NOAA Fleet Update

SEPTEMBER 2014

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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http://www.facebook.com/NOAAOMAO

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OMAO's Ships

OMAO's Ship Tracker (screen shot below) shows information about the location - present and past - of our fleet of research and survey ships. http://shiptracker.noaa.gov

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 Marc Moser
Primary Mission Category: Hydrographic Surveys
Ship Status: Underway September 5 – 12, 2014 and September 15 – 26, 2014
DEPART: Norfolk, VA **ARRIVE:** Norfolk, VA
DEPART: Norfolk, VA **ARRIVE:** Norfolk, VA

Project: Hydrographic Survey Operations in Chesapeake Bay, VA
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. Conduct Autonomous Underwater Vehicle (AUV) operational testing to support Concept of Operations for the REMUS 600 AUV. The AUV Operational Team will work in 'survey mode' to document manpower requirements and efficiency metrics to determine the capabilities and possible benefits of the REMUS 600 aboard the *Hassler* during ship 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
Ship Status: Underway September 7 – 19, 2014 and September 23 – October 4, 2014
DEPART: Newport, RI **ARRIVE:** Newport, RI
DEPART: Newport, RI **ARRIVE:** Newport, RI

Project: Autumn Bottom Trawl Survey
Objectives:

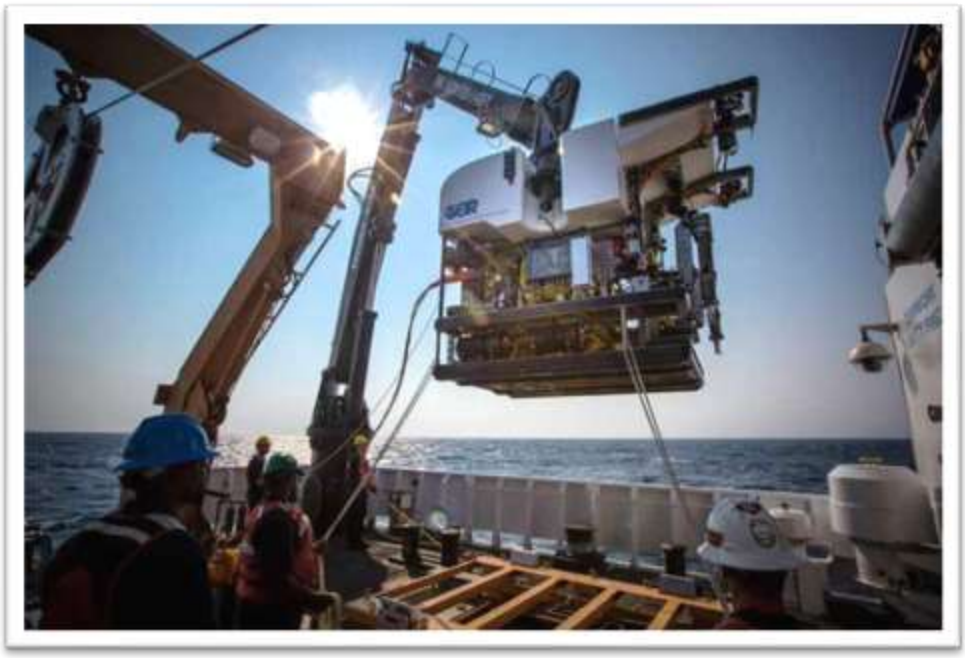
1. Determine the autumn distribution and relative abundance of fish and invertebrate species found on the continental shelf, including variable amounts of additional biological information obtained through intensive sampling effort.
2. Opportunistically test trawl gear, methods, or survey related equipment that may benefit the trawl survey in the future.
3. Collect oceanographic data including Conductivity, Temperature, and Depth (CTD) casts and bongo tows at selected stations.
4. Collect acoustic data along cruise tracks, as well as test and conduct preliminary survey operations with acoustic systems including the EK-60 and ME-70.

Davisville, RI

NOAA Ship *Okeanos Explorer*

Commanding Officer: CDR Ricardo Ramos
Primary Mission Category: Oceanographic Exploration and Research
Ship Status: Underway September 4 – 10, 2014 and September 16 – October 7, 2014
DEPART: North Kingstown, RI **ARRIVE:** Baltimore, MD
DEPART: Baltimore, MD **ARRIVE:** North Kingstown, RI

Project: Our Deepwater Backyard: Exploring the Atlantic Canyons and Seamounts
Objectives: Conduct Remotely Operated Vehicle (ROV) shakedown activities, explore poorly known areas of the continental slope, and increase awareness of ocean exploration and NOAA's Office of Ocean Exploration and Research through VIP interactions. Collect baseline-characterization data of poorly known areas along the New England Seamount Chain and U.S. northeast continental shelf canyons.



NOAA Ship *Okeanos Explorer* crew deploy the Remotely Operated Vehicle (ROV). Are you going to be in the Baltimore vicinity this week? Stop by to visit the NOAA Ship *Okeanos Explorer*, see its ROV, and also visit the NOAA Vessel *Bay Hydrographer II* during the Star Spangled Spectacular September 11 - 15!
[Photo Credit: NOAA]

Norfolk, VA

NOAA Ship *Thomas Jefferson*

Commanding Officer: CDR James Crocker
Primary Mission Category: Hydrographic Surveys
Ship Status: Underway September 2 – 19, 2014 and September 22 – 30, 2014
DEPART: Norfolk, VA **ARRIVE:** Boston, MA
DEPART: Boston, MA **ARRIVE:** Norfolk, VA

Project: Hydrographic Survey Operations of Gardiner's Bay and Eastern Long Island Sound, NY and CT
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: Underway September 1 – 12, 2014 and September 15 – 30, 2014
DEPART: Charleston, SC **ARRIVE:** Key West, FL
DEPART: Key West, FL **ARRIVE:** Charleston, SC

Project One: Port Everglades / Palm Beach Ocean Dredged Material Disposal Site (ODMDS) Trend Assessment / Sediment Profile Imaging (SPI) Survey
Objectives:

1. Conduct routine trend assessments at the Port Everglades and Palm Beach ODMDS consistent with the requirement of the Site Management Monitoring Plan (SMMP) by collecting and analyzing water, sediment, and biota from each ODMDS.
2. Utilize a SPI camera, map the Port Everglades disposal mound and apron of the 2013 disposal event to determine the effectiveness of the new release zone on keeping disposed material within the ODMDS boundaries and conduct pre-disposal mapping at the Palm Beach ODMDS.

Project Two: Florida Keys National Marine Sanctuary (FKNMS) Coral Reef Condition Assessment, Coral Reef Mapping, and Fisheries Acoustics Characterizations
Objectives: Build on past research and monitoring in the FKNMS by the Florida Fish and Wildlife Conservation Commission and focus on connectivity between the network of marine reserves in the Dry Tortugas region, including the connections between populations of fish in the Dry Tortugas National Park (DRTO), the DRTO Research Natural Area, the Tortugas Ecological Reserve North and spawning habitat at Riley's Hump located within the Tortugas Ecological Reserve South. Operations will be conducted with scuba divers and Remotely Operated Vehicles (ROV).

NOAA Ship *Nancy Foster* is seen here about to pass under the Arthur Ravenel Jr. Bridge while departing her homeport of Charleston over Labor Day weekend.
[Photo Credit: Megan McCafferty-Shoup]

NOAA Ship *Ronald H. Brown*

Commanding Officer: CAPT Joseph Pica
Primary Mission Category: Oceanographic Research, Environmental Assessment
Ship Status: Underway August 25 – September 28, 2014
DEPART: Newport, OR **ARRIVE:** Honolulu, HI

Project: Tropical Oceans Atmosphere (TAO) 125W/140W
Objectives: Conduct maintenance of the TAO Array along the 125°W, 140°W, conduct underway operations between stations, including mooring recoveries, deployments, and repairs.

Pascagoula, MS

NOAA Ship *Oregon II*

Commanding Officer: Master Dave Nelson
Primary Mission Category: Fisheries Research
Ship Status: Underway September 10 – 13, 2014 and September 15 – 29, 2014
DEPART: Pascagoula, MS **ARRIVE:** Pascagoula, MS
DEPART: Pascagoula, MS **ARRIVE:** Pascagoula, MS

Project: Red Snapper/ Shark Bottom Long Line
Objectives:
1. Sample the U.S. Atlantic and northern Gulf of Mexico for data concerning the distribution and abundance of shark and red snapper populations to aid in stock assessments.
2. Collect morphological measurements and biological samples to facilitate life history studies.
3. Profile water column temperature, salinity, transmissivity, dissolved oxygen concentrations, and fluorometry.

NOAA Ship *Gordon Gunter*

Commanding Officer: Master Don Pratt
Primary Mission Category: Fisheries Research
Ship Status: Underway September 12 – 30, 2014
DEPART: Pascagoula, MS **ARRIVE:** Pascagoula, MS

Project: Southeast Area Monitoring and Assessment Program (SEAMAP) Fall Ichthyoplankton Plankton Survey
Objectives:
1. Assess the occurrence, abundance, and geographical distribution of the early life stages of fall spawning fishes, especially king and Spanish mackerel, red drum, and snappers.
2. Describe the pelagic habitat of fish larvae through physical and biological measurements.
3. Map the distribution of fish eggs and invertebrate zooplankton.
4. Study extrusion of smaller fish larvae through the standard SEAMAP bongo nets by using a secondary standard bongo frame.
5. Examine the spatial resolution of red and vermillion snapper distribution.
6. Collect detailed observations of net-caught jellyfish and ctenophores.

NOAA Ship *Pisces*

Commanding Officer: CDR Peter Fischel
Primary Mission Category: Fisheries Research
Ship Status: Underway August 22 – September 12, 2014 and September 16 – 30, 2014
DEPART: Pascagoula, MS **ARRIVE:** Pascagoula, MS
DEPART: Pascagoula, MS **ARRIVE:** Tampa, FL

Project One: Natural Resources Damage Assessment of Deep Water Red Crabs
Objectives: NOAA's National Ocean Service, Office of Response and Restoration is monitoring the effects of the Deepwater Horizon oil spill of April 2010, and identifying potential impacts on deepwater benthic red crabs (*Chaceon quinquedens*) communities.

Project Two: Southeast Area Monitoring and Assessment Program Reef Fish Survey
Objectives: Conduct an acoustic survey located on the continental shelf and shelf edge of the eastern Gulf of Mexico. Conduct tests of the ship's Simrad ME-70 multibeam and EK-60 echosounder system, along with Side Scan Sonar operations to ensure positional accuracy of all systems. Conduct bathymetric mapping with the ME-70, in predetermined targeted areas, to increase the reef fish sample size.

San Diego, CA

NOAA Ship *Reuben Lasker*

Commanding Officer: CDR Keith Roberts
Primary Mission Category: Fisheries Research
Ship Status: The ship is alongside in San Diego, CA, due to voltage and harmonic issues within the propulsion motors and will remain alongside as solutions are developed.

NOAA Ship *Rainier* alongside in Homer, AK.
[Photo credit: LTJG Damian Manda, NOAA]

Newport, OR

NOAA Ship *Rainier*

Commanding Officer: CDR E.J. Van Den Ameele
Primary Mission Category: Hydrographic Surveys
Ship Status: Underway September 8 – 19, 2014 and September 22 – 30, 2014
DEPART: Kodiak, AK **ARRIVE:** Kodiak, AK
DEPART: Kodiak, AK **ARRIVE:** Kodiak, AK

Project: Hydrographic Survey Operations in the vicinity of the North Coast of Kodiak Island, 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.

NOAA Ship *Bell M. Shimada*

Commanding Officer: CDR Brian Parker
Primary Mission Category: Fisheries Research
Ship Status: Underway August 28 – September 14, 2014, September 17 – 21, 2014, and September 24 – 30, 2014
DEPART: San Francisco, CA **ARRIVE:** Newport, OR
DEPART: Newport, OR **ARRIVE:** Newport, OR
DEPART: Newport, OR **ARRIVE:** Newport, OR

Project One: 2014 California Current Ecosystem: Investigations of hake survey methods, life history, and associated ecosystem.
Objectives: A NOAA National Marine Fisheries Service, North West Fisheries Science Center-led investigations of Pacific hake (*Merluccius productus*) and joint survey methods, life history, and associated ecosystem components, trophic structure and oceanography, will be conducted.

Project Two: Unmanned Systems
Objectives: Demonstrate command and control turnover procedures with various unmanned systems as well as field test newly developed passive-acoustic autonomous underwater vehicle and unmanned surface vehicle off the Oregon coast. The testing survey will take place along the Newport Hydrographic (NH) Line. Recover a Deep-ocean Assessment and Reporting of Tsunamis 4G buoy and a bottom pressure recorder deployment.

Project Three: Northern California Current Ecosystem Survey
Objectives: Conduct hydrographic measurements, collect water samples for chemical analysis with a rosette, and collect zooplankton samples with towed plankton nets along the NH Line and 5 additional transects off the Oregon and Washington coast. Deploy an acoustic mooring along the shelf-slope off northern Washington.

Last week, NOAA Ship *Bell M. Shimada* tied up at The Exploratorium in San Francisco, CA. Here is a great shot of the ship coming in for docking!
"The vessel offers fisheries scientists the ability to monitor fish populations without altering their behavior, allowing them to collect data with unprecedented accuracy." http://www.moc.noaa.gov/sh/
[Photo Credit: Exploratorium]

OMAO'S MARINE OPERATIONS

CAPT Eric Berkowitz, 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 (currently docks in Newport, OR)

NOAA Ship *Fairweather*

Commanding Officer: CDR David Zezula
Primary Mission Category: Hydrographic Surveys
Ship Status: Underway September 21 – 24, 2014
DEPART: Seattle, WA **ARRIVE:** Drydock

The ship is alongside in Seattle, WA, preparing for her upcoming shipyard period for routine maintenance.

Kodiak, AK

NOAA Ship *Oscar Dyson*

Commanding Officer: CDR Jesse Stark
Primary Mission Category: Fisheries Research
Ship Status: Underway September 4 – 18, 2014 and September 20 – 30, 2014
DEPART: Dutch Harbor, AK **ARRIVE:** Dutch Harbor, AK
DEPART: Dutch Harbor, AK **ARRIVE:** Dutch Harbor, AK

Project: Bering-Aleutian Salmon International Survey, Ecosystem Monitoring and Assessment /Fisheries-Oceanography Coordinated Investigations
Objectives: Fisheries (surface, midwater, and beam trawls) and oceanographic survey to:

1. Describe the community structure, biomass, energetic status, diets, and biological composition of epi-pelagic nekton including Pacific salmon, Pacific cod, age-0 pollock, jellyfish, herring, capelin, and sand lance.
2. Conduct acoustic-midwater trawl activities to convert the acoustic data to estimates of distribution and abundance for the dominant pelagic scatterers (e.g., Pacific cod, age-0 pollock, herring, capelin).
3. Compare and contrast pelagic and epi-pelagic fish communities and food web structure in the southeastern Bering Sea using surface and mid-water trawls.
4. Collect electronic oceanographic data including CTD (Conductivity, temperature, depth) vertical profiles of temperature, salinity, light transmission, chlorophyll a fluorescence, dissolved oxygen, possibly pH, photosynthetic available radiation.
5. Continuously (along-track) collect sea surface temperature, salinity, chlorophyll a fluorescence data.
6. Collect biological oceanographic samples (water and plankton) at trawl stations.
7. Conduct Jellyfish sampling and experimentation to determine the diets and feeding rates of the dominant large jellyfish, *Chrysaora melanaster*, on fish eggs and larvae and on important fish prey.
8. Collect and analyze phytoplankton samples for taxonomic information.
9. Conduct primary production experiments with stable (non-radioactive) isotopes using deck-board incubators cooled with surface seawater.

As NOAA scientists study acoustic data collected aboard the NOAA Ship *Oscar Dyson*, at times they will decide to collect a sample of the fish they have located. This is what the "trawl" part of the survey is all about. The ship's crew will set a large net out behind the ship and then tow it slowly through the water. Electronics attached to the net allow the scientists to monitor the net's position and decide when enough fish have been caught. Then the crew will bring the fish aboard and the scientists can identify them and – for pollock – document their age, length, weight and other important characteristics.

[Photo: Allen Smith, NOAA]

Honolulu, HI

NOAA Ship *Hi'ialakai*

Commanding Officer: LCDR Daniel Simon
Primary Mission Category: Oceanographic Research, Environmental Assessment
Ship Status: Underway September 6 – 30, 2014
DEPART: Pearl Harbor, HI **ARRIVE:** Pearl Harbor, HI

Project: Papahānaumokuākea Marine National Monument Biogeography
Objectives:

1. Collect specimens of reef fishes and invertebrates for characterization of genetic diversity and connectivity for the purpose of understanding biological linkages supporting and maintaining Monument island/atoll ecosystems.
2. Conduct invasive algae surveys with technical dive operations (closed-circuit rebreathers). Dive operations will include: visual surveys of the bottom for the selected Alien Species (AS), taking

photographs and notes on the habitat and other species present, and the collection of specimens believed to be AS.
3. Conduct surveys to determine baseline abundances of coral, algae, and associated reef fishes at technical diving depths. Take photographs and notes to determine species presence and abundance of organisms.
4. Conduct multibeam activities for the purposes of identifying potential dive sites and searching for appropriate habitat for potential survey sites. Multibeam or echosounding activities will take place opportunistically during non-diving hours.
5. Capture apex predators and tag them with acoustic transmitters in order to determine large-scale movement patterns.
6. Deploy and recover Baited Remote Underwater Video units to quantify fish populations in waters deeper than can be surveyed by divers.

NOAA Ship *Oscar Elton Sette*

Commanding Officer: LCDR Stephanie Koes
Primary Mission Category: Fisheries Research
Ship Status: Underway August 30 – September 19, 2014 and September 25 – October 27, 2014
DEPART: Pearl Harbor, HI **ARRIVE:** Pearl Harbor, HI
DEPART: Pearl Harbor, HI **ARRIVE:** Pearl Harbor, HI

Project One: Hawaiian Monk Seal Population Assessment
Objectives:
1. Recover Hawaiian monk seal camps at French Frigate Shoals, Laysan Island, Lisianski Island, Pearl and Hermes Reef and Kure Atoll.
2. Conduct monk seal beach surveys at Ni'ihau, Nihoa, and Necker Islands.
3. Translocate Hawaiian monk seals from a rehabilitation facility in Kona.
4. Recover an American Bird Conservancy Nihoa Miller Bird camp on Laysan Island.
5. Conduct trials of Unmanned Aircraft Systems (Puma and multi-copter) at Pearl and Hermes Reef.
6. Deliver and recover supplies and personnel to Kure Atoll for the Department of Forestry and Wildlife, Department of Land and Natural Resources, State of Hawaii.

Project Two: Marine Debris Survey and Removal in the Northwestern Hawaiian Islands,
Objectives:
1. Support in-water and shoreline marine debris surveys and removal operations at French Frigate Shoals, Maro Reef, Laysan Island, Lisianski Island, Pearl and Hermes Atoll, and Midway Atoll.
2. While in transit shipboard 500 m conductivity-temperature-depth (CTD) casts and water samples will be conducted opportunistically at designated permanent stations along the Hawaiian Archipelago.
3. Oceanographic equipment including Ecological Acoustic Recorders, Sea Surface Temperature buoys, and Subsurface Temperature Recorders will be opportunistically deployed, replaced, or removed within the PMNM.

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

CDR Robert Kamphaus, 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

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.

Gulfstream IV (N49RF)

Aircraft Commander:	TBD
Current Mission:	Hurricane Surveillance and Research. Western Atlantic and Gulf of Mexico
Dates of Operation:	September – November 30, 2014

Aircraft will support operational tropical cyclone forecasting and the Hurricane Forecast Improvement Project. The G-IV will be the primary aircraft for surveillance missions with the Air Force's WC-130J and NOAA's WP-3D aircraft serving as backup platforms. The radar reconnaissance missions will use the G-IV's Tail Doppler Radar (TDR) system to obtain high-density, three-dimensional measurements of the inner core wind structure of tropical cyclones, potentially throughout its full life cycle. 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.

Gulfstream IV at AOC in Tampa, FL.
[Photo Credit: NOAA]

WP-3D (N42RF) and WP-3D (N43RF) – "Hurricane Hunters"

Aircraft Commander: TBD
Current Mission: Hurricane Reconnaissance and Research. Western Atlantic and Gulf of Mexico
Dates of Operations: September – November 30, 2014

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 NOAA National Weather Service hurricane specialists with the ultimate outcome being improved accuracy of intensity and track forecasts, extended forecast/warning lead-times and improved confidence levels by decision makers.

NOAA Aircraft P-3 (N42RF)
Photo Credit: Aircraft Operations Center (AOC), NOAA

Jet Prop Commander (N45RF)

Aircraft Commander: LTJG Kyle Salling
Current Mission: Various locations for Snow Survey / Soil Moisture Surveys
Dates of Operation: September 2014 – April 30, 2015

The aircraft is conducting Snow Survey operations for the National Operational Hydrologic Remote Sensing Center (NOHRSC), utilizing an Airborne Gamma Radiation detector to make airborne Snow Water Equivalent (SWE) and soil moisture measurements in the Midwest. Airborne SWE measurements are used by National Weather Service (NWS), Weather Forecast Offices and NWS River Forecast Centers when issuing river and flood forecasts, water supply forecasts, and spring flood outlooks. Survey locations will be determined based on NOHRSC tasking. Operations in September will primarily be focused on establishing new flight lines and for soil moisture surveys.

Twin Otter (N46RF)

Aircraft Commander: LT John Rossi
Current Mission: Snow Survey/ Soil Moisture Surveys in various locations
Dates of Operation: September – November 30, 2014

The aircraft is also conducting Snow Survey operations for the National Operational Hydrologic Remote Sensing Center. Operations in September will primarily be focused on establishing new flight lines and for soil moisture surveys.

Twin Otter (N48RF)

Aircraft Commander: LT Francisco Fuenmayor and LT Mike Marino
Temporary Base: Key West, FL
Current Mission: LiDAR Evaluation
Dates of Operation: September – November 30, 2014

The aircraft is conducting an evaluation of a topometric-bathymetric Light Detecting and Ranging (LiDAR) system for the Remote Sensing Division of the National Geodetic Survey. The system can scan coastlines and simultaneously measure ground heights above the surface as well as the depths below, near the shoreline. The data could potentially be used to update nautical charts.

Twin Otter (N56RF)

Aircraft Commander: LCDR Nick Toth
Temporary Base: Various locations in Alaska
Current Mission: Harbor Seal Survey
Dates of Operation: August 1 – September 21, 2014

The aircraft is conducting a Harbor Seal survey along the southern maritime region of Alaska. The National Marine Fisheries Service, National Marine Mammal Laboratory conducts aerial surveys of Harbor Seals to estimate their abundance. The project will photograph haul out sites and analyze the photos to count the animals.

P-3 (N42RF) flying a wind calibration mission. The view from the cockpit is Southwest of Tampa Bay, FL, over the Gulf of Mexico. Pilot is CDR Scott Price.
[Photo credit: Jack Parrish, NOAA]

Twin Otter (N57RF)

Aircraft Commander: LTJG Michael S. Silagi
Current Mission: Leatherback Turtles. Monterey, CA
Dates of Operation: Until September 30, 2014

The aircraft will be conducting a survey for Leatherback Turtles off the coast of California. This survey is being conducted to investigate the turtle's distribution and abundance relative to seasonal oceanographic features, and support capture and sampling of free swimming Leatherbacks by an in-water team.

King Air (N68RF)

Aircraft Commander: CAPT Al Girimonte/LT Rebecca Waddington/LTJG Tanner Sims
Current Mission: Various locations for coastal mapping
Dates of Operation: Continuous operations

The King Air is conducting coastal mapping mission flights during an on-going mission, run by the Remote Sensing Division of NOAA's National Ocean Service, National Geodetic Survey, with the goal of providing a regularly-updated national shoreline for supporting marine navigation, defining territorial limits, and managing coastal resources. Stereo photogrammetry and Light Detecting and Ranging (LiDAR) system are used to produce a digital database for a national shoreline.

Unmanned Systems Support

NASA Global Hawk

Location: NASA Wallops Flight Facility, VA
Dates: September and October
Mission: Hurricane Severe Storm Sentinel project (HS3)

The RQ-4 Global Hawks are currently supporting the Hurricane Severe Storm Sentinel project, better known as HS3. The HS3 project will include two Global Hawks configured for hurricane research. The first Global Hawk made a transit to the NASA Wallops Flight Facility on August 26 delaying 12+hrs over Hurricane CRISTOBAL. The second Global Hawk is scheduled to transit in early September. Each jet is capable of flying over 24hrs at a time and is configured with next generation hurricane research instrumentation. NOAA is also supporting the project by providing four pilots, one mission director and three avionics technicians.

Left: Unmanned Aircraft System (UAS) Coyote® ready to be launched aboard a NOAA P-3 aircraft. Right: The in-flight monitoring of the Coyote® data from the pilot station aboard the NOAA P-3.
[Photo Credit: NOAA/AOML]

Coyote®

Location: Avon Park, FL
Dates: September
Mission: Clear Air Testing

The Coyote® has been developed as an expendable UAS deployed from an A-size sonobuoy tube to perform intelligence, surveillance and reconnaissance missions while the host aircraft remains in safe airspace. NOAA has adapted the Coyote® for launch into a tropical cyclone to study the interaction between the sea surface and atmosphere and its influence on hurricane development. A preliminary test for this will occur in September on a clear day over land to examine the airframe's readiness for launch into a true hurricane. A WP-3D Hurricane Hunter will launch the UAS over a specified area where it will be piloted from the plane. Observers both in the plane and on the ground will assess the data the UAS transmits and its readiness for use in a storm.

Hexacopter

Location: Canadian Pacific Coast
Dates: Until September 30, 2014
Mission: Aerial Imaging of Orcas

Canadian and NOAA scientists are using a hexacopter to image killer whales for individual identification. Animal condition and body markings will also be assessed.

Picture of Orca whales taken from the Hexacopter.
[Photo credit: NOAA]

Location: Aleutian Islands, Alaska
Dates: September 21 – October 12, 2014
Mission: Steller Sea Lion Fall Female Capture Cruise

National Marine Mammal Laboratory (NMML) intends to image nearly 40 sites for groups of sea lions. In particular, a reproductive adult female must be present for capture, sampling, and eventual release. After capture, the APH-22 hexacopter will be used to obtain aerial images of the female. The images collected by the UAS will be used to measure the sea lion form images to compare the measurements collected in hand. UAS flights will be conducted as one of several mission objectives during the cruise aboard a vessel operated by a crew with experience in Alaska. This portion of the western distinct population segment of Steller sea lions is declining at a rapid rate which is impeding the recovery of this *Endangered Species* Act protected population.

Recovery of a UAS Hexacopter with LTJG Van Helker and Pilot-in-Command Vehicle Operator Katie Sweeney in June 2014. This was a flight conducted on Attu Island, near Cape Wrangell, AK, to survey endangered Steller sea lions. They flew 17 successful survey flights over the course of a two week cruise through the Aleutian Islands while on board the United States Fish and Wildlife Service (USFWS) Research Vessel *Tiglax*.

[Photo Credit: NOAA]

OMAO Partnerships

United States Senate Committee on Commerce, Science, and Transportation – Office of Ranking Member, Senator John Thune (R-SD)

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

LT Lewis is currently on detail to the Committee and the office of Ranking Member Thune where she will be 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 Joe Phillips, NOAA Commissioned Officer Corps

Members of the NOAA Commissioned Officer Corps carry out NOAA's mission in remote locations across the globe. LTJG Phillips 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

The NOAA liaison to the Oceanographer of the Navy 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. Starting in July, CDR Van Westendorp will serve as the interface for the Oceanographer of the Navy between Navy and U.S. Federal Agencies including NOAA.

Department of Defense and NOAA's Office of Coast Survey

Location: Silver Spring, MD

Embedded Liaison: LCDR Matthew Wingate, 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. LCDR Wingate 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: CDR Jeremy Adams, NOAA Commissioned Officer Corps

As the NOAA liaison to the United States Coast Guard (USCG), CDR Adams maintains a current and comprehensive knowledge of interagency activities and policies related to the USCG and NOAA. He identifies potential conflict or benefit issues for analysis and evaluation, conducts appropriate assessments and studies, and serves as the interface between NOAA and the USCG. CDR 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.

Department of State - North Atlantic Treaty Organization – Science and Technology Organization, Centre for Maritime Research and Experimentation

Location: Le Spezia, Italy

Embedded Liaison: ENS Kevin Michael, NOAA Commissioned Officer Corps

As the NOAA liaison to the North Atlantic Treaty Organization (NATO), Centre for Maritime Research and Experimentation (CMRE), ENS Michael will be part of their unmanned systems engineering team. CMRE is a world-class scientific research and experimentation facility that organizes and conducts scientific research and technology development, centered on the maritime domain, delivering innovative and field tested science and technology solutions to address defense and security needs of the Alliance. ENS Michael will assist with the development of unmanned systems that have the ability to sense, comprehend, predict, communicate, plan, make decisions, and take appropriate action to achieve mission goals.

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 2014 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

2014 Current TAS Placements Blogs – http://teacheratsea.noaa.gov/2014/index.html

NOAA Ship *Thomas Jefferson*
Name: Ms. Laura Guertin
School: Penn State Brandywine – Media, PA
Cruise: Hydrographic Survey, September 2 – 19, 2014
Blog: http://teacheratsea.noaa.gov/2014/guertin.html

NOAA Ship *Henry B. Bigelow*
Name: Ms. Sue Zupko
School: Weatherly Heights Elementary – Huntsville, AL
Cruise: Autumn Bottom Trawl Survey (Leg 1), September 8 – 19, 2014
Blog: http://teacheratsea.noaa.gov/2014/zupko.html

NOAA Ship *Nancy Foster*
Name: Ms. Amy Orchard
School: Arizona-Sonora Desert Museum – Tuscon, AZ
Cruise: Florida Keys National Marine Sanctuary survey, September 15 – 30, 2014
Blog: http://teacheratsea.noaa.gov/2014/orchard.html

NOAA Ship *Henry B. Bigelow*
Name: Ms. Janelle Harrier-Wilson
School: Lanier Middle School – Sugar Hill, GA
Cruise: Autumn Bottom Trawl Survey (Leg 2), September 23 – October 4, 2014
Blog: http://teacheratsea.noaa.gov/2014/harrier-wilson.html

NOAA Teacher at Sea, Suzanne Acord, is shown here aboard one of NOAA Ship *Oscar Elton Sette's* small boats during a cruise where scientists conducted a Kona Integrated Ecosystem Assessment. If you look on the horizon to the right of Suzanne's shoulder, you can see NOAA Ship *Oscar Elton Sette* in the distance.
[Photo Credit: NOAA]

Are you interested in becoming part of the NOAA Teacher at Sea Program?
Do you know someone that would be? You're in luck!
They're now accepting applications until the end of September!

Spread the word - the 2015 NOAA Teacher at Sea application is now online.
The deadline for applications--including letters of recommendation--is September 30, 2014 at 5:00 p.m. Eastern Time.
------->Preview the application: http://tinyurl.com/mbodjrm
------->Apply online here: http://tinyurl.com/l3txt9f
And if you're a TAS alum from 2013 or earlier, check out our alumni application! http://tinyurl.com/on4rba7

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

From left to right: Nick Jeremiah, NOAA Diving Center; LTJG Dan Langis, Pacific Marine Environmental Laboratory; LT Justin Keesee, NOAA Diving Center; Todd Bennett, Northwest Fisheries Science Center; CDR Joel Dulaigh, NOAA Diving Center; LCDR Nicola VerPlank, NOAA Office of Ocean and Atmospheric Research; and CAPT Mark Pickett, NOAA Diving Center

Every day is Earth Day at NOAA, but this year local NOAA divers gathered to commemorate Earth Day by participating in the Western Regional Center's Restoration Day on April 24, 2014. Divers removed 75 lbs. of trash from Lake Washington. Trash included various pipes, a tire, glass bottles and aluminum cans, and an endless amount of, oddly enough, fully intact clay pigeons.
[Photo: NOAA Dive Center]

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 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 9 specialized aircraft. Together, OMAO and the NOAA Corps support nearly all of NOAA's missions.

NOAA has the largest fleet of civilian 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 turboprop "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. 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 snowpack surveys for spring flood forecasts.

The NOAA fleet provides immediate response capabilities for unpredictable events. For example, after Hurricane Sandy, NOAA ships *Thomas Jefferson* and the newly commissioned *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 2011, OMAO's Aero Commander and Jetprop Commander aircraft conducted snow surveys, which increased the accuracy of National Weather Service's flood forecasting during a record year of snow and floods. In 2010, the NOAA fleet and the NOAA Corps played a major role in the response to the BP Deepwater Horizon oil spill, conducting extensive studies in the Gulf of Mexico to monitor the health of the ecosystem. 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. As NOAA's fleet continues to age, maintenance costs steadily increase. Operational costs have increased as well, driven largely by rising fuel costs. 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 are also continuing our effort 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. We transitioned our basic NOAA Corps officer training class to 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.

Finally, we continue to expand our partnerships with other federal agencies. We are proud of our longstanding and fruitful working relationships with the U.S. Air Force, U.S. Coast Guard, U.S. Navy, and U.S. Public Health Service and through the Interagency Working Group on Facilities and Infrastructure, continue facilitating cross-agency cooperation for the federal fleet of research and survey ships. 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.

NOAA Commissioned Officer Corps

– Supporting NOAA's Science, Service, and Stewardship –

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 2012 after Hurricane Sandy, seafloor sonar surveys completed by NOAA ships and small boats helped reopen Baltimore and Virginia ports, quickly restarting commerce and allowing Navy ships to return to port. New York and New Jersey ports were reopened, enabling emergency supplies to reach some of the hardest-hit areas. Maritime traffic resumed more quickly because NOAA embedded regional navigation managers within command centers.

- Hours after Sandy, NOAA planes and scientists conducted aerial surveys of the affected coastlines and immediately published the photos online, allowing emergency managers and residents to examine the damage even before ground inspections were permitted. These surveys are also vital to FEMA assessment teams and other on-the-ground responders and those managing oil spill clean-up and damage assessment. Over 3,000 miles of coastline have been surveyed, and over 10,000 images processed to document coastal damage and impacts to navigation.

- In 2011, OMAO's Aero Commander and Jetprop Commander aircraft conducted snow surveys, which increased the accuracy of National Weather Service's River Forecast Centers flood forecasting during a record year of snow and floods.

- 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 3 days after the storm.

- More than 80 officers, or a quarter of the NOAA Corps' total strength, were re-assigned and/or deployed to support the Deepwater Horizon disaster response in the Gulf in 2010.
    - Eight NOAA-owned vessels, or the entire Atlantic fleet, were also deployed to the Gulf of Mexico for spill response, as well as several aircraft.

- NOAA Corps officers who run NOAA's Ships support fish stock and marine mammal assessments, marine ecosystem studies, ocean exploration, coral reef preservation and protection, and mapping and charting around the United States and the Arctic, and more.

- NOAA Corps officers who run NOAA's Aircraft collect environmental and geographic data essential to studying climate change, assess marine mammal populations, survey coastal erosion, investigate oil spills, and improve hurricane and winter storm forecasts as they pilot the WP-3D Orion hurricane hunters and other aircraft that fly through, and above the storms to obtain critical forecasting data.

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

RECRUITING VIDEO

https://www.youtube.com/watch?v=hE5EnT7xwrs