were last surveyed about 90 years ago, but a National Oceanic and Atmospheric Administration survey ship is in the area to work on an update. The NOAA survey ship Rainier returns to the Santa Barbara and Ventura coast Monday to complete hydrographic surveys and a comprehensive mapping initiative to help mariners navigate safely, and update charts to make informed resource management decisions...

**Hilo students spend month at sea researching coral health in Northwestern Hawaiian Islands**
-University of Hawaii News
A student and a recent graduate from the marine science program at the University of Hawai'i at Hilo returned from a month-long sea voyage to Papahānaumokuākea Marine National Monument to do research on coral and fish populations. The National Oceanic and Atmospheric Administration (NOAA) ship Hi'ialakai returned to Honolulu on September 30 after a 25-day mission to the Northwestern Hawaiian Islands. Rosie Lee and Keelee Martin were interns as part of a NOAA research team completing the third leg of a research mission in support of the Hawaiian Atolls Reef Assessment and Monitoring Project. The NOAA Coral Reef Ecosystem Program team and partners conducted reef monitoring and damage mitigation work. The data is used to assess the impacts of climate change on the Northwestern Hawaiian Islands and gauge potential threats to the main Hawaiian Islands....

**Scientists eavesdrop on little-known beaked whales to learn how deeply they dive**
-Phys.org
Scientists have reported the first dive depths for Gervais’ and True's beaked whales, two of the least known beaked whale species known as mesoplodonts. The study is also the first to use a towed linear hydrophone array to document dive depths for beaked whales, and researchers say it's a promising method to obtain dive depths for other beaked whale species. The findings by NOAA scientists from the Northeast Fisheries Science Center (NEFSC) in Woods Hole, Mass. and a colleague now at Hydroacoustics Inc in Rochester, NY were recently reported in the Journal of the Acoustical Society of America. The linear towed array is made up of a long cable to which a depth sensor and a series of eight hydrophones - underwater microphones - are attached. The array is towed 300 meters, roughly 1,000 feet, behind the NOAA Ship Henry B. Bigelow to reduce the ship's noise on the array. It is a passive acoustic approach, meaning the array just listens and doesn't emit any sounds, while active acoustics such as echosounders (also called fish finders) are devices making noise and then listening for that sound...
Faced with tough national security and economic challenges and a natural world governed by powerful and mysterious forces that often threatened life, property, and commerce, President Thomas Jefferson signed a bill creating a new federal agency in 1807 that would support the nation’s defense, promote the well-being of its citizens, and unlock nature’s secrets. The new agency’s mission was to chart the nation’s coastal waters to ensure that ships could move civilians, troops, and materiel safely.

During the next 150 years, that agency, the Survey of the Coast (later the Coast & Geodetic Survey or C&GS), would prove itself in war as well as in peacetime. With America’s entry into the World War I, a commissioned service of the C&GS was formed in 1917 to ensure the rapid assimilation of C&GS technical skills for defense purposes. During World War II, officers and civilians of the C&GS produced nautical and aeronautical charts, provided critical geospatial information to artillery units, and conducted reconnaissance surveys.

Today, the work of the C&GS—and more—is conducted by the National Oceanic and Atmospheric Administration (NOAA) and the NOAA Commissioned Officer Corps—one of the seven uniformed services of the United States. The direct descendants of the C&GS, NOAA and the NOAA Corps work every day to keep the nation secure and productive by providing products and services that support maritime domain awareness; help ensure safe passage of commercial and military traffic on our nation’s waterways; warn mariners, aviators, and the public of severe weather; aid search and rescue efforts; and conserve and protect our natural resources.

Continuing in the tradition of their C&GS predecessors, NOAA Corps officers continue to play a vital role in the acquisition and analysis of environmental data that aid NOAA and other agencies in meeting the national security, economic, and environmental challenges of the 21st century. NOAA Corps officers command ships that scan the seafloor for potential hazards to shipping, monitor oceanographic and atmospheric conditions, and study ocean resources. They also operate highly specialized aircraft that collect environmental and geographic data necessary for weather and flood prediction, nautical and aeronautical charting, disaster response, and resource management.
We are very excited to announce that the students from BOTC 130 have received their first assignments! Please join us in congratulating these men and women on taking this exciting step toward their future careers:

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<th>Officer Candidate</th>
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<td>OC Brian S. Caldwell</td>
<td>NOAA Ship <em>Okeanos Explorer</em></td>
<td>Davisville, RI</td>
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<td>OC Alexander W. Creed</td>
<td>NOAA Ship <em>Pisces</em></td>
<td>Pascagoula, MS</td>
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<tr>
<td>OC Nicolas S. DeProspero</td>
<td>NOAA Ship <em>Nancy Foster</em></td>
<td>Charleston, SC</td>
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<td>OC Emma M. Ethier</td>
<td>NOAA Ship <em>Henry Bigelow</em></td>
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<td>NOAA Ship <em>Bell M. Shimada</em></td>
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<tr>
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<td>OC Taylor A. Krabiel</td>
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<td>OC Kevin A. Tennyson</td>
<td>NOAA Ship <em>Fairweather</em></td>
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<tr>
<td>OC Jackson Vanfleet-Brown</td>
<td>NOAA Ship <em>Fairweather</em></td>
<td>Ketchikan, AK</td>
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The students are looking forward to connecting with their ships’ and Aircraft Operations Center wardrooms and crews as they prepare to transition to life in the fleet. Thank you to all those who attended Billet Night and supported the students on this exciting and emotional night!
The President's Budget Request for NOAA includes $75 million in FY 2018 as part of an ongoing multi-year NOAA ship fleet recapitalization initiative. Since 2007, the NOAA fleet has declined from 19 ships to the current fleet of 16 ships. Without recapitalization, the fleet will decrease to eight ships by 2028. In FY 2018, funding will support construction of a second NOAA vessel (N/V) Class A. This vessel will be a variant of the Navy's existing Auxiliary General Oceanographic Research vessel, serving a primary mission of oceanographic monitoring, research, and modeling. NOAA will also continue planning for additional ships. New ship construction consists of four acquisition phases: requirements analysis, concept design, preliminary design, and detailed design and construction. Efforts will be made throughout the process to leverage design aspects of previous ship classes and to create standardization across the fleet to meet multiple core mission requirements.

We thank Congress for the fleet recapitalization support received in FY 16 ($80 million) and FY17 ($75 million).

**Fleet Recapitalization Resources**

**OMAO Fleet Recapitalization - Building NOAA’s 21st Century Fleet** [March 2017 - PDF 2.1 MB]

**OMAO Fleet Recapitalization Questions and Answers (Q&As) - [PDF]**

**NOAA Fleet Independent Review Team Final Report**

**The NOAA Fleet Plan: Building NOAA’s 21st Century Fleet** [PDF 7.5 MB]

**NOAA Budget Request Resources**

**FY 2018 NOAA Congressional Justification**

**FY 2018 Bluebook**
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.

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**New Castle, NH**  
**NOAA Ship Ferdinand R. Hassler**

**Commanding Officer:** LCDR Matthew Jaskoski  
**Primary Mission Category:** Hydrographic Surveys  
**Depart:** Charleston, South Carolina  
**Arrive:** New Castle, New Hampshire  
**Project:** Approaches to Jacksonville  
**Objectives:** 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: CDR Jeff Taylor
Primary Mission Category: Fisheries Research
Temporary Location: Norfolk, Virginia
Ship Status: Ship is in Norfolk, Virginia, undergoing emergency repairs to the main propulsion system.
- Repairs required dry docking of the ship, removing the motor through the side of the hull, and shipping the motor to a repair facility in Ohio. Motor components are custom-made due to acoustic quieting requirements.
- As a precautionary measure based on the failure of the primary propulsion motor, the second propulsion motor was inspected, showing similar signs of fatigue. The decision was made to remove and repair the second motor to mitigate potential impacts to future operations, shifting the estimated time of repair completion to February.
- Mitigation strategies, including analysis of opportunities to conduct the New England Fall Bottom Trawl Survey on other NOAA vessels, are being pursued collaboratively by OMAO and NMFS:
  o Two Northeast Fisheries Science Center research cruises planned for July and August have been cancelled. However one, that for sea turtles and marine mammals, will be conducted later this year aboard the R/V Hugh Sharp, operated by the University of Delaware.
  o NOAA Ship Pisces is conducting the planned annual bottom trawl survey.

Davisville, RI
NOAA Ship Okeanos Explorer
Commanding Officer: CDR Eric Johnson
Primary Mission Category: Oceanographic Exploration and Research
Depart: Honolulu, Hawaii
Arrive: Panama City, Panama
Depart: Panama City, Panama
Arrive: Key West, Florida

Project 1: Eastern Pacific Mapping
Objectives: The ship will conduct preliminary seafloor mapping operations to contribute to geological understanding of remote areas of the Pacific Ocean. The ship will also test the operation of a newly developed nitrogen sensor that was funded by an Office of Exploration and Research grant to the University of Washington Applied Physics Laboratory to measure biologically produced excess nitrogen in the Eastern Tropical north Pacific.

Project 2: Gulf of Mexico Mapping
Objectives: The ship will collect high resolution mapping data from sonars in priority areas, including the Seaflower Marine Protected Area in Columbian waters, the Caribbean, and the Gulf of Mexico. The data and information collected during this expedition gives resource managers, the academic community, and the private sector the information they need to identify, understand, and manage ocean resources.

Norfolk, VA
NOAA Ship Thomas Jefferson
Commanding Officer: CDR Christiaan van Westendorp
Primary Mission Category: Hydrographic Surveys
Depart: Savannah, Georgia
Arrive: Norfolk, Virginia
Project: Approaches to Savannah
Objectives: 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.
OMAO’S MARINE OPERATIONS CENTER – ATLANTIC (MOC-A)

CDR Stephanie Koes, Commanding Officer MOC-A

MOC-A serves as a homeport for one NOAA ship. Its personnel provide administrative and logistical support, and manage the day-to-day operations, 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.

Charleston, SC

**NOAA Ship Nancy Foster**

Commanding Officer: Master Donn Pratt  
Primary Mission Category: Oceanographic Research, Environmental Assessment  
Ship Status: Ship will be in a scheduled dockside maintenance period in Charleston, South Carolina through the month of November.

NOAA Ship Ronald H. Brown

Commanding Officer: CAPT Kurt Zegowitz  
Primary Mission Category: Oceanographic Research, Environmental Assessment  
Ship Status: Ship will be in a scheduled dockside maintenance and sea trial period in Charleston, South Carolina through the month of November in preparation for several projects that will involve circumnavigation of the globe throughout 2018.

Pascagoula, MS

**NOAA Ship Pisces**

Commanding Officer: CDR Nicholas Chrobak  
Primary Mission Category: Fisheries Research  
Depart: Newport, Rhode Island  
Arrive: Newport, Rhode Island  
Project: Autumn Multispecies Bottom Trawl Survey  
Objectives: The ship will conduct bottom trawls in an area covering the continental shelf waters of Georges Bank and the Gulf of Maine to the Western Scotia Shelf (including areas in Canada’s Exclusive Economic Zone) to determine the autumn distribution and relative abundance of fish and invertebrate species.

**NOAA Ship Oregon II**

Commanding Officer: Master Dave Nelson  
Primary Mission Category: Fisheries Research  
Depart: Galveston, Texas  
Arrive: Pascagoula, Mississippi  
Project: Southeast Area Monitoring and Assessment Program (SEAMAP) Fall Groundfish Survey  
Objectives: Scientists from the Southeast Fisheries Science Center, Tulane University, and Texas A&M University - Corpus Christi ship will sample the northern Gulf of Mexico from the south Texas coast to the south Florida, using trawling gear to determine the abundance and distribution of benthic fauna.
NOAA’s Deputy Under Secretary for Operations, Ben Friedman, presents a plaque to Master Dave Nelson in honor of NOAA Ship Oregon II’s 50th anniversary in Pascagoula, Mississippi.

[Photo: David Hall/NOAA]

**NOAA Ship Gordon Gunter**

**Commanding Officer:** CDR Lindsay Kurelja  
**Primary Mission Category:** Fisheries Research  
**Depart:** Newport, Rhode Island  
**Arrive:** Norfolk, Virginia  
**Depart:** Norfolk, Virginia  
**Arrive:** Pascagoula, Mississippi  

**Project:** ECOMON and Transit to Homeport

**Objectives:** The Ecosystem Monitoring surveys contribute to stock assessments, protected species assessments, ecosystem assessments, and climate assessments. As such, the surveys are multi-objective. Lchthyooplankton and hydrographic data are collected for stock assessments. A range of ecosystem observations are made, from nutrients and ocean acidification to marine mammals, and a number of the measurements are used in NEFSC ecosystem assessment products. The ocean acidification and hydrographic measurements are incorporated into the region’s climate assessments.
San Diego, CA

NOAA Ship *Reuben Lasker*

**Commanding Officer:** CDR Kurt Dreflak  
**Primary Mission Category:** Fisheries Research  
**Depart:** Honolulu, Hawaii  
**Arrive:** San Diego, California  
**Project:** Hawaiian Islands Cetacean and Ecosystem Assessment Survey (HICEAS)  

**Objectives:** The HICEAS project is a marine mammal and seabird assessment survey of the waters of the Hawaiian island Chain extending offshore to the limits of the U.S. Exclusive Economic Zone. The overall objective of the HICEAS project is to estimate the abundance and understand the distribution of dolphins, whales, and seabirds found in the waters around the Hawaiian Islands. Biopsy data and aerial photography from unmanned aerial systems will help scientists better understand population demography and genetic structure, and biological and oceanographic data will be collected to better characterize the study area environment.
Newport, OR

**NOAA Ship Rainier**

Commanding Officer: CDR Ben Evans  
Primary Mission Category: Hydrographic Surveys  
Depart: San Diego, California  
Arrive: Newport, Oregon  
Project: Channel Islands and Vicinity, California  
Objectives: 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: San Diego, California  
Arrive: San Diego, California  
Project: California Current Ecosystem Moorings  
Objectives: Working with Scripps Institute of Oceanography, the ship will deploy and recover surface and subsurface moorings used to measure biological, chemical, and physical oceanography as well as meteorology to understand linkages between changes in the physical-chemical environment and responses of ocean biota in the California Current Ecosystem.

**OMAO’S MARINE OPERATIONS - NATIONAL SUPPORT**

CAPT Todd Bridgeman, Director of Marine Operations  
Mr. Troy Frost, Deputy Director of Marine Operations  
OMAO’s Marine Operations oversees the operations of OMAO’s ships and the three regional Centers, including the Marine Operations Center-Pacific, Marine Operations Center-Atlantic, and Marine Operations Center-Pacific Islands. Employees of Marine Operations are stationed nationwide to provide strategic, administrative, engineering, maintenance, electronic, budgetary, and personnel support to the OMAO 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.

**OMAO’S MARINE OPERATIONS CENTER – PACIFIC (MOC-P)**

CAPT Keith Roberts, Commanding Officer MOC-P  
MOC-P serves as a homeport for two NOAA ships. Its personnel provide administrative and logistical support, and manage the day-to-day operations, 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. MOC-P also serves as the home of OMAO’s Marine Operations.

Ketchikan, AK

**NOAA Ship Fairweather**

Commanding Officer: CDR Mark Van Waes  
Primary Mission Category: Hydrographic Surveys  
Depart: Ketchikan, Alaska  
Arrive: TBD  
Project: Southeast Alaska Survey and Transit to Dockside Repair  
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.

Following this project, the ship will transit in November to a location as yet to be determined for scheduled dockside repair period until April 2018. Award for this contract is expected in early November.
NOAA Ship *Fairweather* at anchor in south Yakutat Bay, Alaska.
[Photo: CAPT John Herring]

**Kodiak, AK**

**NOAA Ship Oscar Dyson**

- **Commanding Officer:** CDR Michael Levine
- **Primary Mission Category:** Fisheries Research
- **Temporary Location:** Newport, Oregon
- **Ship Status:** The ship will undergo annual fleet inspection and scheduled dockside maintenance period until January of 2018.

**Honolulu, HI**

**NOAA Ship Hi’ialakai**

- **Commanding Officer:** CDR Colin Little
- **Primary Mission Category:** Oceanographic Research, Environmental Assessment
- **Ship Status:** The ship will undergo annual fleet inspection and scheduled dockside maintenance period through January of 2018.
NOAA Ship Oscar Elton Sette

Commanding Officer: CDR Donald Beaucage
Primary Mission Category: Fisheries Research
Depart: Honolulu, Hawaii Arrive: Honolulu, Hawaii
Project: Insular Bottomfish Survey and Transit to Dry Dock

Objectives: The focus of this mission is to support the operational survey of Deep-7 bottomfish stock across the Main Hawaiian Islands using the Modular Optical Underwater Survey System (MOUSS) fishery-independent sampling gear. The MOUSS builds and improves upon previous efforts with the Baited Stereo-Video Bottom Camera System (BotCam), which has been effectively used to collect fishery-independent species-specific size-structured abundance data on bottomfish in the Main Hawaiian Islands.

Following this project, the ship will transit in early November to a location as yet to be determined for scheduled drydock repair period until March 2018. Award for this contract is expected in early November.

OMAO’S MARINE OPERATIONS CENTER – PACIFIC ISLANDS (MOC-PI)
CAPT Robert Kamphaus, Commanding Officer MOC-PI

MOC-PI serves as a homeport for two NOAA ships. Its personnel provide administrative and logistical support, and manage the day-to-day operations, for the ships in NOAA’s Pacific Islands fleet and for ships operating in the Western Pacific. 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.
Lakeland, FL

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

**Current Mission:** Hurricane Season

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.

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

**Temporary Base:** Jacksonville, Florida

**Current Mission:** Scheduled Maintenance

The aircraft was inducted into re-winging in March. No additional projects are planned on this airframe until re-wing is complete in fall 2018.

**Gulfstream IV (N49RF) – “Hurricane Hunter”**

**Current Mission:** Hurricane Season

NOAA’s Gulfstream IV aircraft stands ready to support operational tropical cyclone forecasting and the Hurricane Forecast Improvement Project, based out of its new home in Lakeland, Florida. The G-IV is the primary aircraft for surveillance missions. 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.

**Jet Prop Commander (N45RF)**

**Temporary Base:** Various Locations

**Current Mission:** Soil Moisture/Snow Survey

NOAA’s Jet Prop Commander aircraft will continue supporting the snow survey mission, using specialized detection equipment to make accurate, real-time measurements of snow water 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.

**Twin Otter (N46RF)**

**Temporary Base:** Various Locations

**Current Missions:** Soil Moisture/Snow Survey

N46RF will 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 (N48RF)**

**Temporary Base:** Various Locations in Florida  
**Current Mission:** Coastal Mapping  
The aircraft completed Hurricane Irma response flights and will resume TopoBathy Lidar (light detection and ranging) mission will collect data in the coastal zone used to produce the most up-to-date and accurate marine navigation charts, FEMA flood plain and inundation maps, and other Integrated Ocean and Coastal Mapping (IOCM) applications. Data gathered will help ensure safe and efficient marine transportation and benefit coastal communities with accurate resource management and aid emergency response efforts.

**Twin Otter (N56RF)**

**Temporary Base:** Various Locations  
**Current Missions:** Southeast Atlantic Marine Assessment Program for Protected Species  
N56RF will support the Southeast Atlantic Marine Assessment Program for Protected Species (SE AMAPPS). The purpose of the SE AMAPPS survey is to provide data for NOAA Fisheries, the Bureau of Ocean Energy Management; and the United States Navy so that each agency can meet its obligations under the Endangered Species Act, Marine Mammal Protection Act, and National Environmental Policy Act (NEPA). Each agency is subject to litigation and possible delays or stoppage of fisheries, energy development and military activities without current information. The objective of this project is to provide information on the distribution and abundance of marine mammals and turtles throughout the year. The survey will be flown from New Jersey to Florida.

**Twin Otter (N57RF)**

**Temporary Base:** Calgary, Alberta, Canada  
**Current Mission:** Scheduled maintenance period  
The aircraft will undergo scheduled maintenance and corrosion inspection at Rocky Mountain Aircraft in Calgary, Alberta through February 2018.

**King Air (N68RF)**

**Temporary Base:** Various Locations  
**Current Mission:** Hurricane Response and Continuous Coastal Mapping  
The aircraft concluded Hurricane Harvey, Irma, Maria, and Nate response flights. The aircraft will return to the Coastal Mapping mission. 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 the sole source of shoreline depicted on NOAA’s nautical charts. It is also 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. 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.
OMAO’S AIRCRAFT OPERATIONS CENTER (AOC)
CAPT Nancy Hann, Commanding Officer AOC
The AOC, located at Lakeland Linder Regional Airport in Lakeland, 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.

NOAA’s Gulfstream IV-SP (foreground) and Orion WP-3D (background) and two of NOAA’s Twin Otter aircraft in the hangar at the NOAA AOC in Lakeland, Florida.
[Photo: David Hall/NOAA]
**NASA Global Hawk**

**Location:** Edwards Airforce Base  
**Mission:** Scheduled Inspection and Maintenance

Integration of new equipment in the Global Hawk aircraft and Ground Control Stations has been accomplished to allow the project to communicate with the I4 INMARSAT satellite constellation since the decommissioning of the I3 INMARSAT satellite constellation in December 2016. INMARSAT serves as a command and control link for Global Hawk flight operations. Testing of this recently implemented system is in progress. NASA’s 872 Global Hawk is supporting science missions this summer as part of a NASA project to train new engineers through preparing and executing flights against cyclonic storms in the Pacific, Gulf, Caribbean, and Atlantic regions. The project recently flew a mission over Tropical Storm Franklin in the Bay of Campeche. The instrument suite includes NOAA’s SO2, O3, and NCAR’s AVAPS instruments. Six 24-hour mission flights are planned with NOAA as a key science and flight operations participant.

NASA 874 Global Hawk is currently in refurbishment. System tests have progressed well and the aircraft is being prepared for engine run tests next. A Functional Check Flight is planned for the beginning of 2018. Mission plans and FAA COAs are in process to support the fall 2017 missions as well as groundwork for potential flights to the Arctic for a joint NOAA/NASA project (Arctic Domain) proposed for 2018. Global ARCHER planning continues as a result of the NOAA Arctic Domain meetings that occurred in early February. A Transport Canada application is in work to support a NASA mission being planned for January to operate from NASA Armstrong and over fly the Arctic region north of western Canada & Alaska to assess a new instrument’s performance for measuring snow on sea ice.

**APH-22 Hexacopter**

**Location:** Bellows Air Force Station, Hawaii  
**Mission:** APH-22 Training

Pacific Islands Fisheries Science Center utilizes the airfield at Bellows Air Force Station on the island of Oahu to conduct training and proficiency flights. This allows APH-22 operators to maintain proficiency for future operations at a reduced cost. Training flights are also approved from NOAA small boats.

**Location:** Cape Cod National Seashore  
**Mission:** Seal Haul-Out Survey

The North East Fisheries Science Center will use the APH-22 hexacopter to provide characterization and documentation of seal haul-outs including analysis of entanglement rates, species composition, and general health assessment.

**Location:** Atlantic Northeast  
**Mission:** Emergency Response, Turtles, and Seals

The North East Fisheries Science Center (NEFSC) seeks to use the APH-22 hexacopter to respond to entanglements and other unplanned situations involving marine mammals. Photographs will be collected for the purpose of aiding emergency stranding response, event documentation, and photo ID. Unmanned Aerial System (UAS) technologies will also be used to conduct surveys for marine turtles. The intent is to assess the feasibility of using small unmanned rotorcraft to search for turtles in their marine environment both at surface and subsurface. Turtles that are discovered either by the APH-22 or by on-vessel observers will be photographed by the APH-22 and then tagged and or sampled as part of an ongoing study. Turtles may be photographed post-release with the APH-22 to document post-release behavior. NEFSC will also use the APH-22 to conduct surveys of seal haul out sites. Photographs will be collected for the purpose of obtaining local population numbers, documenting seals with evidence of fishery interactions, and collecting photo ID data of seals with brands, wounds, and other distinguishing marks.
The Marine Mammal Laboratory (MML) intends to begin training flights in the Sand Point area in Seattle, WA. MML has several objectives for the use of the APH-22 hexacopter UAS throughout Alaska. These trips tend to occur in the summer and sometimes fall seasons. In between surveys in the field, it is important that pilots maintain. The Sand Point location will significantly reduce the travel time required and provide more opportunities to meet training requirements.

**APH-22 Hexacopter/ APO-42 Octocopter**

**Location:** Seattle, Washington  
**Mission:** Sand Point APH-22 Training

The Southwest Fisheries Science Center plans to use the APH-22 Hexacopter and the APO-42 Octocopter to survey dolphins off the coast of San Diego County, California. Missions will be flown from small boats, with opportunistic surveys (weather depending) over a two-month period from mid-October to mid-December, 2017. The primary objective is to identify uniquely marked animals, investigate nutritive and reproductive health based on size and shape of animals, and capture imagery for ongoing photogrammetry.

**Location:** San Diego Coast, CA  
**Mission:** Dolphin Photogrammetry

**Location:** Catalina Island, CA  
**Mission:** Dolphin Group Behavior

The Southwest Fisheries Science Center plans to use the APH-22 Hexacopter and the APO-42 Octocopter to survey Dolphins around Catalina Island. The primary objective is to collect accurate and precise counts of large groups of marine mammals. Secondary objectives are to identify uniquely marked animals, investigate nutritive and reproductive health based on size and shape of animals, and capture imagery for ongoing photogrammetry.

**Location:** Descanso Ranch, California  
**Mission:** APO-42/APH-22/APH-17 Training

Southwest Fisheries Science Center will be conducting test flights and training flights for their various platforms. Flights will be conducted under recently introduced Federal Aviation Administration Part 107 rules for Small Unmanned Aircraft Systems and will consist of flight maneuvers, operating in all the control modes, emergency procedures, takeoffs, landings and photogrammetry.

**SenseFly eBee RTK**

**Location:** Sacramento River, CA  
**Mission:** Salmon Habitat Mapping

The goal of this project is to test a set of UAS based approaches for mapping salmon habitat along the upper Sacramento River in northern California, focusing primarily on the key habitat variables of river bathymetry and water temperature. The National Ocean Service Remote Sensing Division (RSD) and the National Marine Fisheries Service have partnered to utilize the RSD eBee with multiple camera payloads. Three distinct areas along the river will be flown twice (one flight per area per payload).

**Coyote**

**Location:** Avon Park, Florida  
**Mission:** Coyote Operational Flights

The Coyote, built by Raytheon (formerly Sensintel), is a small electric-powered unmanned aircraft with 1-3 hour endurance and capable of carrying a 1-2 pound payload. The Coyote can be launched from a P-3 sonobuoy tube in flight, and terrain-permitting, is capable of autonomous landing and recovery. The Coyote, when deployed from NOAA's P-3s within a hurricane environment, will prove to be a unique observation platform from which the low level atmosphere and boundary layer environment can be studied in great detail.
United States Senate Committee on Commerce, Science, and Transportation
Location: Washington, District of Columbia
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: South Pole, Antarctica
Mission: LT Gavin Chensue, NOAA Commissioned Officer Corps
Members of the NOAA Commissioned Officer Corps carry out NOAA's mission in remote locations across the globe. LT Chensue 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
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: CDR Jason Mansour, NOAA Commissioned Officer Corps
CDR 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, CDR 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.
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 800 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. Please access former teacher at sea blogs which document their missions at sea and offer a wealth of information about the research being conducted as well as personal stories.

- **Applications for the 2018 Teacher at Sea program will be open November 1-30.**

- In 2017, 29 teachers representing 20 states participated in the Teacher at Sea Program. To learn about the teachers, read their blogs, and more, please visit [http://teacheratsea.noaa.gov/#/2017/](http://teacheratsea.noaa.gov/#/2017/).
OMAO manages and implements NOAA's Diving 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.

A group of students gather in the NOAA Diving Center (NDC) shop to get an introduction on diving equipment from NDC instructor Zach Hileman (bottom right). In collaboration with the Undersea and Hyperbaric Medical Society, the NDP conducts a Physicians Training in Diving Medicine course.

[Photo: Greg McFall/NOAA]
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]
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 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 jet, these ‘hurricane hunter’ 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, Turbo Prop 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 October 2016, NOAA’s WP-3D (N43RF) and G-IV (N49RF) conducted 21 operational missions in seven days into Hurricane Matthew gathering vital data used to improve hurricane track and intensity forecasts. Rapid response by NOAA Ship Ferdinand R. Hassler to survey for underwater debris and shoaling that could prove dangerous to deeper draft vessels expedited the opening of the Ports of Charleston and Savannah by the U.S. Coast Guard following the passage of Hurricane Matthew. After the storm, NOAA’s King Air (N68RF) flew 14 missions to collect post-storm damage and flooding imagery from Florida to Virginia in coordination with FEMA.

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 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.
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. The U.S. Coast and Geodetic Survey Corps was founded in 1917 to provide officers to command U.S. coastal survey ships and field survey parties locally and abroad. 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. The NOAA Corps celebrates its Centennial year in 2017.

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. For example:

- In 2016, NOAA aircraft conducted research and reconnaissance missions into Hurricane Matthew, and post-storm flooding reconnaissance missions from Florida to Virginia with FEMA. NOAA Ship Ferdinand Hassler conducted post-storm surveys within of the ports of Charleston and Savannah within 48 hours to re-open the ports to maritime commerce, worth more than $5M per hour.

- 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.

- After Hurricane Sandy in 2012, NOAA Ships Thomas Jefferson and Ferdinand R. Hassler conducted emergency bathometric 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 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.
Resources

Please find more information at the following links:

OMAO – http://www.omao.noaa.gov
NOAA Corps - http://www.omao.noaa.gov/learn/noaa-commissioned-officer-corps
OMAO 101 - http://www.legislative.noaa.gov/policybriefs/OMAO%20101%20052317.pdf
NOAA Fleet Update – Find the latest at - http://www.legislative.noaa.gov/policybriefs.html

Reports and Informational Slide Decks:
OMAO Fleet Recapitalization Slide Deck – Building NOAA's 21st Century Fleet
OMAO Fleet Recapitalization Questions and Answers (Q&As)
NOAA Fleet Independent Review Team Final Report
The NOAA Fleet Plan: Building NOAA's 21st Century Fleet

Other OMAO Sites:
OMAO Aircraft Operations – http://www.noaacorps.noaa.gov/
NOAA Diving Program – http://www.noaacorps.noaa.gov/
OMAO on Facebook - https://www.facebook.com/NOAAOMAO
OMAO on Twitter - http://www.twitter.com/NOAA_OMAO
NOAA Ship Tracker - https://shiptracker.noaa.gov/ (restricted to only .gov or .mil users)