NOAA Fleet Update

NOVEMBER & DECEMBER 2015

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.
http://www.facebook.com/NOAAOMAO

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Office of Marine and Aviation Operations (OMAO) and the NOAA Commissioned Officer Corps – In the News -

Below is a sampling of clips and web links to recent news items related to OMAO and the NOAA Corps.

Coast Guard Eyes Unmanned Systems as a 'Force Multiplier'
-Seapower
Because the Coast Guard is such a small service with so many mission areas, it is seeking to implement unmanned systems as a "force multiplier, to be where personnel cannot be," a Coast Guard officer working on unmanned systems in coordination with the Navy, said Oct. 27. Coordinating with the Navy also follows the Coast Guard's directions to use off-the-shelf systems in order to speed new capabilities to the fleet, said CDR Jeff Vajda, who is a liaison from the Coast Guard Office of Aviation Forces to the Navy's unmanned aerial systems (UAS) program office. Because unmanned systems can provide greater persistence than manned platforms, Vajda said, it has "the ability to saturate a search area for many more hours than we could with manned aircraft, which minimizes the risk of losing contact that can come during a handover." Addressing the AUVSI Unmanned Defense Systems forum, Vajda said the Coast Guard had tried to put a UAS on its new national security cutter, which was designed to support one. The service initially tried the Eagle Eye, a small fixed-wing UAS capable of ship-based operations, but had to cancel the contract, leaving it without a cutter-based UAS...A key mission the Coast Guard wants to apply UAS capabilities to is public safety, Vajda said. **The service is getting experience in that field by partnering with the National Oceanic and Atmospheric Administration (NOAA) in the Arctic.** "We provide a platform (ship) for NOAA to operate from, and we get to look over their shoulder," and can learn for the future, he said...

The strongest hurricane 'ever recorded in the Western hemisphere' looks terrifying from space
-Tech Insider
Hurricane Patricia is about to barrel into the mid-Pacific coast of Mexico as a monster category 5 storm. The storm is so powerful that forecasters are calling it "the strongest ever recorded in the Western hemisphere," according to the Associated Press. The **National Oceanic and Atmospheric Administration (NOAA) hurricane hunters** who are flying through the storm, and an international fleet of satellites are keeping close tabs on the situation...

Hurricane Patricia: 10 Stunning Meteorological Images
-Weather Channel
Hurricane Patricia's rapid intensification into a Category 5 off the coast of Mexico has produced a number of stunning images being shared by meteorologists on social media. Here are a few of those images and some others we've compiled that illustrate the power of this extremely intense hurricane...Radar imagery showing the eye of Patricia from a **NOAA P3 aircraft** on Thursday. It was provided in a tweet by the Hurricane Hunters and shows how small the eye is with hurricane-force winds extending out 30 miles from the center...

USAF Awards Rolls-Royce $36M Contract To Upgrade C-130 Engines

-Defense News

The Air Force has awarded Rolls-Royce a $36 million contract to begin upgrading its fleet of C-130 transport planes, the company announced. The contract will kick off what is expected to be a long-running agreement with the Air Force to upgrade the entire fleet of 400 C-130E and C-130H engines with Rolls-Royce's T56 Series 3.5 kits. Deliveries of the upgrade packages will begin in December, and will introduce the engine improvements into Air Force and US Air National Guard C-130s, according to an Oct. 20 company news release. The Series 3.5 upgrade, which was designed and funded by Rolls-Royce, enables the engines to operate at low temperatures, extends parts life and improves reliability by 22 percent, according to the statement..."The **T56 Series 3.5 technology has proven itself in challenging hurricane flight operations on NOAA aircraft** and we are excited to launch the upgrades into the US Air Force C-130 fleet so they can achieve the same benefits," said Phil Burkholder, Rolls-Royce's president for defense aerospace in North America...

Mapping out the bottom of the Long Island Sound

-WTIC-TV

State-of-the-art sonar equipment is giving us a better picture of the Long Island Sound--the bottom of it. The **National Oceanic and Atmospheric Administration's ship named *Nancy Foster*** has been scanning the ocean floor to generate an unprecedented image of the terrain. It's been done in three legs. The second leg just finished up with the discovery of a sunken tug boat off Stamford. NOAA's underwater mapping will help the state distinguish safer shipping and boating lanes, as well as help protect habitats...

Why Naperville teacher's summer at sea helps students

-Daily Herald

The people at the National Oceanic and Atmospheric Administration must have sensed Leah Johnson's genuine nature as strongly as her students and co-workers do. When the Naperville Central High School science teacher applied to NOAA's Teacher at Sea program, hoping to spend part of her summer conducting real scientific research on the ocean, she was a lock. And when she left the ship to which she was assigned for two weeks, the chief scientist called her the best teacher he's welcomed aboard...."I feel like as a teacher, I'm always a learner," she said. But aboard ***Pisces*****,** where she was assigned through the program that gives educators a greater understanding of ocean life and maritime research, "I was definitely on the learning end the entire time..."

Pollock: Tracking the next generation

-NOAA.gov

"Start haul back," the NOAA Corps watch officer says to the fisherman operating the winch controls. The officer monitors the helm and navigation settings to maintain a smooth ride while the fisherman, a NOAA wage mariner, begins the slow process of reeling in a trawl net from the depths. They're aboard **NOAA Ship *Oscar Dyson*** in the Gulf of Alaska, conducting a research survey to estimate the number and health of juvenile pollock. Pollock is one of Alaska's most important commercial fisheries, and this assessment gives fishery managers a heads-up on how healthy the pollock will be by the time this year's juveniles grow to commercial harvest sizes at age three.

Here's video of Hawaii's first humpback whale sighting of the season

-Hawaii Today

Last week, oceanic researchers traveling aboard NOAA ship *Hi'ialakai* spotted the first humpback whale off the Niihau coast. The crew was on their way home from Papahanaumokuakea Marine National Monument in the Northwestern Hawaiian Islands when they saw the adult mammal's hump and tail breach the surf of the water, and they were quick enough to catch it on video...

NOAA Corps - Basic Officer Training Class (BOTC) 126

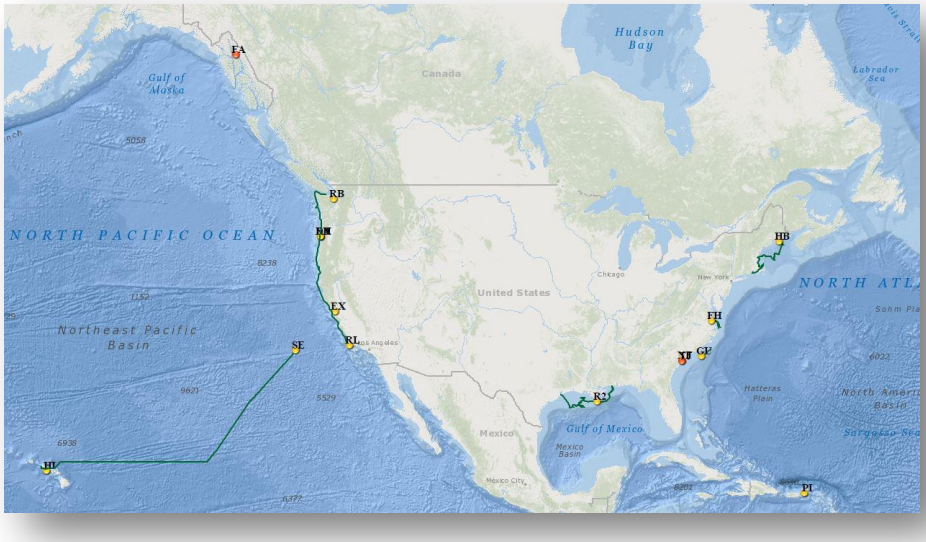
On July 29, 2015, NOAA Corps Basic Officer Training Class (BOTC) 126 reported to the United States Coast Guard (USCG) Academy in New London, Connecticut. On November 24, the 10 individuals in BOTC 126 will graduate alongside the newest class of U.S. Coast Guard officer candidates.

The Commander – Atlantic Area, Vice Admiral (three stars) William D. Lee (USCG); Superintendent – USCG Academy, Rear Admiral (two star) James E. Rendon; Deputy Director of NOAA's Office of Marine and Aviation Operations and the NOAA's Commissioned Officer Corps, Rear Admiral (one star) Anita Lopez (NOAA); and Commander – FORCECOM, Rear Admiral (one star) David G. Throop (USCG) will join other officials from NOAA and the USCG at the graduation of the 126th NOAA Corps BOTC and USCG Officer Candidate School (OCS) 1-16. VADM Lee will provide the keynote address. This is the seventh BOTC class to graduate from the NOAA Corps Officer Training Center in New London, Connecticut and the fourth class to share a joint graduation with the USCG Officer Candidate School program. Below is a glimpse into some of BOTC 126's training activities.

The graduation ceremony will be on livestream and is available at the following link: http://livestream.com/CGA

OMAO's Ships and Centers

OMAO's Ship Tracker - http://shiptracker.noaa.gov - (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 Briana Welton

Primary Mission Category: Hydrographic Surveys

Ship Status: Alongside New Castle, New Hampshire, for scheduled maintenance, winter repairs, scientific data processing, crew rest, and training. After repairs, sea trials will be conducted to measure the vessel's performance and general seaworthiness, as well as to conduct a dynamic positioning system test, patch test, and calibration of all ship systems.

Woods Hole, MA (currently docks in Newport, RI)

NOAA Ship *Henry B. Bigelow*

Commanding Officer: CDR G. Mark Miller
Primary Mission Category: Fisheries Research
DEPART: Newport, RI **ARRIVE:** Newport, RI
DEPART: Newport, RI **ARRIVE:** Newport, RI

Project 1: Autumn Multispecies Bottom Trawl Survey – Leg 4
Objectives: Determine the autumn distribution and relative abundance of fish and invertebrate species found on the continental shelf and upper slope.

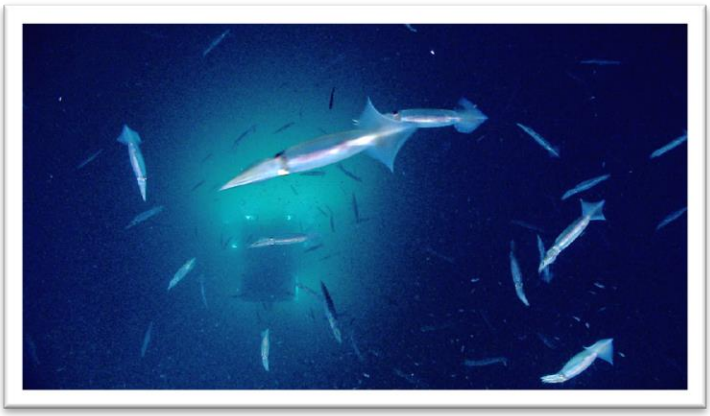
Project 2: Gulf of Maine – Harmful Algal Bloom (HAB)
Objectives: Collect sediment cores from 43 stations throughout the US waters of the Gulf of Maine. The cores will be subsampled, processed, and preserved on board to allow for the later counting of *Alexandrium fundyense* cysts to support the forecasting of HAB events in the spring and summer of 2016 along the coastline of the Gulf of Maine.

Project 3: Dry Dock & Winter Repair Period
Objectives: Vessel will be in scheduled dry dock for scheduled maintenance, winter repairs, scientific data processing, crew rest, and training. Location is still TBD.

Davisville, RI

NOAA Ship *Okeanos Explorer*

Commanding Officer: CDR Mark Wetzler
Primary Mission Category: Oceanographic Exploration and Research
Ship Status: In drydock at the Bay Ship & Yacht Shipyard in Alameda, California, for a scheduled repair period.



In 2015, NOAA Ship *Okeanos Explorer* investigated and documented the Caribbean and the Hawaiian Islands. Here a camera sled *Seirios* encounters a school of squid while ROV *Deep Discoverer* investigates deep-water habitats off the Atlantic Coast.
Learn more here: http://1.usa.gov/1JOMBRe
[Photo: NOAA]

Norfolk, VA

NOAA Ship *Thomas Jefferson*

Commanding Officer: CAPT Shepard Smith
Primary Mission Category: Hydrographic Surveys
DEPART: Charleston, SC **ARRIVE:** Norfolk, VA
DEPART: Norfolk, VA **ARRIVE:** Norfolk, VA

Project 1: Mapping Approaches to Charleston, SC
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.

Project 2: Mapping Approaches to Chesapeake Bay
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)

CAPT Anne Lynch, 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.

Charleston, SC

NOAA Ship *Nancy Foster*

Commanding Officer: LCDR Jeffrey Shoup
Primary Mission Category: Oceanographic Research, Environmental Assessment
Ship Status: Alongside Charleston, South Carolina, for scheduled maintenance, winter repairs, scientific data processing, crew rest, and training. After scheduled maintenance, the ship will depart on a mission in support of the validation of the VIIRS Satellite Radiometer (early December).

NOAA Ship *Ronald H. Brown*

Commanding Officer: CAPT Robert Kamphaus
Primary Mission Category: Oceanographic Research, Environmental Assessment
DEPART: Seattle, WA **ARRIVE:** Honolulu, HI

Project: Tropical Atmosphere Ocean (TAO) Buoy Array Maintenance (155W / 170W)
Objectives: Maintenance of the TAO moored ocean buoy array along the 155°W and 170°W meridians. The TAO buoy array is critical to providing real-time data for improved detection, understanding and prediction of El Nino and La Nina events.

Pascagoula, MS

NOAA Ship *Oregon II*

Commanding Officer: Master Dave Nelson
Primary Mission Category: Fisheries Research
DEPART: Galveston, TX **ARRIVE:** Pascagoula, MS

Project: Southeast Area Monitoring and Assessment Program (SEAMAP) Fall Groundfish Survey
Objectives: Sample the northern Gulf of Mexico with SEAMAP standard trawl sampling gear to determine the abundance and distribution of benthic fauna. Following completion of this project, the ship will be alongside Pascagoula, MS for scheduled maintenance, winter repairs, scientific data processing, crew rest, and training.

NOAA Ship *Oregon II*, working in coordination with the U. S. Coast Guard, recently conducted a training exercise while underway. A recovery basket was lowered from a MH-65 Dauphin helicopter to the fantail of the *Oregon II* to simulate evacuating an injured person from the ship.
[Photo: ENS Yannutz]

NOAA Ship *Gordon Gunter*

Commanding Officer: Master Donn Pratt
Primary Mission Category: Fisheries Research
Ship Status: In drydock at Detyens Shipyards Inc. in North Charleston, South Carp;ina, for a scheduled repair period.

NOAA Ship *Pisces*

Commanding Officer: CAPT Michael Hopkins
Primary Mission Category: Fisheries Research
DEPART: St. Thomas, USVI **ARRIVE:** Pascagoula, MS

Project: Caribbean Reef Fish Video
Objectives: Conduct a survey of reef fish using multiple video camera systems and acoustics. Use multi-beam SONAR to map pre-determined targeted areas on a nightly basis to increase the reef fish sample size. Following completion of this project, the ship will be alongside Pascagoula, Mississippi for scheduled maintenance, winter repairs, scientific data processing, crew rest, and training.

San Diego, CA

NOAA Ship *Reuben Lasker*

Commanding Officer: CDR John Crofts
Primary Mission Category: Fisheries Research
DEPART: Kodiak, AK **ARRIVE:** San Diego, CA

Project: Collaborative Large Whale Survey (CLaWS)
Objectives: Mark-recapture estimate (from photo-id) of abundance over the entire southern summer feeding area(s) of large Whales. Examine population structure, including maturity and sex composition and assessment of internal and external recruitment. Following completion of this project, the ship will be alongside San Diego, California, for scheduled maintenance, winter repairs, scientific data processing, crew rest, and training.

While off the Oregon coast, this gray whale was seen swimming through bull kelp during the CLaWS cruise aboard the NOAA Ship *Reuben Lasker*.
[Photo: Bernardo Alps]

Newport, OR

NOAA Ship *Rainier*

Commanding Officer: CDR E.J. Van Den Ameele
Primary Mission Category: Hydrographic Surveys
Ship Status: Alongside Newport, Oregon, for scheduled maintenance, winter repairs, scientific data processing, crew rest, and training.

NOAA Ship *Bell M. Shimada*

Commanding Officer: CDR Paul Kunicki
Primary Mission Category: Fisheries Research
Ship Status: Alongside Newport, Oregon, for scheduled maintenance, winter repairs, scientific data processing, crew rest, and training.

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.

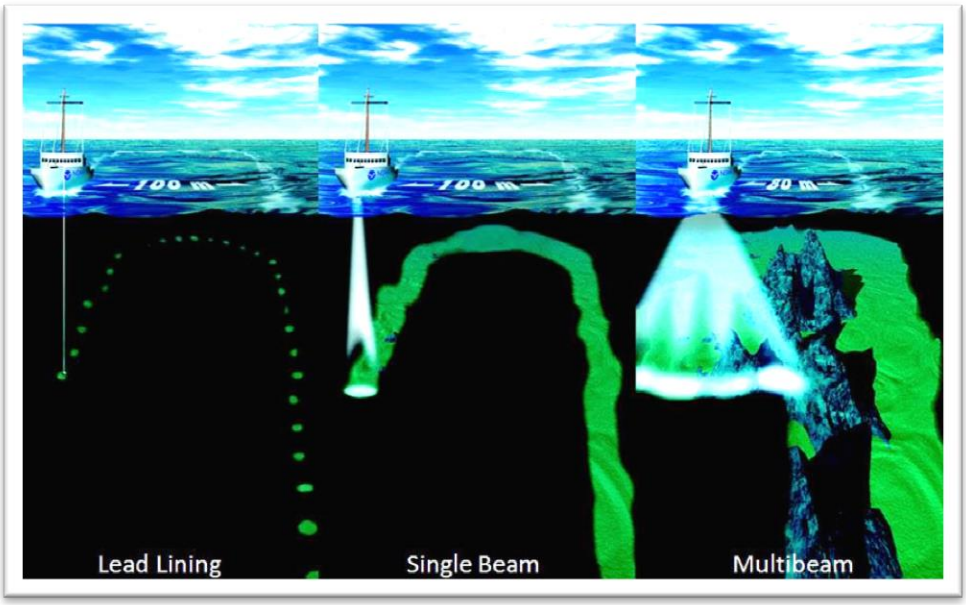
Ketchikan, AK

NOAA Ship *Fairweather*

Commanding Officer: CDR David Zezula
Primary Mission Category: Hydrographic Surveys
DEPART: Sitka, AK **ARRIVE:** Juneau, AK

Project: West Prince of Whales, AK

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. Following completion of this project, the ship will be alongside (location: TBD) for scheduled maintenance, winter repairs, scientific data processing, crew rest, and training.



Since lead line, survey technology has improved immensely from single beam sonar to today's multi-beam and side scan sonar's. As you can see in the image above that advances in technology have enabled surveyors to collect full bottom coverage of the ocean floor with meter level accuracy.
[Graphic: NOAA]

Kodiak, AK

NOAA Ship *Oscar Dyson*
Commanding Officer: CDR Arthur "Jesse" Stark
Primary Mission Category: Fisheries Research
Ship Status: Alongside Newport, Oregon, for scheduled maintenance, winter repairs, scientific data processing, crew rest, and training.

Honolulu, HI

NOAA Ship *Hi'ialakai*
Commanding Officer: CDR Daniel Simon
Primary Mission Category: Oceanographic Research, Environmental Assessment
DEPART: Honolulu, HI **ARRIVE:** Honolulu, HI

Project: Hawaiian Islands Humpback Whale National Marine Sanctuary (HIHWNMS)

Objectives: The ship will support SCUBA (including closed-circuit rebreather Tri-mix dives, and open circuit dives) and snorkeler collections of reef fish, corals, other invertebrates, and algae for population genetics analysis; surveying and monitoring reefs and associated reef fish, as well as searching for invasive /alien species of coral and algae. These studies allow Federal and State resource managers to improve our broad understanding of HIHWNMS ecology and assist in achieving HIHWNMS management priorities.

NOAA Ship *Oscar Elton Sette*

Commanding Officer: LCDR Keith Golden
Primary Mission Category: Fisheries Research
Ship Status: In drydock at Mare Island Shipyard in San Francisco, California, for a scheduled repair period.

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"

Aircraft Commander: N/A
Temporary Base: Naval Air Station Jacksonville, FL
Current Mission: Scheduled Maintenance - Until May 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.

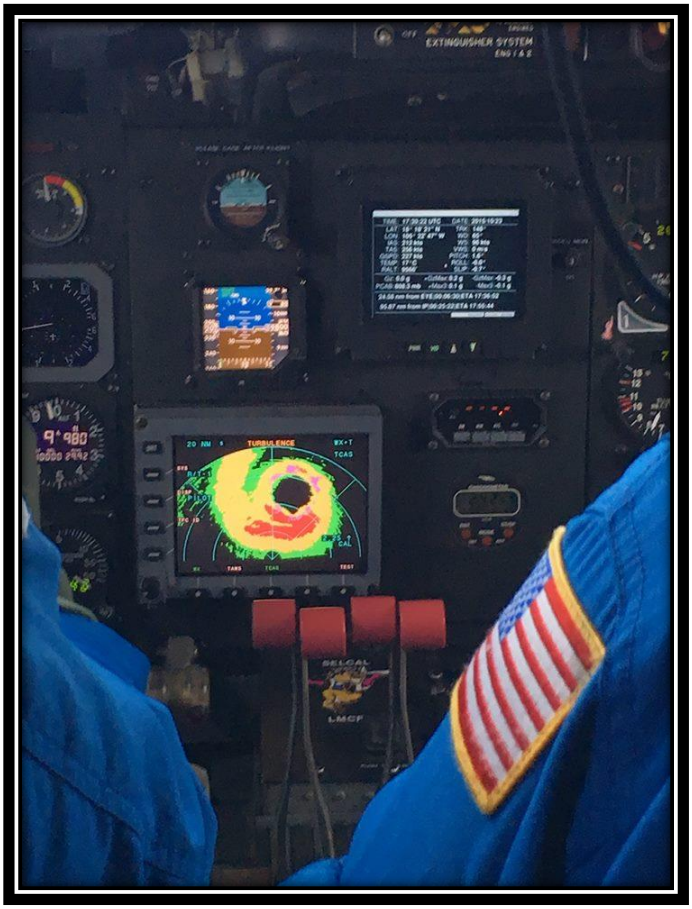
One of NOAA's two Lockheed WP-3D Orion aircraft has entered a long-term maintenance period at Naval Air Station, Jacksonville. The aircraft will receive new wings and significant additional upgrades as part of a service life extension program that will allow our WP-3D Orion aircraft to continue supporting all of NOAA's critical missions for years to come. These photos show the removal of the wings from the airframe.

[Photo: Victor Pitts, FRCSE Jacksonville]

WP-3D (N43RF) – "Hurricane Hunter"

Aircraft Commander: TBD
Temporary Base: Western Atlantic, Gulf of Mexico and Eastern Pacific
Current Mission: Hurricane Research

The 2015 Hurricane Season is underway and the NOAA Hurricane Hunter aircraft are ready to respond. Radar reconnaissance missions on both 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 NWS 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.



Have you ever wondered what an intense Category 5 storm might look like on radar? This photo was taken just as N43RF (NOAA P-3) was entering the outer eyewall of 879mb Hurricane Patricia.
[Photo: LT Abitbol, P-3 Pilot, NOAA/AOC]

Gulfstream IV (N49RF) – "Hurricane Hunter"

Aircraft Commander: TBD
Current Mission: Hurricane tasking ready

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. 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. The 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)

Aircraft Commander: LT Kyle Salling/ LTJG Kevin Doremus
Temporary Base: Various locations
Current Mission: Soil Moisture Surveys

NOAA aircraft use specialized detection equipment to make accurate, real-time measurements of snowpack characteristics and soil moisture 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. A single snowmelt flood can cause billions of dollars in damage and in the western areas of the country spring snowmelt provides over 70% of the annual water supply. The benefits of accurate snow and soil moisture measurements are immense and NOAA aircraft are uniquely capable to provide this information.

Twin Otter (N46RF)

Aircraft Commander: LT Matt Nardi/LT Michael Marino
Temporary Base: Various locations
Current Mission: Soil Moisture Surveys

NOAA aircraft use specialized detection equipment to make accurate, real-time measurements of snowpack characteristics and soil moisture 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. A single snowmelt flood can cause billions of dollars in damage and in the western areas of the country spring snowmelt provides over 70% of the annual water supply. The benefits of accurate snow and soil moisture measurements are immense and NOAA aircraft are uniquely capable to provide this information.

Twin Otter (N48RF)

Aircraft Commander: N/A
Current Mission: Maintenance

The aircraft is undergoing scheduled maintenance for inspections and equipment upgrades that will increase capability to support NOAA science and extend the life of the aircraft.

One of NOAA's Twin Otters at its NOAA Aircraft Operations Center in Tampa, Florida. NOAA uses these versatile planes for a wide variety of missions, including marine mammal, coastal mapping, and snow surveys.
[Photo: ENS Bonner, NOAA]

Twin Otter (N57RF)

Aircraft Commander: LTJG Hirsch/LT Cowan/LT Fuenmayor
Temporary base: Various & North East Coast of the US
Current Mission: Coastal Mapping & North Atlantic Right Whale surveys

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 Light Detection and Ranging (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.

North Atlantic right whales are critically endangered and listed under the Marine Mammal Protection Act. Aerial surveys serve multiple objectives with regard to conservation including providing locations and distribution of right whales to mariners to avoid collisions with ships, photo identification records on right whales, information on distribution and abundance of marine mammals and turtles, and provide sightings of dead whales for monitoring mortality.

Twin Otter (N56RF)

Aircraft Commander: LT Ron Moyers
Temporary base: South East Coast of the US
Current Mission: North Atlantic Right Whale surveys

North Atlantic right whales are critically endangered and listed under the Marine Mammal Protection Act. Aerial surveys serve multiple objectives with regard to conservation including providing locations and distribution of right whales to mariners to avoid collisions with ships, photo identification records on right whales, information on distribution and abundance of marine mammals and turtles, and provide sightings of dead whales for monitoring mortality.

King Air (N68RF)

Aircraft Commander: LCDR Rebecca Waddington/LT Sims
Current Mission: Various Locations – 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 Light Detection and Ranging (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

NOAA's King Air taxing down the run-way.
[Photo: NOAA]

OMAO'S AIRCRAFT OPERATIONS CENTER (AOC)

CAPT Harris Halverson, 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.

NOAA's Aircraft Operations Center at MacDill Air Force Base, Tampa, FL.
[Photo: NOAA]

Unmanned Systems Support

NASA Global Hawk

Location: Edwards Air Force Base (AFB), CA/ NASA Wallops Flight facility
Mission: Sensing Hazards with Operational Unmanned Technology (SHOUT) project

NASA's Global Hawk Unmanned Aircraft System (UAS) returned to Edwards AFB from the NASA Wallops Flight Facility in Virginia following a successful deployment for the NOAA funded Sensing Hazards with Operational Unmanned Technology (SHOUT) project. During this science campaign the aircraft collected critical data used to update hurricane track models as well as vital research data by conducting two 24-hour flights in support of Tropical Storm Erika. The aircraft is scheduled for maintenance and upgrades through December 2015. NOAA Corps officer, LCDR Neuhaus, is supporting as a Project Manager and Instructor Pilot.

APH-22 Hexacopter

Location: Livingston Island, Antarctica
Dates: 15 November 2015 – 31 March 2016
Mission: APH-22 Antarctic Hexacopter Ops

The Southwest Fisheries Science Center (SWFSC) has successfully used the APQ-16 and APH-22 in field seasons from 2010 to 2014, and continues this effort this year from Cape Shirreff Field Station in Antarctica. This season's efforts from Cape Shirreff will focus on collecting replicate counts of breeding pairs and chicks for Gentoo and Chinstrap penguins, Antarctic fur seal pup counts, and defining the relationship between mass of leopard seals and their size and shape as determined from vertical aerial photographs.

A pod of Orcas off British Columbia, Canada, as seen from an APH-22 Hexacopter.
[Photo: Dr. John Durban]

Puma UAS

Location: Channel Islands
Dates: November 2015
Mission: RQ-20A PUMA Shearwater Net Capture Testing

The purpose of this project is to integrate shipboard recovery technologies for use on the 2016 Antarctic Operation Deep Freeze in conjunction with the U.S. Coast Guard. Continued testing of the Onboard Ship Net Capture System will be critical for successful shipboard implementation of Puma UAS technologies. The collaborative efforts between NOAA and the Puma system manufacturer AeroVironment will refine and troubleshoot the system and procedures relating to the net capture system. The system will be integrated onto *R/V Shearwater* within the Channel Islands National Marine Sanctuary.

DJI S-1000

Location: Belle Mina, Alabama
Dates: November-December 2015
Mission: DJI-S1000 Belle Mina ATDD

OAR's Atmospheric Turbulence and Diffusion Division (ATDD) will be conducting a field experiment to examine the onset of convective initiation (CI). Despite extensive research on convective storm initiation and development, key factors involved in the CI process are still not well understood. These interactions are critical for gaining a better understanding of CI. Increased forecast lead times for CI in the 0-6 hour time frame are needed to meet society's need for accurate severe weather warnings. To improve our ability to predict thunderstorms ATDD will use the DJI-S1000 octocopter equipped with meteorological sensors to study storm events. The project goals are to conduct field experiments that will provide key observations to validate model predictions, and to identify critical surface and boundary layer processes associated with CI. The mission will be flown over Auburn University's Tennessee Valley Research and Extension Center (TVREC) in Belle Mina, Alabama.

Survey of historic Thunder Bay lighthouse, supporting Thunder Bay NMS with the MD4-1000 Quadcopter.
[Photo: NOAA]

OMAO Partnerships

United States Senate Committee on Commerce, Science, and Transportation – Chair, Senator John Thune (R-SD)

Location: Washington, DC
Detail: LCDR Wendy Lewis, NOAA Commissioned Officer Corps

LCDR Lewis is currently on detail to the Committee 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: LT Jesse Milton, NOAA Commissioned Officer Corps

Members of the NOAA Commissioned Officer Corps carry out NOAA's mission in remote locations across the globe. LT Milton 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, HI
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. Northern Command (USNORTHCOM)

Location: Boulder, CO
Embedded Liaison: CAPT Mark Moran, NOAA Commissioned Officer Corps

U.S. Northern Command (USNORTHCOM) partners to conduct homeland defense, civil support, and security cooperation to defend and secure the United States and its interests. NORTHCOM's area of responsibility includes air, land, and sea approaches and encompasses the continental United States, Alaska, Canada, Mexico, and the surrounding water out to approximately 500 nautical miles. It also includes the Gulf of Mexico, the Straits of Florida, and portions of the Caribbean region that include The Bahamas, Puerto Rico, and the U.S. Virgin Islands. CAPT Moran serves as the liaison for the NOAA Corps, helping to plan, organize, and execute homeland defense and civil support missions.

Department of Defense - U.S. Navy

Location: Washington, DC

Embedded Liaison: CDR Christiaan van Westendorp, NOAA Commissioned Officer Corps

CDR van Westendorp 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 van Westendorp 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.

Department of Defense - U.S. Navy

Location: Stennis Space Center, MS

Embedded Liaison: LCDR Jonathan French, NOAA Commissioned Officer Corps

Embedded in the Navy's Naval Oceanography Mine Warfare Center, LCDR French works side by side with Navy officers operating Unmanned Underwater Vehicles worldwide and is currently deployed to the Arabian Gulf. 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: CAPT Scott Sirois, NOAA Commissioned Officer Corps

As the NOAA liaison to the United States Coast Guard (USCG), CAPT Sirois 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. CAPT Sirois 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 2015 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. More info: http://teacheratsea.noaa.gov

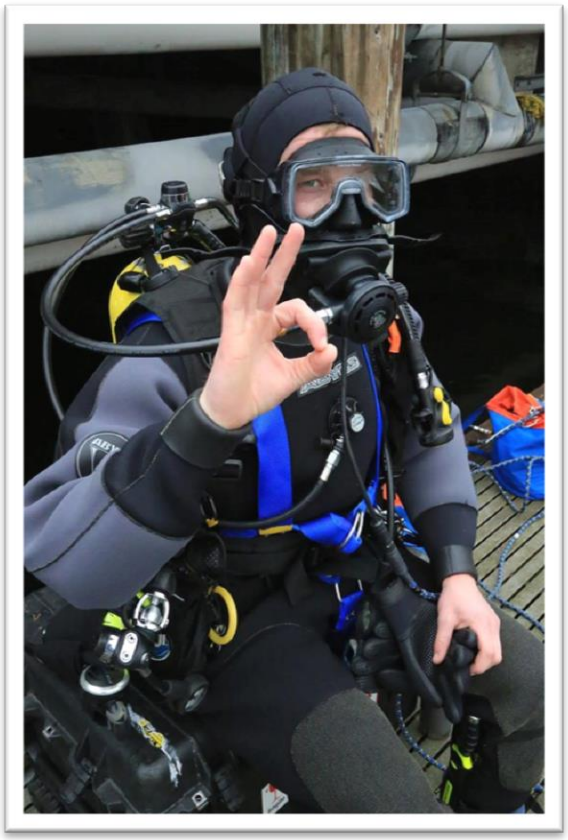
2015 Season Stats: 21 teachers sailed on different projects on NOAA vessels

2015 TAS Placements Blogs – http://teacheratsea.noaa.gov/2015/index.html

Teacher-At-Sea Jeff Miller, aboard NOAA Ship *Oregon II,* standing with a CTD rosette which is used to measure dissolved oxygen, salinity and temperature throughout the water column.
[Photo: NOAA]

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. http://www.ndc.noaa.gov/gi_program.html.

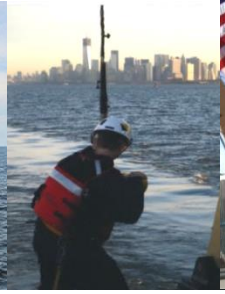


This tethered safety diver (with communication mask) gives the OK sign in preparation for dive operation. The safety diver must be configured using the same gear as the divers in the water and must be able to enter the water within a minute - in case of an emergency.
[Photo: Greg McFall/NOAA]

OMAO - NOAA Small Boat Program

OMAO 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. More info: http://www.sbp.noaa.gov/

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 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. 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 nation's seven uniformed services and 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 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. 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 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 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.

- 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 re-open 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. 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.

Find out more about the NOAA Corps, its mission and history at http://www.noaacorps.noaa.gov/.