



NOAA Fleet Update

JUNE 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.



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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.

[What Drives Nighttime Thunderstorms? NOAA And NCAR Hope To Find Out](#)

-KUNC

June is the start of outdoor recreation season for many Coloradans, and it also marks the start of the peak season for powerful storms and lightning. Colorado's infamous weather unpredictability can suddenly bring afternoon hikes, picnics or games to a quick end. It's nighttime weather, though, that has atmospheric scientists' attention. They'll be spending six weeks in the Great Plains, trying to figure out the mystery of thunderstorms that form at night. The results could help meteorologists better predict these sometimes damaging storms. The Plains Elevated Convection at Night campaign is a collaboration of the National Center for Atmospheric Research in Boulder and several other institutions, including NASA and the National Oceanic and Atmospheric Administration. It's not your average weather study, according to Tammy Weckwerth, an NCAR scientist and a principal investigator with the study...The \$13.5 million campaign will be based in Hays, Kansas, and will cover a large area that includes northern Oklahoma, central Kansas, and south-central Nebraska. More than 100 pieces of technology will play a role, including mobile radar, ground-based instrument suites mounted on vehicles, and several research aircraft – one of which, a NOAA P-3, will be able to fly into the trailing region of storms...

[\\$42 million 'nose-to-tail' upgrade for 2 hurricane hunters](#)

-Associated Press (via WFTV-TV Orlando)

The hurricane planes known affectionately as "Miss Piggy" and "Kermit" are getting new Rolls-Royce engines, new wings and better radar. Every hurricane season for nearly four decades, the two technologically packed planes have flown into storms at speeds of up to 300 mph, collecting research and forecasting data to transmit back to the mainland. The 38-year-old planes are getting \$42 million "nose-to-tail" upgrades of key components. The money comes from the post-Superstorm Sandy Disaster Relief Appropriations Act of 2013. While the planes are routinely maintained, this is the first big overhaul in more than a decade. The National Oceanic and Atmospheric Administration estimates that the refurbishments could keep them flying for decades. The improvements also will mean better fuel efficiency and additional safety for the crew and scientists who fly in the mobile weather stations...

[Hurricane season 2015: Better track forecast since Katrina, but intensity a puzzle](#)

-NOLA.com

Nearly ten years after flooding during and after Hurricane Katrina devastated metro New Orleans and the Mississippi Gulf Coast, there have been dramatic improvements in forecasting the paths and landfalls of succeeding storms. But as the 2015 hurricane season begins Monday, experts warn that efforts to forecast the intensity of hurricanes are still lagging behind, especially when a storm intensifies by more

than one category in a few hours -- a process called rapid intensification...Bursts of federal money for research, first after Katrina, and then Hurricane Sandy in 2012, also helped implement dramatic improvements in the computers used to run the HWRF model and in equipment that provides the model with information...Filling in the information within those grids requires instruments aboard two Lockheed WP3-D Orion turboprop airplanes and a Gulfstream IV-SP jet operated by NOAA that fly around and through storms, Hurricane Hunter aircraft operated by the Air Force, and satellites. The two turboprops, nicknamed "Miss Piggy" and "Kermit," are due for a \$45 million upgrade this year and next. Doppler radars mounted on the tails of the three NOAA planes provide wind estimates from within the storms by measuring the speed of raindrops. New lidars -- light sensors -- added to the planes this year will use lasers to estimate winds near the surface of the water. The new equipment will measure the movement of sea spray and dust particles in areas away from storms. The three research planes also have taken measurements from within hurricanes by dropping cylindrical instrument packages called dropsondes that measure humidity, temperature, air pressure and wind speeds at locations around the storm...

[What's causing the hot spot?](#)

-Durango Herald (with video)

From the air, the rocky, sprawling San Juan Basin comes into focus like a scene in a classic Western. As a team of researchers board an aircraft on an April day to examine what's below, a mysterious concentration of methane continues to spew around dramatic alpine peaks, desert canyons and ancient cliff dwellings....Scientists used airborne and ground-based instruments and coordinated measurements. A Twin Otter utility aircraft was used to quantify methane emissions, two mobile labs outfitted with sophisticated chemical-detection instruments targeted specific areas identified by the aircraft, and a single-engine Mooney TLS airplane surveyed the region to locate large methane signals and focus on particular plumes. Meanwhile, a P3 aircraft swept the area to capture information on chemicals associated with air quality and climate.

[Sussex Tech Educator to Set Sail on NOAA Research Cruise](#)

-Delaware 105.9FM

A biology and physical science teacher at Sussex Tech High School in Georgetown will set sail June 11 on a research mission to assist NOAA scientists on a fisheries survey in the Bering Sea. Vincent Colombo will be working with the Mid-water Assessment and Conservation Engineering group within NOAA to survey fish stocks in the Bering Sea, Alaska. Colombo was chosen to participate in this cruise as a part of the 2015 class for the NOAA Teacher at Sea Program, a program that bridges science and research through real-world research experiences for teachers. Colombo will sail aboard NOAA Ship *Oscar Dyson*...



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: CDR Marc Moser

Primary Mission Category: Hydrographic Surveys

DEPART: Baltimore, MD

ARRIVE: New Castle, NH

DEPART: New Castle, NH

ARRIVE: New Castle, NH

Project 1: Mapping Rhode Island Sound and Approaches

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.

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: Spring Ecosystem Monitoring Survey

Objectives:

The principal objective of the survey is to assess the hydrographic, planktonic and pelagic components of the Northeast U.S. Continental Shelf Ecosystem. Specifically, they will quantify the spatial distribution of: water currents, water properties, phytoplankton, microzooplankton, mesozooplankton, sea turtles and marine mammals. The ecosystem monitoring surveys contribute to stock assessments, protected species assessments, ecosystem assessments and climate assessments.

Project 2: Cetacean and Turtle Biology

Objectives:

- Deploy the small boat to collect identification photographs and biopsy samples of as many cetacean individuals as possible, and possibly deploy tags
- Collect passive acoustic data on cetaceans via sonobuoys, dipping hydrophones and towed array;
- Develop a better understanding of habitat use and site fidelity for abundance and monitoring of critical areas
- Determine the distribution and relative abundance of plankton and prey species
- Use big-eye binoculars, binoculars and Puma fixed wing unmanned aerial systems to locate sea turtles
- Capture, bring on board, sample, and satellite tag hard-shelled sea turtles (primarily loggerheads)
- Suction cup leatherback sea turtles
- Use shipboard equipment and deploy instruments overboard to assess gelatinous zooplankton
- Use remaining resources to advance other protected species research, including acoustics, photo ID, fecal sample collection and biopsy.



Sunset aboard the NOAA Ship *Henry B. Bigelow* during the Spring Bottom Trawl and Acoustic Survey.

[Photo: NOAA]

Davisville, RI

NOAA Ship *Okeanos Explorer*

Commanding Officer: CDR Mark Wetzler

Primary Mission Category: Oceanographic Exploration and Research

DEPART: San Juan, PR

ARRIVE: Pearl Harbor, HI

Project: Tropical Exploration (Mapping) – Leg 2

Objectives:

The entire expedition is a transit, with planned stops to recover two moorings. The transit through the Caribbean maximize time in waters with foreign clearances to collect data. The transit through the eastern Pacific will include time spent along the Clipperton Fracture Zone. Specific objectives include:

- Collect deep water multi-beam bathymetry sonar data and ancillary sonar data with EK-60 single beam sonar and Knudsen sub-bottom profiler.
- Conduct Conductivity, Temperature and Depth profiles and Expendable Bathymetric Thermograph operations.
- Deploy ARGO floats.
- Recover 2 PICO-Prawler moorings.
- Tow Sea snake salinity instrument for supplementary project data collection.
- Test new or modified mission hardware and software.
- Maintain telepresence - single live stream video from ship to shore.

Norfolk, VA

NOAA Ship *Thomas Jefferson*

Commanding Officer: CAPT Shepard Smith

Primary Mission Category: Hydrographic Surveys

DEPART: Charleston, SC

DEPART: Norfolk, VA

ARRIVE: 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: Benthic Habitat Assessments of Northeast Outer Continental Shelf Ecosystems

Objectives:

- Collect high resolution multi-beam bathymetry, backscatter and side-scan sonar imagery.
- Survey-directed conductivity, temperature and depth casts.
- Survey-directed benthic grab samples throughout the New Jersey Water Environment Association priority area.

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

DEPART: Cozumel, Mexico

DEPART: Key West, FL

DEPART: Key West, FL

ARRIVE: Key West, FL

ARRIVE: Key West, FL

ARRIVE: Charleston, SC

Project 1: Coral Reef Ecosystem Research (CRER) and Bluefin Tuna Ecology

Objectives:

- Collect physical and biological data.
- Collect profiling reflectance radiometer data in the upper water column.
- Collect sea surface flow-through data set for the entire cruise period.

- Collect a complete and continuous 150 kHz hull-mounted Acoustic Current Doppler Profiler (ADCP) data set, interfaced with directional GPS heading input, for the entire cruise period.
- Install a 300 kHz ADCP in the ship's moon pool and collect a complete and continuous hull-mounted ADCP data set from the instrument interfaced with directional GPS heading input.
- Deploy ~10 satellite-tracked Lagrangian drifting buoys.
- Collect a complete and continuous bathymetric time-series from the ship's Knudsen depth sounder for the entire cruise period (with time, position, and quality flag).
- Conduct directed sampling targeting potential Atlantic Bluefin Tuna (*Thunnus thynnus*) and other tuna species spawning areas in the Caribbean Sea including Cuban and Mexican waters.
- Assess the occurrence, abundance, and geographical distribution of the early life stages of spring spawning fishes, especially Atlantic Bluefin Tuna.
- Measure the vertical distribution of fish larvae by sampling at discrete depths in the water column using a 1 meter Multiple Opening and Closing Net Environmental Sensing System.
- Evaluate trophic pathways relative to the early life dynamic primarily of Atlantic Bluefin Tuna larvae with the use of stable isotope analysis of samples collected using a bongo net.

Project 2: Florida Keys National Marine Sanctuary Ecological Assessment

Objectives:

Assess ecological condition and potential stressor impacts in unconsolidated sediments and overlying waters of the Florida Keys National Marine Sanctuary, based on a field survey performed in June 2015. Sampling will be conducted at 30 stations using multiple indicators of general habitat characteristics, potential stressors, biological condition, and human-health risks and aesthetics. Results also will serve as a baseline for monitoring and detecting change over time in support of other NOAA priorities including "Stressor Impacts, Mitigation & Restoration" and "Coastal Climate Vulnerability & Resilience."

Project 3: Florida Keys National Marine Sanctuary Coral Reef Condition Assessment, Coral Reef Mapping, Fisheries Acoustics Characterizations

Objectives:

- Retrieve and replace one thermograph in Tortugas Ecological Reserve North and one thermograph at New Grounds (North and West of Marquesas).
- Deploy scuba divers to place fish traps in the vicinity of Marquesas Islands, then acoustically tag fishes *in situ*.
- Deploy scuba divers to recover, download and redeploy acoustic receivers in the vicinity of Marquesas and Key West; 34 receivers will be serviced in total.
- Deploy scuba divers to install 'new' acoustic receivers, and associated stands, as deemed appropriate – no more than 10 deployed.
- Conduct seine net operations from small boats within and around the Marquesas Islands.
- Remote Operated Vehicle (ROV) surveys will target fish aggregations and benthic habitat features. ROV to be deployed either from the ship, or from small boats, depending on environmental conditions.
- Drop camera (small boat based) and/or diver visual surveys over bathymetry habitat features of interest, or for habitat validation purposes.
- Dive and drop camera via small boat on fish aggregations, fish traps or benthic habitat features, as required for the mission.
- Multi-beam target areas in the vicinity of Key Largo, Marathon, Lower Keys, Marquesas and Dry Tortugas region.



NOAA Ship *Nancy Foster* departing Montego Bay, Jamaica.

[Photo: LCDR Rathke, USPHS]

NOAA Ship *Ronald H. Brown*

Commanding Officer: CAPT Robert Kamphaus

Primary Mission Category: Oceanographic Research, Environmental Assessment

DEPART: Honolulu, HI

ARRIVE: Seattle, WA

Project: P16N CLIVAR/CO2 Repeat Hydro – Leg 2

Objectives:

This project will be a decadal reoccupation of repeat hydrography section P16N as part of the GO-SHIP (Global Ocean Ship-Based Hydrographic Investigation Program)/CO2/hydrography/tracer program. The goal of the effort is to occupy a set of hydrographic transects with full water column measurements over the global ocean to study physical and hydrographic changes over time and better assess changes in the ocean's biogeochemical cycle in response to natural and/or man-induced activity on the decadal time-scale. Near surface seawater and atmospheric measurements will be made along the cruise track. More details on the GO-SHIP program can be found at: <http://ushydro.ucsd.edu/>

Pascagoula, MS

NOAA Ship *Oregon II*

Commanding Officer: Master Dave Nelson

Primary Mission Category: Fisheries Research

DEPART: Pascagoula, MS

ARRIVE: Pascagoula, MS

Project: Summer Southeast Area Monitoring and Assessment Program (SEAMAP) Groundfish Survey

Objectives:

- Sample the northern Gulf of Mexico with SEAMAP standard trawl sampling gear to determine the abundance and distribution of benthic fauna.
- Collect size measurements to determine population size structures.
- Transmit real-time shrimp biological data weekly to Gulf States Marine Fisheries Commission.
- Record profiles of the water column for temperature, salinity, fluorescence, dissolved oxygen, and turbidity using a Conductivity/Temperature/Depth (CTD) unit at SEAMAP stations.
- Collect at-depth water samples daily and perform benchtop dissolved oxygen tests using the benchtop Winkler Titration method on triplicate samples and handheld Orion 3 Star Portable Dissolved Oxygen Meter. Transmit the processed CTD profiles to a previously setup FTP site as often as time permits to NOAA National Coastal Data Development Center at Stennis Space Center, MS and other researchers to map the hypoxic zone.
- Assess the occurrence, abundance and geographical distribution of the early life stages of ichthyoplankton.
- Assess the functionality of an autonomous hydro-acoustic altimeter on the trawl foot-rope.

NOAA Ship *Gordon Gunter*

Commanding Officer: Master Donn Pratt

Primary Mission Category: Fisheries Research

DEPART: Newport, RI

ARRIVE: Newport, RI

DEPART: Newport, RI

ARRIVE: Newport, RI

Project 1: Gulf of Maine Buoy Array Service, Survey and Glider Deployment

Objective:

Service the Northeastern regional Association of Coastal and Ocean Observing Systems buoys in the Gulf of Maine region.

Project 2: East Coast Ocean Acidification-1

Objectives:

This is the comprehensive survey of inorganic carbon, nutrients and other biogeochemical parameters along the East coast of the USA. The effort is in support of the NOAA/OAR Ocean Acidification Program that has as a major objective to monitor changes in inorganic carbon dynamics, due to anthropogenic carbon input and natural changes in the coastal regions. These processes are often referred to as ocean acidification. The project will increase our understanding of the controls of ocean acidification and its impacts on ocean ecosystems. Additionally the project seeks to better understand a unique set of

processes such as freshwater discharge and intense net production known to affect the coastal carbonate cycle.

NOAA Ship *Pisces*

Commanding Officer: CAPT Michael Hopkins

Primary Mission Category: Fisheries Research

DEPART: Pascagoula, MS

ARRIVE: Mayport, FL

DEPART: Mayport, FL

ARRIVE: Mayport, FL

Project 1: Southeast Area Monitoring and Assessment Program (SEAMAP) Reef Fish Survey

Objectives: Conduct a survey of reef fish on the U.S. continental shelf of the Gulf of Mexico using a custom built stereo/video camera system and bandit reels. The ship's ME70 multi-beam system and Simrad EK60 Echo-sounder will be used to map predetermined targeted areas on a nightly basis to improve or increase the reef fish sample universe

Project 2: South Atlantic Bight Marine Protected Areas

Objectives: The goal of the cruise is to gather additional data on habitat and fish assemblages in six of the South Atlantic Marine Protected Areas as part of a long term sampling program to document changes in these areas before and after fishing restrictions are implemented. The southernmost boundary of our work areas will be Port Canaveral, FL while the northern-most boundary will be Cape Hatteras, NC. Efficacy testing of this management tool will aid fishery managers in future use of area restrictions for the protection of valuable habitat and fishery resources. Specific objectives include:

- Daytime Operation: Conduct ROV transects surveys of habitat and fish assemblages during daylight hours.
- Daytime Operation: Conduct total water column CTD profiles
- Night Operation: Conduct multi-beam mapping to find areas to dive on with the ROV the following day.
- Education and Outreach: We will have a Teacher-at-Sea participating on this cruise.

San Diego, CA

NOAA Ship *Reuben Lasker*

Commanding Officer: LCDR John Crofts

Primary Mission Category: Fisheries Research

Ship Status: The ship is alongside in San Diego, CA, and will be underway conducting sea trails and systems shakedown starting the week of June 14.

Newport, OR

NOAA Ship *Rainier*

Commanding Officer: CDR E.J. Van Den Ameele

Primary Mission Category: Hydrographic Surveys

DEPART: Juneau, AK

ARRIVE: Nome, AK

Project: Arctic Alaska- Kotzebue Sound

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 Brian Parker

Primary Mission Category: Fisheries Research

DEPART: Newport, OR

ARRIVE: Newport, OR

DEPART: Newport, OR

ARRIVE: San Francisco, CA

Project 1: Rockfish Recruitment and Ecosystem Assessment

Objectives:

- Sample for pelagic juvenile rockfish (*Sebastes* spp.) and other epi-pelagic micronekton.
- Characterize prevailing ocean conditions and examine prominent hydrographic features.
- Collect acoustic data for mapping distribution of fish and krill.
- Observe seabird and marine mammal distribution and abundance.
- Conduct paired trawls with charter ship *Ocean Starr*.
- Collect surface neuston and CUFES plankton samples.
- Collections for stable and radio isotope analysis.
- Bottom grab collections along the Oregon and Washington Coast.
- Collect plankton and conduct conductivity, temperature and depth (CTD) casts to characterize ocean conditions off Oregon and Washington.

Project 2: Joint Sardine and Hake Integrated Acoustic-Trawl Survey (SaKe)

Objectives: The primary goal of the survey is to estimate the biomasses, distributions, and biological compositions of populations of Pacific hake and Coastal Pelagic Species (CPS) using data from an integrated acoustic and trawl survey off the west coasts of the U.S. and Canada from approximately San Diego, California (lat 32°48.02'N) to the north end of Vancouver Island, Canada (lat 50°45.65'N).

- Besides Pacific sardine, the other CPS of interest for the SWFSC are those comprised in the Pacific Fisheries Management Council Fisheries Management Plan (PFMC, 2011) including: Northern anchovy (*Engraulis mordax*), Pacific Mackerel (*Scomber japonicus*), Jack Mackerel (*Trachurus symmetricus*). The Northwest Fisheries Science Center and Southwest Fisheries Science Center are interested in all species of euphausiids found within the U.S.' West Coast Exclusive Economic Zone. The current sampling resolution will probably not allow for a comprehensive assessment of all anchovy sub-populations. In particular, those residing in the Southern California Bight and off the Columbia River plume might require additional effort given their patchy distribution.

- SaKe 2015 will continue to monitor the populations of Ecosystem Component Species, in particular Pacific Herring (*Clupea pallasii*).
- Continuously sample multi-frequency acoustic backscatter data using the ship's Simrad EK60 scientific echo-sounder system. These data will be used to estimate the distributions and abundances of hake and the CPS assemblage.
- Conduct daytime trawling to classify observed backscatter layers to species and size composition and to collect specimens of hake and other organisms.
- Conduct nighttime (i.e., between sunset and sunrise) surface trawling to collect specimens of CPS and other organisms.



Kite Photo of NOAA Ship *Bell M. Shimada* alongside at The Exploratorium in San Francisco, CA.
 [Photo: Cris Benton]

OMAO'S MARINE OPERATIONS

CAPT Todd Bridgeman, Director of Marine Operations

OMAO's Marine Operations oversees 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)

CAPT Douglas Baird, 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: Juneau, Ak

ARRIVE: Nome, AK

Project: Arctic Alaska- Kotzebue Sound

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 *Fairweather* at the Arctic Deployment ceremony in Kodiak, AK.

[Photo: NOAA]

Kodiak, AK

NOAA Ship *Oscar Dyson*

Commanding Officer: CDR Arthur “Jesse” Stark

Primary Mission Category: Fisheries Research

DEPART: Dutch Harbor, AK

ARRIVE: Dutch Harbor, AK

DEPART: Dutch Harbor, AK

ARRIVE: Kodiak, AK

Project 1: Eco Fisheries Oceanography Coordinated Investigation (FOCI) Spring Ichthyoplankton Survey

Objectives: To conduct an ichthyoplankton survey and process studies in the region between the Shumagin Islands and Shelikof Strait in order to estimate the abundance, transport and factors influencing the survival of young walleye Pollock larvae, as well as other larval fish species. This effort will continue a 28-year time series of environmental and biological conditions in Shelikof Strait. Sampling will continue up through Shelikof Strait and progress along the Kenai Peninsula. In addition to this sampling, stations have been selected from the main grid for monitoring nutrients, salts and oxygen. A total of 4 satellite tracked drifter buoys may be released in areas of high larval walleye Pollock abundance.

Project 2: Summer Pollock-Gulf of Alaska

Objectives:

- Collect acoustic-trawl data necessary to determine the distribution, biomass, and biological composition of walleye Pollock and other mid-water fishes
- Calibrate the acoustic systems using standard sphere calibration techniques
- Collect target strength data using centerboard-mounted or lowered transducers for use in scaling acoustic data to estimates of absolute abundance
- Collect physical oceanographic data (temperature and salinity profiles) at selected, and continuously collect sea surface temperature and salinity data using the ships flow thru water monitoring system
- Conduct trawl hauls to ground truth multi-frequency acoustic data collection

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 1: Main Hawaiian Island Reef Fish Survey

Objectives: Collect data on shallow-water (0-30m deep) reef fish assemblages and reef habitats in the Main Hawaiian Islands via non-extractive methods, including:

- Coral Reef Ecosystem Division(CRED) Pacific Reef Assessment Monitoring Program Reef Fish surveys (conducted from the Hi'ialakai and CRED small boats)
- CRED Re-breather fish surveys (conducted from the Hi'ialakai and CRED small boats)

NOAA Ship *Oscar Elton Sette*

Commanding Officer: LCDR Keith Golden

Primary Mission Category: Fisheries Research

DEPART: Saipan, Northern Mariana Islands

ARRIVE: Honolulu, HI

Project: Fisheries Oceanography- Commonwealth of the Northern Mariana Islands and Mariana Trench Marine National Monument

Objectives: The ship will conduct scientific operations in the waters surrounding the Commonwealth of the Northern Mariana Islands (CNMI) and the Mariana Trench Marine National Monument. The scientific objectives of this project are as follows:

- Traps will be deployed from the ship and a small boat deployed from the ship. These traps will target both fish and invertebrates over sandy bottoms in coastal areas throughout the archipelago. Samples collections will support CNMI Division of Fish and Wildlife research to characterize biodiversity over sandy bottom habitats within the Mariana Archipelago and the Barcode of Life project.
- Mid water trawl operations will be conducted in the nighttime and early morning to collect mid water larval and juvenile stages of pelagic and reef fish species as well as pelagic midwater fauna. Samples collections will support CNMI Division of Fish and Wildlife research to evaluate latitudinal shifts in trophic relations via stable isotope analysis of tissue samples and to characterize mid water biodiversity within the Mariana Archipelago. Samples collections will also support a University of Guam research proposal to evaluate genetic connectivity within the Mariana Archipelago and the Barcode of Life project. These trawling operations will take place in offshore waters.
- Plankton sampling operations will be conducted during the daytime using 2 types of nets ring nets deployed as vertical casts in the upper 100m.
- The ship will collect oceanographic data from routine conductivity-temperature-depth casts, continuous acoustic Doppler current profiler and thermosalinograph measurements throughout the project.
- Drifting night-light dip-netting operations off the port side long line pit will be conducted in the late evening to collect surface occurring larval and juvenile stages of pelagic and reef fish species. Samples collections may provide support for a University of Guam research proposal to evaluate genetic connectivity within the Mariana Archipelago.
- Shallow-water and shore-based collections and surveys of organisms will be conducted at selected islands. Sette small boat will be used to put a small team of 3-4 scientists ashore for day excursions inland for collections and surveys.

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 April 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 recently 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: CDR Mark Sweeney
Temporary Base: Salina, KS
Current Mission: Plains Elevated Convection at Night

Upgraded engines have been installed increasing efficiency and performance. Beginning mid-month, the aircraft will support the Plains Elevated Convection at Night (PECAN) project studying the development of severe weather over the Great Plains region in partnership with the University of Illinois. This mission will improve understanding of how storms develop to help reduce the loss of life and property associated with severe weather.

Gulfstream IV (N49RF) – “Hurricane Hunter”

Aircraft Commander: TBD
Current Mission: Awaiting Hurricane Tasking

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: LTJG Kyle Salling/LTJG Kevin Doremus
Current Mission: Southwestern U.S. Soil moisture

The aircraft will resume its soil moisture flights for the National Operational Hydrologic Remote Sensing Center (NOHRSC), utilizing an Airborne Gamma Radiation detector to make airborne soil moisture measurements. These measurements are used by NWS Weather Forecast Offices (WFO) and NWS River Forecast Centers (RFC) when issuing river and flood forecasts, water supply forecasts, and spring flood outlooks. Survey locations will be determined based on NOHRSC tasking. Operations in June will primarily be focused on establishing new flight lines for soil moisture surveys in the Southwestern U.S.

Twin Otter (N46RF)

Aircraft Commander: LT Francisco Fuenmayor
Current Mission: Southwestern U.S. Soil moisture

The aircraft is conducting soil moisture work in conjunction with the NOAA Jet Prop (N46RF) in the Southwest until mid-June when it will head to Tuscaloosa, AL, for calibration flights.

Twin Otter (N48RF)

Aircraft Commander: LT Ron Moyers
Current Mission: Soil moisture and coastal mapping

The aircraft will undergo scheduled maintenance followed by soil moisture calibration flights mid-month. The aircraft will then begin coastal mapping work until early July. The coastal mapping work will collect imagery and bathymetric data throughout the U.S. to update the national shoreline on nautical charts and other integrated mapping applications. This shoreline data is used to define territorial limits, ensure safe and efficient marine transportation as well as aid in coastal planning.

Twin Otter (N56RF)

Aircraft Commander: LT Matt Nardi
Current Mission: Steller Sea Lion

Aircraft will undergo scheduled maintenance until mid-June when it departs for Steller Sea Lion surveys in Alaska monitoring abundance and distribution of the species. The National Marine Fisheries Service / National Marine Mammal Laboratory conducts aerial surveys of endangered non-listed Steller Sea Lions to estimate abundance of pups, juveniles and adults on land during the summer breeding season. Western Steller Sea Lions are listed under the Endangered Species Act and the information obtained during these surveys is critical for monitoring recovery of the species and for management of commercial fisheries in federal waters of the North Pacific Ocean.

Twin Otter (N57RF)

Aircraft Commander: LT Mike Marino/LTJG Kevin Doremus
Temporary Base: US Coast Guard Air Station Cape Cod, MA
Current Mission: Northeast Right Whale Survey - New England waters

This survey will: 1) provide locations of North Atlantic Right whales to mariners, 2) provide description of Right whale distribution to support the implementation of seasonal and dynamic area management, 3) provide annual photo-identification records on Right whales, as well as detailed vertical photogrammetry in selected periods, 4) provide information on the distribution and abundance of marine mammals and marine turtles in the winter, spring, summer and fall seasons, 5) provide sightings of dead whales, 6) provide information on the distribution of shipping and fishing gear, and 7) census seal populations along the New England coast.

King Air (N68RF)

Aircraft Commander: CAPT Adam Dunbar/LT Tanner Sims
Current Mission: Various Locations – Continuous Coastal Mapping

King Air is conducting Coastal Mapping mission flights in various locations. The Coastal Mapping work is an on-going mission, run by the Remote Sensing Division of the National Geodetic Survey (NGS), with the goal of providing a regularly-updated national shoreline for supporting marine navigation, defining territorial limits, and managing coastal resources. Stereo photogrammetry and a Light Detecting and Ranging System (LiDAR) are used to produce a digital database for a national shoreline.

OMAO'S AIRCRAFT OPERATIONS CENTER (AOC)

CAPT Harris Halverson, Commanding Officer AOC

The AOC, located at MacDill Air Force Base, 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

Mission: Multiple Flight Test Activities

NASA's Global Hawk Unmanned Aircraft System (UAS) has now been geared for multiple flight test activities in May and June. This test period will be followed by hurricane surveillance instrumentation in July for the Sensing Hazards with Operational Unmanned Technology (SHOUT) project. The SHOUT project is a NOAA funded hurricane surveillance and research activity that is scheduled to operate from the NASA Wallops Flight Facility in August and September. NOAA Corps officer, LCDR Neuhaus, is supporting Global Hawk as a project manager and instructor pilot.

APH-22 Hexacopter

Location: Cape Cod, MA

Mission: Atlantic Bluefin Tuna Population Assessment

The objective of this project is to obtain an estimate of juvenile Atlantic Bluefin Tuna abundance for the western population. Integrated aerial and acoustic sampling has the potential to reduce perception bias as well as availability biases associated with tuna at depth obscured by surface individuals. The APH-22 hexacopter will be used to obtain high resolution aerial images from a platform that will not interfere the functioning of attitude sensors. The improved low altitude/high resolution images taken from the APH-22 will help us develop automated target recognition of Atlantic Bluefin Tuna. Studies have demonstrated feasibility for shark and leatherback turtles, but insufficient image quality has been obtained for smaller juvenile Atlantic Bluefin Tuna from photographs taken via a spotter plane.

APH-22 Hexacopter

Location: Aleutian Islands, AK

Mission: Aleutian Islands Stellar Sea Lions

The objective of this project is to monitor the trend of Steller sea lion populations by counting newborn pups and non-pups in high resolution photographs of sea lion rookeries and haulouts. The Hexacopter will supplement the manned aircraft survey and fill in the gap by obtaining data within the most inaccessible locations. In 2014, supplementing these manned aircraft surveys with UAS resulted in the most successful survey of the Aleutian Islands since the 1970s.

Puma UAS

Location: US Northeast Offshore Waters

Mission: Sea Turtle Surveys

The objective of this project will be to locate, capture, sample, and satellite tag loggerhead sea turtles in the poorly understood area from the southern flank of Georges Bank through the Scotian Shelf. Operations will be conducted from the NOAA Ship *Henry B. Bigelow*. Puma operations will be conducted as part of the 8-day cruise operating along the southern flank of Georges Bank, across the northeast channel, and onto Browns Bank and the Scotian Shelf. The Puma UAS will be used to locate sea turtles and relay the location information to the ship and scientific crew. The locations of the turtles will be used

to vector the ship's launches to the turtles. The crew aboard the launches will capture, tag and release the turtles.

DJI S-1000

Location: Oak Ridge, TN

Mission: Convective Initiation

This project is an initiative from OAR's Atmospheric Turbulence and Diffusion Division (ATDD) to measure the conditions that lead to Convective Initiation (CI) in the lower boundary layer. A DJI S-1000 rotor-based UAS system will be operated by NOAA/ATDD and will be used to measure the dynamics of land-atmosphere interactions in the lower boundary layer. The goal is to measure the scale and extent of the temperature and moisture fields in the lower boundary layer adjacent to fixed towers on the surface. A field experiment is planned for the summer of 2015 using this UAS in Northern Alabama to help accomplish this mission.





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: LTJG Jesse Milton, NOAA Commissioned Officer Corps

Members of the [NOAA Commissioned Officer Corps](#) carry out NOAA's mission in remote locations across the globe. LTJG 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: LT Jonathan French, NOAA Commissioned Officer Corps
Embedded in the Navy's Naval Oceanography Mine Warfare Center, LT 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 Defense and NOAA's Office of Coast Survey

Location: Silver Spring, MD

Embedded Liaison: LT Russell Quintero, NOAA Commissioned Officer Corps
NOAA's National Ocean Service Office of Coast Survey (OCS) is the lead federal provider of nautical charts and hydrographic survey data of the U.S. Exclusive Economic Zone. Meeting this responsibility requires active cooperation and coordination with federal partners in the Departments of Defense and Homeland Security with which NOAA shares responsibility for U.S. navigational products and services. LT Quintero tracks, coordinates, and adds value to existing activities involving OCS subject matter experts and partners, seeks and develops additional opportunities for collaboration, and increases visibility and access to these activities and partnerships for OCS leadership.

Department of Homeland Security - U.S. Coast Guard

Location: Washington, DC

Embedded Liaison: CAPT Jeremy Adams/CDR Scott Sirois (Reporting mid June), NOAA
Commissioned Officer Corps

As the NOAA liaison to the United States Coast Guard (USCG), CAPT Adams 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 Adams 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: 22 teachers will be sailing on different projects

NOAA Ship *Henry B. Bigelow*

Name: Mr. Tom Savage

School: Henderson County Early College, Hendersonville NC

Cruise: Cetacean and Turtle Biology, June 7, 2015 – June 19, 2015

Blog: http://teacheratsea.noaa.gov/#/2015/Tom*Savage/blogs

NOAA Ship *Oscar Dyson*

Name: Mr. Vincent Colombo

School: Sussex Technical High School, Frankford DE

Cruise: Summer Pollock-Gulf of Alaska, June 11, 2015 – June 30, 2015

Blog: http://teacheratsea.noaa.gov/#/2015/Vincent*Colombo/blogs

Name: Ms. Nichollete Durkan

School: Steamboat Mountain School, Steamboat Springs CO)

Cruise: Summer Pollock-Gulf of Alaska, June 11, 2015 – June 30, 2015

Blog: http://teacheratsea.noaa.gov/#/2015/Nicholette*Durkan/blogs

NOAA Ship *Hi'ialakai*

Name: Ms. Sandra Camp

School: Robert Louis Stevenson Elementary/ San Francisco Unified District, San Francisco CA

Cruise: Main Hawaiian Island Reef Fish Survey, June 14, 2015 – June 24, 2015

Blog: http://teacheratsea.noaa.gov/#/2015/Sandra*Camp/blogs

NOAA Ship *Nancy Foster*

Name: Mr. William Henske

School: Maplewood Richmond Heights School District, St. Louis MO

Cruise: Florida Keys National Marine Sanctuary Coral Reef Condition Assessment, June 14, 2015 – June 29, 2015

Blog: http://teacheratsea.noaa.gov/#/2015/Sandra*Camp/blogs



Teacher At Sea (TAS) Tom Savage, aboard NOAA Ship *Henry B. Bigelow* preparing a sonobouy for deployment.

[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.



NOAA diver Michelle Johnston installs a Calcification Acidification Unit to bare substrate at East Flower Garden Bank.

[Photo: Ryan Eckert]



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

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

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



NOAA Commissioned Officer Corps



– Honor, Respect, Commitment –

The NOAA Commissioned Officer Corps (NOAA Corps) is one of the 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 bathymetric surveys to locate possible submerged navigational hazards in the ports of New York and Virginia. These surveys enabled the ports to reopen quickly. Aerial images of storm-stricken regions, taken by NOAA aircraft, helped residents and emergency workers to quickly assess the condition of houses, bridges, and vital infrastructure.
- After Hurricane Irene in 2011, the NOAA Ship *Ferdinand Hassler* and team completed 300 lineal nautical miles of survey work in less than 48 hours providing a Damage Assessment that enabled the U.S. Coast Guard to 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/>.