National Weather Service CONOPS for Products, Impact-based Decision Support Services, and Training/Outreach to the U.S. Coast Guard

13 September, 2022[1]

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OVERVIEW

In March 2020, Dr. Louis Uccellini (former National Oceanic and Atmospheric Administration [NOAA] Assistant Administrator for Weather Services) and Rear Admiral Richard V. Timme (U.S. Coast Guard [USCG] Assistant Commandant for Prevention Policy) signed a national-level "*Memorandum of Agreement between USCG and NOAA/National Weather Service (NWS) Regarding the Management of Marine Weather Information*". Through this agreement (reference page 4), NWS provides USCG field units with weather information necessary for the safe and successful accomplishment of their assigned missions. While this document provides an overarching framework for interactions between USCG and NWS, it does not provide the detail necessary to carry out the objectives within. In addition, the USCG has no meteorology/forecasting arm internally. Thus, NWS has developed this Concept of Operations (CONOPS) for weather forecasting, Impact-based Decision Support Services (IDSS), and training that NWS will provide USCG nationwide in order to facilitate a comprehensive and consistent level of support to our USCG colleagues.

The NWS launched its Evolve effort in 2017, in recognition of increased vulnerability to extreme weather events and the need to provide enhanced IDSS. NWS Evolve focused on five objectives to help achieve a Weather-Ready Nation: 1) enhancing quality and consistency of IDSS at all levels of the organization; 2) building a flexible and nimble workforce the NWS needs to deliver science-based services through enhancing skills today and hiring for tomorrow; 3) improving effectiveness of forecasting in support of IDSS through a collaborative process that makes the best use of technology, reduces duplication, and ensures consistency of the forecast; 4) matching workforce to workload across the organization and building a stronger organizational structure to better meet the needs of NWS partners; and 5) supporting the innovation, science, technology, and culture required for NWS to continue improving over time.

During the development of this CONOPS, NWS Service Program Teams (SPTs) were tasked with identifying what IDSS was currently being provided to our partners. This team led an effort to solicit what IDSS was being provided to the USCG nationwide through an internal NWS survey. Marine SPT completed a milestone to document the IDSS Management System (IMS) - Marine Specific Impact Identification and Forecasting Requirements. By better understanding what the NWS is doing throughout the various service programs, we can help better define a more consistent IDSS outreach to our partners.

GOALS

1. To develop a document of detailed "best practices" for NWS to adopt nationwide in order to support the USCG's mission. These best practices fall into the following categories:
    a. NWS Forecast and Warning Products, Services, and Information Sources
    b. IDSS, and
    c. Training/Outreach.
2. To establish NWS as the primary source of weather information and support for the U.S. Coast Guard.

Cross-Organizational Responsibilities and Collaboration

The missions of the NWS and USCG align when it comes to safety of life and property. As agencies, the NWS and USCG have been working together since NOAA started in the early 1970's and earlier when the NWS used to be called the Weather Bureau. The NWS is the national expert on weather conditions and forecasting. As specified in the MOA, the USCG should be using NWS forecasts for all operational situations. This section will focus on the organizational structures of both agencies and what the cross-organizational responsibilities and collaboration look like at each level.

Beyond the transmission of weather information to vessels, this CONOPS endeavors to also assure the USCG is supplied with accurate weather and water information for daily and emergency operations. Imperative to NWS providing a consistent level of support is the ability for NWS to build relationships with appropriate USCG personnel to effectively serve their specific needs. NWS offices should know and regularly engage with USCG facilities and personnel in their area of responsibility, so they can provide Impact-based Decision Support Services (i.e., forecasts, briefings, and training) when needed. Conversely, the USCG should be able to easily reference their serving NWS office to request assistance with meeting their life-saving mission. This document provides that framework.

USCG also interacts significantly with the U.S. Navy for some of USCG's requirements. Specifically, the U.S. Navy provides marine and aviation enroute weather forecasts and Optimum Track Ship Routing (OTSR) to individual USCG vessels, upon request by the USCG. This CONOPS document from the NWS to USCG does not supersede or interfere with this ongoing service.

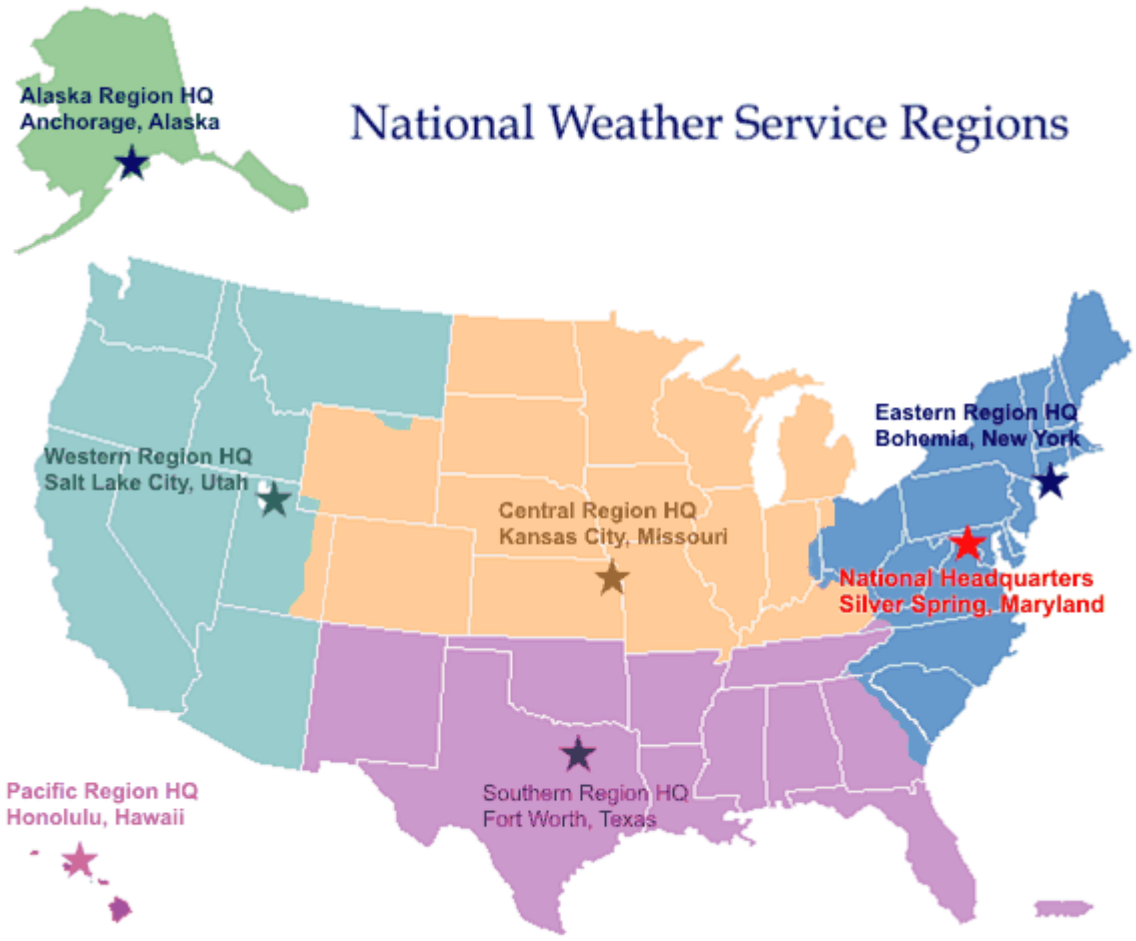
NWS and USCG Headquarters Collaboration

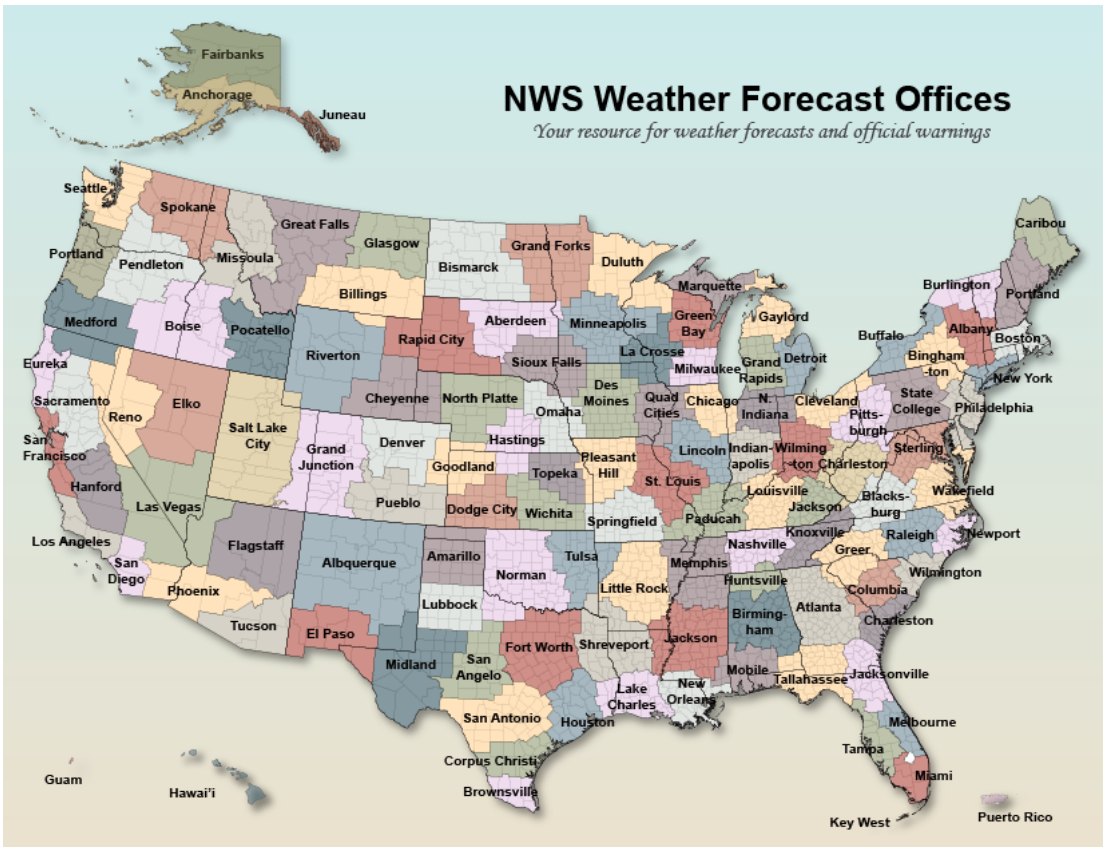
The Memorandum of Agreement (MOA) discussed in the opening paragraph focuses on high level responsibilities and collaboration of each agency, where the NWS creates forecast products for inland rivers, marine and open ocean areas and the USCG transmits this information to vessels via their radio transmission equipment. The NWS does not have this dissemination capability so the NWS relies

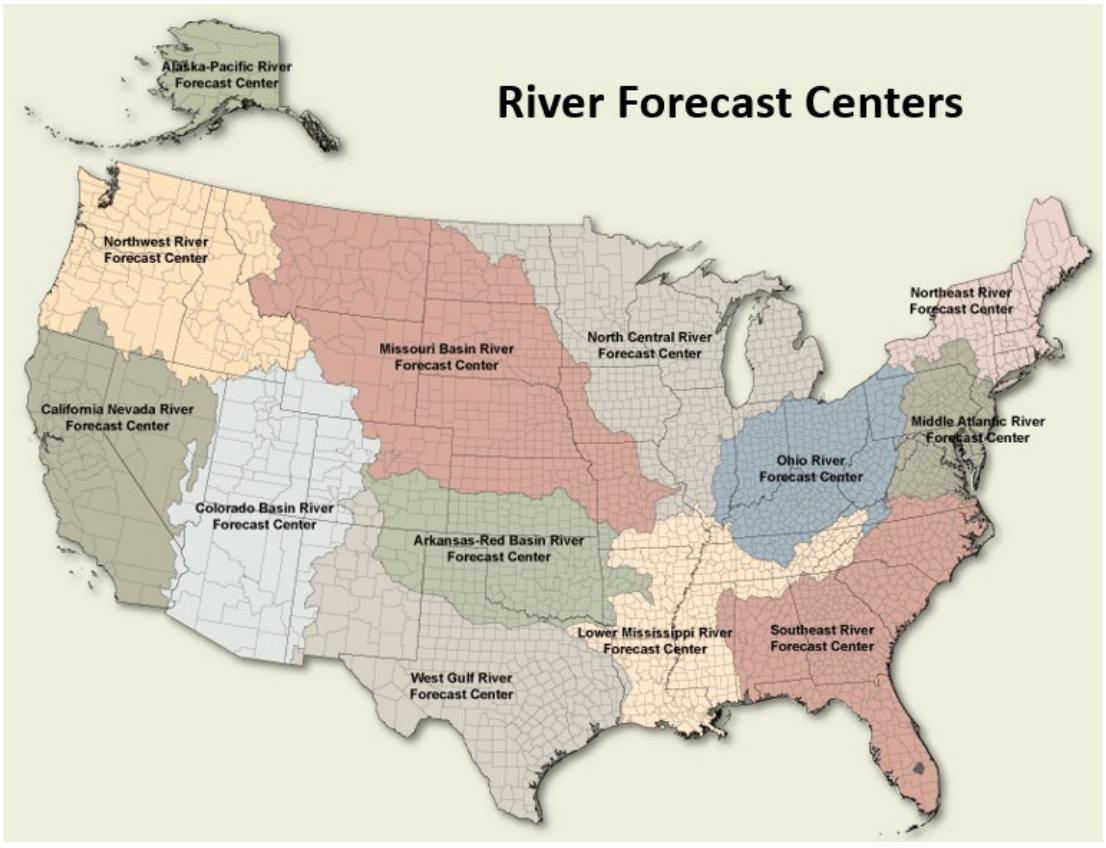
on the USCG to relay important forecast information to ships. To assure this transmission capability is running at top efficiency and there is collaboration and communication when there are issues, the NWS and USCG established a team called the USCG/NWS Coordination Liaison Group (UNCLOG). This team meets quarterly to discuss any systematic or transmission issues. Establishing a line of communication is also a goal of the team to assure situational awareness of any issues that arise. NWS HQ has also utilized the USCG "Notice to Mariners" to announce national product changes or to solicit feedback.

NWS and USCG Field Office Collaboration

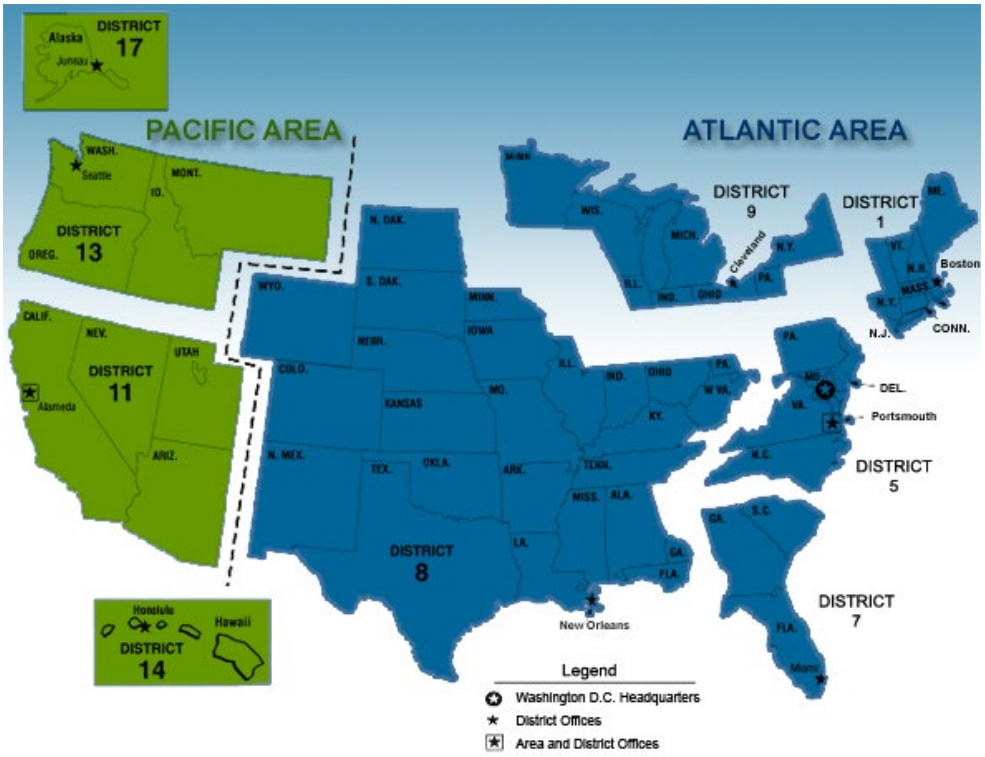
In general, NWS and USCG have similar organizational structures. NWS has an NWS Operations Center, National Centers, Regions/Regional Operations Centers, River Forecast Centers, and local Weather Forecast Offices:

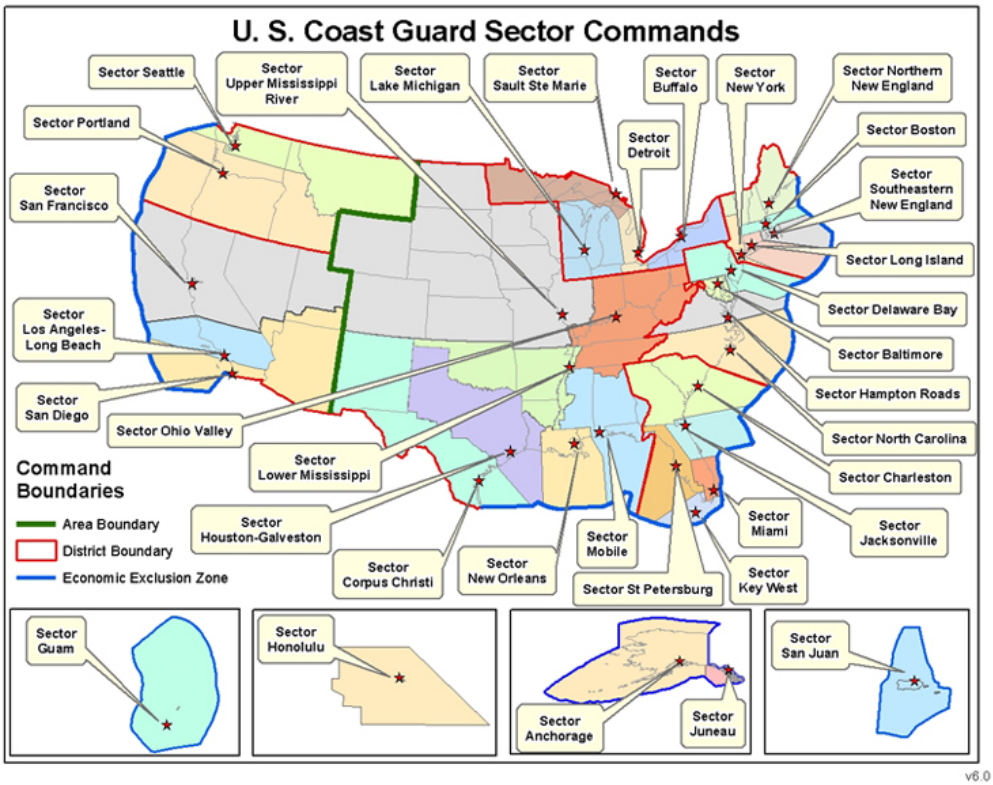



NWS Weather Forecast Offices
Your resource for weather forecasts and official warnings
Fairbanks
Anchorage
Juneau
Seattle
Spokane
Great Falls
Glasgow
Grand Forks
Duluth
Portland
Pendleton
Missoula
Bismarck
Billings
Marquette
Caribou
Burlington
Portland
Medford
Boise
Pocatello
Aberdeen
Minneapolis
Green Bay
Gaylord
Buffalo
Albany
Boston
Rapid City
Riverton
Sioux Falls
La Crosse
Milwaukee
Grand Rapids
Detroit
Bingham-ton
New York
Eureka
Des Moines
Quad Cities
Chicago
N Indiana
Cleveland
State College
Philadelphia
Sacramento
Reno
Elko
Cheyenne
North Platte
Omaha
Pitts-burgh
Salt Lake City
Grand Junction
Denver
Hastings
Lincoln
Indian-apolis
Wilming-ton
Charleston
Sterling
San Francisco
Goodland
Topeka
Pleasant Hill
St. Louis
Louisville
Jackson
Blacks-burg
Wakefield
Hanford
Las Vegas
Pueblo
Dodge City
Wichita
Springfield
Paducah
Knoxville
Raleigh
Newport
Los Angeles
Flagstaff
Albuquerque
Amarillo
Tulsa
Nashville
Greer
San Diego
Phoenix
Norman
Memphis
Huntsville
Wilmington
Little Rock
Columbia
Lubbock
Atlanta
Birming-ham
Charleston
Tucson
El Paso
Fort Worth
Shreveport
Jackson
Midland
San Angelo
Mobile
Tallahassee
Jacksonville
Lake Charles
New Orleans
San Antonio
Houston
Melbourne
Tampa
Corpus Christi
Miami
Guam
Hawai'i
Brownsville
Key West
Puerto Rico

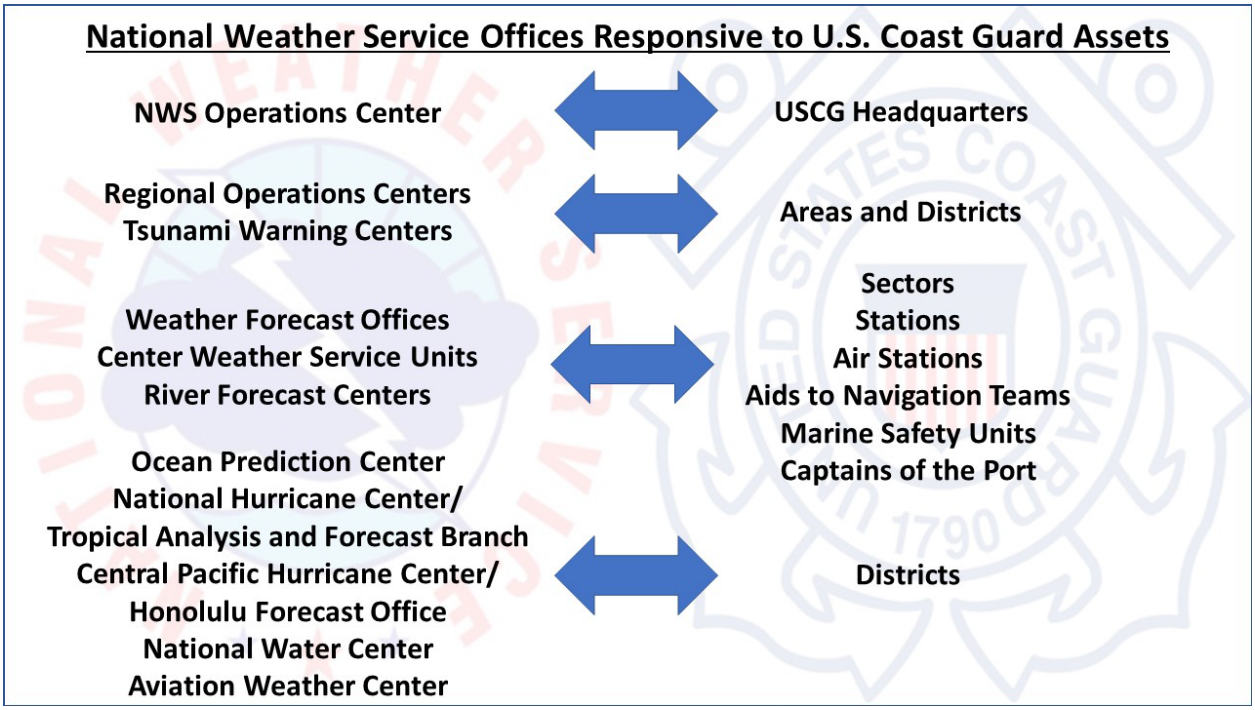

River Forecast Centers
Alaska-Pacific River Forecast Center
Northwest River Forecast Center
Missouri Basin River Forecast Center
North Central River Forecast Center
Northeast River Forecast Center
California Nevada River Forecast Center
Middle Atlantic River Forecast Center
Ohio River Forecast Center
Colorado Basin River Forecast Center
Arkansas-Red Basin River Forecast Center
Lower Mississippi River Forecast Center
Southeast River Forecast Center
West Gulf River Forecast Center

Likewise, USCG has USCG Headquarters, Areas, Districts, Sectors and local assets (Stations, Air Stations, Aids to Navigation Teams, and Marine Safety Units):





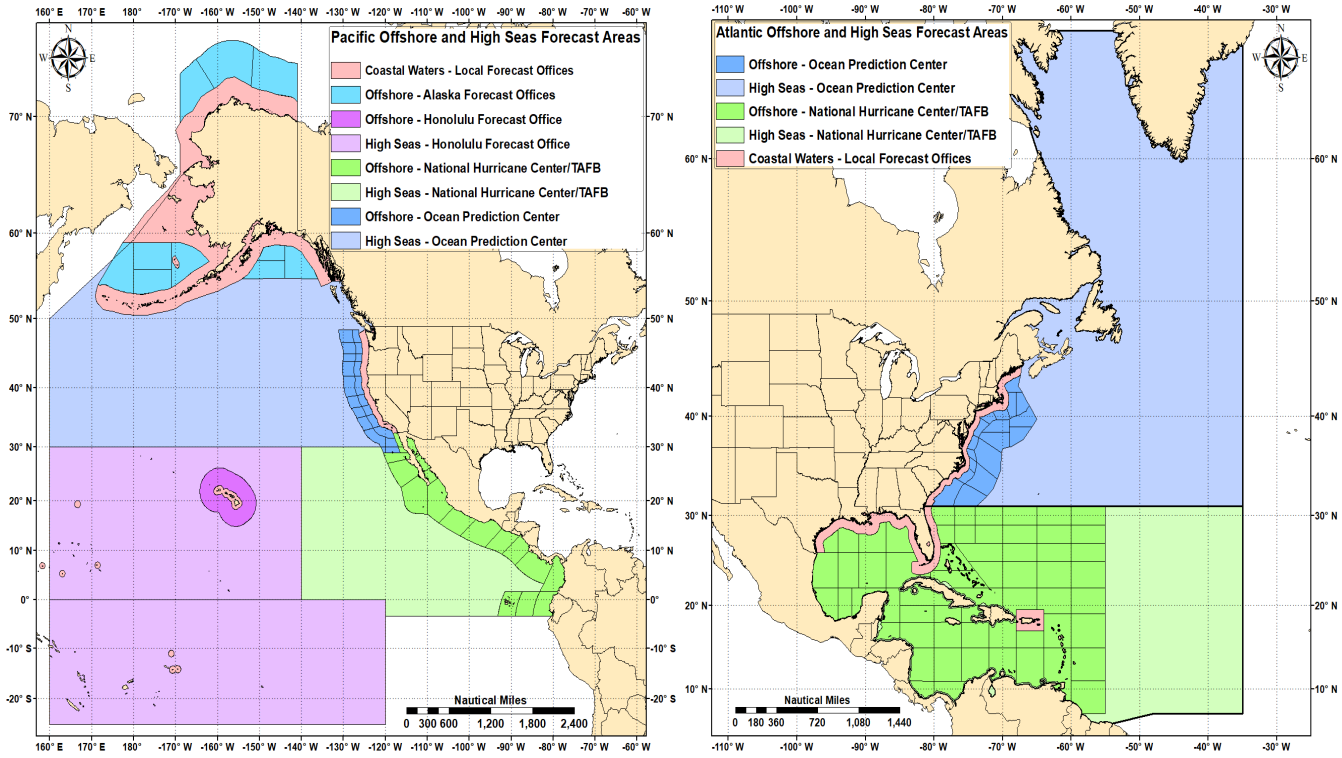
This allows for a natural delineation of IDSS responsibilities:



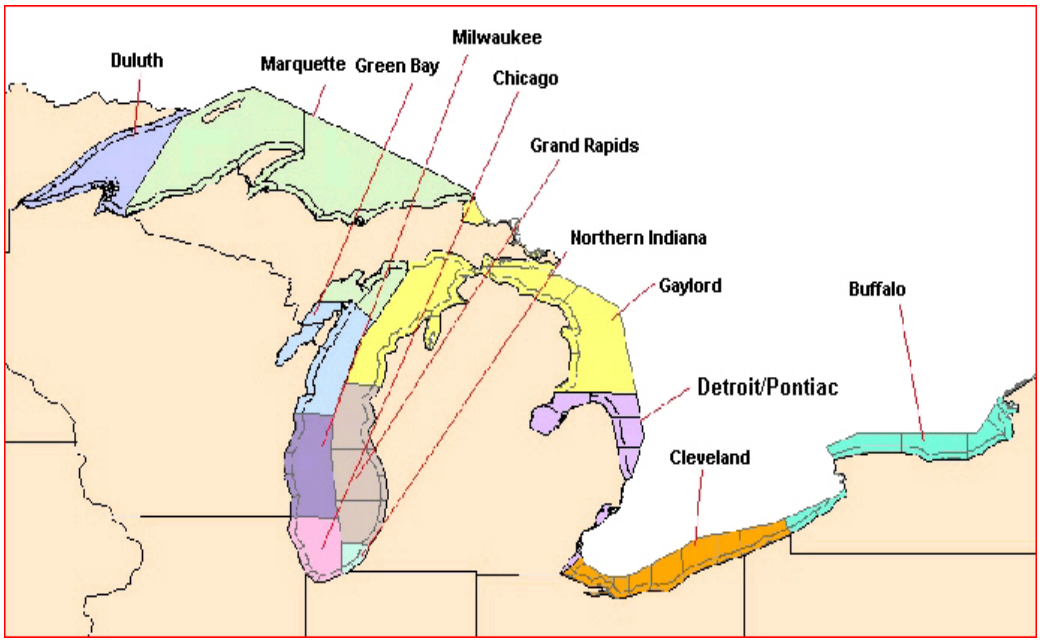
- The NWS Operations Center will be responsive to the USCG Headquarters;
- The Regions/Regional Operations Centers (ROCs) and the Tsunami Warning Centers will be responsive to USCG Areas and Districts;
- The Weather Forecast Offices (WFOs), Center Weather Service Units (CWSUs), and River Forecast Centers (RFCs) in coordination with the ROCs will be responsive to USCG Sectors, Stations, Air Stations, Aids to Navigation Teams, Marine Safety Units, and USCG personnel serving as Captain of a respective port.
- National Centers (the Ocean Prediction Center [OPC], the National Hurricane Center/Tropical Analysis and Forecast Branch [NHC/TAFB], the Central Pacific Hurricane Center/Honolulu Forecast Office [HFO]), the National Water Center (NWC), and the Aviation Weather Center (AWC) will tend to lead the response for the open oceans, inland rivers and aviation, being responsive primarily to the USCG Districts. National centers will tend to work in conjunction with Regions, ROCs, RFCs, and WFOs for response over land and in coastal waters.
- Note: National Centers, WFOs, ROCs and the Alaska Sea Ice Program (ASIP) will coordinate operational support activities with the U.S. National Ice Center (USNIC) when applicable and in accordance with the Ice Analysis and Forecasting Annex 21 to the Memorandum of Agreement between the US Navy and NOAA. NWS' National Data Buoy Center (NDBC) has a unique relationship with the USCG. NDBC's Coast Guard Liaison Officer (CGLO) provides NDBC program operational support coordination, policy guidance and liaison to the nine U.S. Coast

Guard Districts' waterways management staff by coordinating the use of USCG assets, temporary storage facilities and port services for the handling, storage, maintenance and repair of buoy hulls, moorings and power supplies. The CGLO develops administrative policies, procedures, and regulations for establishing, altering, and maintaining the USCG/NDBC Memorandum of Understanding and Pacific/Atlantic Areas Working Agreements as required by USCG and NDBC directives. The CGLO is responsible for independently executing approved NDBC/USCG missions, over 100 weather buoys, resolving conflicts which arise, coordinating work with others both inside and outside the unit as necessary.

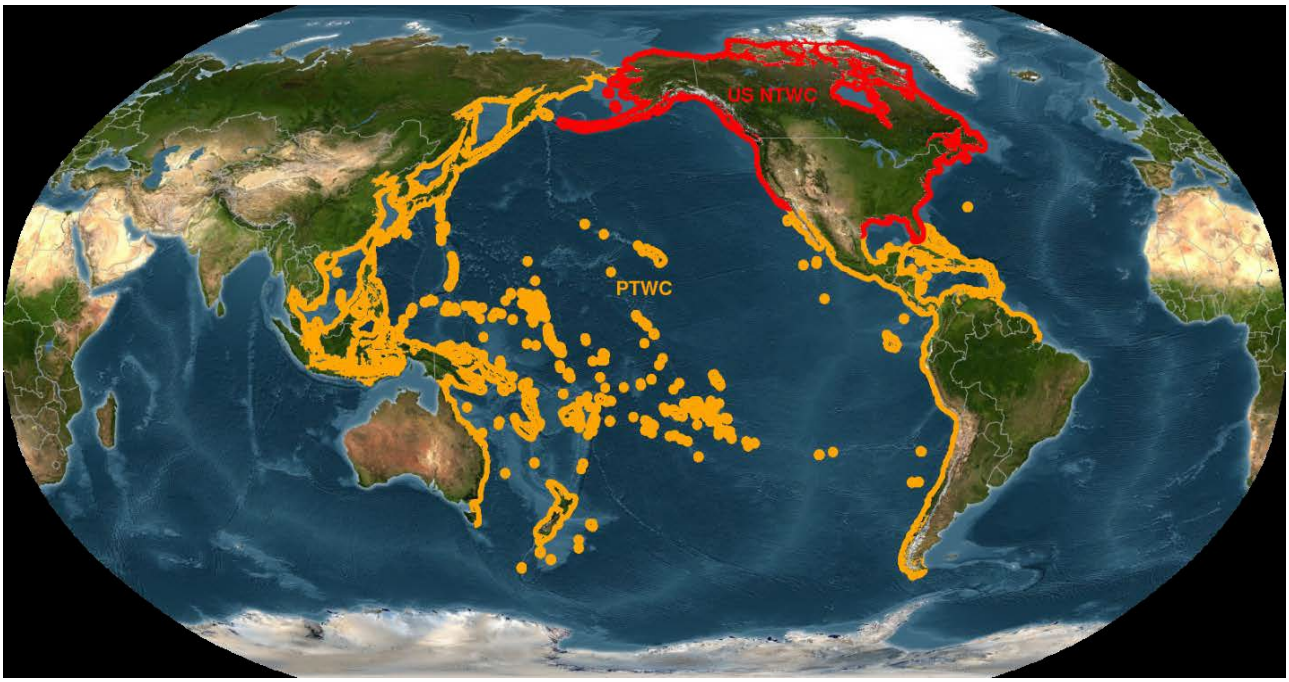
The following graphics show the NWS areas of responsibility for marine forecasting from the WFOs' Coastal Waters (gray in Pacific, peach in Atlantic), Alaska Forecast Offices' Offshore Zones (light blue), HFO's Offshore Zones (light purple), OPC's Offshore Zones (dark blue), NHC/TAFB's Offshore Zones (dark green), HFO's High Seas (light purple), OPC's High Seas (medium blue), and NHC/TAFB's High Seas (light green):

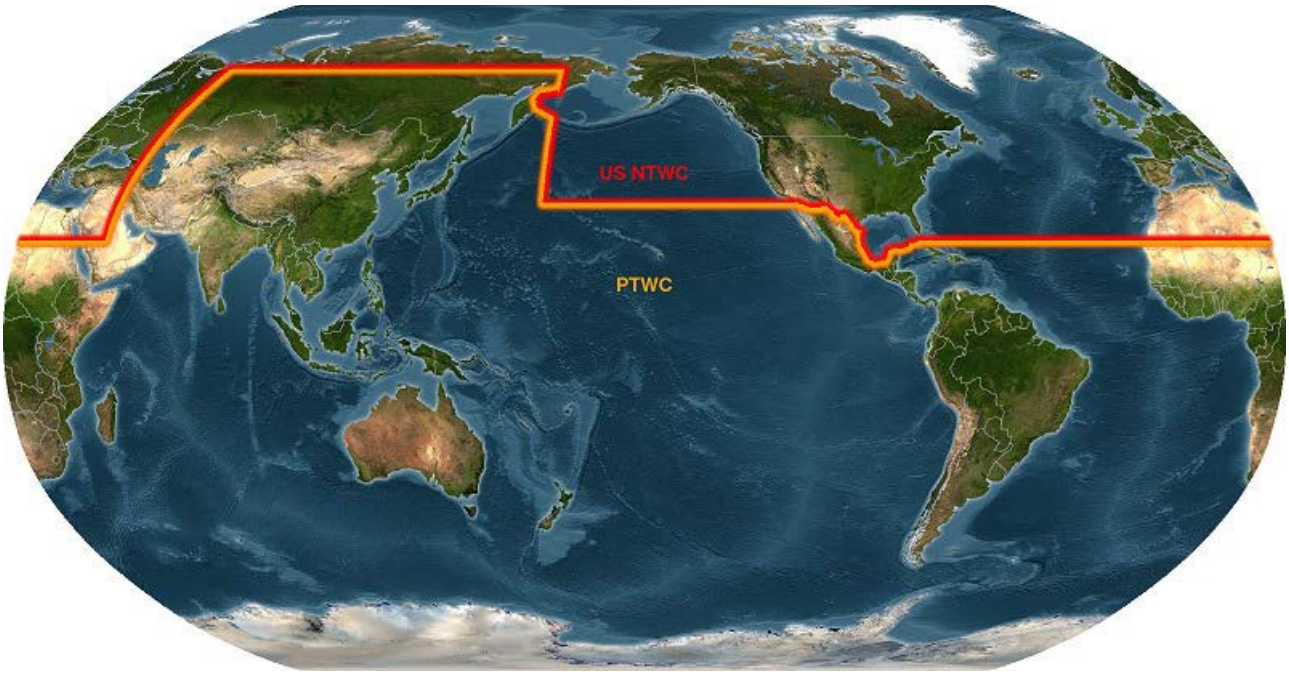


The following graphic shows WFO areas of responsibility for the Great Lakes:

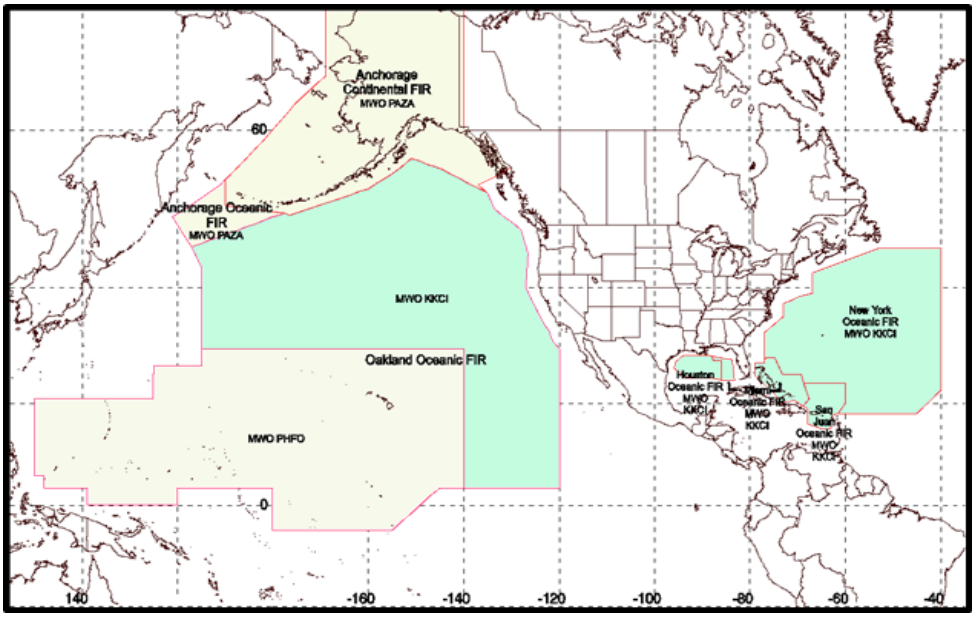


The following graphics show the National Tsunami Warning Center (NTWC) / Pacific Tsunami Warning Center (PTWC) Designated Service Areas (the coastal and offshore areas for which each TWC has the responsibility to issue operational tsunami products) and Tsunami Source Regions (the region for which a TWC has the primary responsibility for the detection and parameterization of large earthquakes and other potential tsunami sources for tsunami warning purposes):





The following graphic shows the NWS areas of enroute aviation forecast responsibilities for flight operations for the Atlantic Ocean, Pacific Ocean, Gulf of Mexico, and Caribbean Sea. The Alaska Aviation Weather Unit has responsibility for the Anchorage Continental and Oceanic Flight Information Regions (FIR). The Honolulu Forecast Office (HFO) is responsible for the Meteorological Watch Office (MWO) PHFO region. All other flight areas (in light green) over the Atlantic Ocean, Pacific Ocean, Gulf of Mexico, and Caribbean Sea, as well as the contiguous United States, are the responsibility of the Aviation Weather Center (AWC). Terminal Aerodrome Forecast (TAF) services are also provided for select airports through the local WFO.



It is recognized that there may be pre-existing relationships that are not consistent with the responsibilities above. For consistency of service nationwide, adjustments could be made to the recommended associations. There may be situations where a particular NWS office, Center, ROC, etc. may be best suited to provide support for particular events. In general, however, it is recommended the USCG units work within the structure as outlined in this Concept of Operations.

Appendix A - "Mapping of U.S. Coast Guard Facilities to National Weather Service Offices" - of this document provides a detailed listing of the specific NWS office that is responsive to the respective USCG asset.

Weather Forecasting Products

The USCG-NWS MOA states: "THE USCG AGREES TO primarily use NOAA/NWS analysis and forecast products for USCG field unit decision making, such as weekly weather briefings and extraordinary events, such as hurricanes, winter storms, major oil spills, rescues, large-scale exercises, or other incidents of that caliber. NOAA/NWS will assist in identifying appropriate existing products for use in these purposes."

The National Centers for Environmental Prediction (NCEP) and NWC deliver national and global weather, water, climate and space weather guidance, forecasts, warnings and analyses to its partners and external user communities. These products and services are based on a service-science legacy and respond to user needs to protect life and property, enhance our nation's economy and support the growing need for environmental information. NCEP comprises nine centers, seven of which provide official NWS forecasts and/or warnings.

A variety of weather and water products are also produced by NWS Weather Forecast Offices (WFOs), Weather Service Offices (WSOs), and River Forecast Centers (RFCs) serving U.S. coastal and Great Lakes areas and coastal and inland rivers. WFOs are responsible for the provision of marine weather information for the waters immediately adjacent to the coastline (and Great Lakes shorelines), bays, sounds, etc. out to a set distance from shore. RFCs are responsible for the provision of flow and stage information for both inland and coastal rivers, creeks, and streams as well as hydrologic information to support navigation for coastal and inland waterways. These products are of both a routine (produced and disseminated on a predetermined schedule) and non-routine nature (produced and disseminated when needed, depending on the situation). Routine products are mostly "forecasts" or "informational" in nature.

Of critical importance to the USCG is the use of NWS ocean model current data and surface wind forecast data (including directly from NWS' National Digital Forecast Database [NDFD]) for the drift modeling and simulation in their Search and Rescue Optimal Planning System (SAROPS) to predict

an object's motion due to currents and wind and assist in preparing appropriate search plans. These model and NDFD forecast output are provided routinely by NWS to contribute toward USCG's life-saving mission.

While not serving a weather forecasting requirement, the two Tsunami Warning Centers, National Tsunami Warning Center (NTWC) and Pacific Tsunami Warning Center (PTWC), are responsible for the provision of Observatory Messages to worldwide seismic observatories, and Tsunami alert messages to support safety, evacuation, and avoidance of domestic and international coastal regions across the Atlantic and Pacific Ocean basins. These products are purely event-driven and non-routine (produced and disseminated when needed, depending on the magnitude of the seismic event and/or tsunami observations).

Through enhanced collaboration between regions/WFOs/centers, regular feedback should be obtained from the USCG at all levels to develop improved products and services. Such advancements should be accomplished by using sound science and by incorporating recommendations by USCG critical decision-makers to support their life-saving mission.

A detailed listing of NWS products from NCEPs and WFOs is available in **Appendix B: National Weather Service Products.**

Observations

The MOA states: "THE NOAA/NWS AGREES TO provide the software, training and instrumentation for those USCG ships and coastal units actively participating in the NOAA/NWS Voluntary Observing Ship (VOS) program. Local NOAA/NWS offices should work in coordination with USCG units to establish criteria for which NOAA/NWS should be notified of inaccurate forecasts and significant events (for example: loss of life, vessel accidents, and hazardous material spills, especially for those cases where an inaccurate forecast, rapidly changing conditions, or hazardous weather may be involved). Local NOAA/NWS offices should assist local USCG personnel through training efforts and encouraging visits to NOAA/NWS forecast offices."

Observations are essential to the weather forecast process. They provide the ground truth to verify current forecasts and data to build future forecasts. Accurate marine forecasts increase mariner safety and mission effectiveness and are built from ship weather observations. NOAA/NWS forecast offices are open to visits from USCG personnel and will provide weather training to USCG personnel in a locally agreed manner.

Under the Voluntary Observing Ship (VOS) program, NOAA shares with USCG the position reports of participating vessels through the USCG Automated Mutual-Assistance Vessel Rescue

(AMVER) program to support search and rescue operations. This function is specifically addressed and managed under a separate agreement.

Impact-based Decision Support Services

The MOA states: "THE NOAA/NWS AGREES TO provide USCG field units with weather information necessary for the safe and successful accomplishment of their assigned missions. Normally, this will be accomplished through routine/existing telecommunication channels. However, specific forecasts (e.g., Spot Forecasts) and briefings may be provided for extraordinary events, such as hurricanes, winter storms, flooding, major hazardous materials spills, search and rescue operations, large-scale exercises, or other incidents of that caliber."

This is a critical level of interaction. Forecasts and briefings are needed when the USCG is engaged in their life-saving missions including 1) Ports, Waterways & Coastal Security; 2) Drug Interdiction; 3) Aids to Navigation; 4) Search & Rescue; 5) Living Marine Resources; 6) Marine Safety; 7) Defense Readiness; 8) Migrant Interdiction, 9) Maritime Environmental Protection; 10) Polar, Ice & Alaska Operations, and 11) Law Enforcement[2]. Most often, the WFO Warning Coordination Meteorologists, RFC Service Coordination Hydrologists and/or WFO Marine Focal Points will be leading the IDSS coordination with the corresponding USCG Emergency Management Specialist at the affected Sectors, Stations, Air Stations, Aids to Navigation Teams, and Marine Safety Units. Below are suggested guidelines for NWS IDSS delivery to a USCG entity:

1. Know which USCG assets the NWS office is responsible for. See the section **Cross-Organizational Responsibilities and Collaboration** which details the suggested delineation of IDSS responsibilities and **Appendix A: Mapping of U.S. Coast Guard Facilities to National Weather Service Offices.** This **interactive map** allows for easy visualization of both USCG and NWS offices and areas of responsibility.
2. NWS Headquarters, NCEP, Regions, RFCs and WFOs are encouraged to visit USCG Headquarters, Districts, Sectors, Stations, Air Stations, Aids to Navigation Teams, and Marine Safety Units within their area of responsibility, either in person or virtually, on a routine basis. USCG Emergency Management Specialists, Captains of the Port, and Command Staff are a few key contacts that can provide additional information regarding units and personnel that rely upon weather information within their organization. Building a trusted relationship between the NWS and USCG personnel on a local level is critical for successful IDSS Delivery.

[2] The USCG may be sharing sensitive information at times for NWS to create effective IDSS such as vessel locations, maneuvers etc. They may wish to keep such information internal. In that case, using the formal "Spot Forecast" webpage methodology may need to be replaced by more informal, direct communication.

a. Best practice: NWS offices should maintain and share a standing document describing the office functions, its area of responsibility, products produced, and additional weather support available and how to obtain it, and 24/7/365 office contact information.

3. NWS should obtain and document important water and weather decision thresholds that may affect national, regional and local USCG operations and assets in their area of responsibility. Forecasters should maintain situational awareness since these thresholds may differ from traditional NWS watch, warning or advisory criteria. Elements to consider:
    a. Wind speed, gusts, and direction.
    b. Sea state (wave heights, period, etc.).
    c. Cloud coverage, base, and tops.
    d. Precipitation.
    e. Temperatures (air and water).
    f. Tropical cyclones.
    g. Thunderstorms.
    h. Water levels & tides (including tsunami amplitudes, currents, and duration).
    i. Hazmat incidents.
    j. Sea ice & lake ice (concentration and stage).
    k. Aviation and/or marine vessel icing.
    l. River levels, flows, flooding, and or ice jams.
    m. Visibility/fog/smoke/air quality.
    n. Turbulence/Low Level Wind Shear.
    o. Airborne Volcanic Ash and Ashfall.
    p. Space Weather.

4. Routine IDSS options available for NWS Headquarters, NCEP, Regions and WFOs:
    a. *Routine weather briefings* (daily, weekly, planned events, as needed). Content and frequency may vary between NWS offices based upon USCG needs and preferences at the USCG HQ, District, Sector, and Unit levels. NWS offices should check with the USCG within their area of responsibility and inquire about their preferences and means of delivery:
        i. Telephone/verbally.
        ii. Email.
        iii. Fax.
        iv. Short Messaging System (SMS)/Texting.

v. PowerPoint/pdf. [3]
vi. NWSChat.
vii. Webinars.
viii. iNWS - email and text alerting.

b. Websites dedicated to USCG weather support.
c. Blogs and other communication support pieces.

5. Enhanced and site-specific IDSS options and tools available for NWS Headquarters, NCEP, Regions, RFCs and WFOs:
   a. Spot Forecast webpage[4]
   b. Marine Point Forecast webpage
   c. Various Weather Portals (i.e. Great Lakes Portal, Gulf Portal, etc.)
   d. HYSPLIT and ALOHA (plume modeling)[5]
   e. NWS capability to send USCG Mayday Relays and Urgent Marine Information Broadcasts (UMIB) over NOAA Weather Radio
   f. Locally developed methods or procedures including variations of #4 (above).
   g. Depending on the event, NWS may be able to provide dedicated on-site personnel to support USCG operations, such as during larger-scale weather events and/or hazardous material events. Such requests typically flow through the USCG Emergency Management representatives to NOAA's Office of Response and Restoration's (OR&R) Scientific Support Coordinator (SSC). Regional ROCs (for WFOs and RFCs) or NWS Headquarters (for NCEP and NWC) should be made aware of on-site representation requests to ensure agency reimbursement from responsible parties when applicable.
   h. USCG areas of responsibility may overlap those of multiple NWS offices. Forecast consistency on national, regional and local levels is necessary and important for NWS. Internal NWS forecast collaboration is a necessity.

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[3] Google Meet is a useful option for many NWS partners. However, as of this time Google Meet is not available within USCG.

[4] The Spot Forecasts webpage currently works for coastal, Great Lakes, and NHC/TAFB areas. Other marine areas will need to provide Spot Forecasts through other means. Individual NWS offices must coordinate with the USCG units in their area of responsibility as to the way to request and format preferred for Spot Forecasts.

[5] Routine collaboration will be necessary during hazmat events with NOAA's Office of Response and Restoration (OR&R), Scientific Support Coordinators (SSCs), Interagency Modeling and Atmospheric Assessment Center (IMAAC), Environmental Protection Agency (EPA) and other state/local agencies that have expertise with chemicals, spill trajectories and plume modeling. Sensitive information may be obtained and should only be released to the requesting party(s) unless given permission to redistribute publicly.

6. USCG may have tools/resources to assist in the forecast and warning process (observations, webcams, etc.). Communicate their importance to the mission and encourage USCG to share information if they are able to do so.

Training/Outreach

The USCG-NWS MOA states: "Local NOAA/NWS offices should assist local USCG personnel through training efforts and encouraging visits to NOAA/NWS forecast offices...USCG should support NOAA/NWS training efforts by, whenever possible, encouraging NOAA/NWS staff to … [conduct] visits to USCG coastal units.....USCG should support NOAA/NWS training efforts by, whenever possible, encouraging NOAA/NWS staff to accompany them on short at sea missions."

Training and Outreach by NWS to our USCG partners is critical to the success of this MOA. NWS is obligated to not just provide routine forecasts, extreme weather warnings, Spot Forecasts, and briefings, but also to ensure that USCG colleagues are familiar with and know how to utilize NWS products and services.

Thus, a robust training and outreach program is essential. **All NWS offices that have USCG assets in their area of responsibility should engage with the USCG on training.** It is recommended that NWS offices provide **annual training** on NWS products and services and to update points-of-contact for both the USCG and the NWS, given the two-to-four-year turnover in USCG personnel and more limited movement of NWS forecasters. If the USCG is to rely upon the NWS for products and services, this training is essential to keep a consistent relationship between the NWS and USCG as well as USCG personnel knowing what products are available to them. Ideally, training should be done **in-person at a minimum of once yearly** to facilitate efficient learning as well as the opportunity for NWS forecasters to meet face-to-face USCG officers, though there are circumstances like the COVID-19 pandemic or extremely large areas of responsibility where virtual training can be used. Training should include some or all of the following (as needed for specific USCG partners):

- Requesting/using Spot Forecasts;
- Requesting briefings for planned events and extreme weather;
- Local weather hazards;
- River forecasting and hydrology fundamentals;
- Ocean wave hazards;
- Aviation hazards;
- Rip current forecast process;
- NWS/NOAA websites and products;
- Submitting weather observations;
- Seasonal outlooks;

- Sea ice and Great Lakes ice hazards; and
- Tsunami detection and alerting.

There exists a significant amount of NWS training materials on-line that the USCG can access including the following:

- JetStream - An Online School for Weather
- Chief Learning Officer Training Portal
- Cooperative Program for Operational Meteorology, Education and Training (COMET)
- Weather Ready Nation Marine Ambassador

Training and outreach to USCG partners should also include the encouragement of proactive communication from the USCG. This is in terms of providing timely marine observations from USCG vessels (possibly via shore-based personnel) to local NOAA/NWS offices[6], consistent with the actions agreed to by the USCG in the MOU, and requesting impact-based decision support services. Local NOAA/NWS offices should also work with USCG partners to ensure appropriate USCG staff are: (1) able to recognize when observed weather has become unrepresentative of forecast conditions[7]; (2) able to recognize what weather information needs are unmet; and (3) able to initiate a request for event-driven forecast support from the local NOAA/NWS office.

The Weather Ready Nation (WRN) Marine Ambassador program is NOAA's effort to formally recognize marine organizations that are improving the nation's readiness, responsiveness, and overall resilience against extreme weather, water, and climate events. As a WRN Ambassador, organizations commit to collaborating with NOAA and other Ambassadors to strengthen national resilience against extreme weather. Given the critical life-saving mission of USCG, it would be ideal to have more USCG offices and assets join in as WRN Marine Ambassadors. **It is recommended that NWS offices invite the USCG offices in their area of responsibility to become part of the WRN.**

In-person visits by NWS personnel to USCG assets, and conversely, visits by USCG staff to nearby NWS offices/centers, are vital to the forming of effective relationships. **NWS offices with USCG assets in their area of responsibility should schedule reciprocal visits on (at least) an annual basis**. Both visits by NWS forecasters to USCG assets and by USCG staff to NWS offices are important due to the typically very frequent turnover of USCG staff and the somewhat less frequent changing of offices by NWS forecasters. Any of NWS' personnel are encouraged to visit USCG assets,

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[6] According to the MOU, "If possible, USCG will, in a timely manner, return reports of weather conditions encountered during the mission."

[7] According to the MOU, "USCG units should establish means to quickly inform local NOAA/NWS offices of inaccurate forecasts and significant weather related events commensurate with necessary security measures and available resources." Also, "Local NOAA/NWS offices should work in coordination with USCG units to establish criteria for which NOAA/NWS should be notified of inaccurate forecasts…."

and such visits are most relevant for WFO Warning Coordination Meteorologists, WFO Marine Team Leader, RFC Service Coordination Hydrologists, Branch Chiefs, and Port Meteorological Officers. Reasons for such visits would include the following:

- General office familiarization;
- Training opportunities;
- In-person briefings;
- Tabletop Exercises/Drills;
- Hot Washes (post-event evaluations);
- Integrated Warning Team (IWT) meetings;
- Meteorology equipment maintenance;
- Open house events;
- Port/maritime security meetings; and
- Other workshops/meetings.

Finally, NWS has the option to engage the USCG aboard their vessels as provided by the MOA. These "Familiarization Floats" are an option for NWS personnel to join in on USCG operations ranging from a couple hours to a couple of weeks. Such Familiarization Floats are an ideal way to better appreciate the USCG mission and at the same time more fully understand how the weather affects every part of their operations. **NWS offices are encouraged to work with their local management and reach out to their USCG counterparts in their area of responsibility for the opportunity for NWS forecasters to join a Familiarization Float.**

Summary

The Mission Statement of NWS, which guides all of our products and services, is the following:

> **"Provide weather, water and climate data, forecasts, warnings, and impact-based decision support services for the protection of life and property and enhancement of the national economy."**

This USCG-NWS CONOPS endeavors to assure the USCG is supplied with accurate weather and water information for daily and emergency operations by providing details needed for successful support by NWS offices. Imperative to NWS providing a consistent level of support is the ability for NWS to build relationships with appropriate USCG personnel to effectively serve their specific needs. NWS offices should know and regularly engage with USCG facilities and personnel in their area of responsibility, so they can provide Impact-based Decision Support Services (i.e., forecasts, briefings, outreach and training) when needed. It is by engaging with our USCG colleagues that NWS will be successful in our IDSS efforts with this deep core governmental partner. Conversely, the USCG should

be able to easily reference their serving NWS office to request assistance with meeting their life-saving mission.

APPROVED:

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Michael Coyne
NWS Chief Operating Officer (Acting)

APPROVED:

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Rear Admiral Todd Wiemers
USCG Assistant Commandant for Capability