NOAA Fleet Update

December 2018/January 2019

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

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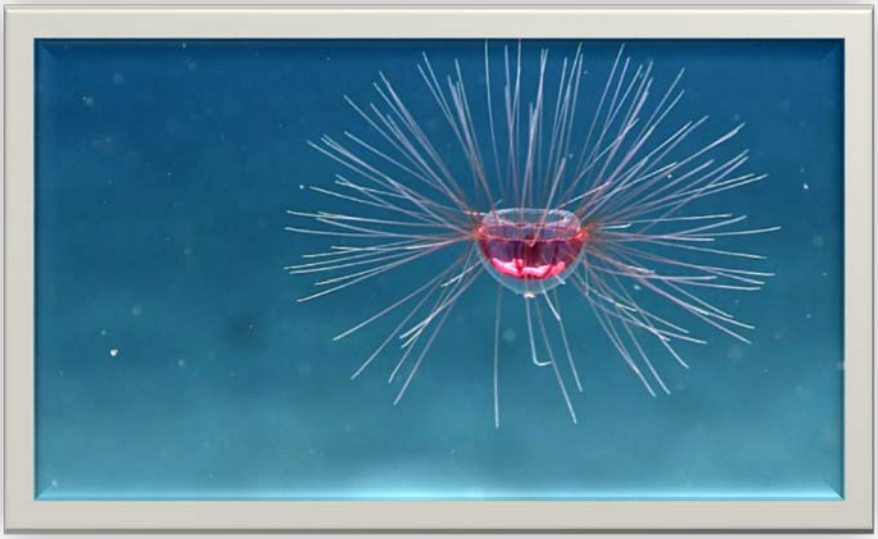
OMAO in the News

‘Psychedelic’ jellyfish may be ranging in ocean off South Carolina – The Post and Courier; November 26, 2018. A find from during a recent ROV dive aboard the NOAA *Ship Okeanos Explorer*.



Medusa Jellyfish
[Photo Credit: NOAA]

Hurricane season 2018 ends: A look at the strongest, strangest storms – AL.com; November 30, 2018

Weather Blog: 2018 hurricane season recap – CBS channel 12; November 30, 2018.
Multiple articles regarding the end of the 2018 Hurricane Season.

View of Hurricane Michael from a NOAA P-3 Hurricane Hunter
[Photo Credit: NOAA]

Saildrone and NOAA team up to monitor fish populations – CBS8.com; November 22, 2018
Scientists in La Jolla are using cutting edge technology to track schools of fish off the west coast.

NOAA Ship *Reuben Lasker*
[Photo Credit: NOAA]

Coast Guard Station New Orleans investigates mystery sailboat adrift in the Gulf of Mexico – WGNO ABC News; November 15, 2018. The Coast Guard is responding to a vessel adrift in the Gulf of Mexico approximately 80 nautical miles south of Cape San Blas, Florida, Wednesday. Watch standers at Coast Guard Sector Mobile received a report at approximately 2 p.m. from crewmembers aboard a NOAA ship, the *Gordon Gunter,* that a 30-foot white sailboat named My Time appeared to be floating adrift.

NOAA Ship *Gordon Gunter* departing from Pascagoula, Mississippi
[Photo Credit: NOAA]

Major campaign aims to unravel exactly what is in wildfire smoke – E&E News; November 13, 2018
A group of U.S. agencies is in the midst of the most detailed study ever done of the enormous plumes of fire-generated smoke that can sometimes cross the entire country before they dissipate. NOAA Twin Otter aircraft are assisting with this study.

NOAA Twin Otter
[Photo Credit: Lieutenant Lindsey Norman, NOAA]

Océano Profundo 2018: Exploring Deep-sea Habitats off Puerto Rico and the U.S. Virgin Islands – NOAA Corps and the *Okeanos Explorer's* Wardroom Careers – NOAA Office of Ocean Expoloration and Research; November 12, 2018.
A look at the highly trained and dedicated NOAA Corps officers in the *Okeanos Eplorer's* wardroom.

NOAA Ship *Okeanos Explorer* wardroom
[Photo Credit: Debi Blaney, NOAA]

NOAA Commissioned Officer Corps

OMAO and the NOAA Corps are an integral part of NOAA and our officers operate OMAO's research and survey fleet of 16 ships and nine aircraft. Mission areas can range from launching a weather balloon at the South Pole, conducting hydrographic or fishery surveys in Alaska, maintaining buoys in the tropical Pacific, flying snow surveys over the Midwest, or flying our "Hurricane Hunter" aircraft into, or above, hurricanes.

Basic Officer Training Class (BOTC) 133 Selection Board

A selection board convened August 15, 2018 to make selections for BOTC 133. Thirteen names were forwarded to the Secretary of Commerce for temporary appointment and all were signed and approved. BOTC 133 is scheduled to commence January 6, 2019.

Applications Being Accepted

The NOAA Corps is currently accepting applications for BOTC 134. The application deadline is January 18, 2019 to receive an interview. A selection board will convene March 2019. Additional information may be found on the NOAA Corps website and BOTC 134 applicants may start the application process, utilizing the online NOAA Corps E-Recruit System.

Recruiting Events

The NOAA Corps recruiting team has wrapped up for 2018. The recruiting team will be attending career fairs again in the spring of 2019.

Recruiting Display
[Photo Credit: NOAA Corps Recruiting]

Basic Officer Training Class 132

BOTC 132 takes the oath of office at their graduation ceremony in New London, Connecticut
[Photo Credit: Lieutenant Commander Chad Meckley, NOAA]

On Tuesday, November 20, 2018, NOAA Corps BOTC 132 and Coast Guard Officer Candidate School Class 1-19 had their graduation ceremony at Coast Guard Academy in New London, Connecticut. The new NOAA Corps ensigns will now have a week of underway training and a week of Bridge Resource Management training prior to reporting to their first duty station (listed below) in December.

Alejandro J. Amezcua	Initial Flight Training	Lakeland, Florida
Andie M. Cuiffo	NOAA Ship *Oregon II*	Pascagoula, Mississippi
Jaime M. Hendrix	NOAA Ship *Oscar Dyson*	Kodiak, Alaska
Gabriella E. McGann	NOAA Ship *Rainier*	Newport, Oregon
Nicole B. Morgan	NOAA Ship *Hi'ialakai*	Honolulu, Hawaii
Nicolas B. Osborn	NOAA Ship *Okeanos Explorer*	Davisville, Rhode Island
Eben T. Smith	NOAA Ship *Bell M. Shimada*	Newport, Oregon
Thomas A. Smith	NOAA Ship *Gordon Gunter*	Pascagoula, Mississippi
John D. B. Stephens	NOAA Ship *Fairweather*	Ketchikan, Alaska
Julia M. Waldsmith	NOAA Ship *Thomas Jefferson*	Norfolk, Virginia

OMAO's Ships and Centers

OMAO's Ship Tracker (screen shot below) shows information about the location - present and past - of our fleet of research and survey ships. Please note: To access Ship Tracker you must have 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.

National

OMAO'S MARINE OPERATIONS

Director of Marine Operations: Mr. Troy Frost

OMAO's Marine Operations oversees the operations of OMAO's ships and the three regional Centers, including the Marine Operations Center-Pacific, Marine Operations Center-Atlantic, and Marine Operations Center-Pacific Islands. Employees of Marine Operations are stationed nationwide to provide strategic, administrative, engineering, maintenance, electronic, budgetary, and personnel support to the OMAO fleet. Each year these ships conduct dozens of missions to assess fish and marine mammal stocks, conduct coral reef research, collect seafloor data to update nautical charts, and explore the ocean.

New Castle, New Hampshire

NOAA Ship *Ferdinand R. Hassler*

Commanding Officer: Commander Matthew Jaskoski/ Lieutenant Commander Mark Blankenship

Primary Mission Category: Hydrographic Surveys

Depart: New Castle, New Hampshire

Arrive: New Castle, New Hampshire

Ship Status: The ship is currently alongside in homeport prior to their scheduled drydock repair period starting in early January. On December 17, 2018, the ship will be conducting a Change of Command ceremony in which Lieutenant Commander Mark Blankenship will relieve Commander Matthew Jaskoski.

Newport, Rhode Island

NOAA Ship *Henry B. Bigelow*

Commanding Officer: Commander Jeffrey Taylor/ Captain William Mowitt

Primary Mission Category: Fisheries Research

Depart: Newport, Rhode Island

Arrive: Newport, Rhode Island

Ship Status: The ship is currently in homeport conducting a scheduled dockside repair that is scheduled to continue through mid-February. On December 14, 2018, the ship will be conducting a Change of Command ceremony in which Captain William Mowitt will relieve Commander Jeffrey Taylor.

Davisville, Rhode Island

NOAA Ship *Okeanos Explorer*

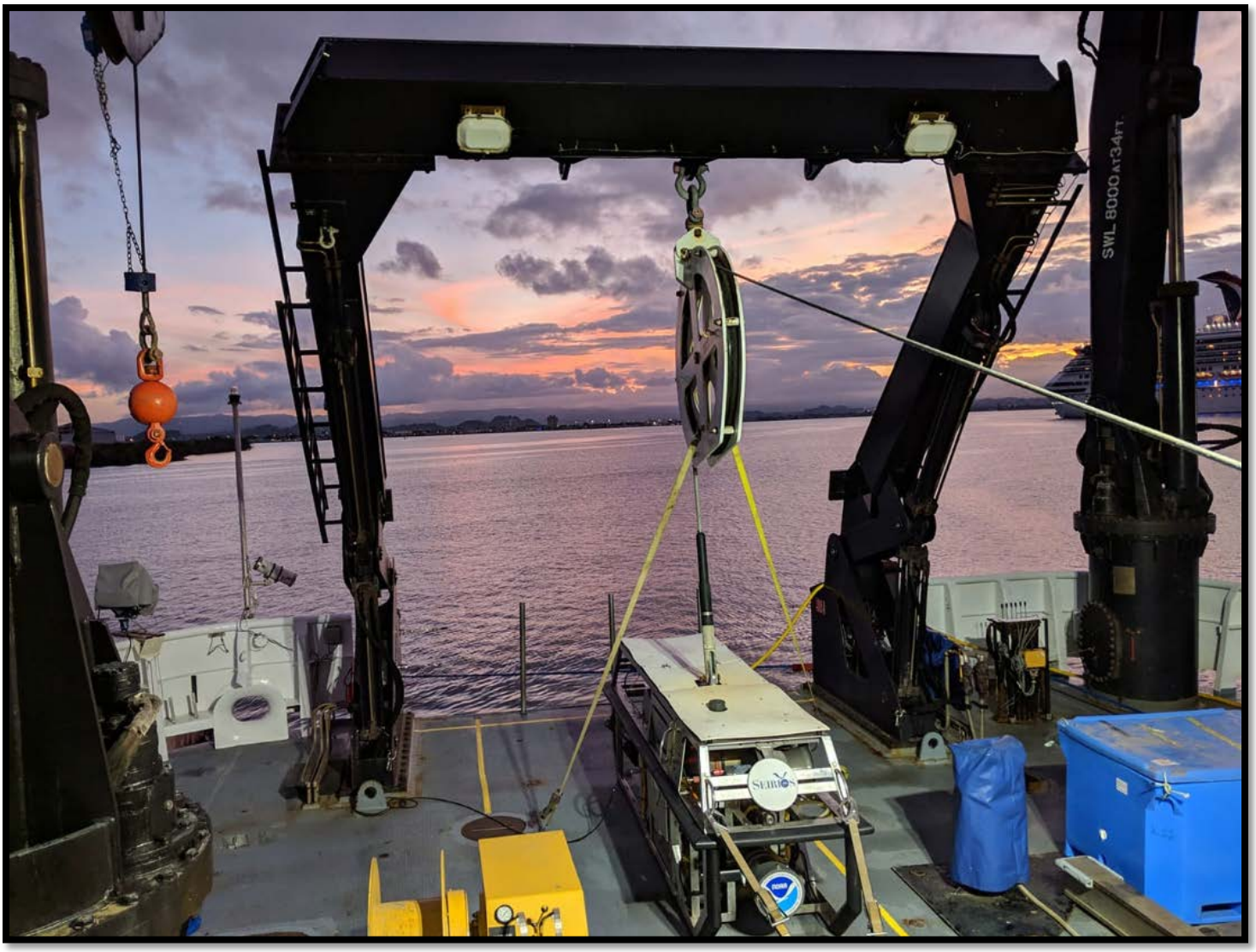
Commanding Officer: Commander Eric Johnson

Primary Mission Category: Oceanographic Exploration and Research

Depart: San Juan, Puerto Rico

Arrive: Charleston, South Carolina

Ship Status: The ship will be conducting exploratory mapping operations in three adjacent areas east of Blake Plateau, northeast of the Bahamas. The U.S. Extended Continental Shelf Project Office designated these areas as high priority for bathymetric data collection. Information collected will be used to support U.S. and Bahamas boundary negotiation objectives.



Final preparation complete prior to NOAA Ship Okeanos Explorer getting underway from Puerto Rico
[Photo Credit: Ensign Anna Hallingstad, NOAA]

Norfolk, Virginia

NOAA Ship *Thomas Jefferson*

Commanding Officer: Captain Christiaan van Westendorp

Primary Mission Category: Hydrographic Surveys

Depart: Norfolk, Virginia

Arrive: Norfolk, Virginia

Ship Status: Ship is currently in homeport for the winter and will start a scheduled drydock repair period in late January.

NOAA Ship *Thomas Jefferson*

[Photo Credit: NOAA]

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

Commanding Officer: Captain David Zezula

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

OMAO's Marine Operations Center – Atlantic in Norfolk, Virginia.

[Photo Credit: Lieutenant Commander Meghan McGovern, NOAA]

Charleston, South Carolina

NOAA Ship *Nancy Foster*

Acting Commanding Officer: Commander George Miller

Primary Mission Category: Oceanographic Research, Environmental Assessment

Depart: Charleston, South Carolina

Arrive: Charleston, South Carolina

Ship Status: The ship is currently in homeport for the winter with the next scheduled project in mid-January.

NOAA Ship *Nancy Foster* departs New York, New York for the Harmful Algal Bloom Cyst project

[Photo Credit: NOAA]

NOAA Ship *Ronald H. Brown*

Commanding Officer: Captain Daniel Simon

Primary Mission Category: Oceanographic Research, Environmental Assessment

Depart: Charleston, South Carolina

Arrive: Charleston, South Carolina

Ship Status: The ship is currently in homeport conducting a scheduled dockside repair period through late January.

NOAA Ship *Ronald H. Brown* servicing a buoy

[Photo Credit: NOAA]

Pascagoula, Mississippi

NOAA Ship *Pisces*

Commanding Officer: Commander Nicholas Chrobak

Primary Mission Category: Fisheries Research

Depart: Pascagoula, Mississippi

Arrive: Pascagoula, Mississippi

Ship Status: The ship is currently alongside in homeport and will start a scheduled drydock period in December.

NOAA Ship *Oregon II*

Commanding Officer: Master David Nelson

Primary Mission Category: Fisheries Research

Depart: Pascagoula, Mississippi

Arrive: Pascagoula, Mississippi

Ship Status: The ship is currently alongside in homeport and will start a scheduled dockside repair period in early December.

NOAA Ship *Gordon Gunter*

Commanding Officer: Commander Lindsay Kurelja
Primary Mission Category: Fisheries Research
Depart: Pascagoula, Mississippi
Arrive: Pascagoula, Mississippi
Ship Status: The ship is currently alongside in homeport and undergoing a scheduled dockside repair period in December.

San Diego, California

NOAA Ship *Reuben Lasker*

Commanding Officer: Commander Chad Cary
Primary Mission Category: Fisheries Research
Depart: San Diego, California
Arrive: San Diego, California
Ship Status: The ship is currently alongside in homeport and will start a scheduled dockside repair period in December.

NOAA Ship *Reuben Lasker* underway
[Photo Credit: Nicole Turpin, NOAA]

Newport, Oregon

NOAA Ship *Rainier*

Commanding Officer: Commander Benjamin Evans
Primary Mission Category: Hydrographic Surveys
Depart: San Diego, California
Arrive: Newport, Oregon
Ship Status: The ship will be alongside in Newport, Oregon for a scheduled extended dockside repair period through February.

NOAA Ship *Bell M. Shimada*

Commanding Officer: Captain Arthur Stark

Primary Mission Category: Fisheries Research

Depart: Newport, Oregon

Arrive: Newport, Oregon

Ship Status: The ship will be alongside in Newport, Oregon for a scheduled dockside repair period through January.

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

Commanding Officer: Captain Keith Roberts

MOC-P serves as a homeport for two NOAA ships. Its personnel provide administrative and logistical support, and manage the day-to-day operations, for the research and survey ships in NOAA's Pacific fleet. Each year, these ships conduct dozens of missions to assess fish and marine mammal stocks, conduct coral reef research, collect seafloor data to update nautical charts, and explore the ocean. MOC-P also serves as the home of OMAO's Marine Operations.

NOAA Ships *Bell M. Shimada* and *Rainier* in homeport after a successful end to their field seasons

[Photo Credit: Lieutenant Timothy Sinquefield, NOAA]

Ketchikan, Alaska

NOAA *Ship Fairweather*
Commanding Officer: Commander Marc Moser
Primary Mission Category: Hydrographic Surveys
In port: Seattle, Washington
Ship Status: The ship is in a scheduled dry dock repair period in Seattle, Washington through February.

NOAA Ship Fairweather in the Gulf of Alaska
[Photo Credit: NOAA]

Kodiak, Alaska

NOAA *Ship Oscar Dyson*
Commanding Officer: Commander Sarah Duncan
Primary Mission Category: Fisheries Research
In port: Seattle, Washington
Ship Status: The ship is in a dry dock repair period in Seattle, Washington through January.

Honolulu, Hawaii

NOAA Ship *Hi'ialakai*
Commanding Officer: Commander Colin Little
Primary Mission Category: Oceanographic Research, Environmental Assessment
In port: Vallejo, California
Ship Status: The ship is in a scheduled dry dock repair period in Vallejo, California through February.

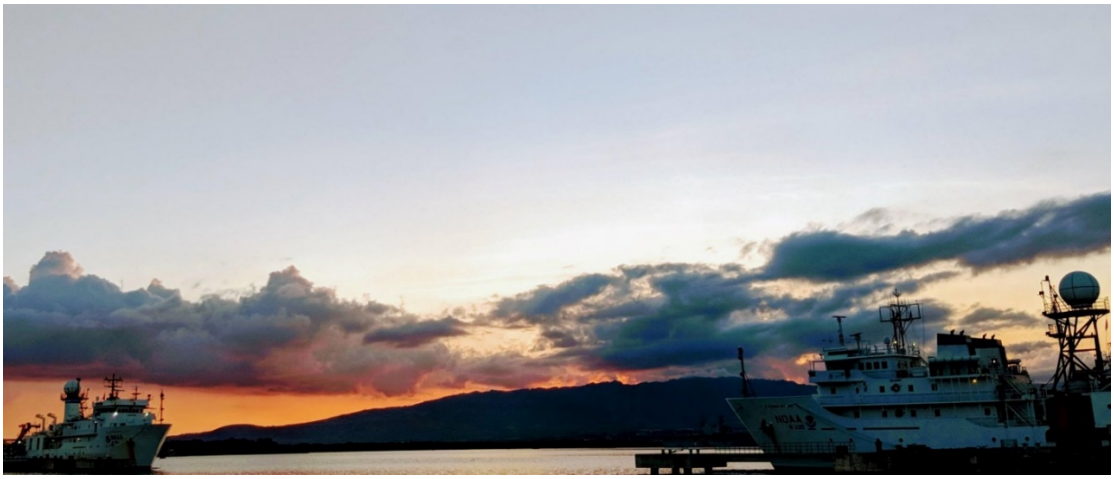
NOAA Ship *Oscar Elton Sette*

Commanding Officer: Commander Héctor Casanova
Primary Mission Category: Fisheries Research
Depart: Pearl Harbor, Hawaii
Arrive: Pearl Harbor, Hawaii
Ship Status: Ship will be alongside in Pearl Harbor, Hawaii for a scheduled dockside repair period through January.

NOAA Ship *Oscar Elton Sette* off the coast of the big island of Hawaii
[Photo Credit: Commander Hung Tran, USPHS]

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

Commanding Officer: Commander Jeffrey Shoup
MOC-PI serves as a homeport for two NOAA ships. Its personnel provide administrative and logistical support, and manage the day-to-day operations for the ships in NOAA's Pacific Islands' fleet and for ships operating in the Western Pacific. Each year, these ships conduct dozens of missions to assess fish and marine mammal stocks, conduct coral reef research, collect seafloor data to update nautical charts, and explore the ocean.



NOAA Ships *Hi'ialakai* and *Oscar Elton Sette* moored in Hawaii
[Photo Credit: Junior Engineer Jason Dlugos, NOAA]

OMAO's Aircraft

Lakeland, Florida

NOAA's fleet of nine manned aircraft is based at OMAO's Aircraft Operations Center (AOC). Located at Lakeland Linder Regional Airport in Lakeland, Florida, the officers, crew, and scientists from AOC provide capable, mission-ready aircraft and professional crews to the scientific community. AOC is committed to the safe, efficient and economical use of NOAA aircraft and has more than four decades of experience developing, coordinating and successfully and safely conducting airborne environmental data gathering missions.

P3 "Hurricane Hunter" [Tail ID# N42RF]

The aircraft will be used for training and scheduled maintenance at AOC.

NOAA P3

[Photo Credit: Michael Mascaro, NOAA]

P3 "Hurricane Hunter" [Tail ID# N43RF]

Rewinging of this aircraft is complete. Instrumentation and outfitting will continue at AOC until mission-ready on June 1, 2019.

G-IV "Hurricane Hunter" [Tail ID# N49RF]

The aircraft is in scheduled phase maintenance for the month of December.

NOAA G-IV

[Photo Credit: NOAA]

King Air [Tail ID# N68RF]

The aircraft will stand by for Emergency Response tasking following GRAV-D test flights.

Who: Officers and crew of OMAO/NOAA Corps along with scientists from NOAA's National Ocean Service, National Geodetic Survey Grav-D Program.

What: Gravity for the Redefinition of the American Vertical Datum (GRAV-D) instrument test flights

When: December 8 – December 19

Where: Lakeland, FL

Why: Test flights to explore the capability of using AOC's King Air 350 to serve the Grav-D mission. Grid pattern flight lines will be flown at 20,000 feet while collecting GPS and inertial data to update the U.S. vertical datum. A vertical datum is a base measurement point (or set of points) from which all elevations are determined.

NOAA King Air
[Photo Credit: NOAA]

Jet Prop Commander [Tail ID# N45RF]

Training and scheduled upgrades will follow the Annual Safety meeting.

Who: Officers and crew of OMAO/NOAA Corps along with scientists from NOAA's National Weather Service (NWS), National Operational Hydrologic Remote Sensing Center

What: Water Resource Surveys (Soil Moisture)

When: December 15 – December 31

Where: Surveys will be conducted over Minnesota, North Dakota, South Dakota, Montana, Maine, New Hampshire, and Vermont.

Why: The aircraft will conduct Low level (500 feet) surveys to collect soil moisture data for NWS River Forecast Centers. This data is used by NWS Weather Forecast Offices and NWS River Forecast Centers for determining baseline moisture levels prior to the winter snow fall. SWE (Snow Water Equivalent) data will be collected during the winter months and used for river and flood forecasts, water supply forecasts, and spring flood outlooks.

Jet Prop Commander
[Photo Credit: NOAA]

Twin Otter [Tail ID# N46RF]
Aircraft is inducted into scheduled maintenance in Calgary, Alberta. Due out February 2019.

Twin Otter [Tail ID# N48RF]
Who: Officers and crew of OMAO/NOAA Corps along with scientists from NOAA's National Weather Service (NWS), National Operational Hydrologic Remote Sensing Center
What: Water Resource Surveys (Soil Moisture)
When: December 8 – December 31
Where: Surveys will be conducted over Minnesota, North Dakota, South Dakota, Montana, Maine, New Hampshire, and Vermont.
Why: The aircraft will conduct Low level (500 feet) surveys to collect soil moisture data for NWS River Forecast Centers. This data is used by NWS Weather Forecast Offices and NWS River Forecast Centers for determining baseline moisture levels prior to the winter snow fall. SWE (Snow Water Equivalent) data will be collected during the winter months and used for river and flood forecasts, water supply forecasts, and spring flood outlooks.

Twin Otter [Tail ID# N56RF]
Who: Officers and crew of OMAO/NOAA Corps along with scientists from NOAA's National Marine Fisheries Service (NMFS), Northeast Fisheries Science Center (NEFSC).
What: Northeast Atlantic Right Whales
When: December 8 – December 31
Where: Based out of Cape Cod, Massachusetts. Possible survey location to include Moncton, New Brunswick, Canada. The survey area will cover coastal waters off the Maritime Provinces.
Why: The objectives of this project are to provide real time Right Whale sighting information to commercial shipping interests in an effort to reduce ship-whale collisions, to better understand the distribution and abundance, and to collect photographic images. With as few as 400 of the species remaining, surveillance flights to track their migration patterns are important for conservation and recovery efforts.

Twin Otter [Tail ID# N57RF]
Who: Officers and crew of OMAO/NOAA Corps along with scientists from NOAA's National Marine Fisheries Service (NMFS), Northeast Fisheries Science Center (NEFSC).
What: Southeast Atlantic Right Whales
When: December 8 – December 31
Where: Based out of St. Simons, Georgia
Why: The objectives of this project are to provide real time Right Whale sighting information to commercial shipping interests in an effort to reduce ship-whale collisions, to better understand the distribution and abundance, and to collect photographic images. With as few as 400 of the species remaining, surveillance flights to track their migration patterns are important for conservation and recovery efforts.

Twin Otter
[Photo Credit: NOAA]

Unmanned Aerial System (UAS) Section

The UAS Section provides nationwide policy input, oversight, and guidance for all of NOAA's UAS operations. The UAS Section of AOC is staffed by a team of aviation professionals who specialize in operational UAS implementation. The UAS Section tracks all small UAS (sUAS) operations for NOAA to include aircraft hours, types, pilot qualifications, and pilot training. The UAS Section also coordinates airspace approvals for operations within the United States National Airspace System, special use airspace, and foreign airspace. AOC conducts a thorough review of all projects by applying established risk management procedures to UAS missions, including an airworthiness review of all aircraft. This support is provided to NOAA Line Offices and partners to further develop and refine the use of sUAS for NOAA's research and data collection.

OMAO'S AIRCRAFT OPERATIONS CENTER (AOC)

Commanding Officer: Captain Timothy Gallagher

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

AOC personnel and aircraft in the hangar at the NOAA Aircraft Operations Center in Lakeland, Florida
[Photo Credit: NOAA]

Unmanned Systems Support

Nationwide

APH-22 Hexacopter

Mission: SWFSC Marine Mammal Photogrammetry
The South West Fisheries Science Center continually collects aerial images to estimate the size, body condition and nutritional status of marine mammals along the California coast. UAS photogrammetry will be conducted opportunistically on species, including whales, pinnipeds, and turtles.

Location: Atlantic Northeast
Mission: NEFSC Training Areas
The Northeast Fisheries Science Center has been approved to conduct proficiency training and manufacturer training at the following locations; Woods Hole Pier, Griswold Point Connecticut, and Waquoit Bay NERR. These locations will allow the pilots within NEFSC to remain proficient with the APH-22 and to fine-tune flight operations to increase their success for future operations.

Location: Hawaiian Archipelagos, Hawaii
Mission: PIFSC Hawaiian Monk Seal Research Program
Population assessment of Hawaiian monk seals at Nihoa and Mokumanamana. If conditions allow, the APH-22 will be launched and controlled from a small boat and flown to the island to photograph and document Hawaiian monk seals on shore. The APH-22 has the potential to greatly increase our ability to assess the population of monk seals at these sites when swell conditions do not allow small boats to land people on shore.

Location: Oahu, Hawaii
Mission: PIFSC APH-22 Training
The Pacific Islands Fisheries Science Center utilizes the location at the Kawainui Model Airplane Field to conduct training and proficiency flights. This allows APH-22 operators to maintain proficiency for future operations at a reduced cost. Training flights are also approved from NOAA small boats.

Location: Antarctica
Mission: SWFSC Wildlife Mapping
The South West Fisheries Science Center Antarctic team deployed to Antarctica on December 1 and will collect aerial images to estimate the size, body condition and nutritional status of marine wildlife along the Cape Shirreff coastline. The team will utilize the APH-22 alongside the new APH-28.

APH-28 Hexacopter

Location: La Jolla, California
Mission: APH-28
The Southwest Fisheries Science Center hosted a training class for the APH-28 in November. The new aircraft has increased flight time that will enable scientists to collect more data per flight.

Location: Antarctica
Mission: SWFSC Wildlife Mapping
The South West Fisheries Science Center Antarctic team deployed to Antarctica on December 1 and will collect aerial images to estimate the size, body condition and nutritional status of marine wildlife along the Cape Shirreff coastline. This will be the first operational deployment of the new APH-28.

APH-17 Hexacopter / APH-22 Hexacopter / APO-42 Octocopter

Location: Descanso Ranch, California
Mission: APO-42/APH-22/APH-17 Training
Southwest Fisheries Science Center will be conducting test flights and training flights for their various platforms. Flights will be conducted under Federal Aviation Administration Part 107 rules for Small Unmanned Aircraft Systems and will consist of flight maneuvers, operating in all the control modes, emergency procedures, takeoffs, landings and photogrammetry.

SenseFly eBee RTK

Location: Corbin, Virginia
Mission: Training and Operations
East coast training is expected to continue at the National Geodetic Survey's Corban, Virginia facility in preparation for mapping missions.

FireFLY6 PRO

Location: Oahu, Hawaii
Mission: PIFSC Proficiency Training
The Kawainui model airplane field will be used monthly to perform proficiency flights for PIFSC operators. The main objective will be to practice hand launches, recoveries and locating targets. These flights are essential in providing the necessary skills needed for successful operations.

Location: Oahu, Hawaii
Mission: PIFSC Habitat Mapping
The PIFSC began habitat mapping flights on the North Shore of Oahu in September and will continue flights in the area of MCAS Kaneohe. The main objective for the first flights is to establish data collection and airspace procedures. Flights will continue monthly around Oahu. The FAA Waiver for continued and expanded operations in MCAS Kaneohe Bay's Class D airspace has been submitted.

HQ-55 Latitude

Location: Lakeland, Florida
Mission: Research
The HQ-55 Latitude is a new vehicle currently in development for NOAA. This new vehicle is expected to come conduct sea trials from the NOAA Ship *Ronald H. Brown* in May 2019. The aircraft is currently being prosed for the project 'Atomic 2020' in January-February 2020.

Blackswift S-2

Location: Oak Ridge, Tennessee
Mission: Research
The Blackswift S-2 is a new vehicle. Initial pilot training was conducted in November. An FAA Certificate of Authorization has been submitted for higher altitude flight operations. Sensor test flights are expected in December and the first few months of 2019.

DJI Phantom 4

Mission: NOS/RSD
The National Geodetic Survey's Remote Sensing Division in coordination with the Office of Coast Survey conducted shoreline mapping operations in Puerto Rico from the NOAA Ship *Thomas Jefferson* in November. Data will be evaluated in December with plans for 2019 deployments.

DJI Matrice 600 (M600) and DJI Matrice 210 (M210)

Mission: NOS/RSD and SWFSC
The National Geodetic Survey's Remote Sensing Division in coordination with the Southwest Fisheries Science Center's Santa Cruz Office conducted Salmon habitat surveys in California's American River in November. Sensor testing is expected to continue in December at the University of California Santa Barbara campus test site.

OMAO Partnerships

OMAO and the NOAA Commissioned Officer Corps provide key services and leadership to a number of federal agencies and external partners to help them meet their mission – and ours – and to better leverage federal resources.

United States Senate Committee on Commerce, Science, and Transportation

Location: Washington, District of Columbia
Detail: Lieutenant Commander Zachary Cress
LT Cress is currently on detail to the Committee with the staff of the Chair, Senator John Thune (R-SD), where he is assisting on activities pertaining to oceans, atmosphere, and fisheries policy, as well as other matters within the Committee's jurisdiction.

National Science Foundation

Location: South Pole, Antarctica
Embedded Liaison: Lieutenant (Junior Grade) Timothy Holland
Members of the NOAA Commissioned Officer Corps carry out NOAA's mission in remote locations across the globe. LT Friedlander is assigned to Antarctica where she serves as the Station Chief for NOAA's Atmospheric Research Observatory (ARO) at the Amundsen-Scott South Pole Station. The ARO at the Amundsen-Scott South Pole Station is a National Science Foundation facility used in support of scientific research related to atmospheric phenomena.

Department of Defense – U.S. Pacific Command

Location: Honolulu, Hawaii
Embedded Liaison: Captain Barry Choy
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

Location: Boulder, Colorado

Embedded Liaison: Captain Catherine Martin

The U.S. Northern Command (USNORTHCOM) 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 to include The Bahamas, Puerto Rico, and the U.S. Virgin Islands. The commander of USNORTHCOM is responsible for theater security cooperation with Canada, Mexico, and The Bahamas. The embedded NOAA liaison is linked closely with the activities within the region allowing for identification of opportunities and cooperation between USNORTHCOM and NOAA, and serves as a liaison between fostering greater situational awareness of NOAA response activities to natural disasters and Arctic activities.

Department of Homeland Security – U.S. Coast Guard

Location: Washington, DC

Embedded Liaison: Captain Kurt Zegowitz

As the NOAA liaison to the United States Coast Guard (USCG), Captain Zegowitz 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. Captain Zegowitz 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 Defense – U.S. Navy

Location: Washington, District of Columbia

Embedded Liaison: Commander Jason Mansour

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

Location: Stennis Space Center, Mississippi

Embedded Liaison: Lieutenant Laura Dwyer

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

Teacher at Sea Program

The mission of NOAA's Teacher at Sea Program (TAS) is to provide teachers hands-on, real-world research experience working at sea with world-renowned NOAA scientists, thereby giving them unique insight into oceanic and atmospheric research crucial to the nation. The program provides a unique opportunity for kindergarten through college-level teachers to sail aboard NOAA research ships to work under the tutelage of scientists and crew.

Since its inception in 1990, the program has enabled more than 800 teachers to gain first-hand experience of science and life at sea. By participating in this program, teachers enrich their classroom curricula with knowledge that can only be gained by living and working side-by-side, day and night, with those who contribute to the world's body of oceanic and atmospheric scientific knowledge. Please access former teacher at sea blogs which document their missions at sea and offer a wealth of information about the research being conducted as well as personal stories.

TAS Alumni Alex Eilers and Bhavna Rawal aboard the R/V Caretta at the Gulf of Mexico Teacher at Sea Alumni Workshop. [Photo Credit: Ryan Hawk, TAS]

Teacher at Sea Alumni Association:
Currently there are over 70 Teacher at Sea alumni reviewing the applications for the class of 2019 Teachers at Sea. Selections will be made in January 2019 and the official announcement will be in February 2019.

OMAO - NOAA Diving Program

Seattle, Washington

NOAA Diving Center and Program

OMAO manages and implements NOAA's Diving Program (NDP), which trains and certifies scientists, engineers, and technicians from federal, state, tribal governments, and the private sector to perform the variety of tasks carried out underwater to support NOAA's mission. NDP also has cooperative diving agreements with over 100 government agencies and academic institutions. NOAA has approximately 350 divers who perform over 8,000 dives per year and leverages its cooperative agreements to accomplish twice that number of dives contributing to scientific research. The NDP is headquartered at the NOAA Diving Center (NDC), which is located at the NOAA Western Regional Center in Seattle, Washington.

Upcoming events include: NOAA Diver and Divemaster classes in January at the Special Forces Underwater Operations School in Key West, Florida.

Innerspace Megalodon Closed Circuit Rebreather Training at the NOAA Diving Center held in early November
[Photo Credit: NOAA Dive Center]

NOAA Small Boat Program

Oversight of the NOAA Small Boat Fleet is a collaboration across OMAO, NMFS, NOS, OAR and NWS. The Small Boat Program (SBP) was established in 2004 to create policies and procedures to ensure safety in support of NOAA's field operations. Direction, technical and administrative support is provided by OMAO through the NOAA Small Boat Program Office. NOAA Line and Program Offices are responsible for acquisitions, operational funding and mission support. The NOAA Small Boat Safety Board is comprised of line offices, SBP, and SECO representatives and is charged with initiating policies and training, program metrics, and compliance.

Last month, NOAA's Thunder Bay National Marine Sanctuary (TBNMS) partnered with Great Lakes Environmental Research Laboratory (GLERL) to provide small boat and dive support to the National Centers for Coastal Ocean Science's (NCCOS) sampling mission. NOAA divers collected zebra and quagga mussels at multiple sites around Lake Ontario as part of an NCCOS-led effort to characterize contaminants in designated areas of concern. The non-indigenous mussels are a good tool for contaminant monitoring due to their high water-filtering capacity, propensity to bioaccumulate chemical contaminants with limited ability to metabolize them, sedentary habits, and widespread distribution on hard substrates in the region. The researchers from NCCOS, NOAA's Office of National Marine Sanctuaries, and NOAA's GLERL collect these species throughout the Great Lakes in support of NOAA's NCCOS Mussel Watch Program. NCCOS will analyze the mussels sampled for chemical contaminants (EPA priority pollutants and emerging chemicals of concern), micro-plastics, and biological health indicators of stress (DNA damage, abnormal metabolites, and other biomarkers). The results of the analysis will also be predictive of the state of other Great Lakes species, such as sport fish and waterfowl.

NOAA small boat R2604 (based out of GLERL Muskegon Field Station in Muskegon, MI) being loaded with supplies and equipment to sample mussels at the mouth of the Genesee River in Rochester, NY

[Photo Credit: NOAA]

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

The NOAA fleet provides immediate response capabilities for unpredictable events. For example, during the 2017 Hurricane season NOAA flight crews and scientists flew a combined 622.7 hours over the course of 120 sorties for hurricane surveillance, research, reconnaissance, and emergency response. NOAA's Lockheed WP-3D and Gulfstream IV-SP collected and provided vital data used by NOAA scientists for improved modeling, forecasting, and ensuring accurate forecasts provided to the public. NOAA's Beechcraft King Air 350 rapidly responded to demand from emergency managers, using state-of-the-art equipment to collect over 65,000 aerial images of damaged communities from Houston to the U.S. Virgin Islands and rapidly providing that imagery to first-responders and the public. On short notice, NOAA Ship Thomas Jefferson departed Florida for Puerto Rico and the U.S Virgin Islands to conduct surveys in and around ports. The priority tasking searched for sunken storm debris posing a threat to shipping traffic and a hazard to navigation. These post-storm surveys provided critical information regarding navigational safety for multiple vital ports.

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

NOAA Commissioned Officer Corps

– Honor, Respect, Commitment –

The NOAA Commissioned Officer Corps is one of the United States' seven Uniformed Services and commissioned officers serve with the 'special trust and confidence' of the President. NOAA Corps officers are an integral part of the National Oceanic and Atmospheric Administration, an agency of the U.S. Department of Commerce. With an authorized strength of 321 officers, the NOAA Corps serves throughout the agency's Line and Staff Offices to support nearly all of NOAA's programs and missions. The combination of commissioned service and scientific expertise makes these officers uniquely capable of leading some of NOAA's most important initiatives. The NOAA Corps is part of NOAA's Office of Marine and Aviation Operations and traces its roots back to the former U.S. Coast and Geodetic Survey, which dates back to 1807 and President Thomas Jefferson. The U.S. Coast and Geodetic Survey Corps was founded in 1917 to provide officers to command U.S. coastal survey ships and field survey parties locally and abroad. In 1970, NOAA was created to develop a coordinated approach to oceanographic and atmospheric research and subsequent legislation converted the commissioned officer corps to the NOAA Corps. The NOAA Corps today provides a cadre of professionals trained in engineering, earth sciences, oceanography, meteorology, fisheries science, and other related disciplines. Corps officers operate NOAA's ships, fly aircraft, manage research projects, conduct diving operations, and serve in staff positions throughout NOAA. The NOAA Corps celebrated its Centennial year in 2017.

Benefits of the NOAA Corps to the Nation

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

- In 2017, NOAA aircraft flew over 600 hours in support of storm reconnaissance, surveillance, research, and emergency response for Hurricanes Harvey, Irma, Jose, Maria, and Nate. NOAA Ship *Thomas Jefferson* conducted post-storm surveys of waterways of Puerto Rico following Hurricane Maria to help re-open the ports for maritime delivery of critical supplies to the island.
- In 2016, NOAA aircraft conducted research and reconnaissance missions into Hurricane Matthew, and provided post-storm flooding reconnaissance missions from Florida to Virginia with FEMA. NOAA Ship *Ferdinand Hassler* conducted post-storm surveys within of the ports of Charleston and Savannah within 48 hours to re-open the ports to maritime commerce, worth more than $5M per hour.
- In 2010, the NOAA fleet and the NOAA Corps played a major role in the response to the BP Deepwater Horizon oil spill in the Gulf of Mexico. NOAA's entire Atlantic fleet and over a quarter of the total strength of the NOAA Corps were deployed to the Gulf following the spill, developing mission plans and assisting response efforts.

OMAO/NOAA Corps Resources

OMAO Sites

- OMAO
- NOAA Corps

Two Pagers, Reports, and Informational Slide Decks

- **Monthly NOAA Fleet Update** - The latest version may always be found on the Office of Legislative and Intergovernmental Affairs website [http://www.legislative.noaa.gov/policybriefs.html].
- **Monthly Aircraft Flights and Mission Info Summary** - The latest version may always be found on the Office of Legislative and Intergovernmental Affairs website [http://www.legislative.noaa.gov/policybriefs.html].
- Tornado Formation, Intensity, and Path for the Southeast United States: Research Flight and Mission Info Recap - 2018
- Hurricane Irma Flight and Mission Info Recap - 2017
- Hurricane Maria Flight and Mission Info Recap - 2017
- OMAO two pager with Recent Mission Highlights – 2018
- OMAO Fleet Recapitalization Slide Deck – Building NOAA's 21st Century Fleet
- OMAO Fleet Recapitalization Questions and Answers (Q&As)
- NOAA Fleet Independent Review Team Final Report
- The NOAA Fleet Plan: Building NOAA's 21st Century Fleet

Other Web Resources

- OMAO Marine Operations
- OMAO Aircraft Operations
- OMAO on Facebook
- Hurricane Hunters on Facebook
- OMAO on Twitter
- Hurricane Hunters on Twitter
- OMAO Ship Tracker - (restricted to only .gov or .mil users)