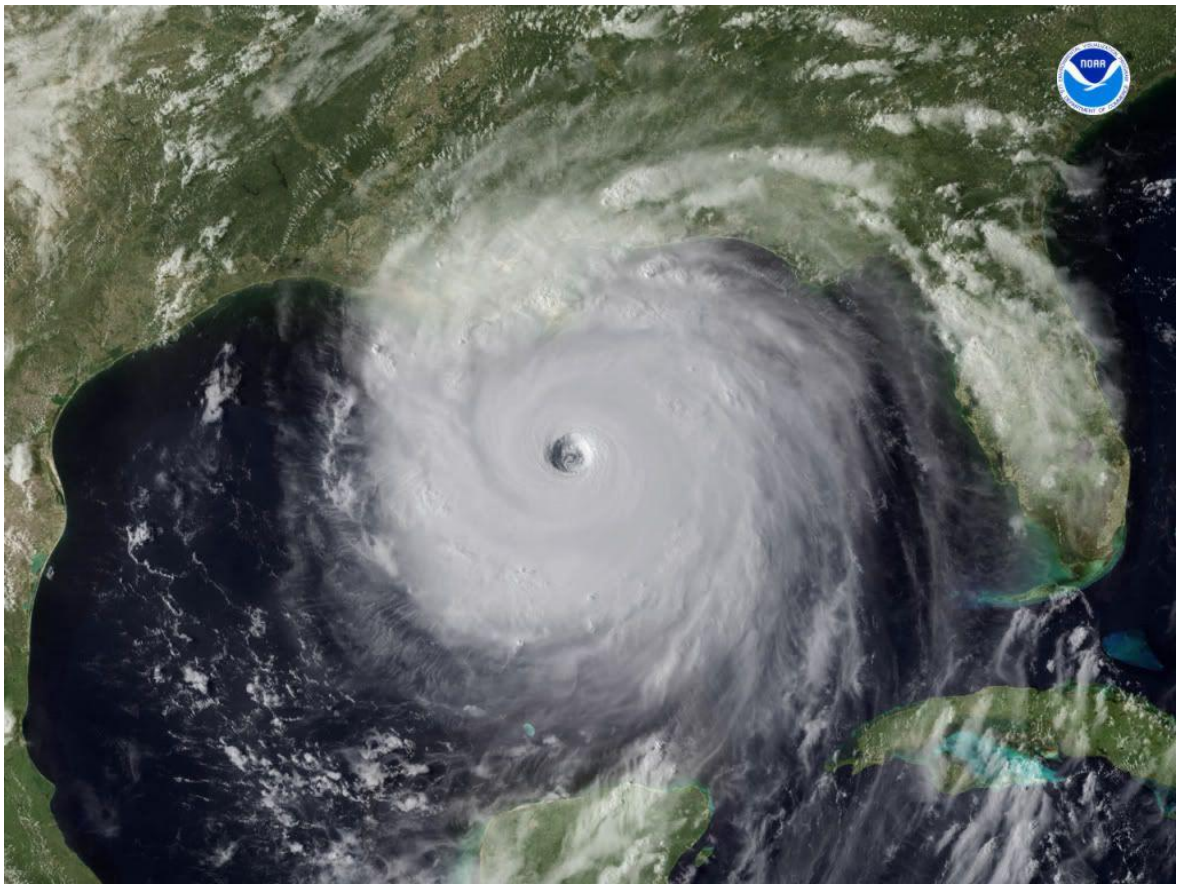
12-2020

NOS HURRICANE PREPAREDNESS SUMMIT SERIES 2020

Coastal Response Research Center

NOS Hurricane Preparedness Summit Series 2020

April 23, 2020 & June 29, 2020 & August 3, 2020



This is a partnership between NOAA's Office of Response and Restoration and the Coastal Response Research Center.

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Contents

Acronyms

CAPT	Captain
CDR	Commander
CO-OPS	Center for Operational Oceanographic Products and Services (NOAA)
COOP	Continuity of Operations
CRRC	Coastal Response Research Center
DEP	Department of Environmental Protection
DNR	Department of Natural Resources
DOC	Department of Commerce
DPP	Disaster Preparedness Program (NOAA)
EPA	Environmental Protection Agency
ESF	Emergency Support Function
ERD	Emergency Response Division (NOAA)
ERI	Emergency Response Imagery
FEMA	Federal Emergency Management Agency
FWC	Florida Fish and Wildlife Conservation Commission
GIS	Geographic Information System
GSA	General Services Administration
HSPO	Homeland Security Program Office (NOAA)
IMT	Incident Management Team
IOOS	The U.S. Integrated Ocean Observing System
LCDR	Lieutenant Commander
LT	Lieutenant
MARACOOS	Mid-Atlantic Regional Association Coastal Ocean Observing System
MEF	Mission Essential Functions
MOCA	Marine Operations Center - Atlantic
NCCOS	National Centers for Coastal Ocean Science (NOAA)
NERR	National Estuarine Research Reserve (NOAA)
NGS	National Geodetic Survey (NOAA)
NOAA	National Oceanic and Atmospheric Administration
NOS	National Ocean Service (NOAA)
NHC	National Hurricane Center (NOAA)
NOAA	National Oceanic and Atmospheric Administration
NRT	Navigation Response Team
OCS	Office of Coast Survey (NOAA)
OCM	Office for Coastal Management (NOAA)
OMAO	Office of Marine and Aviation Operators (NOAA)
ONMS	Office of National Marine Sanctuaries (NOAA)
OPM	Office of Personnel Management
OPS	Operations
OR&R	Office of Response and Restoration (NOAA)
PPE	Personal Protective Equipment

SSC	Scientific Support Coordinator
UNH	University of New Hampshire
USCG	United States Coast Guard
USEPA	United States Environmental Protection Agency
USPHS	United States Public Health Service
WFO	Weather Forecast Office

Acknowledgements

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- Charlie Henry, NOAA OR&R DPP and Gulf of Mexico Disaster Response Center
- Collin Buckner, NOAA OR&R DPP
- Nancy Kinner, UNH CRRC
- Brad Benggio, NOAA OR&R ERD, SSC
- Matthew Chasse, NOAA, OCM
- Jason Rolfe, NOAA OR&R Marine Debris
- Lisa Symons, NOAA, ONMS
- CAPT Liz Kretovic/ CDR Jay Lomnicky, NOAA, OCS

This summit series was facilitated by Dr. Nancy Kinner from the CRRC (www.crrc.unh.edu). CRRC is known globally as an independent intermediary that brings all stakeholders to the table to identify, develop, and implement viable and trusted solutions to complex problems related to environmental disasters. CRRC has conducted 70+ workshops that bring together practitioners, researchers, and scientists of diverse backgrounds (e.g., industry, academia, government, NGOs).

We would like to thank each of the presenters for their participation:

- Scott Lundgren, NOAA OR&R
- Dr. Neil Jacobs, Assistant Secretary of Commerce for Environmental Observation and Prediction (Acting), performing the duties of Under Secretary of Commerce for Oceans and Atmosphere
- Nicole LeBoeuf, NOAA NOS
- Chris Landsea, NOAA NWS NHC
- CAPT Christian Rathke, US Public Health Service Commissioned Corps (USPHS)
- Andy Green, NOAA Office of Human Capital Services
- Mike Aslaksen, NOAA NGS
- CAPT Christiaan van Westendorp, NOAA OCS
- John Tarpley, NOAA OR&R
- Paul Fanelli, NOAA CO-OPS
- Ralph Cantral, NOAA OCM
- Jonathan Gordon, NOAA ONMS
- LCDR Ben LaCour, NOAA IOOS
- Randy Grady, NOAA NCCOS
- CDR Matt Jaskoski, NOAA OMAO Marine Operations Center, Atlantic
- Kate Wheelock, NOAA DPP
- Steve Thur, NOAA NOS
- LCDR Gary Montgomery, USPHS
- Savannah Turner, NOAA OR&R
- John Dennis, GSA Public Buildings Service
- Mike De Luca, Rutgers University/Jacques Cousteau NERR
- Gerhard Kuska, MARACOOS
- Chad Yoshinaga, NOAA Pacific Islands Fisheries Science Center
- Julia Powell, NOAA OCS
- Keith Laakkonen, FL DEP - Rookery Bay NERR

- Ruperto Chaparro, Puerto Rico Sea Grant
- John McGowan, HSPO
- Greg Piniak, NOAA NCCOS
- Emily Menashes, NOS Chief of Staff
- Kevin Dunn, CDC/NIOSH/DFSE/EPHB
- Christine Hanson, FEMA Region 6
- James Webster, U.S. EPA
- Michael Sams, U.S. Coast Guard District 8
- LCDR Brian Elliot, NOAA Small Boat program manager
- CDR Chris Kerns, NOAA Aircraft Operations Center
- LT Aras Zygas, NOAA Diving Center
- Daryl Jaschen, Virgin Islands Territorial Emergency Management Agency
- Captain Chris Hodge, Georgia DNR
- Major Rob Rowe, FWC

A special thank you to (1) Marlies Tumolo, Kathy Mandsager, Katie Perry, and Melissa Gloekler for their efforts in coordinating each of the virtual summits (2) Quinn Wilkins, Tori Sweet, Jessica Manning, Megan Verfaillie, and Josh Howard for their note-taking during the summits.

Executive Summary

An in-person, three-day NOS Hurricane Summit was planned in late-April 2020 ahead of the 2020 hurricane season. The purpose of the summit was to enhance preparedness for the 2020 hurricane season by identifying past shortfalls and challenges using the lessons learned from past events to plan for future hurricane response requests. The summit series centered on the safety and preparedness of NOS staff, facilities, partners, and other key resources as well as mission related activities and response actions. These mission activities included, but were not limited to, coordination with USCG for port safety and reopening, readiness and response for pollution and debris events, and post landfall damage assessment aerial photography. The COVID-19 pandemic made an in-person meeting unfeasible. The summit then pivoted into three virtual, half-day sessions to socialize and develop a common understanding of the 2020 hurricane season in the context of pandemic related operational constraints.

Summit Objectives:

1. Enhance NOAA's support of its own people and resources for safety and improved disaster resilience considering the current pandemic.
2. Meeting hurricane response mission objectives while maintaining response personnel safety.
3. Enhance NOAA communications surrounding a potential hurricane-related disaster during a pandemic.

The first summit, held on April 23, 2020, focused on how NOAA offices were implementing lessons learned from the 2019 hurricane season and then addressing the pandemic related restrictions in their planning for the 2020 hurricane season. The second summit, held on June 29, 2020, focused on best practices and risk management as NOAA and its close partners prepared for the upcoming hurricane season. The third summit, held on August 3, 2020, sought to understand and explore (1) the challenges and limitations of hurricane response and recovery activities during a pandemic and (2) best practices shared by the participants as they prepared for a possible major hurricane landfall.

Two separate surveys were sent out to participants and stakeholders prior to Summit Day 2 and Summit Day 3. These surveys asked participants questions related to the focus of the respective summits that would help guide each session. A copy of each blank survey is included as **Appendix A** and the analysis of the survey results are included as **Appendix B**. Each of the summits included speakers from various backgrounds providing different perspectives, lessons learned, and next steps related to hurricane preparedness and response considering the pandemic. Question and answer sessions were included throughout each summit, as well as polling questions to obtain feedback from participants.

Introduction Day 1

On April 23, 2020, the first day of the three hurricane preparedness summits was held. The first virtual summit focused on how NOAA offices were implementing lessons learned from the 2019 hurricane season and how NOAA was addressing the pandemic related restrictions in their planning for the 2020 hurricane season. There were 75 participants that joined the virtual meeting representing primarily NOAA employees.

The focus of this session was on NOAA's infrastructure, communications, and people. Key questions for this summit included:

1. What are the plans for NOAA's people and facilities who are in harm's way as they prepare for the hurricane season?
2. What do the partners need from NOAA to support their efforts?
3. How do we share information/lessons learned from facility to facility?
4. How do we recover our own people/staff?
5. To clarify and understand the guidelines for evacuation and recovery (e.g., funding and orders).
6. How do we best conduct internal communications before, during, and after the hurricane-related disaster?

Nancy Kinner provided the opening statements. Charlie Henry, Scott Lundgren, Dr. Neil Jacobs, and Nicole LeBoeuf each provided a welcome and overview of summit objectives from their respective roles. To set the stage for the summit, Chris Landsea provided an overview of the National Hurricane Center's seasonal forecast and new tools and products available to help prepare for the 2020 hurricane season. CAPT Christian Rathke provided background information related to the current state of the pandemic and how that impacts to the professional working environment. He reminded participants that the pandemic "will shape all our lives as a historical event", with over 60% of infected individuals being asymptomatic and that it would be 12-14 months before vaccines would be widely available. He framed the use of PPE as a key risk mitigation tool and reminded participants that natural disasters often increase disease potential.

Each NOAA program office was asked to participate in a briefing regarding the topic of "using the Hurricane Season 2019 After Action Report in context of the pandemic, how is your office addressing lessons learned/readiness with focus on people safety and mission for the upcoming hurricane season?" Each panelist was asked to prepare an answer to the following five questions to guide the discussions:

1. How are you changing your posture from last year's hurricane season? What lessons learned are being implemented?
2. How are you addressing the pandemic related restrictions?
3. Do you have a response posture during shelter-in-place/telework?
4. What is posture for response with social distancing/quasi-normal?
5. What action is needed to protect people and facilities (specifically to hurricane-prone locations) if pandemic related restrictions continue?

- **OHCS:** Andrew "Andy" Green started the briefing by describing evacuations and facility closures from a human resources perspective. Four program offices with hurricane mission essential function assignments presented their take on the above questions.

- **NGS:** Mike Aslaksen discussed that aircrafts were staffed at minimum capacity and that all personnel were required to adhere to all applicable guidance (NOAA, local, state, federal, etc.) which requires the use of PPE, social distancing and personal hygiene.
- **OCS:** Christiaan "Chris" van Westendorp discussed the response posture, which included: staffing at the minimum capacity, delaying/staggering deployments, utilizing telework, and only conducting essential maintenance on facilities. He mentioned the ongoing lack of PPE and the ongoing effort to create additional guidance around the logistics of deployment.
- **OR&R:** John Tarpley discussed that only mission critical travel was approved which resulted in delaying launches until the level of risk was evaluated. Additionally, the agency was on mandatory telework and was working on creating guidance for the logistics of deployment.
- **CO-OPS:** Paul Fanelli mentioned that the overall response posture has had little change regarding producing data; all data-related response work can be done remotely. However, in-person response efforts were delayed, including repairs to facilities.

Other NOAA program offices, not charged with MEFs, presented their briefings to the aforementioned questions:

- **OCM**: Ralph Cantral discussed the communication protocols in place that were used before, during, and after storms. Staff roles were clearly defined with specific responsibilities for staff in pandemic affected areas.
- **ONMS:** Jonathan Gordon mentioned the improved communication channels for staff and new protocols developed to streamline site closures and future assessments. The response posture was ever evolving based on PPE availability, staff willingness to respond, and agency guidance.
- **IOOS:** Ben LaCour mentioned that all staff was required to follow the applicable guidance and that staff were still teleworking.
- **NCCOS:** Randy Grady mentioned that all staff were adhering to the applicable guidance regarding social distancing, telework, and face coverings. It was stressed that the preparation timelines for hurricane preparedness need to be extended, due to limiting the number of staff in the building at any one time.
- **MOC-A:** Matthew "Matt" Jaskoski mentioned that the ships were minimally staffed and repairs to the shipyard have been postponed. All personnel were required to complete daily symptom screenings and to adhere to all applicable guidance related to the pandemic.

CAPT Christian Rathke and Kate Wheelock delivered the wrap up and path forward. They both stressed that the health and safety of staff should remain the top priority. This included getting additional PPE and allowing staff to have a choice in whether or not to respond. Regarding missions, improving communications internally and with partners was critical in exchanging emergency messages. Lastly, for infrastructure, it was anticipated to take longer to prepare for storms and to plan accordingly. The summit concluded with Nancy Kinner thanking the participants, planning committee, and speakers for their time and knowledge.

Introduction Day 2

On June 29, 2020, the second day of the three hurricane preparedness summits was held. The second virtual summit focused on best practices and risk management as NOAA and its close partners prepared for the upcoming hurricane season. There were 72 participants that joined the virtual meeting representing NOAA agencies and its close partners such as NERRs, Sea Grant, and multiple state representatives. Polls were used throughout the summit to have the participants engage with the session. An exit survey was displayed after the summit to capture any additional feedback.

The focus of this session was on NOAA and its close partner's facilities and resources. Key goals for this summit were:

1. Discussing the current reconstitution guidance and health and safety guidelines.
2. Understanding the level of preparedness and limitations for Facilities/Infrastructure, People, and Resources for NOAA and its partners during the 2020 Hurricane Season during pandemic.
    a. Understand new risks in hurricane preparedness because of the pandemic.
    b. Learn best practices on how our preparedness and response reduce risk to NOAA and partner facilities, people, and resources to hurricanes during the pandemic response.

A 19-question survey was distributed to the participants and other stakeholders prior to the summit. The survey covered topics were divided into two categories: hurricane preparedness and hurricane response. A total of 56 responses were received from the survey. A copy of the blank survey and an analysis of the survey responses are included in **Appendix A** and **Appendix B**, respectively.

Nancy Kinner provided the opening statements. Charlie Henry, Steve Thur, and Scott Lundgren each provided a welcome and overview of summit objectives from their perspectives. To set the stage for the summit, Chris Landsea provided an overview of the National Hurricane Center's seasonal forecast and new tools and products available to help prepare for the 2020 hurricane season. LCDR Gary Montgomery provided an overview of public health issues summarizing the current state of the pandemic, and what was anticipated in the coming months. Savannah Turner reviewed NOAA's best practices for reintegration including the requirements necessary to reopen facilities. John Dennis spoke to GSA's recommendations for the reconstitution of federally owned and leased facilities. He emphasized the development of advanced cleaning protocols and updated requirements for environmental systems (eg. HVAC).

The remainder of the session was broken out into two panels: focused on risks and best practices. The risk panel was guided by the question, "what new risks in hurricane preparedness are you seeing because of the pandemic?" Collin Buckner started the panel by presenting an overview of the survey results related to hurricane preparedness.

- **Rutgers University/Jacques Cousteau NERR:** Mike DeLuca discussed critical lessons learned from Hurricane Sandy in 2012 and post-storm investments including a coastal resilience initiative and a shift to focus on vulnerable populations for future storms.
- **MARACOOS**: Gerhard Kuska described pandemic related risks such as gaps in data collection due to delayed/cancelled deployments. Mitigation measures were centered on early provisional planning and increased communications among partners and stakeholders.

- **NOAA Pacific Islands Fisheries Science Center:** Chad Yoshinaga stressed that normal risks during a hurricane have been worsened by the pandemic. The risks during the 2020 hurricane season specific to the pacific islands included utility shut offs (e.g., water, power, communications), disruption to the supply chain, and difficult evacuation decisions.
- **OCS Nav Services Division:** Julia Powell discussed the challenges and response changes induced by the pandemic which included a reduced crew size, postponement of routine surveys, and the reliance on risk assessments to make decisions.
- **ONMS**: Lisa Symons discussed how preparedness efforts have been altered due to the pandemic induced risks for facilities and people. Key risks included increased stress on staff, short notice for response activities, and increased time to prepare facilities.

The best practices panel was guided by the question, "What are your best practices for preparedness and response to reduce risk to NOAA or partner facilities, people, and resources to hurricanes during the pandemic response?" Collin Buckner reviewed the remaining survey results focusing on hurricane response.

- **FL DEP- NERR Manager - Rookery Bay:** Keith Laakkonen stressed that safety was the top priority during activities before, during, and after a storm. Other key points included using lessons learned from previous storms, increasing preparedness efforts, and increasing communication with staff during response operations.
- **Puerto Rico Sea Grant** - Ruperto Chaparro discussed the challenges in Puerto Rico as they prepared for the hurricane season including infrastructure already weakened by previous storms and limited availability of essential resources including water and power.
- **HSPO** - John McGowan offered two different perspectives on hurricane preparedness; HSPO and FEMA. For HSPO, he discussed the shift of the NOAA Operations Center to virtual support. For FEMA, the top concern was that staff and survivors of a storm would be less inclined to seek shelter when a storm is coming due to the risk of contracting COVID-19.
- **NCCOS - Beaufort Lab**: Greg Piniak discussed the planning, preparation, and post-storm phases for handling facilities and operations during storm season in light of the pandemic based on lessons learned from previous hurricane impacts.

Charlie Henry provided an overview of emergency response functions and introduced Kate Wheelock, who then delivered the wrap up and path forward. She reminded everyone that COVID-19 cases were on the rise and therefore preparation and response actions would be slower, and that the list of unknowns has become somewhat shorter since the first session, but that the changes since the first session reinforce the need to be flexible about when, where and how response will be conducting during the hurricane season. Agencies need to be mindful that it is challenging to understand what level of risk an individual is willing to accept. Those personal risk levels could be forced to change during/after a hurricane impact. Mitigation measures, such as disaster response plans, would be critical as the situation continues to evolve. Nancy Kinner concluded the summit by thanking everyone for their participation.

Introduction Day 3

On August 3, 2020, the final of three hurricane preparedness summits was held. The third virtual summit sought to understand and explore (1) the challenges and limitations of hurricane response and recovery activities during a pandemic and (2) best practices shared by the participants as they prepared for a possible major hurricane landfall. There were 131 participants that joined the virtual meeting representing NOAA agencies and other agencies involved in hurricane preparedness and response such as FEMA, EPA, USCG, Sea Grant, and multiple state representatives. Polls were used throughout the summit to have the participants engage with the session. An exit survey was displayed after the summit to capture any additional feedback.

The focus of this session was on post landfall mission assignments and response activities. A 27-question survey was distributed to the participants and other stakeholders prior to the summit. The survey covered hurricane response and was further focused on emergency support functions. A total of 46 responses were received from the survey. A copy of the blank survey and an analysis of the survey responses are included in **Appendix A** and **Appendix B**, respectively.

Nancy Kinner provided the opening statements. Charlie Henry, Emily Menashes, and Scott Lundgren provided the welcome. To set the stage for the discussion to follow, panelists provided an overview from their respective agencies as to how they were addressing the challenges created by the pandemic.

- **ONMS:** Lisa Symons summarized Summit Day 1 and Summit Day 2 by reviewing the goals, discussions, and key takeaways.
- **US Public Health Service**: CAPT Christian Rathke provided an overview of NOAA's pandemic response challenges and mitigation strategies.
- **CDC**: Kevin Dunn gave an occupational health overview and discussed that the CDC was focused on the pandemic response and providing guidance on how to safely re-open the country.
- **NOAA DPP**: Collin Buckner summarized the results from the pre-summit survey given to participants and other stakeholders, many of whom were in attendance.
- **FEMA:** Christine Hanson discussed what FEMA has done to mitigate pandemic challenges including providing PPE, temperature checks, social distancing, utilizing stakeholders and other key information when making decisions.
- **EPA:** James Webster discussed using lessons learned to guide the pandemic response and useful procedures used before, during, and after response actions.
- **USCG:** Michael Sams discussed the pandemic response protocols and updated response operations which included deploying limited staff and using remote support.

The remainder of the summit was broken out into two panels: one focused on NOAA representatives and the other panel focused on state representatives. The first panel was focused on understanding the challenges to NOAA's ability to support state and federal partner's field response missions during the 2020 hurricane season. This was the socialization of the 'minimum viable product' concept.

- **Small Boats:** LCDR Brian Elliot discussed NOAA's small boat program and the pandemic response including issuing specific guidance documents for small boat operations.
- **Aircrafts:** CDR Chris Kerns provided an update on the pandemic response including teleworking, weekly COVID-19 testing, and continued adherence with applicable guidelines.

- **NOAA Dive Program:** LT Aras Zygas discussed dive specific pandemic risks and the steps needed to return to diving.
- **Aircraft**: Mike Aslaksen discussed the challenges and limitations created by the pandemic including limited base personnel and operations.
- **Command Post:** John Tarpley discussed changes at the command post due to the pandemic and mitigation measures including telework, early planning, and risk mitigation strategies.

The panel made up of state representatives was an interactive question and answer session prefaced by short presentations from each of the following representatives.

- **Caribbean:** Daryl Jaschen discussed the status of Caribbean airways and how debris would be handled during and after a storm hits the island.
- **Georgia:** Captain Chris Hodge reviewed the status of the Golden Ray operation and the current strategy which prioritized public safety.
- **Florida:** Major Rob Rowe discussed the current pandemic strategy including COVID-19 testing, PPE, social distancing, and quarantining.

Charlie Henry delivered the wrap up and path forward. A theme across all three summits was that safety was always the top priority. Many useful best practices and mitigation strategies were presented that will be helpful for the rest of the 2020 hurricane season. Thank you all for participating.

Hurricane Preparedness Summit – Day 1

1:00 – 4:30 pm (EST)

April 23, 2020

Agenda

Hurricane Preparedness Summit Day 1

Notes

Hurricane Preparedness Summit Day 1

1. Opening, Overview and Logistics

1.1. Coastal Response Research Center – *Nancy Kinner*

- Thank you for participating, this is part one of three half day sessions.
- Overall Goals:
    - Enhance NOAA's support of its own people and resources for safety and improved disaster resilience considering the current pandemic, and
    - Meeting hurricane response mission objectives while maintaining response personnel safety, and
    - Enhance NOAA communications surrounding a potential hurricane – related disaster during a pandemic.
- Key considerations (all considering the pandemic):
    - NOAA's people
    - Guidelines for evacuation and recovery
    - Facilities
    - Lessons learned from previous hurricane season(s)
    - NOAA's partners

2. Welcome and Summit Objectives

2.1. NOAA Gulf of Mexico Disaster Response Center – *Charlie Henry*

- Focus on people, mission, and infrastructure (PMI) - people are always the priority.
- NOAA and the larger response community are always required to adapt to new situations, and we continue to do our mission while protecting our people.
- Understand and use previous lessons learned to prepare better for this hurricane season.
- Hurricane season or the pandemic would be a great challenge independently, together they create a synergistic nightmare, and this is what we are planning for.
- The biggest hurdle with hurricane response will now be social distancing. People will be together in close spaces without the ability to practice good hygiene and social distancing in locations throughout the country.

2.2. NOAA Office of Response and Restoration – *Director Scott Lundgren*

- NOAA Disaster Preparedness Program (DPP):
    - **Mission:** To prepare NOS and partners to respond to and recover from pollution events and natural disasters.
    - Activities include disaster coordination, training, exercises and drills, long-term disaster recovery, regional support, resource/tool development and continuity of operations.
- Focus of the summit series is on people, mission, and infrastructure (PMI).
- NOS Coordinated National Response:
    - NOS supports ESF 1 (transportation annex), ESF 3 (public works and engineering annex), ESF 5 (information and planning annex), and ESF 10 (oil and hazardous materials response annex).
    - Other functions include meteorological and oceanographic observations, weather services, and support for coastal communities.
- Pandemic Challenges:

- Areas that have been impacted by the pandemic are also the hurricane prone regions.
- Some situations (rescue and evacuations) will need to be re-evaluated due to the pandemic limitations (e.g. social distancing).
- Must continue to work on preparedness and utilize lessons learned to plan for the worst outcomes yet hope for the best outcomes.

2.3. Acting NOS Assistant Administrator – *Nicole LeBoeuf*

- Thank you all for your skill, determination, and professionalism while moving forward with this summit series despite the current events.
- We do not get to choose our current or future conditions in response, and we must work with uncertainty, hardships, and unpredictability.
- We need to recognize that many staff and responders have been under a lot of stress over the last month. The pandemic is reshaping our daily lives, but we are the ones who choose how we will respond to it.
- Whatever may come our way with the pandemic and/or the hurricane season, I am honored to be standing with all of you and will do whatever I can to keep you safe and supported.

2.4. Assistant Secretary of Commerce for Environmental Observation and Prediction, performing the duties of Under Secretary of Commerce for Oceans and Atmosphere – *Dr. Neil Jacobs*

- Hurricane preparedness is more crucial now than ever before and we have been working on a presidential proclamation for hurricane preparedness.
- Evacuations and sheltering in place orders during the pandemic have presented an extra challenge because we do not want to spread the disease, but we need to keep people safe from hurricanes.
- Working with FEMA and emergency managers to make sure people are extra prepared since some people will be reluctant to evacuate due to the pandemic.
- The goal of the DOC is to mitigate flood impacts from a coastal storm surge.
- NOS and the hurricane center are coupling hydrologic storm surge models with hurricane models and inland hydrologic models. Water is often the element that is most lethal.

3. Question & Answer

Q: Is there any guidance to employees who are responders but are in a higher risk category if they were to contract COVID-19, especially those in the field or in command posts?

- There is no 'one size fits all' guidance. It is up to the local community as local and regional levels are dealing with different pandemic conditions.
- It is best for everyone to follow local guidance and take instruction from the chain of command. An individual's health and safety are always top priority. All protocols speak to this so staff do not have to compromise themselves.

Q: FEMA is spread thin for emergency response due to the pandemic. Is NOAA influenced by that?

- **Jacobs**: NOAA is taking on as much non-pandemic related tasks off FEMA so NOAA can protect life and property and prevent people from being in a harmful situation. FEMA resources and personnel are limited. Tasks are federally mandated but state and locally executed, so work with state and local partners. FEMA needs to stay focused on the pandemic while NOAA can handle

the things in our charge to be ready to assist when called upon. We try to not loop FEMA in on things that they are not concerned about as it distracts from their top priorities.

4. Setting the Stage

4.1. NOAA National Weather Service (NWS) National Hurricane Center (NHC) – *Christopher "Chris" Landsea*

- Hurricane Center has two main operational branches: Tropical Analysis Branch and Forecast Branch
- USCG does not have forecasters, relies on NWS and NOAA to support lifesaving missions
- Graphical tropical weather outlook is the first notice that a storm is forming in a timeframe of the next five days and where it will form (probability as a percentage).
- Cone graphic:
    - Shows likely location of the center of the tropical storm/hurricane
    - Does not show likely area of tropical storm/hurricane force winds, extreme rain and/or life-threatening storm surge
- Tools:
    - Wind speed probabilities:
        - Harder to track than hurricanes
        - Depends on water temperature and depth, vertical shear, dry or moist air etc.
    - Storm surge inundation:
        - Geographical areas where inundation from storm surge could occur every 6 hours
        - Storm surge watcher warning in place (within 48 hours of landfall)
        - Based upon worst case scenario (10% exceedance)
    - Storm surge watch/warning:
        - Where (coast or inland) areas could have 3 feet or greater of water
- New for 2020:
    - Graphical depiction of storm surge inundation values
    - 60-hour forecast information on the cone graphic – decision-making time scale
- NOAA Season Hurricane Outlook:
    - Just a prediction – does not provide information on when or how a hurricane will hit

4.2. Office of Public Health Services – *CAPT Christian Rathke*

- Guiding public health principles:
    - Keeping plans general is the safest choice. We must be response-adaptable
    - Keeping people safe is, and should remain, the top priority
- More people have had the virus than we initially thought (over 50% showing no symptoms). This means the virus is more contagious that we initially thought.
- To return to pre-pandemic lifestyles, we need a vaccine and the localized risk must be low enough so that there is a minimal risk when people are brought back into society. This specifically applies to the response community in the following ways:
    - Essential personnel will have to continue working because their jobs are critical. Non-essential employees should stay at home while still achieving missions.
    - Develop strategies around risk mitigation, PPE, social distancing, and personal hygiene.
    - If anyone is sent to a location where the localized risk is high, and they have not received a vaccine, we are putting people at risk.

- Federal guidelines for opening America again:
    - Responsibility of assessing risk is on state and local governments. The approach to re-opening is up for interpretation and therefore opening will not be uniform.
    - We are expecting outbreaks, even though we are flattening the curve as a nation there are still many local areas that are increasing. Other coronaviruses increase in the fall and winter so that should be something we are prepared for.
- In general, natural disasters make people more prone to infectious diseases and COVID-19 is no different.

5. Question & Answer

Q: We have been able to adjust to working with pandemic restrictions (e.g., telework), but how do you see the pandemic affecting the future workforce mobility and remote capabilities for the long term?

- **Rathke:** Everything is a work in progress. It comes down to the level of risk and risk management. Determine the level of risk and how much mitigation is required to lower the risk. Is the remaining risk level after mitigation acceptable?

Q: Since you need to prepare for one storm the same as you would for many storms, the forecast for storms does not matter from a planning perspective. How does the hurricane center forecast compare to the Colorado State University forecast which is predicting more storms than normal?

- **Landsea**: I cannot discuss the NOAA forecast yet, but in general, forecasts provide a good sense of overall activity but may be missing key information (e.g., where the storm will form, steering patterns, and the storms impacts). It will be difficult to change preparedness based on a seasonal outlook because that does not predict landfalls. You cannot use seasonal outlooks to make changes at the regional level and you must prepare regardless of what the forecast predicts.

Q: As we prepare for hurricane season, are there conversations about standardizing ESF 3 and ESF 10 mission assignments? Is NOAA going to be engaging in more ESF 3 mission assignments?

- One of the purposes of this summit series is to drive those types of conversations when thinking of hurricane season and there are multiple program discussions happening at regional and national levels.
- There has been a lot of discussion with our partners to plan how to execute response activities during a hurricane and keeping people safe is the top priority of every mission.
- ESF 3:
    - Attention to marine debris and related issues. We have worked with partners to remove as much debris as possible during early mission activities. More focus as funding is received for the removal of debris.
    - NOAA has done a good job as an agency to remove as much debris as possible during mission assignments. Under ESF 10 mission, marine will be incorporated into the debris plan.
- Keep open lines of communications.
- Not necessarily as active in the emergency response phase.

6. Briefings and Discussion

Topic: Using Hurricane Season 2019 After Action Report in context of the pandemic, how is your office addressing lessons learned/readiness with focus on people safety and mission for the upcoming hurricane season?

1. How are you changing your posture form last year's hurricane season? What lessons learned are being implemented?
2. How are you addressing the pandemic related restrictions?
3. Do you have a response posture during shelter-in-place/telework?
4. What is posture for response with social distancing/quasi-normal?
5. What action is needed to protect people and facilities (specifically to hurricane-prone locations) if the pandemic restrictions continue?

6.1. Overview and Charge – *Nancy Kinner*

- Each office was asked these five questions related to hurricane response during the pandemic.

6.2. Human Resources Policy Specialist – *NOAA Corporate Andrew "Andy" Green*

- Responsible for COOP evacuation and facility closure from and human resources perspective.
- The process for evacuations and evacuations pay:
    - Get evacuation orders from a local authority and the notification goes up the chain of command.
    - Assess the impact and decide whether to authorize benefits and what to provide (e.g., pay, travel, transportation, per diem assistance). Employees then need approval from their supervisor (e.g., E2 and authorization, advance pay, time sheet coded).
- The process for facility closure:
    - Currently working on guidance for facility closure. Most senior DOC manager will decide if a facility will need to close. This requires coordination with other federal offices in the area, as NOAA does not want to be an outlier.
    - Once a decision is made, HR will notify DOC that a facility is closed.
- Currently, we have no closed facilities, but most employees are working from home unless they are essential.

7. Program Offices with Hurricane Mission Essential Function Assignments

7.1. National Geodetic Survey (NGS) – *Mike Aslaksen*

How are you changing your posture from last year's hurricane season? What lessons learned are being implemented?

- Collection:
    - A primary aircraft is available and one back up is available starting June 1, 2020 to respond to tasking from the National Hurricane Center.
- Processing Dissemination: Onboard aircraft
    - Pre and post COVID-19 testing of the system.
    - Dissemination tested last week.
    - NGS IT is constantly involved and testing ERI dependencies.
- Communication:

- Critical that OMAO and NOS speak with one voice – lots of taskers/scenario inside and outside of NOAA.
- Understand assessments that need to be done and the operational risk management.

How are you addressing the pandemic restrictions? Do you have a response posture during shelter-in-place/telework?

- Collection:
  - Aircrafts will be staffed at the minimum capacity.
  - NOAA aircraft travel to the DC area to pick up staff vs using commercial air.
  - ERI ops would be centralized to a single location (minimizing exposure and interactions).
- Processing/Dissemination:
  - All personnel involved are following OPM/DOC/NOAA evacuation order and adhere to local guidance.
  - PPE requirements have been provided.

What is posture for response with social distancing/quasi-normal?

- Use social distancing as much as possible to safely accomplish their missions, may have MEF personnel be last to return when normal operations resume.

What action is needed to protect people and facilities (specifically to hurricane prone locations) if COVID-19 restrictions continue

- Collection: No new concerns
- Processing/Dissemination:
  - Personnel located outside of hurricane prone areas are dispersed and have backups.
  - If the DC area were threatened, we would need assistance to relocate key personnel to one of the pre-identified NOAA locations.

7.2. Office for Coast Survey (OCS) – *CAPT Christiaan "Chris" Van Westendorp*

- Posture:
  - Minimal staffing.
  - Delayed/staggered deployment (avoid burnout and risk of infection).
  - Response – proactive state departments and USCG engagement.
- Pandemic Restrictions:
  - Postpone routine surveys.
  - Primary objective is protecting life, property, and the environment.
  - Limiting number of boat personnel and designating one person to fuel the boat, trailer the boat, etc.
  - CDC guidance (social distancing, PPE, protocols, etc.).
- Telework and Social Distancing:
  - NRTs are use to remote work.
  - Minimal routine maintenance.
  - Autonomous systems used for maintenance – have not deployed yet. Learning more about them and hope to use the in response this year or next year.
- Protecting Personnel and Facilities:
  - NRTs designated for storm response have little/no public interaction.
  - Need PPE for situations when we cannot use social distancing.

- Working on disinfection guidance for vessels and trucks.
- Working on the logistics required for lodging, food, fuel etc.

7.3. Office of Response and Restoration (OR&R) – *John Tarpley*

- OR&R mission focuses on pollution response:
  - Scientific Support Coordinators (SSC) – support to Oil/Hazardous Substance mission under disaster response (ESF 10).
  - Marine Debris – Debris Task Force Coordination (ESF 3) with FEMA, USACE and States.
  - Cross NOS Coordination - Disaster Preparedness Program.
- After a hurricane we try to identify targets, vessels, tanks, debris, and ships in the environment. We work closely with FEMA, EPA and USCG and are involved in mapping, information management, operations, and environmental consulting.

How are you changing your posture from last year's hurricane season? What lessons learned are being implemented?

- Conduct yearly Hot washes /After Action Reports on our response.
- Lessons Learned over the last 3 years:
  - No two hurricanes are the same.
  - The States influence the federal response (Stafford Act).
  - Staff preparedness (backups for evacuations, vacations, etc.).
  - Plan for long-term support (e.g., rotations).
  - Prepare to support multiple locations.
  - Conduct regular Office coordination briefings.

How are you addressing the pandemic restrictions? Do you have a response posture during shelter-in-place/telework? What is posture for response with social distancing/quasi-normal?

- Very cautious by doing 100% telework and only authorizing mission essential travel. We are delaying launches to evaluate risk and have no active responses. Currently, we are trying to coordinate logistics such as lodging, food availability and staff willingness to deploy.

What action is needed to protect people and facilities (specifically to hurricane prone locations) if the pandemic restrictions continue?

- Evacuations: A personal decision about if there is more risk from potential COVID-19 exposure during an evacuation or staying in place through a storm.
- Practices for Response:
  - Physical distancing on-scene.
  - PPE and PPE 'to-go' kits.
  - Continue coordinating with partners about on-scene response protocols and best practices.

7.4. Center for Operational Oceanographic Products and Service (CO-OPS) – *Paul Fanelli*

- Our focus is on quality control and quality assurance of sensors along the coast during storms. This includes real-time storm surge observation, post-storm peak water level analysis, support for NGS and OCS post storm surveys, participate on NOS Incident Management Team (IMT), and assist NWS and USCG with collection of post storm high water mark data.

How are you changing your posture form last year's hurricane season?

- No change in posture when it comes to producing data.
- CO-OPS will still be prepared to provide emergency tide support for nautical charting responses to impacted ports.

What lessons learned are being implemented?

- Addressing concerns about how water level forecast information is being presented in the Coastal Inundation Dashboard.
- Working on creating a printable version of the new QuickLook product in a similar format to the legacy product that was replaced in 2019.

How are you addressing the pandemic related restrictions?

- All employees are teleworking, even those normally in the field.
- Station maintenance and contract work is suspended.
- Emergency station repairs may occur on a case by case basis.
- Travel guidance is being disseminated from NOAA and local, state and nation levels.

Do you have a response posture during shelter-in-place/telework?

- Posture will remain the same for serving up data and products.
- Challenges with ability to repair stations and sustain storm damage.
- Emergency station repairs are considered on a case by case basis (operational importance, location, travel risk, personnel availability, etc.).

What is posture for response with social distancing/quasi-normal?

- All data-related response work will be done remotely, and in-person response efforts will be delayed.

What action is needed to protect people and facilities (specifically to hurricane-prone locations) if the pandemic restrictions continue?

- Continue to work remotely
- Many CO-OPS stations will not receive routine maintenance which may result in future degradation.
- Deputy Chief has access to purchase pandemic supplies to protect field personnel (masks, glove, cleaning supplies, hand sanitizer, etc.).

8. Question & Answer

Q: Will NOAA support evacuation prior to local governments to avoid having to travel further to find shelter?

- **Green:** In general, we would have some sort of evacuation order from a local authority before we can authorize benefits. Internally, if we were to go through NOAA it would be the exception not the rule.

Q: Would staff deploy if there was no PPE available? If yes, how would they deploy?

- **Westendorp**: No, staff would not deploy. We would conduct an initial assessment on a case by case basis (have people been isolated, is anyone showing symptoms, etc.) and then evaluate based on CDC guidelines and through consulting with leadership and the incident management team. We would not intentionally put people at risk.

- **Aslaksen**: No, staff would not deploy. We are doing drills with FEMA to fulfill our PPE requirements.
- **Tarpley:** No, we would not require staff to respond. We would evaluate on a case by case basis as some staff may have their own PPE. Oil spill response teams and/or state level agencies talking to management teams about how they are staffing. What procedures and supplies do they have? (some have a lot and other have staff bring their own). There will be a delay in response as it takes time to ensure we have the equipment to keep people safe.

Q: Are there specific aspects of planning for both hurricanes and the pandemic response that are applicable to other offices and are worth sharing to the broader community?

- **Green:** This is the new normal. We will be slowly transitioning by providing more telework flexibility and less focus on time and attendance. We cannot lose this flexibility as we start to return to normal.
- **Westendorp**: Many of the topics discussed today, with respect to preparation and using the public health information, are worth sharing with the broader community. Many lessons learned were shared and adapting to new ways of doing business.
- **Fanelli**: Shift in infrastructure to teleworking. This shift has impacted the field staff due to core work being interrupted. Non-field staff have been doing a great job working from home. Most data work can be done from home. Data analysis side adapted well because of provisions in place. This may not be applicable to other offices.
- **Tarpley:** Job analysis risk assessment that helps to identify what a hurricane would look like during the pandemic. Different protocols for traveling and what PPE 'to-go' kits will be. These things would be good to share between agencies.

9. Other Program Offices

9.1. Office for Coastal Management (OCM) – *Ralph Cantral*

- We have no specific standing response functions, but we work with our state partners to help with coastal vulnerabilities. Our staff work in many locations and routinely go to FEMA operational centers.
- We update our contact list and emergency notification system and test the systems in real-time. Our goal is to share information as broadly as possible.
- <u>Pandemic Response:</u>
    - Staff is accustomed to accomplishing our goals from different locations.
    - Communication protocols for staff use before, during, and after storms.
    - Disaster Coordination Contact Sheets and Emergency Notification System (ENS).
    - Clear staff roles and responsibilities.
    - Specific responsibilities for regional staff in pandemic affected areas.
    - Challenge: most of our training and technical assistance has gone virtual.

9.2. Office of National Marine Sanctuaries (ONMS) – *Jonathan Gordon*

- The sanctuaries have a lot of infrastructure that supports our sites. We have 14 sanctuaries, 2 national monuments, 10 visitor centers, 41 vessels, 154 federal staff and 199 associate staff. If a hurricane hits, it will most likely impact a sanctuary.

How are you changing your posture form last year's hurricane season? What lessons learned are being implemented?

- Improved communication channels.

- Developed a predetermined site shut down and reconstitution protocols to expedite the site closure process.
- Developed Resource Advisor training with OR&R and Florida for ESF 10.
- Developed protocols for rapid assessment of debris and impacts to coral reefs.

How are you addressing the pandemic related restrictions?

- ONMS is following OPM/DOC/NOAA regarding telework.
- Our visitor centers are closed, and we are adhering to local government guidance on social distancing and reconstitution protocols. Field operations for boating and diving will occur under protocols developed by OMAO.

Do you have a response posture during shelter-in-place/telework?

- ONMS is not MEF. Response posture priorities are securing our facilities and evacuating personnel.

What is posture for response with social distancing/quasi-normal?

- To be determined – will depend on agency guidance, PPE availability and staff willingness.

What action is needed to protect people and facilities (specifically to hurricane-prone locations) if the pandemic restrictions continue?

- ONMS may have to evacuate ahead of country or state orders because every location is hurricane prone. Temporary housing is at a premium.

9.3. U.S. Integrated Ocean Observing System (IOOS) – *Ben LaCour*

- We disseminate ocean data globally and coordinate outreach. We have 20 staff and most of our work is through our 17 federal agency partners and 11 regional partners.
- Our primary tasks are observations (collect information), stakeholder outreach, data access and integration, and maintaining a suite of tools and models
- Pandemic Response:
    - Operate out of small office in Silver Spring, MD – no Federal owned facilities
    - Telework
    - Our work is coordinated with our regional partners and each state is different on what we are able and unable to do. Therefore, some observing assets may not be able to be repaired or maintained until pandemic restriction are lifted.
    - Asking everyone to follow local, state, and national guidance

9.4. National Centers for Coastal Ocean Science (NCCOS) – *Randy Grady*

- Prior to 2020:
    - Facilities sustainability goal: 3-4 days for electrical/mechanical support
    - NCCOS remote monitoring unique to each location
    - Reopen facilities based on post storm facility condition assessment.
- Lessons learned from 2019 (went 11 days without power):
    - Facilities sustainability goal: 11-14 days for electrical/ mechanical support (burn rates/load calculations etc.)
    - Corporate approach to standardizing and upgrading remote monitoring
    - Evaluation of facility infrastructure and staff reoccupation capabilities is in better alignment

    - Hardening of facilities to become inherently resilient to future storm impacts (capital investment projects/upgrades)
    - Infrastructure may be ready to be reoccupied, but that does not mean staff is ready
    - To integrate smoothly, staff must coordinate with infrastructure personnel
- Pandemic Impacts:
    - Following OPM/DOC/NOAA guidance (social distancing, telework, etc.)
    - Preparation timelines for hurricanes have been extended to promote pandemic restrictions (e.g., 1-2-day prep is taking 3-4 days)
    - Facilities are at a higher level of readiness (due to lack of available staff support)
    - Labs are closed except on a limited basis for essential purposes

9.5. Office of Marine and Aviation Operations (OMAO), Marine Operations Center, Atlantic (MOCA) – *CDR Matthew "Matt" Jaskowski*

How are you changing your posture form last year's hurricane season? What lessons learned are being implemented?

- Proactive with drills and exercises and are more prepared than we were last year.
- Marine OPS:
    - Three ships minimally staffed
    - Shipyard repair is postponed
    - Evaluating various courses of action to reconstitute response assets by June 1, 2020
- Aircraft OPS:
    - The P-3 and G-IV Hurricane Hunter aircraft will be staffed and ready to respond to tasking from the National Hurricane Center starting June 1, 2020

How are you addressing the pandemic related restrictions?

- Marine OPS:
    - All ships and shore support facilities are minimally staffed
    - All personnel complete a daily symptom screening prior to accessing the ship
    - Contractor site visits need to be cleared
        - Each contractor must provide their travel and exposure history, have proper PPE, and adhere to the guidelines
- Aircraft OPS:
    - Hurricane response is a Mission Essential Function for OMAO and will be staffed to the minimum extent possible.

Do you have a response posture during shelter-in-place/telework?

- Marine OPS:
    - Phase approach to reconstituting the ships and shore facilities.
    - Any course of action will have some risk – evaluating and mitigating the risks is essential.
        - Assumptions, Actions/Reactions, and Risks
        - Creating risk assessment criteria
- Aircraft OPS:
    - Hurricane response is MEF for OMAO and will be staffed to the minimum extent possible.

What is posture for response with social distancing/quasi-normal?

- Marine OPS:
    - Evaluating various courses of action to reconstitute response assets by June 1, 2020.
    - Identifying phases and sequencing we need to achieve a response readiness posture.
        - New criteria/procedures as part of reconstitution
    - Health of our personnel is the top priority
- Aircraft OPS:
    - Use social distancing as much as possible to safely accomplish mission

What action is needed to protect people and facilities (specifically to hurricane-prone locations) if the pandemic restrictions continue?

- Hurricane preparedness plans are update annually and restrictions will not change significantly in those plans other than minimal staffing.

10. Question & Answer

Q: What guidance is there for small boats and diving?

- **Jaskowski**: I cannot speak on that. We do not have a detailed plan on what the two programs' reconstitution posture will be.

Q: Have there been discussions on how we are going to address reopening of visitor centers?

- **Cantral**: The visitor centers are state run, so we rely on the state to make some of those decisions. There has been discussion on next steps but no consensus on how or when.
- **Gordon**: Has not been addressed. Sanctuary partners help manage centers and we will most likely work with partners/foundations. Protocols and reconstitution are being discussed and public safety is the number one concern.

Q: Given the possible reopening, can you tell us more about the daily symptom screening and provide input on if visitor screening is possible?

- **Jaskowski**: Procedure put in place by public health service. Each officer covers a cohort of ships. If someone is going on a ship:
        - Call public health office
        - Given a symptom screening for typical symptoms related to COVID-19
            - Symptom screening is not perfect due to asymptomatic people
        - Testing is paramount
        - 2-3 weeks in isolation is important
    - Aviation took lead because of recent flights – have not finalized marine plan.
        - Working document for protocols
        - Science and PPE for the virus are still emerging
        - Emergency screening is a good idea due to closeness of employees
        - Not including testing right now because it is not available

Follow up: If testing is available would it be the antibody test or other?

- **Jaskowski:** It would be a current test because antibody does not test for active cases (it could still be spreading) and there are a lot of unknowns about the antibody tests.

Q: There are concerned about reopening too soon; before staff are ready to reenter the workplace due to issues at home. Have you looked at using facilities for place of respite and would you consider it due to the pandemic?

- **Gordon:** In a normal hurricane situation if the office is available then yes. With the pandemic and no PPE or mitigation strategy, that possibility goes down. Worst case scenario maybe, but not likely.
- **Grady:** Agree with Gordon. It is a case by case basis because some areas have been more impacted by the pandemic than others. Different buildings have different layouts making it easier in some buildings to maintain social distancing.

Q: You mentioned the issue of PPE availability. Is there a concern about the ability to respond due to a delay in PPE shipments?

- **Gordon:** Now looking at investing in PPE but nothing is fully coordinated. We did not want to inhibit medical responses. PPE needs to be available if we are going to go back to our offices.

Q: Gliders are used by regional associations to collect data; can other unmanned systems be used in other mission assignments? What drives development across missions?

- **LaCour**: There are other autonomous systems used. Gliders are the most operational – we have wave gliders and sail drones. We need to work with people and collaborate on other project with autonomous systems. Gliders on ship-based services in the Arctic. Looking at collaboration in remote areas. Case by case basis on what local areas can and cannot do.

Follow up: Is there flexibility to expand that kind of work?

- **LaCour**: Yes, case by case basis based on the regional level. Some regions can quickly take on a task that could be harder for NOAA to do with its infrastructure.

Q: How do we address false negatives from testing? With medical screenings how do we screen out symptoms related to COVID-19 vs. allergy/cold?

- **CAPT Rathke**: Regarding testing:
    - 3-4 weeks ago, there were only pockets of areas doing testing
    - Testing is still limited but we are getting more tests
    - U.S. needs close to 700,000 tests a day. Might be close in 3-4 weeks
    - Test were having a lot of false negatives ~40% in some locations
        - Now it is below 10% with reagents and sample collection changes
- If someone has any symptoms that are not permitted to enter the workplace or deploy until they quarantine for 14 days and test negative for COVID-19.

Q: Is there any literature about why there is high number of false negatives?

- **CAPT Rathke**: Not a lot of science behind that yet and there are not many restrictions on publishers.
    - Stick to peer reviewed papers (CDC NIH)
    - Validate information
    - Credible sources
- Problems with testing:
    - People who are administering the test are not trained and the nasal swabs must go all the way back
    - Saliva testing is more prominent now
    - Reagents lab was not processing correctly.
        - Has been remedied for the most part with saliva testing.

11. Wrap Up and Path Forward

11.1. USPHS – *CAPT Christian Rathke*

- When we think of the pandemic, we need to balance operational readiness with risk of exposure.
- Key Takeaways:
    - Have a flexibility mindset as information is always changing.
        - Responses and recommendation will change as progress through hurricane season
    - Realistic expectations of self and team
        - Try not to over promise so can deliver and plan
    - Be compassionate to yourself and others
- Mitigation Strategy:
    - Most important to empower employees
    - Make decisions about personal health.
        - Consider whether staff is high risk
        - Consider if what they are asked to do is safe or not
        - Make decisions based on personal risk
    - Make the workplace as safe as possible
- Take care of personal health including self-care, sleep a minimum of 6 hours (goal of 8 hours), exercise, eat healthy, and try to reduce stress.

11.2. NOAA Disaster Preparedness Program – *Kate Wheelock*

- Many unknowns regarding hurricane preparedness. Prepare the best we can give the added challenges.
- People:
    - Staff health and safety is top priority
    - Need more PPE
    - Social distancing may not be possible
    - Find creative solutions to meet mission objective while keeping people safe.
    - Staff choice as to whether to respond or not. There should be no questions or retribution for responder willingness
- Mission:
    - Minimal support from FEMA
    - Connect with state partners
    - Communication is critical for the exchanging of emergency messages and timely decisions for evacuations
- Infrastructure:
    - Preparing facilities will take longer
    - Facilities are not getting routine maintenance

12. Question & Answer

Q: How do COVID-19 tests address our questions? A person could get a negative test or be asymptomatic but then get exposed shortly after and infect their coworkers?

- **CAPT Rathke**: There is no perfect answer and the timing needs to be strategic once testing is available. One Navy strategy is to clean everything and have a strict 14-day quarantine protocol, have 5-minute point of care machines to test people before they enter the ship.

Q: Do you predict the number of tests ramping up?

- **CAPT Rathke**: The gateways to be met is 14 steady days of declining cases. Before Phase 1 of going back to work – need to have the capacity to test and respond for cases. Governors interpret the criteria differently so there is no uniform reopening method.

Q: Georgia ignored gateways and had different recommendations for personnel. Would NOAA be more conservative local governments?

- **CAPT Rathke:** Only three meetings over the last 3 weeks for reconstitution. Still very early discussions on what reconstitution looks like for NOAA. If state and federal guidelines are not sufficient/not best for employees – we lean more on the conservative side. Safety needs to be paramount.

Q: Regarding the issue of purchasing PPE, is NOS and NOAA competing?

- **Wheelock:** Three avenues for PPE (1) Craigslist (2) FEMA (3) Amazon.
    - NOS would be craigslist – at first, we were donating – then list and hold it and decide for mission essential function – then distribute.
    - FEMA – cloth masks for NWS for operations.
    - Amazon-special account for government access to PPR. It is reported that there is nothing to buy there.

Q: Would there be PPE available for non MEF if need to close for hurricane preparations?

- **Wheelock:** Allow MEF to access craigslist first, then if there is additional equipment left over the non-MEF personnel could access it or make their own.
- **CAPT Rathke:** Need an operational mindset. Meeting soon to work out a strategy to get supplies and more PPE.

Q: Communications always an issue with emergency response, in context of the pandemic and hurricane response and preparedness how are you enhancing communications?

- **Wheelock:** I do not know about enhanced communication, but regular lines of communication typically remote so regular communication still applies. Last year learned group email is not good. Communication has allowed us to be geographically disperse. Crisis communications have clear guidance and communication up and down the line.

13. Closing

13.1. Coastal Response Research Center – *Nancy Kinner*

- Thank you, please answer the following post survey question. This information will inform Day 2 and Day 3 in this series which are following in the coming weeks.

14. Post Summit Survey

After today's Hurricane Preparedness Summit webinar, what questions or concerns do you have with respect to Personnel, Mission, and Infrastructure (PMI)?

15. Adjourn

Hurricane Preparedness Summit – Day 2

1:00 – 4:30 pm (EST)

June 29, 2020

Agenda

Hurricane Preparedness Summit Day 2

Notes

Hurricane Preparedness Summit Day 2

1. Opening, Overview and Logistics

1.1. Coastal Response Research Center – *Nancy Kinner*

- Thank you for participating, this is part two of three half day sessions.
- Review of Overall Goals:
    - Enhance NOAA's support of its own people and resources for safety and improved disaster resilience considering the current pandemic, and
    - Meeting hurricane response mission objectives while maintaining response personnel safety, and
    - Enhance NOAA communications surrounding a potential hurricane – related disaster during a pandemic.
- Key considerations (all considering the pandemic):
    - NOAA's people
    - Guidelines for evacuation and recovery
    - Facilities
    - Lessons learned from previous hurricane season(s)
    - NOAA's partners
- Overview of Hurricane Summit Day I: Focus being on In-house NOAA
    - How will things be different this hurricane season than they were last year?
    - All NOAA program offices involved in hurricane response gave a presentation update.

2. Welcome and Summit Objectives

2.1. NOAA Gulf of Mexico Disaster Response Center – *Charlie Henry*

- Welcome and thank you for joining.
- Takeaways from Summit Day 1:
    - The pandemic creates new challenges for hurricane preparedness and response. Hurricanes are a challenge, the pandemic is a challenge, combined they present even more of a challenge.
    - The pandemic impacts response activities, evacuations, and forces people to be close together (hard to social distance).
        - Telework, physical distancing, PPE – all key elements
        - Not a clear understanding of the risks from the pandemic because the pandemic was and is ever evolving
- Goals for Summit Day 2:
    - Discuss the current reconstitution guidance and health and safety guidelines.
    - Understand the level of preparedness and limitations for facilities/infrastructure, people, and resources for NOAA and its partners during the hurricane season considering the pandemic.
        - Understand new risks in hurricane preparedness because of pandemic.
        - Learn best practices on how preparedness and response reduce risk to NOAA and partner facilities, people, and resources to hurricanes during the pandemic response.

2.2. NOS Deputy Assistant Administrator – *Steve Thur*

- Thank you for rolling with the changes and for the work you are doing to prepare ourselves for the coming months.
- How we were working one month ago was different than three months ago and will be different from how we work a month from now.
- Situations are changing so dramatically so quickly so we need to plan as professionally as we can and adapt with the conditions we are presented with.
- Reviewing facility readiness status for 31 ocean service facilities all over the country.
    - Very challenging set of decisions
- Maybe in a situation where we will take one step forward and two steps back.
    - Hurricane playbook may change due to travel bans or increase in positive cases

2.3. NOAA Office of Response and Restoration –*Scott Lundgren*

- Welcome and thank you to our partners who can be here. Thank you for your work, participation, and sharing of plans on preparedness.
- You are all a critical link in harmonizing response activities and preparedness.
- OR&R and DPP: Response to natural disasters and pollution incidents.
- COVID-19 cases are increasing in most states and there are new peaks in hurricane prone regions.
- Only one month into hurricane season and have already had four major storms across the basin
- Need to protect people and services as well as respond to events.
    - How can we carry out this critical work in a way that will protect our responders?
    - How do we manage incident response in these conditions?
- Given the challenging combined threat – we need to continue to test and evaluate our planned responses.

3. Introductory Poll

1) Does your program support FEMA Emergency Support Functions (ESF)?

A) Yes (73%)
B) No (17%)
C) I don't know what an ESF is (10%)

2) Can your program support be accomplished remotely?

A) Fully (22%)
B) Partially (78%)
C) Not at all (0%)

4. Setting the Stage

4.1. NWS Overview of 2020 Hurricane Season Forecast – *Christopher "Chris" Landsea, NOAA NWS NHC*

- NOAA Seasonal Hurricane Outlook was issued a few weeks ago.
    - Estimating six to ten hurricanes (average of six) this season
    - Does not predict if an area will get hit or how strongly it will get hit
    - Must be as prepared for one hurricane as you would be for several hurricanes
- Hurricane Center has two main operational branches: Tropical Analysis Branch and Forecast Branch.
    - Issue forecasts for mariners via text, graphs, and grid products using USCG high frequency radio broadcasts

- USCG does not have forecasters, relies on NWS and NOAA for support.
    - Work closely with D7 (Miami) and D8 (New Orleans) to conduct briefings for life-saving information
- Graphical tropical weather outlook:
    - First notice that a storm is forming over the next five days and where it will form
- Cone graphic:
    - Shows likely location of the center of the tropical storm/hurricane
    - Does not show likely area of tropical storm/hurricane force winds, extreme rain and/or life-threatening storm surge
- Tropical cyclone (wind) intensity:
    - Dry air
    - Warm water temperatures
    - Effects of wind shear
- Tools:
    - Wind speed probabilities:
        - Provide probabilistic information for people to view
        - Mathematical technique where you have 1,000 plausible hurricanes and add up this ensemble to see chances of wind intensities
        - Used as a decision-making tool
    - Storm surge inundation:
        - Geographical areas where inundation from storm surge could occur
        - How high above ground the water could reach in specific area
        - Based upon worst case scenario (10% exceedance)
    - Storm surge watch/warning:
        - Became operational in 2017
        - Uses a 3' threshold
        - Communicated using graphic on NHC website, watch/warning section of the NHC public advisory using coastal breakpoints, and NWS WFO Hurricane Local Statement
- Evacuations will be more difficult this year:
    - Hard to maintain social distancing
    - People cannot stay home if their house is impacted by a storm
- New for 2020:
    - Graphical depiction of storm surge inundation values
    - 60-hour forecast information on the cone graphic – decision-making time scale

4.2. Pandemic Public Health Service Overview – *Gary Montgomery, MPAS, PA-C, LCDR, USPHS*

- Questions about the pandemic:
    - What are the long-term effects?
    - How do you manage asymptomatic cases?
    - Are there long-standing medical consequences from developing COVID-19?
- People are forming Immunoglobulin G (IgG) antibodies that protect themselves from COVID-19
    - Unknown how long these will protect you
    - Similar antibodies last 1 year to 3 years for some strains but others may last weeks to months
    - Potential risk of reinfection – very concerning
- CDC released its interpretation of cumulative death forecasts

Anywhere between 130,000 to 150,000 especially in hard hit states

- New infections are on the rise
  - Warm weather bringing people out of home isolation
  - Social distancing is being put on the back burner
- A second wave of pandemic may spike in August or September
  - Concerning because we are starting with seasonal cold and influenza season
  - Makes diagnosing COVID-19 and decision-making more difficult
- Anticipating that the vaccine will be done by 2021
  - Concerns about capabilities of creating 4.5 billion vaccines needed to create herd immunity in worldwide society.

4.3. NOAA Best Practices for Reintegration – *Savannah Turner, OR&R Health and Safety Officer*

- **Phase 1**: Return to workplace for a small percentage of people for mission critical functions with restrictions and safety measures in place.
  - Focus on mission needs and whether local conditions and data can allow for some return/access to facilities.
  - Up to 25% occupancy – maximum
  - No timeline for phase implementation
  - Looking for downward trajectory in symptoms and tests for 14 days – in line with White House goals.
    - Look at trend data by county, hospital data by state
    - Positivity rates for decisions – give insight into how widespread a community is testing. High rate means testing worst cases and not looking at all cases. Lower rates mean inclusion of milder or new symptoms.
- Upon reopening:
  - Most NOS buildings are still closed to the public
  - Different protocols for entering and exiting
  - Record where in the facility you travel each day (know your movements and interactions)
  - Reorientation training for those returning to work
  - Self-certification (personal level of accountability)
  - Masks and social distancing must be maintained. Masks control lower transmission of cases and minimize community exposure
  - Elevator passenger restrictions
  - Large signs to remind people of all different measures. Signage catalog released last week with instructions
  - Security guards behind plexiglass
  - Mail delivery, contractors, etc. will all perform self-assessments and social distancing requirements.
  - Increased cleaning and disinfecting
  - Community areas will be closed (break rooms, conference rooms, etc.)
  - Attending meetings virtually despite being on site
- Mission activities that occur outside of these facilities, we must think about risk across multiple dimensions.
  - Number of people, proximity, environment, duration of activities
    - Close contact for extended periods of time increases risk

4.4. Reconstitution for Federal Facilities – *John Dennis, GSA Public Buildings Service*

- Responsible for 8 southeastern states - coastline from North Carolina through Mississippi, coverage for Southeast Sunbelt Region 4.
- Hurricane response – ESF 7
- Return to facilities (reintegration) is steady and deliberate, no rush to return.
- Primary responsibility during hurricanes is to support FEMA (use NWS and NOAA, plan and retract as needed).
- Partner for disaster assessments, deploy teams before a storm hits and begin damage assessment of owned and leased buildings immediately following an event.
    - If NOAA's lease is damaged during a storm, we want to assess that
- Facilities:
    - NOAA has 200,000 square feet throughout region
    - 25% of leases are in Florida
    - Around 1,500 leases in the region
- Cleaning:
    - Give at least a 14-day notification before occupying so that there is time to modify contracts and leases.
    - Have cleaning protocols in place upon return. Mandatory signage and mask wearing.
    - Clean appropriately in impacted areas when confirmed exposure.
    - Mission of the agencies we serve does not lend them to constantly be in a telework environment.
    - Increasing base level of cleaning and to maximum extent within operational systems of buildings modifying air intake.
    - Modifying cleaning contracts to consider these implications and increase sanitation.
- Some folks are in the office already and want to make sure they are in a safe environment.
- Need to operate in a flexible way – how can we accelerate evacuations and maintain social distancing, so it has less of an impact on first responders.

5. Question and Answer

Q: For those of us with children and vulnerable members of our family, we are concerned with transmission at preschools and schools. Is there any additional insight from the CDC about transmission rates in children?

- Everybody is at equal risk for becoming infected – the difference is how we show it.
- At-risk groups:
    - Elderly with pre-existing diseases and young children under the age of five
    - At risk for developing certain conditions with abnormal clotting of blood
- Children are equally at risk of infection but not equally at risk for developing severe cases of COVID-19
    - Likely to be asymptomatic or have minimal symptoms

Q: Is there a threshold for testing positive rates?

- World Health Organization: beneficial to have test positivity rates at 5% or below.
- If you have a test positivity rate of 2%, two out of every 100 people will have an active infection.
    - See states and counties where test positivity ratio is 5% or under.
        - Ex: Mobile, AL county is between 9-10%
- Are we only testing symptomatic folks? If we are testing appropriately there will be sufficient testing to see rates go down because we are testing more than just those with symptoms.

Q: Is there one measure that you think is critical for your building/services and can you share this as you prepare for hurricane season, specifically as it regards to the pandemic?

- We have gone through a period of spikes and then saw a lessening; but as people become more active the trends are going back up.
- Following return to facilities plans
- Testing and trends are the drivers for decisions
    - If agencies require something different, we will support them

6. Risk Panel

6.1. Recap of Survey Responses – *Collin Buckner, Disaster Preparedness Program, NOAA OR&R*

- Summarized results from a pre-summit survey given to participants and other stakeholders prior to the summit. Fifty-six people completed the survey.
- Key takeaways:
    - 85.5% of respondents said their organization/agency has a hurricane preparedness/response plan.
    - Top three responsibilities for the 2020 hurricane season were:
        - How to keep your people safe (COVID-19) – 87%
        - Communication capacity and protocols – 66.7%
        - Determining whether you have enough PPE – 40.7%

6.2. Rutgers University/Jacques Cousteau NERR – *Mike De Luca*

- Critical lessons learned from Hurricane Sandy in 2012.
    - Disaster Response Plan (lacked in 2012):
        - Worked with NOAA and a variety of partners, many of them in emergency response and land management, to develop a plan
        - Now – engaging healthcare professionals to update the plan considering the pandemic
    - Partner/Stakeholder Engagement.
    - Prepare for Post – storm opportunities.
- Post – Sandy Investments:
    - Coastal Resilience Initiative:
        - Focused on working with local officials and key stakeholder groups to identify their vulnerability to sea level rise and flooding
    - Vulnerable Populations:
        - Now – looking at vulnerable populations (no transportation, no capacity for disaster preparedness)
    - Restore high hazard areas
    - Disaster preparedness exercise
- Pandemic Response:
    - Pandemic considerations and integration into disaster preparedness planning
    - Developing plans for a return to research and operations in general
    - Planning in collaboration with basic guidelines created by CDC and Rutgers
    - Have a formal plan developed in collaboration with key partners and agencies
    - Capitalize on lessons learned
    - Prepare for post storm opportunities
    - Work with area networks and partners to reduce their vulnerability to coastal hazards.

- Prioritize the safety of people
    - Incorporate measures at shelters and at residences that are hosting family and friends to make sure people are safe
- Start developing pandemic best practices now and incorporate them into disaster preparedness plans.

6.3. Mid-Atlantic Regional Assn Coastal Ocean Observing System (MARACOOS) – *Gerhard Kuska*

- IOOS – public private partnership situated within National Ocean Service (NOS), under the stewardship of NOAA.
- What we do:
    - Carry out mission in areas impacted by hurricanes (at sea and upon landfall).
    - Specifically collect and serve data that support hurricane intensity forecasting.
- Concerned with:
    - Protecting people (from hurricanes and the pandemic).
    - Information flow and communication among partners and stakeholders.
    - Maintain operations and data streams before, during and after events.
- Current Status:
    - Facility access restrictions.
    - Stressed personnel due to quarantine and personal home situations.
    - Restrictions on local and/or at sea site visits.
    - Unable to get sensors and equipment back from manufacturers.
    - Labored communications.
    - Children, home schooling, family, and health concerns.
    - Need for increased communication exchange.
- Risks:
    - Delayed or cancelled deployment/repairs.
    - Missing or failing assets.
    - Reduced productivity/efficiency.
    - Decrease in performance.
    - Gaps in data collection and overall operational performance.
    - A societal risk.
- Pandemic Response:
    - Early provisional planning.
    - Increased communications among partners and stakeholders.
    - Google share status update.
    - Critical support letters from federal partners.
    - Essential work letters issued to respective MARACOOS partners.
    - Situation-dependent decisions on maintenance and repairs.
    - Partner-created, standard operating procedures manual for COVID-19.
    - Budgeting for future – additional spares and backups for critical systems.

6.4. NOAA Pacific Islands Fisheries Science Center – *Chad Yoshinaga*

- Located in Pacific region: Remoteness of these areas make for an additional challenge, especially in heavy weather events. Virtual EOCs are the default scenario.
- Risk assessment scenarios:
    - Landfall at primary hubs – Oahu HI, Guam, Saipan, American Samoa
    - Landfall on neighboring islands and remote areas

    - Pacific wide tsunami (more condensed time frame 10-16-hour notice)
- Oahu:
    - Majority of facilities and population is coastal (airports, harbors, etc.)
    - Infrastructure and powerplants are in coastal, industrial areas
    - Major population centers also around coastlines
- COOP and Devolution
    - Shelter in place, no other option
    - Support for field staff and territories
    - Power and water
    - Communication
    - Reconstitution – extended telework
    - Supplies
    - Reliant on shipping for most consumer goods – if harbors are shut down it impacts ability to support ourselves
    - Small boat protocols (majority of operations) like DIVE for working on small boats during the pandemic conditions
- Example: If a hurricane misses Oahu (major island) and lands in a remote area where we have people, there are few resources, No infrastructure/shelter, evacuation decisions must be made much earlier because it takes longer (48-96 hours)

6.5. NOAA Office of Coast Survey (OCS) Nav Services Division – *Julia Powell*

- Primary mission:
    - Provide hydrographic surveys through NOAA response team to open ports and waterways after a storm
- Teams operate using a survey launcher to identify hazards to navigation
- Mobile integrated survey team:
    - Set up a small kit on a vessel of opportunity that is local to the region to help re-open the ports and waterways
    - NRTs provide time sensitive information to USCG and port officials and transmit this to NOAA surveys
    - Respond to vessel groundings and cargo loss with risk to life and property
- Changes since the pandemic:
    - Normally operate 3-man crew now use a 2-man crew
    - May not be a solution in post disaster response as 3rd member is priority as lookout for debris to keep ship safe
    - Always require use of proper PPE
    - Risk based decision tree implemented-Is this mission critical to life, property, or the environment?
    - Request must come from USCG or other authority
    - Consider health and safety of personnel
    - Temporarily halted routine survey projects
- Reintegration starts on a regional basis
    - Looking at local projects and working with a reduced crew
    - Teams must feel safe working in a close environment with crew members
- Pandemic has changed response posture, trying to be response ready while mitigating as much risk as possible

6.6. NOAA Office of National Marine Sanctuaries – *Lisa Symons*

- Office of National Marine Sanctuaries (ONMS) is comprised of 14 sanctuaries, 2 national monuments, 18 buildings, 10 visitor centers, 41 vessels, 154 federal and 199 associate staff from state co-management facilities or academic institutions
- Risks for facilities and vessels:
    - Regional infrastructure stressed from previous storms (particularly in southeast and parts of the Pacific)
    - Short notice to respond
    - May not have adequate time to prepare facilities and vessels
    - Utility companies have told customers to expect longer periods without power and water
    - Problematic for sites with live animals
- What has changed in how we prepare our facilities and vessels?
    - ONMS sites are NOAA Phase 0 or Phase 1 (max. TW and 25% occupancy)
    - Starting some preparations now for both facilities and vessels in more hurricane prone areas rather than based on forecasts
    - It will take longer to get a facility prepped for a hurricane – must get boats out of the water with limited staff (possibly 25%). How do we balance this while still allowing some minimal field operations as we can go to Phase 1 in some instances?
- What has changed for our people?
    - Increased stress and trauma associated with previous storms and the pandemic
    - Reluctance to evacuate due to pandemic and re-entry concerns
    - Earlier evacuation - harder to find places to stay
- Preparation changes
    - Encouraging staff to re-evaluate personal plans
    - Identify back up plans for when staff become ill
    - Evacuations will need to occur earlier
    - Encouraging staff to talk, use EAP resources to combat stress/trauma from previous storms and the pandemic

7. Question & Answer

Q: With respect to your building codes – have these helped facilitate shelter in place for some residents?

- **Yoshinaga:** Yes, we have some older residential housing with a lot of damage. We are in the process of redoing home insurance and making sure that proper hurricane protective measures are made. We look at storm surges, focusing on generator placement and elevation.

Q: Given the fluidity of the current situation where things are changing day by day (or hour by hour) how often are you reassessing risks and updating mitigation plans?

- **Powell:** We meet once a week if not twice a week to assess mitigation plans. Largely assessing small boat operations and trying to deploy teams at a limited capacity. It is about getting back to somewhat normal operations.
- **De Luca:** Our university comes out with new guidance almost daily, directing discussions as a reserve staff. We have weekly staff meetings and communicate through email to constantly review and interpret new guidelines. We have a lot of work to do to refine our plans. Due to our remote nature, we cannot rely on all university resources and we will require more time to prepare for storms.

- **Symons:** We are re-evaluating things constantly. Evaluating our plans on a frequent basis, focusing on local communities and government, and bolstering out local preparedness. We are expecting impacts to staff soon so we will continue to plan.
- **Kuska:** It has not been linear over time. In May we had a sense of delays and procedures. We started seeing reopening on June 1st and now we are seeing changing responses and scenarios in different states. Thy dynamic nature makes us reevaluate on a much more frequent basis.

Q: What communication capacity/bandwidth concerns do you have for this hurricane season?

- **Yoshinaga:** This has always been our biggest issue. We found a couple years ago in Saipan; the cell carriers were able to maintain coverage during the entire storm event. We supplemented this with additional satellite communications and SAT phones for key personnel.
- **De Luca:** The university has been investing in expanding broadband capacity due to the telework environment we are in. Hurricane Sandy showed us that service can dip during events and it is important to have other systems available or online such as handheld radios for key personnel. Auxiliary systems at the ready are also crucial for continued communication.

Q: How are you planning to implement early evacuations?

- **Symons:** We have 10 visitor centers which will only be open at NOAA phase 3. We may cover computers or displays in plastic, delay vessels being put in the water (if we don't plan to use them within the next couple months, we secure them in preparation for a storm event, pinning them down on land). We will likely do the same in offices through phase 3, always thinking through the kinds of things that can be done ahead of time. Typically, we will do these activities within 24 hours of landfall, with a much larger staff, so we are allocating time and personnel now to start these plans. Focus will be on sites that are at the greatest risk. Many we do not expect full operations until September/October, allowing us to close these early.

8. Best Practices Panel

8.1. Recap of Survey Responses – *Collin Buckner, Disaster Preparedness Program, NOAA OR&R*

- Summarized results from a pre-summit survey given to participants and other stakeholders prior to the summit. Fifty-six people completed the survey.
- Key takeaways:
    - Top three challenges in hurricane recovery (facilities and people) due to the pandemic:
        - How to keep your people safe (COVID-19) – 92.6%
        - Access to adequate PPE – 55.6%
        - Return to pre-storm operation capacity – 46.3%
    - 58.5% of respondents had identified a way to mitigate those challenges.

8.2. FL DEP – National Estuarine Research Reserve Manager – Rookery Bay – *Keith Laakkonen*

- Overall Hurricane Goals:
    - Safety is top priority during storms and post-storms
    - Constant communication with teams
        - NOAA OCM issues satellite phones. Mesh net testing this summer
    - Protect State-owned resources from damage
    - Make facilities safe to enter and work in
    - Assess natural resources when it is safe to do so

- Hurricane preparedness in the pandemic:
    - PPE and social distancing
        - One person per vehicle; makes transfer of vehicles more challenging
        - Face masks
        - No in person meetings
    - Personal Preparation (high risk staff)
    - Staff evaluation vs staying in place
    - Follow local and governor guidance – basing our preparations on this guidance
- Response and recovery:
    - More time and effort
    - Staff returning from evacuation
        - Quarantine? Testing?
        - Consider that staff may be unavailable for two weeks if they need to quarantine
    - Facility repair
        - How to do it with social distancing?
- Lessons learned - natural resource assessment
    - Reliance on remote sensing and drones, keeping staff away from the field
    - When staff return, natural resources are a primary concern, evaluating mangrove forests, and coastal ecosystems
    - After Hurricane Irma we realized that overflights do not cover most of the reserve, inhibiting response, and mitigation
    - Focused on human areas and human structures
    - Remote sensing
        - Looks at stress levels on vegetation
    - Better handle on damages, especially during the pandemic concerns

8.3. Puerto Rico Sea Grant – *Ruperto Chaparro*

- Challenges for Puerto Rico:
    - Bankrupt for 10 to 15 years
    - Earthquakes
        - 950 earthquakes since December 31, 2019
    - The pandemic concerns
- Not prepared for the next season:
    - Lacking preparedness resources
    - Weak infrastructure caused by:
        - Hurricane Irma and Maria (2017)
        - Deferred and minimal maintenance over the past 50 years
- Biggest allies during hurricane season:
    - Neighbors – first responders
    - Cash
    - No water
    - No electricity
    - Reliance on family and friends, diaspora of Puerto Ricans off island use communities of faith and NGOs
- Only 8% of HUDs community development block disaster grants has been dispersed, many people are still using blue tarps
    - Only 23% of the hurricane shelters are now ready, most do not have COVID 19 protocols
        - No power or water still

        - 23%destroyed by the earthquakes
        - Capacity has been reduced to 30-35% due to COVID-19
- No protocol has been established to deal with COVID-19 during a hurricane
- The main power plant was destroyed, and the grid is too centralized
    - 70% of the power is generated in the south
    - 70% of use is in the north

8.4. NOAA Homeland Security Program Office (HSPO) – *John McGowan*

- McGowan offers two perspectives:
    - Homeland Security Program Office (HSPO)
    - FEMA
- NOAA operational center serves as an information center during an incident. They assess ongoing impacts while events are occurring.
- HSPO collects this information and presents it to decision-makers to help advise decision-making and mitigate potential impacts to personnel.
    - HSPO does NOT drive operations
- The pandemic has caused minimal impacts to our coordination since meetings are usually hosted virtually.
- The pandemic is a level 1 incident (the highest level of incident). Decision-making is being driven the most updated information. These decisions include PPE distribution, signage, and integration.
- The pandemic has disrupted largely disrupted our physical locations since our staff is working remotely. However, our utilities, such as internet, water, and electricity, have not been disrupted so we have remained successful in our tasks. If utilities become disrupted, it would impact the flow of information and we would likely work slower and become less effective. Since impacts would be measured slower, the following decisions and response would also be delayed.

- Measure impacts generally post-storm, inform leadership, determine personal impacts. Because we are in quarantine-type state, there may be a delay before we even know a facility is impacted.
- FEMA:
    - Top concern – staff/survivors of a storm are going to be less inclined to seek shelter when a storm is coming in to minimize disease spread
    - Defining the mission as we go
        - Adapting to information as we get it
    - Can FEMA quickly do their damage assessment?
        - Must assess damage before a disaster declaration is made
        - May use more aerial footage to do damage assessments
    - NOAA – nontraditional missions at the request of FEMA

8.5. National Centers for Coastal Ocean Science, Beaufort Lab – *Greg Piniak*

- Decision-maker for when it is time to close and when to prepare facilities
- We have minimal response capacity, as we operate in a scientific capacity
- Three phases
    - Planning
        - Clear responsibilities for different organizations
    - Preparation
        - Scientific staff - minimal prep (secure lab spaces)

        - Facilities staff - leader for prep
        - Pending projects inhibited by the pandemic
        - Focus on live organisms and critical infrastructure
        - Biggest challenge is our boats and critical infrastructure. transportation of these resources will be difficult with one person per vehicle.
    - Post – storm events
        - Because we are already partially closed, there is less pressure on reopening
        - The biggest gap for me is what to do from a communication perspective. It can be therapeutic for people to discuss their experiences during an event.
        - NCCOS – remote evacuation planning. Business management division sets up a google drive and all staff can add to it (stay or go, here is where I am going, here is who is going with us etc.)
        - Real-time updates during evacuation during a storm
        - Hence, no need for phone call – just update google doc

9. Question & Answer

Q: Have you had to reassign tasks to different staff due to pandemic related concerns?

- **Laakkonen:** Early on when we were given sent home notice, staff members had to quarantine. I had to take care of all fish and aquaria. It showed how greatly things can be disrupted during a pandemic. We were also unable to conduct sea turtle monitoring and relied on partners to help in conducting missions.
- **Piniak:** I have not had to reassign anything yet, but I see the potential. Scientific staff typically evacuates, and facility staff stays. I could see other people being called in if the facility staff were impacted. No one is allowed back into facilities until the area has been cleared.

Q: Do individual responders or folks in your office have the choice to decline response due to risk of exposure (even during a Category 4 or 5 storm)?

- **Laakkonen:** We are not a response agency in the classic sense, but we have a lot of equipment. Any response we do is voluntary and would be willing to allow individuals to stay away if they are truly concerned. We have had a few cases already where we allowed staff to stay home due to health concerns.

Q: What precautions will be taken with personnel if they have had to conduct some sort of activity and may have been exposed?

- **Piniak:** Are we talking about pre-potential illness or if someone has already tested positive? From a facilities perspective if someone tests positive, we close, clean, and notify up the chain. We manage it as quickly and effectively as possible.
- **Laakkonen:** Anyone who has been exposed must do a 14-day mandatory quarantine and cannot come back until they test negative twice.
- **Powell:** Our largest concern is boat crews operating in close quarters and we have been thinking of post response with immediate quarantine. With considerations for quarantine in their own homes. With options to give access to hotels, testing, and any aid we can provide. Response most of the time requires travel to a different location. Pre-position of teams is crucial and we have been considering the impact of social distancing.

Q: Have the building codes in PR helped facilitate shelter in place?

- **Chaparro:** In most situations we cannot comply.

Q: Has NCCOS exercised disaster response plans in past, or are you interested to do so in the future?

- **Piniak:** On some levels it feels like every storm we go through is the first storm. I see a weakness in getting people back to work after evacuations. The Forest Service has great plans for this, caring for the people as well as the place. We have no plan this comprehensive in Beaufort. The response plan is very locally driven due to our location. Can people stage a response out of the lab? I would love to help with that. If there are ways for us to do this better and collaborate better to achieve our mission, I want to help.

Q: Given that testing can have false positive, how can testing clear an individual?

- **Laakkonen:** We must have two negative tests after the 14-day quarantine, with no symptoms. Be as cautious as possible and it might not be perfect.

10. Post – Panel Polling

1) Before March 2020, did you believe that you were more prepared for the 2020 hurricane season than you were for the 2019 season?

A) Yes (84%)
B) No (16%)

2) Do you believe now, during the pandemic, that you are more prepared than you were last year?

A) Yes (32%)
B) No (68%)

3) After the panel, do you feel like there are additional best practices you could implement?

A) Yes (86%)
B) No (14%)

11. Wrap up and Path Forward

11.1. Overview of Emergency Support Functions (ESF) – *Charlie Henry*

- FEMA is responsible when there is a declared national disaster/emergency
- FEMA is the primary lead in a coordination capacity
- FEMA cannot provide the federal mission on its own – so other federal agencies do those missions on FEMAs behalf – called Emergency Support Functions (ESFs)
    - For example, NGS does aerial surveys for impacts.
    - NOAA has no missions where we are a primary lead, but we support other agencies, ex: ESF 10 for oil, NOAA supports USCG response

11.2. NOAA Disaster Preparedness Program – *Kate Wheelock*

- Thank you to our NOAA staff and our close partners
- Critical to understand our partner's posture
    - How we can support you?
    - How you may support us?
- A lot has changed in the last 67 days, and a lot will change in the next 67 days
    - Our understanding changes week by week based on the pandemic
- <u>We do we know:</u>
    - COVID-19 cases are rising in coastal states
        - Watch the positive rates in areas you are traveling/responding to
    - Staff safety is top priority

    - Preparation and response will be slow
        - Smaller crews
        - Work will take longer
        - Close partner networks will be slower to respond
        - Social distancing
        - Utility concerns/slower repairs
    - Communication is key
        - Relying on virtual responses whenever possible
            - Most likely posture
            - Virtual command centers or unmanned resources
    - Every element of response has uncertainty
    - We understand the likely risks, and what they may entail (ex: oil responses, debris)
    - Remote areas deal with many complicating factors, such as our partners in PR and Hawaii.
        - How we can provide mutual aid and remote support to these areas?
- <u>We do not or cannot know:</u>
    - When, where, how and if we will respond this season
    - Plan and prepare to respond to anything
- <u>Mitigation:</u>
    - Disaster response plans – very important
        - Continual revision and assessment of risk mitigation plans – very important
    - Keep adapting
    - Staff may be uncomfortable to responding
        - Field responders may need to travel (e.g. air, cars with colleagues, lodging)
        - If a responder is unwilling to respond/travel, it is my belief that their request should be honored with no questions, judgment, or penalties
    - Staff have been unable to do field work (e.g. check tidal gages, maintenance)
        - We do not know how resilient some of our systems will be

12. Adjourn

- Thank you to our presenters, participants and organizing committee
- Hurricane Summit Part III webinar to come in about one month
- CRRC website [https://crrc.unh.edu/workshop/crrc/nos-hurricane-summit] has information for Part I, Part II, and a link to the FEMA guide

13. Exit Survey

1) Do you have a sense of what your key state and federal partners are doing to prepare for the 2020 hurricane season?

A) Yes (80%)
B) No (20%

2) Which of the following has most significantly altered your facilities, people, and resource preparedness actions?

A) Reliance on remote support/teleworking (39.13%)
B) Need to minimize on-scene personnel (field and office) (21.74%)
C) Creation of new response protocols to follow agency/state/federal guidelines (PPE etc.) (23.91%)
D) Requiring more time to complete preparation activities (due to social distancing) (10.87%)

E) No change (4.35%)

3) Which has most significantly impacted your planned capacity to respond to a hurricane under the current pandemic?

A) Prioritizing employee safety (31.11%)
B) Minimizing on-scene personnel (deploying smaller teams) (28.89%)
C) Planning for a remote response (no or limited on-scene deployment) (48.89%)
D) No change (6.67%)
E) Adjusting response actions to agency/state/federal pandemic guidelines (11.11%)

4) Do you believe now, during the pandemic, that you are more prepared than you were last year?

A) Yes (30.4%)
B) No (69.57%)

Hurricane Preparedness Summit – Day 3

1:00 – 4:30 pm (EST)

August 3, 2020

Agenda

Hurricane Preparedness Summit Day 3

Notes

Hurricane Preparedness Summit Day 3

1. Opening, Overview and Logistics

1.1. Coastal Response Research Center – *Nancy Kinner*

- Thank you for participating; this is part three of three half-day sessions.
- Overall Goals:
    - Enhance NOAA's support of its own people and resources for safety and improved disaster resilience considering the current pandemic, and
    - Meeting hurricane response mission objectives while maintaining response personnel safety, and
    - Enhance NOAA communications surrounding a potential hurricane – related disaster during a pandemic.
- Key considerations (all considering the pandemic):
    - NOAA's people
    - Guidelines for evacuation and recovery
    - Facilities
    - Lessons learned from previous hurricane season(s)
    - NOAA's partners

2. Welcome

2.1. NOAA Gulf of Mexico Disaster Response Center – *Charlie Henry*

- We are now in hurricane season and are trying to handle that amidst the pandemic. This summit series was intended to share best practices across different groups and to put everyone in a better posture for success & safety.
- NOAA plays a lot of different roles in a disaster response:
    - NWS – forecasts trajectories and situational data
    - NOS – provides products during a storm
    - NGS – post assessment overflights
- USCG is keeping the ports safe

2.2. National Ocean Service - *Emily Menashes, Chief of Staff*

- Throughout the work of the NOS and NOAA task force, our number one priority is the safety of people during this pandemic in the reintegration process. You must be ready for multiple hurricanes at a time. We now must think of the medical safety of people during hurricane preparedness and response.
- Key points:
    - Be safe
    - Recognize what you can and cannot do
    - Forgive yourself - understand that things are different
    - Redefine success
    - Acknowledge what we have accomplished – it is easy to focus on what you wish to accomplish

2.3. NOAA Office of Response and Restoration - *Scott Lundgren*

- Through this summit series, we hope to aid the efforts of conducting critical response missions. With each successive summit, we have expanded the participants by engaging the representatives from the emergency response and health communities.
- Thank you to the planning community and all the participants, your role is critical in linking our mission to our partners and the greater public.
- We have a lot of different capabilities and different players to solve similar challenges. We strive for the balance of service delivery while maintaining the safety of our staff.

3. Introductory Poll

1) *Does your program/office/agency support FEMA Emergency Support Functions (ESF)?*
    A) Yes (85%)
    B) No (11%)
    C) I don't know (4%)

2) *Can your program support be accomplished remotely?*
    A) Fully (42%)
    B) Partially (58%)
    C) Not at all (0%)

4. Setting the Stage

4.1. Summary of Summit I & II – *Lisa Symons, NOAA Office of National Marine Sanctuaries*

- Hurricane Summit Day 1 – Infrastructure, Communication & People
    - **Goal:** enhance NOAA's support of its personnel and resources for safety and improved disaster resilience – primarily NOAA attendees.
    - Enhance communications
    - Focus on keeping personnel safe while meeting mission objectives
    - Review of how to achieve mission objectives with pandemic limitations
    - Maximum telework (only essential people allowed into NOAA buildings)
    - Many unknowns – need to remain flexible
    - Starting to develop reintegration guidance and job hazard analysis tools
- Hurricane Summit Day 2 – Infrastructure and People
    - **Goal:** understand the level of preparedness and limitations for NOAA and its partners. Discuss the current reintegration and health and safety guidelines – attendees included NOAA and state/territorial partners (Coastal Ocean Observing System, Coastal Zone Management entities and National Estuarine Research Reserves).
    - Preparation needs to start earlier – it will take longer due to limited resources
    - Rely on remote support
        - Maximum telework for NOAA and most of its partners
    - Reintegration guidance and job hazard analysis tools were being disseminated within agencies
    - Slow recovery – critical infrastructure (e.g., water and power) and unknown travel logistics (e.g., crews may be delayed responding)

- Response and recovery support may at the local level rather than the state/federal level (e.g., Puerto Rico).
- Additional physical and emotional challenges for staff (e.g., pandemic, stress, safety, etc.)

4.2. U.S. Public Health Service Overview – *CAPT Christian Rathke*

- Priorities for NOAA: NOAA's pandemic response in general and hurricane response from a public health perspective.
- NOAA's Response:
  - Overall strategy follows science – predominantly CDC guidance.
  - Slow moving for reconstitution but still have critical personnel in centers during the pandemic.
  - Daily new positive tests from NOAA employees – community-based transmission
  - Plans in place for aviation, dive medicine and other resources – sent via e-mail to anyone with a NOAA e-mail address
    - Providing weekly testing
- NOAA's Challenges:
  - Significant testing shortages – difficult to test everyone
    - Created our own testing kits for crews due to shortages
  - Identify testing solution, effectively isolate individuals, contact trace (takes a lot of people)
  - Employees are chronically stressed in addition to new stress related to the pandemic
    - General fear – will people be willing to evacuate?
  - Complicated travel logistics
  - Post storm challenges (contaminated water (e.g., *E. Coli*), cannot maintain social distancing, chronic health problems do not get taken care of, mosquito borne illness increases).
- Pandemic Strategy:
  - Physical distancing (e.g., one-person/vehicle vs flying)
  - Face coverings 100% of the time
  - Hand washing and good hygiene
  - Health disparities in the area (e.g., plenty of medication and supplies)
  - Good communication (frequent check-ins to monitor stress load and mental health of staff)

4.3. Occupational Health CDC – *Kevin Dunn*

- Priorities for CDC: Currently working on the pandemic response and informing others on how to safely re-open.
- For full guidance and information, please consult the: CDC Interim Guidance for Businesses and Employers Responding to COVID-19.
  - https://www.cdc.gov/coronavirus/2019-ncov/community/guidance-business-response.html
- Virus Spreading: Primarily person to person within 6 feet of each other due to the transfer of respiratory droplets from coughing, sneezing, or talking. May also be transferred onto surfaces. Can be spread by asymptomatic and pre-symptomatic people.

- Preventative Actions:
    - Avoid touching your face (eyes, nose, and mouth) and close contact with others.
    - Stay at home as much as possible
    - Wear a face covering when in public
    - Clean and disinfect surfaces frequently
    - Wash hands and use hand sanitizer
- Guidance for Employers:
    - Plan to respond based on community transmission data and refine response plans as needed by coordinating with state and local health officials.
    - Create a workplace-specific plan – identifying and mitigating potential risks
    - Encourage sick employees to stay home
    - Daily health checks (temperature screening, online form, etc.)
    - Hazard assessment of the workplace
    - Have employees with face coverings, barriers, and PPE (if applicable)
    - Act if there are any confirmed positive cases
    - May need to close and clean specific areas but likely will not have to shut down facility
- Maintain Healthy Business Operations:
    - Identify COVID-19 workplace coordinator
    - Flexible sick leave and other supportive policies
    - Protect high risk employees (e.g., telework, reassign duties etc.)
    - Modify and increase ventilation systems
    - Supply resources that support proper hygiene (e.g., soap, water, hand sanitizer etc.)
    - perform routine cleaning and disinfection

4.4. Recap of Survey Responses – *Collin Buckner, NOAA Disaster Preparedness Program OR&R*

- Summarized results from a pre-summit survey given to participants and other stakeholders prior to the summit. Forty-six people completed the survey.
- Key takeaways:
    - Most of the respondents represented regions in the southeast and Gulf of Mexico.
    - 91.1% of respondents said their organization/agency has a hurricane preparedness/response plan.
    - Top three most significant planning challenges for hurricane response and recovery due to the pandemic:
        - How to keep your people safe and maintain access to adequate PPE during response activities – 76.1%
        - Staff safety during evacuations and/or Continuity of Operations Planning (COOP) – 60.9%
        - Return to pre-storm operational activities/capacity – 41.3%
    - 56.8% of respondents have partially found mitigation strategies to the aforementioned challenges.
    - 47.8% of respondents said their organization/agency allows personal/individual discretion as to whether to respond.
    - 53.3% of respondents said their organization/agency has established criteria for staff deployments during the pandemic.

- 67.4% of respondents have a Mission Essential Function (MEF) or Emergency Support Function (ESF) role in hurricane response.
- 47.7% of respondents support ESF 3 or ESF 10 response missions.
  - Of those who support ESF 3 or ESF 10, 37.9% said that response actions for ESF3 and ESF 10 can be combined under a single mission while 27.6 said that they can partially be combined and 27.6% said they cannot be combined.
- 73.9% said it would be helpful to have an operationally focused "playbook" or manual to guide all aspects of ESF3 and ESF 10 response. This guide would provide consistent and clear ESF mission guidance about administrative and operational implementation and represent a common mission and vision from the perspective of FEMA, USCG, EPA, USACE, and states.
- 75.6% said they would find a developmental or informational training useful to help perform ESF activities better.
- 82.2% of respondents said that a scenario-based exercise would be useful for planning contingencies relative to pandemic related response issues including staffing, on-scene criteria, evacuations, safety, and protocols for dealing with positive COVID-19 cases during a response.

4.5. FEMA – *Christine Hanson, FEMA Region 6, Response Operations Team Lead*

Priorities for FEMA: Coordinate integration of federal support during disasters including emergency support functions and other federal agencies.

- Manage ESFs, including ESF 10
- Lessons learned by FEMA, Regional 6 supports 5 states and over 30 tribes
- Lesson 1: Effectively limit physical program
  - Temperature checks
  - Stay home if ill
  - Face coverings
  - Social distancing
    - Deploying to office while others stay home
    - 25% of people in-person
    - Use local people more
    - Limit staff to accommodate mission
- Provide PPE
  - Train staff to use effectively
- Due to reduced footprint use 2 platforms:
  - Adobe Connect
  - Microsoft teams
- Essential to be disciplined and time management
  - Stick to plan
- Key things to think through
  - What information is needed to make decisions
  - Key stakeholders
  - When do the decisions need to be made?
  - Identify what decisions need to be made, the safest decision, and how to respond
- FEMA does not have response resources – have funds and ability to coordinate resources
- With everything changing, the key work we do remains unchanged – maintaining relationships

- Lean on each other

4.6. U.S. EPA – *James Webster*

- Priorities for EPA: Primary responsibility is oil and hazmat response while air, water, waste management and laboratory experiments also come into play. EPA primary works under ESF 3 and ESF 10.
- EPA Region 4 Hurricane Preparedness (8 States, 6 Federal-Recognized Indian Tribes)
- Share Response Responsibility with U.S. Coast Guard
- Description of Programs and Capabilities:
  - Oil and hazardous response
  - Water Team (assist in restoring public water systems)
  - Landfill Specialty Team
  - Response Support Corps
    - Over 100 members
    - Operate in our office and in the field
- Missions we support (most often): ESF-10 (Lead Coordinating Agency) and ESF-3 (Supporting Agency)
- Pandemic considerations:
  - Use lessons learned
    - Have maintained our capabilities and deployments since the beginning of the pandemic
    - Continue to work at critical superfund sites to protect the public from hazardous materials
  - Established guidelines based on information from NIOSH and CDC

- Procedures:
  - Before mobilization
    - Assess conditions of the location to be deployed to
    - Health Screening (questions about symptoms and contact)
    - Symptomatic people would not go into the field and asymptomatic people can work in isolation
  - During deployment:
    - Safety officers ask questions about health and conduct temperature screenings in the field
    - If test positive – support them with whatever they need and isolate them
    - Asymptomatic may continue to work from a hotel or from a truck if there is no contact with others
    - One person per vehicle and assign specific vehicles to specific individuals
    - Avoid eating out
    - Find lodging with dining available or food can be prepared in the room
    - Suspend after hour gatherings
    - Face coverings and PPE
    - One or more disinfection teams to ensure these activities are conducted properly and documented.

4.7. U.S Coast Guard – *Michael Sams, District 8, Incident Management & Preparedness Advisor*

- Motto of USCG is Semper Paratus – “always ready”.
- <u>Pandemic Response:</u>

    - Protocols in place – nothing is static
    - Physical distancing in offices
    - Telework and other virtual activities
    - Face coverings and PPE provided
    - Screenings
    - Contact tracing
    - Commanders have discretion for how to handle individual events
- Response Operations:
    - Hurricane response is like a multi-day oil spill discharge
        - Send limited number of trained personnel
        - Use remote support as much as possible
    - Primarily ESF 9 and ESF 10 and support many other ESFs
    - USCG representatives are sent to FEMA regional response centers and joint response offices as needed
    - At request of a state or government, we are looking to work closely with the entity requesting help, making sure we minimize personnel onsite, maximize virtual capability, and make sure they are getting the maximum efficiency from the government.

5. Q&A Participant Discussion

Q: How effective are the HVAC filters in preventing spread of virus in Silver Spring NOAA office building?

- **CAPT Rathke:** Most aircraft circulate air every 5 minutes and combine outside air – more airflow than HVAC. Prevention measures come down to social distancing and face coverings even in aircraft where air is replaced every 5 minutes, not maintaining social distancing will still be problematic.
    - HVAC should be looked at but should not be the primary focus. Working outside while maintaining physical distance is ideal.

Q: Is there a strong consistency between the different FEMA regions or is there variability?

- **Hanson:** Yes, on the key elements. There are many different FEMA regions. Some regions are more likely to engage with ESFs, but most are consistent and work similarly. There is variability because of administration differences but they are/should be consistent.

Q: Given current staffing level, how long can you sustain staffing in deployment?

- **Sams**: For USCG, support mission as needed, while maintaining important COVID-19 protocols
- **Webster:** Agree, we have national base of resources can draw from – can bring 230 personnel nationwide as necessary and can pull from back-up if needed – can support response as needed – was in field responding to Katrina for 6 months
- **Hanson**: Echo what has been said– in addition to having deep end to pull from, virtual work helps

Q: For FEMA, if responders must shelter/quarantine, is that cost under Mission Assignment?

- **Hanson**: Yes, there are state by state regulations on quarantining. If quarantining is required, FEMA will pay for it if it is in the Mission Assignment language.
- **Sams:** Cannot speak definitively to this. If quarantine was part of the response, then it would be a consideration. We would need to see if that has come up in responses and then will provide a definitive answer.

Q: How many NOAA staff have been infected with COVID-19?

- **CAPT Rathke:** As of August 12, 2020, NOAA has traced 411 COVID-19 related incidents and has 81 confirmed positive cases.

Q: For the survey responses, is there a reason some were selected to share with attendees and others were not?

- **Katie Perry:** The questions reviewed during this summit were intended to give a high-level overview of the responses and topics covered in the survey. We omitted the more detailed "fill in the blank" style questions for this presentation, however, they are very useful for future planning efforts.

Q: Can anyone comment on the conflicts regarding NOAAs use of Zoom? Many states and other partners use it, yet NOAA prohibited its use.

- **Jonathan Gordon:** The Department of Commerce (not just NOAA) issued a moratorium on the use of Zoom in early July due to security issues with the platform. DOC employees cannot use Zoom to conduct DOC business of any sort, whether it is on a DOC computer or a personally owned computer. There are very few exceptions to this moratorium and the exception process is arduous at this point.

6. Panel 1: Understand the challenges to NOAA's ability to support state and federal partners' field response missions during the 2020 season. This is socialization of the 'minimum viable product' concept.

6.1. Small boats – *LCDR Brian Elliot, NOAA Small Boat Program Manager*

- NOAA Small Boat Program:
    - Comprised of the Small Boat Safety Board, with representatives from Line Offices, and the Small Boat Program Office, with inspection, engineering, and training support.
    - Develops policy and procedures and provides support for safe, effective operations. The SBP does not approve or disapprove individual operations, that is the responsibility of the Line Offices and local units.
    - Approximately 700 operators across all Line Offices except for NESDIS
    - 93 Locations Worldwide
    - 432 Active Small Boats (2019) 8ft kayak to 85ft SRV
    - 6,616 days underway (2019)
    - 22,966 people/days (2019)
    - 99.95% safety record (2019)
- Pandemic Response:
    - June 2020 distribution Guidance and Best Management Practices Document "COVID-19 Risk Management for Small Boat Operations"
    - Provided guidance to Vessel Operations Coordinators and personnel on the waterfront on best practices to operate during COVID-19.
        - General procedures
        - PPE
        - Cleaning
        - Emergency Procedures
        - Personnel Screening
        - Risk Assessment and mitigations – GAR Based

- Size of the boat, duration of the mission, and ability to distance, and to have outdoor air (vs inside a cabin without 6 ft social distancing) are considerations when doing a COVID-19 Operational Risk Assessment.
- We try to provide our users with as much guidance as possible.
- We are increasing training including CPR training and have ceased inspection operations. Remote and self-inspections are now in place.

6.2. Aircraft – *CDR Chris Kerns, Aircraft Operations Center, Operations Officer*

- Fleet of airplanes for hurricane missions – two plane types (Gulfstream G-IV & Lockhead) that determine where the storm will go and one plane type(King Air) for the response after the storm has hit.
- Pandemic updates:
  - Telework for office work
  - Maintenance and repairs cannot be done remotely
  - Field work requires people to be in close contact
  - All PMEF Missions are being conducted
  - Will start flying non-PMEF missions within the next month – using lessons learned from PMEF missions
  - Testing everyone at the center every 7-10 days, crews working in cohorts
  - Testing in some states has a long turnaround time
  - In-house health manager
  - Continue to comply with CDC guidelines (e.g., social distancing, wear a mask, signage, resources for personal hygiene, adequate time for air circulation)
  - No way to social distance on an aircraft, let aircraft aerate ~2 hours between missions
    - Testing program is critical
    - Keeping people together and constructing specific cohorts of professionals (shelter in place until going into to the field – trust each other to do so)

6.3. NOAA Dive Program – LT Aras Zygas, Executive Officer, NOAA Diving Center

- Dive center is training and field support command and is responsible for diving safety, creating regulations and any kind of incident investigations.
- Dive-Specific Pandemic Risks:
  - Transmission: Diving uses the buddy system for safety, so people are near each other. How to stop asymptomatic spread
  - Sequelae: Lasting effects from the pandemic that could pose a threat to divers (e.g., blood clots)
  - Lapse in Proficiency: Divers rely on muscle memory and having experience increases diver safety. Divers are required to conduct a certain number of dives per quarter for safety. A lot of divers have not been able to dive since March.
- Steps Needed to Return to Diving:
  - Medical Screening
  - Mission Approval: Mission critical is up to line offices, mission safety up to Dive Safety Board
  - Dive Safety Board Approval:
    - Requires:
      - Job hazard analysis
      - Dive operations plan
      - Emergency assistance confirmation

    - Skills Checkout/Training Dive: assess swim times as the virus can decline physical capabilities
    - Once completed – dive unit can be operational
- Operational Readiness:
    - Board and Medical Approval for Operational Dives
    - Adherence to COVID-19 Mitigation Best Practices
    - NOAA Diving is a voluntary activity
        - Staff can excuse themselves from diving without any penalty
        - May feel unsafe or uncomfortable

6.4. Aircraft – *Mike Aslaksen, NOAA National Geodetic Survey, Remote Sensing Division*

- Primary activities are updating nautical charts and supporting other ESF and hazmat spill response actions. Our goal objective is to ensure safety and navigation. Support NOAA's requirement and NRF Emergency Support Functions (ESF 1, ESF 3, ESF 9, ESF 10, ESF 11, ESF 13, ESF 14).
- We fly during storms to collect data, process in the cloud, and deliver data as soon as four hours after landing. Then we communicate this information to our customers and partners.
- Challenges and Limitations due to Pandemic:
    - Available personnel due to pandemic safety procedures (testing, shelter in place, cohort crew approach etc.)
    - Limited base operations (limiting multiple travel locations, avoid high risk locations, select locations for data transfer, safe distance from storm impacts, etc.)
    - Shorter on station time due to longer transits
    - Decentralized support
    - Use of non-traditional tools – e.g., FEMA exploring the use of imagery for damage assessment instead of sending onsite inspectors
    - Remote tools when possible

6.5. Command Post – *John Tarpley, NOAA Emergency Response Division*

- OR&R missions:
    - Scientific Support Coordination
        - Support to ESF 10 missions under disaster response
        - Target classification from aerial remote sensing
        - Data sharing arrangements with EPA, USCG, feed the Emergency Response Management Application (ERMA) (serves as common operational picture)
    - Marine Debris
        - ESF 3 missions with FEMA, USACE, and states
- Command Post:
    - During a spill response industry is responsible for setting this up – The major oil companies or responsible party has an industry representative that coordinates all aspects of the response
    - In hurricanes, there is no industry representative - the command post is run by FEMA and the states which causes unknowns:
        - Where is it going to be?
- Pandemic:

- Providing remote support as much as possible
    - May require more staff to monitor virtually vs one person coordinating on-scene
- Planning risk mitigation strategies for deploying staff
- Case by case basis as situations vary state to state and event to event
- NOAA does not have control over location, space, social distancing, infrastructure, testing. We can only make recommendations. NOAA can say that our people will not work in the command post if they are not implementing appropriate protocols Working with a volunteer force, federal staff cannot be forced to deploy
- Have job-hazard analysis protocol to keep people safe in the field

7. Q&A Participant Discussion

Q: Given interplay between small boat requirement & divers, is it practical to assume that divers can do inspections?

- **Zygas:** It depends on how many divers you need and what boat you are doing operations on.
- **Elliot:** Typically, those boats are smaller to get in shallower areas. If you put a dive team and surface support on a boat, you cannot be socially distanced (e.g., six people on 20 ft boat) so it would be challenging to adhere to all guidelines with large amount of people on small platform.

Q: Given recent experience, will NOAA need to rely more on unmanned systems?

- **Kerns:** Unmanned is the future. We need the technology to be as good as the manned technology. That day may come, but the technology is not there yet.
    - If you send a unmanned system into eye of hurricane, what happens to the technology?
- **Aslaksen:** The imagery is almost there in comparison with manned imagery. It could be a solution, but the technology is not portable enough yet.

Q: Is there any coordination with other imagery service that may serve?

- **Aslaksen:** Probably, yes. We are coordinating at the regional level with FEMA. The data is coordinated and collected. There is public access and government data only. Insurance companies are willing to share information.

Q: Does OR&R have a plan in place for who is available and willing to respond? Does that include cohorts of staff to deploy to command posts?

- **Tarpley:** No, but our plan continues to change. We do not have a mandatory deployment policy, so it is up to the employee. At the start of the pandemic, everyone was ready to be deployed, but now staff are pausing more, so it is a week by week decision. Our plan is to work with our staff and see who is willing to deploy around the country. We are making sure our risk is low. We are trying to keep this footprint as small as possible. If SSC is on-scene, may not send a team because we could provide remote support. What we do is different from the EPA and Forest Service.

8. Post – Panel Polling

1) *After the discussion you heard, are you inclined to change your planning for response?*
    A) Yes: 15%
    B) No: 35%
    C) TBD: 51%

2) *If most of a hurricane response activity is virtual, are you concerned about coordination?*

A. Yes: 76%
B. No: 24

9. Panel 2: State Representative

9.1. Caribbean – Daryl Jaschen, Virgin Islands Territorial Emergency Management Agency

- Currently have about 60 active COVID-19 cases and contract tracing been part of everyday life here. Friday had a 3 to 4% positivity rate and today, on Monday, there was 7% positivity rate.
- In September 2017, we had back to back CAT 5 hurricanes. Water Island has a small population, but many people go there for hurricane protection and their population size increases drastically.
- Air ways:
    - St. Croix has airport on south shore (10,000 ft runway)
    - St. Thomas has airport on south shore (7,000 ft runway)
    - St. John has no air strip, small landing pad
    - There is three miles between St. Thomas and St. John which leads to a lot of boat traffic – it is important these ports remain open
- Debris:
    - Department of Public Works coordinates with us to make sure routes are open – let us know the types of debris.
    - Activities are on a case by case basis and most can be conducted with local contacts.
    - Disposal
        - Cannot burn anything on the island
        - Disposal f through mulching
        - Two landfills cannot take much debris – transported elsewhere such as FL
        - With assistance from EPA, FEMA, NOAA, and Army Corps of Engineers we have stayed on top of waste management
- ESF 10:
    - Primarily use Department of Planning and Natural Resources (DPNR) and the fire department
    - Learned what it takes to clean shoreline
    - Recovery operations with 479 boats recovered and salvaged to some degree
    - Disposal of toxic waste
    - USCG is helpful
- The Pandemic:
    - COVID test within 5 days of flying to island
    - Website set up with Department of Tourism
- Hurricane Season 2020
    - Nine hurricanes have turned into tropical storms
    - Recognize need to work together with FEMA to fulfill virtual needs

9.2. Georgia – *Captain Chris Hodge, Department of Natural Resources*

- Golden Ray:
    - Vessel rolled on its side in September 2019 and work has been done on salvaging the vessel since

    - The crew was infected with COVID-19 – caused delays and revised work plan.
- Current Strategy:
    - Top priority is public safety – get access to areas and offer first aid and other assistance
    - Remain fluid when dealing with the pandemic
    - Lodging and command post – working on details (school gymnasium, spread out staff)
        - Before the pandemic – school gymnasium and state park cabins
    - Realigned staff teams to have people from similar locations

9.3. Florida – *Major Rob Rowe, Fish and Wildlife Conservation Commission*

- Follow CDC and state procedures when thinking about contingency plans and response.
- Current Strategy:
    - Minimize footprint
    - Quarantine any staff that test positive until they test negative
    - Essential personnel will be given PPE, practice social distancing, and be prepared to live out of trucks for up to two weeks
    - Local staff will be used for field assessments – minimize need for lodging and/or travel
    - Telework for non-essential staff
    - Need to remain flexible
    - Have multiple pre-staging areas
    - Briefings are done via video conferencing
    - Keep in contact with staff and partners to keep up to date on information
    - Case by case basis regarding state quarantine and health requirements

10. Q&A Participant Discussion

Q: For long response operations, often the same state staff are relied on for many duties. This can be labor intensive and place a disproportionate burden on local personnel. What do federal responders do to lessen the burden on state responders?

- **Jaschen**: We partnered with FEMA and people rotate through. This way there is fresh information and ideas.
- **Captain Hodge:** We have not participated heavily in the Golden Ray event. I know there are folks on two-week rotations. The USCG has a vast supply of people to draw from so they have not needed to utilize state staff like other organizations.
- **Major Rowe**: I was activated during Hurricane Irma and Hurricane Michael. One thing that eased the burden was the one week overlap between the commanders. That overlap may be shortened due to the pandemic. Maintaining the relationships with federal staff to create these overlaps helps.

Q: How do you expect to staff field teams for assessments, surveys, field work?

- **Jaschen:** We have already worked it through with FEMA. In some cases, drones are used. Having a local individual match up with a federal individual is crucial. PPE must be provided. It may take longer, but safety is first.
- **Captain Hodge:** We have reorganized the teams and will bring the teams in earlier than normal for a screening process. We do not want to send them into the area if they have symptoms. There is not always time to get test results back, but screening will take place.
- We are really relying on local staff depending on the severity of the storm to minimize the spread of the virus. Having local teams with PPE will be another safety measure taken.

Q: Does your state/territory have other health restrictions on personnel moving into the state/territory?

- **Captain Hodge**: We have restrictions in place all over, but I do not know what they are doing at airports. At our agency, anyone who has been exposed will be quarantined.

Q: How can NOAA better support each of your state/territory in the future?

- **Major Rowe**: Our experience with NOAA has been great in the past. I believe doing what you have done in the past while working with our staff and the Coast Guard was helpful. You saved us hours by helping with assessments. Most experiences are with the Coast Guard. One thing that eased the burden was the overlap between the incident commander and deputy incident commander. Back then, there was a week overlap as they rotated, but with COVID that may be shortened. That overlap helps keeps the staff up to speed.
- **Captain Hodge:** We have had great cooperation with NOAA for the responses. I do not really have any suggestions on what to do better. Communication is key. Supplemented federal staff positions with state staff to give federal staff some relief. The Coast Guard has a vast amount of people, so they do not have to use state staff, but some agencies have.
- **Jaschen**: We have developed partnerships that are useful.

Q: How do you assemble field teams for deployment?

- **Jaschen**: That has been worked on with FEMA. Some work can be done with drones. It will be similar to the past, but it will be slower. A local individual will be matched with a federal individual, so they know the area. More deliberate and slower to prioritize safety.

- **Captain Hodge:** There have been many discussions on assembling these teams. The drawing of those teams has been reorganized. Probably teams will have to be brought in a day earlier than normal to screen them to make sure they are not showing signs of COVID-19. Will not always have the time to test them, but screening can be done.

- **Major Rowe:** Biggest part of the plan is to not bring people from different parts of the space to reduce the risk of spreading COVID-19. We will heavily rely on local staff depending on the severity of the storm to minimize the spread of COVID-19. Helps with not burning through PPE by having local personnel using their PPE. It will be slower than in the past though.

Q: Does your state or territory have quarantine or health restrictions for people coming into state / territory or moving around state/ territory?

- **Captain Hodge:** We have restrictions in place all over the state (GA), I cannot speak on what the state is doing. As far as our agency, anyone who has been exposed will have to quarantine as well as anyone that they were around.

Q: How can NOAA better support each of your states/territories in the future?

- **Major Rowe:** Our experience with NOAA has been great for the past two hurricanes. What has been done in the past has worked. Doing analysis of potential targets with fly overs saved us a lot of time in the field and money so it was very critical to our cleanup.
- **Captain Hodge:** We have had great cooperation and coordination with NOAA. Typically, NOAA folks move in when we move out. I do know coordination between our state operations center has been very fluid, allowing things to happen easily during these times. Communication is key

and if we continue to hold more events like this summit, we will be more prepared. NOAA is doing a great job.

11. Wrap Up and Path Forward

11.1. NOAA Gulf of Mexico Disaster Response Center – *Charlie Henry*

This summit series was a joint project with NOAA and CRRC at the University of New Hampshire. A constant theme during this summit is the need to be smart and safe while measuring success differently that we would have in years past. Many useful best practices for post-response strategies were mentioned, including testing and quarantine procedures.

- Safety is always a top priority and we need to stay current on the pandemic and the status of public health.
- Another lesson that was discussed was to plan ahead for tasks as many tasks now take longer due to pandemic restrictions.
- Effective engagement with FEMA and primary support agencies (e.g., USCG) for Stafford Act/Emergency Support Function response missions is critical.
- Thank you to everyone for being a part of this series and for providing valuable information that we can all apply in our respective fields.

11.2. Coastal Response Research Center – *Nancy Kinner*

- Thank you everyone for joining, the presentations were very informative. The final report from this summit series will be available on the CRRC website (https://crrc.unh.edu/).

12. Exit Survey

Conclusions and Recommendations

This three-part summit series was a unique opportunity to discuss hurricane preparedness efforts as the pandemic evolved. This series was an example of the importance of how early, interagency discussions can improve the preparedness, planning and response to hurricanes and other natural disasters that impact natural and human resources. Using lessons learned and best practices, numerous recommendations were presented throughout the summit series. Given those recommendations, the pandemic has created some challenges that are still ongoing.

Ongoing Challenges:

- Maintaining social distancing during hurricane response operations and evacuations.
- Creating cleaning disinfection guidance for vehicles, vessels, aircrafts, and other equipment.
- Creating guidance for deployment logistics including travel, lodging, and food.
- Preparation times have been extended to promote pandemic restrictions.
- Testing is not as widely available as needed.
- Testing results are not produced within the short time frame required to make response decisions.
- Testing and quarantine requirements before, during, and after deployments are constantly evolving and differ regionally.
- Establishing criteria for on-scene response that prioritizes the health and safety of the workers.

Recommendations:

- Staff and public safety is and should remain the top priority during all operations.
- Follow all applicable guidance (local, state, and federal) related to the pandemic including social distancing, using PPE, and personal hygiene.
- Employees should have a choice for deployments without consequences from their decision.
- Conduct routine COVID-19 testing, temperature screenings, and daily symptom checks on essential employees.
- Increase communication capacity to keep engaged internally and with partners during planning and response operations.
- Shift staff responsibilities and create internal “back-ups” in case an employee can no longer perform their duties due to the pandemic.
- Limit travel to mission critical and utilize telework and remote support as much as possible.
- Deploying staff for a response should be assessed on a case by case basis, keeping plans general and adaptable.
- Routine maintenance and activities that can be delayed and/or staggered should be.
- Minimize the staffing capacity required for in-person operations.

A common theme mentioned through the summit series was that an individual’s health and safety is the top priority when discussing hurricane preparedness and response. The ongoing challenges and recommendations reported out during the summit series helped to facilitate communication efforts with internal NOAA, NOAA’s closest partners, and other stakeholders that act in hurricane preparation and response as they prepare for the 2020 hurricane season. However, there were additional questions that remained unanswered largely due to NOAA, and the United States, learning and understanding more about how to navigate the pandemic. At the time of this summit, uncertainties remained

regarding NOAA's overall posture for providing continuity of operations during the pandemic for response missions. Actions to address employee health and safety during the pandemic, for both remote and on-scene response actions were still being developed. Stafford Act responses will be evaluated at the highest levels, weighing safety against mission essential needs. When possible during the pandemic, remote response support is preferred. The employee concerns regarding health and safety will be considered. Evaluation and decision criteria for deployments is continuously being reviewed and updated as we learn more about the pandemic. Remaining issues will contribute to the planning for the 2021 NOS Hurricane Preparedness Summit.

Appendix A

Blank Surveys

Hurricane Preparedness and Response Survey

* Required

1. 1. Organization/Agency Name *

2. 2. Region/state you represent *

3. 3. Number of personnel in your immediate organization/agency *

Mark only one oval.

- ◯ Between 0 to 50 personnel
- ◯ Between 50 to 100 personnel
- ◯ Between 100 to 200 personnel
- ◯ Over 200 personnel

Hurricane Preparedness

4. 4. Does your organization/agency have a hurricane preparedness/response plan?

Mark only one oval.

- ◯ Yes
- ◯ No

5. 5. Please check your top three preparedness responsibilities for the 2020 hurricane season. (select only three)

Check all that apply.

- [ ] How to keep your people safe (COVID-19)
- [ ] Determining whether you have enough PPE
- [ ] Access to state and federal partner resources
- [ ] Access to funding to support hurricane response
- [ ] Communication capacity and protocols

Other: [ ] _____

6. 6. How has the COVID-19 pandemic altered your facilities, people, and resource preparedness actions towards potential hurricanes?

_____

_____

_____

_____

_____

7. 7. Where do you see the biggest challenges in your ability to protect your people and infrastructure? (check all that apply)

Check all that apply.

- [ ] How to keep your people safe (COVID-19)
- [ ] Access to adequate PPE
- [ ] Access to funding to support hurricane response efforts

Other: [ ] _____

8. 8. Based on your answer to the previous question, has your organization/agency identified ways to mitigate those challenges?

Mark only one oval.

- ◯ Yes *Skip to question 9*
- ◯ No *Skip to question 10*

Hurricane Preparedness

9. 9. Please explain any specific mitigation strategies.

Hurricane Response

10. 10. What are your hurricane response capabilities during a normal hurricane season? (check all that apply)

Check all that apply.

- [ ] Secure boat storage
- [ ] Access to boats
- [ ] Specialized vehicles
- [ ] Launching (for both launch and salvage)
- [ ] Emergency power/generator
- [ ] Staging areas (for both launch and salvage)
- [ ] Berthing quarters (that can be socially distanced)
- [ ] Living quarters equipped with a kitchen
- [ ] Detailed maps of infrastructure and/or critical natural resources
- [ ] Meeting rooms
- [ ] Hardened communications

Other: ☐ _____

11. 11. Do you represent a State Trust Resource Partner?

Mark only one oval.

- ◯ Yes *Skip to question 12*
- ◯ No *Skip to question 13*

Hurricane Response

12. 12. What is your role in hurricane response?

_____

_____

_____

_____

_____

Hurricane Response

13. 13. Does your organization/agency have established criteria for response during the COVID-19 pandemic?

Mark only one oval.

- ◯ Yes *Skip to question 14*
- ◯ No *Skip to question 15*

Hurricane Response

14. 14. Please explain the criteria used by your organization/ agency?

_____

_____

_____

_____

_____

Hurricane Response

15. 15. Do responders in your organization/agency have discretion as to whether or not to respond?

Mark only one oval.

- ◯ Yes
- ◯ No
- ◯ Other: _____

16. 16. What changes are planned/anticipated in your capacity to respond to a hurricane under the current COVID-19 pandemic?

17. 17. What are new challenges in hurricane recovery (facilities and people) are you expecting because of the COVID-19 pandemic?(check all that apply)

Check all that apply.

- [ ] How to keep your people safe (COVID-19)
- [ ] Access to adequate PPE
- [ ] Access to funding to support hurricane response
- [ ] Return to pre-storm operational capacity

Other: [ ] _____

18. 18. Based on your answer to the previous question, has your organization/agency identified ways to mitigate those challenges?

Mark only one oval.

- ◯ Yes *Skip to question 19*
- ◯ No

Hurricane Response

19. 19. Please explain those mitigation strategies.

Post Landfall Mission Assignments/Response Activities Survey

* Required

1. 1. Organization/Agency name *

_____

2. 2. Region you represent (check all that apply) *

Check all that apply.

- [ ] Northeast
- [ ] Mid-Atlantic
- [ ] Southeast
- [ ] Carribean
- [ ] Gulf of Mexico
- [ ] Pacific Islands

Other: [ ] _____

3. 3. Number of personnel in your immediate organization/agency *

Mark only one oval.

- ◯ Between 0 to 50 personnel
- ◯ Between 50 to 100 personnel
- ◯ Between 100 to 200 personnel
- ◯ Over 200 personnel

4. 4. Does your organization/agency have a hurricane preparedness/response plan?

Mark only one oval.

- ◯ Yes
- ◯ No

5. 5. What are your hurricane response capabilities during a normal hurricane season? (check all that apply)

Check all that apply.

- ☐ Secure boat storage
- ☐ Access to boats
- ☐ Specialized vehicles
- ☐ Launching (for both launch and salvage)
- ☐ Emergency power/generator
- ☐ Staging area (for both launch and salvage)
- ☐ Berthing quarters (that can be socially distanced)
- ☐ Living quarters equipped with a kitchen
- ☐ Detailed maps of infrastructure and/or critical natural resources
- ☐ Meeting rooms
- ☐ Hardened communications
- ☐ Specialized response/mission staff (SME, ICS trained etc.)
- Other: ☐ _____

6. 6. Do you represent a tribal/territorial/state/federal Trust Resource?

Mark only one oval.

- ◯ Yes *Skip to question 7*
- ◯ No *Skip to question 9*

7. 7. In one to two sentences, please describe your role in hurricane response.

8. 8. If you are a tribal/territorial/state trustee do you know how to work through FEMA to get access to NOAA and other federal agency expertise?

Mark only one oval.

- ◯ Yes
- ◯ No

9. 9. What are some of your most significant planning challenges for hurricane response and recovery due to the pandemic? (check all that apply)

Check all that apply.

- ☐ Staff safety during evacuations and/or Continuity of Operations Planning (COOP)
- ☐ How to keep your people safe and maintain access to adequate PPE during response activities
- ☐ Access to funding to support additional hurricane response requirements due to the pandemic
- ☐ Return to pre-storm operational activities/capacity
- Other: ☐ _____

10. 10. Based on your answer to the previous question, has your organization/agency identified ways to mitigate those challenges?

Mark only one oval.

- Yes
- No
- Partially

11. 11. In one to two sentences, please describe your recommended best practices for hurricane response and recovery beyond general pandemic guidance (PPE, social distancing, personal hygiene).

12. 12. Does your organization/agency allow personal/individual discretion as to whether to respond?

Mark only one oval.

- Yes
- No
- Unclear/undetermined
- Not Applicable

13. 13. Does your organization/agency have established criteria for staff deployments during the pandemic?

Mark only one oval.

- ◯ Yes *Skip to question 14*
- ◯ No *Skip to question 15*
- ◯ In progress/development *Skip to question 14*

14. 14. In one to two sentences, please explain the criteria used by your organization/agency for staff deployments during the pandemic.

_____

_____

_____

_____

_____

15. 15. As a responder or a supervisor of responders, what are your top concerns about response during the pandemic? (check all that apply)

Check all that apply.

- ☐ Being able to maintain my personal or my employees health
- ☐ Figuring out a viable screening strategy
- ☐ Having enough qualified personnel to respond
- ☐ Being able to provide safe, socially distanced travel
- ☐ Being able to provide adequate PPE for response staff
- ☐ Being able to address impacts to tribal, territorial, state and/or federal trust resources

Other: ☐ _____

16. 16. Do you have a Mission Essential Function (MEF) or Emergency Support Function (ESF) role in hurricane response?

Mark only one oval.

- Yes
- No *Skip to question 19*

Skip to question 4

17. 17. Is your organization/agency's response and recovery activities in a command post the same as they were pre-pandemic?

Mark only one oval.

- Yes
- No
- Partially
- Unclear/undetermined

18. 18. Is your organization/agency's response and recovery activities in the field the same as they were pre-pandemic?

Mark only one oval.

- Yes
- No
- Partially
- Unclear/undetermined

19. 19. Does your organization/agency have an Emergency Support Function (ESF) 3 or 10 response mission?

Mark only one oval.

- Yes *Skip to question 20*
- Yes, but limited to providing staff support *Skip to question 20*
- No *Skip to question 25*

20. 20. During ESF 3 or ESF 10 response following a hurricane, have you experienced confusion and/or inconsistencies with regard to guidance from FEMA, EPA, and/ or USCG on any of the following issues:

Mark only one oval per row.

	Yes	No	Unknown	Not Applicable
Appropriate staffing and skills for extended responses				
Transition planning from emergency to project management phase				
Sufficient participation from Tribal, Territorial, State or Federal entities needed to complete the mission				
How Mission Assignments (MA's) are obtained and/or tasked				
How MAs are justified				
How reimbursements for MA activities occur				
Coordination and/or categorizing response actions under ESF 3 vs. ESF 10				
Regarding addressing debris vs. hazmat				
During an event re: what/who governs response actions				
Between events re: what/who governs response limitations				

21. 21. In your experience, specific to ESF 3 and/or ESF 10, please evaluate the following:

Mark only one oval per row.

	Yes	No	Not Applicable
Does the pollution risk need to constitute a substantial threat?			
Can response actions include or extend to federal lands under any circumstances?			
Are response actions limited to State lands?			
Can response actions include or extend to federally recognized tribal lands?			
Can response actions include or extend to private lands and marinas?			
Can response actions be covered through State support requests and cost shares?			

22. 22. What role/ responsibility does each of the following have in ESF 3 and/or ESF 10 response activities?

Check all that apply.

	Decision Maker	Subject Matter Expert	Unknown
EPA	☐	☐	☐
USCG	☐	☐	☐
FEMA	☐	☐	☐
NOAA	☐	☐	☐
Other Natural Resource Trustees and Managers (all levels of gov't)	☐	☐	☐
National Response Plan Special Teams	☐	☐	☐
Regional Response Teams	☐	☐	☐
Area Committees	☐	☐	☐
LEPCs	☐	☐	☐
Counties	☐	☐	☐
States/Territories	☐	☐	☐
Tribes	☐	☐	☐

23. 23. Can response actions for ESF 3 and ESF 10 be combined under a single mission assignment?

Mark only one oval.

- ◯ Yes *Skip to question 25*
- ◯ No
- ◯ Partially *Skip to question 25*
- ◯ Unclear/ undetermined *Skip to question 25*

24. 24. In one to two sentences, describe what protocols would be helpful for coordinating the ESF 3 or ESF 10 missions in the coastal zone.

25. 25. Would it be helpful to have an operationally focused “playbook” or manual to guide all aspects of ESF 3 and 10 response? This guide would provide consistent and clear ESF mission guidance with regard to administrative and operational implementation and represent a common mission vision from perspectives of FEMA, USCG, EPA, USACE and States.

Mark only one oval.

- Yes
- No
- Not Applicable

26. 26. Would you find developmental or informational training useful to help perform ESF activities better?

Mark only one oval.

- Yes
- No
- Not Applicable

27. 27. Would scenario-based exercises be useful for planning contingencies relative to pandemic related response issues including staffing, on-scene criteria, evacuations, safety, and protocols for dealing with positive COVID-19 cases during a response?

Mark only one oval.

- ◯ Yes
- ◯ No
- ◯ Not Applicable

Appendix B

Survey Analysis

Summit Day 2 Survey Responses Summary

1. **Organization/Agency Name**
    a. NOAA - general
        i. National Ocean Service (NOS) - general
            1. Office of National Marine Sanctuaries (ONMS)
                a. Flower Garden Banks National Marine Sanctuary
                b. Papahānaumokuākea Marine National Monument
            2. Office of Coast Survey (OCS)
            3. Office for Coastal Management (OCM)
            4. National Geodetic Survey (NGS)
            5. National Centers for Coastal Ocean Science (NCCOS)
            6. Center for Operational Oceanographic Products and Services (CO-OPS)
            7. Office of Response and Restoration (ORR)
                a. Marine Debris Program (MDP)
        ii. Oceanic and Atmospheric Research (OAR)/Atlantic Oceanographic and Meteorological Laboratory (AOML)
        iii. National Weather Service (NWS) (2 responses)
        iv. National Environmental Satellite, Data, and Information Service (NESDIS)/Satellite Analysis Branch
    b. National Estuarine Research Reserves (NERR)
        i. Rookery Bay
        ii. Grand Bay
        iii. Apalachicola/Florida Department of Environmental Protection
        iv. Narragansett Bay
        v. Mission-Aransas
        vi. Sapelo Island/Georgia Department of Natural Resources
        vii. The Guana Tolomato Matanzas (GTM)
    c. Sea Grant
        i. Puerto Rico
        ii. Texas
    d. Louisiana Department of Natural Resources
    e. Maryland's Chesapeake and Coastal Service
    f. Puerto Rico Coastal Management Program/Department of Natural and Environmental Resources
    g. Alabama Dept Conservation Natural Resources State Lands Division Coastal Section and Weeks Bay Reserve
    h. General Land Office

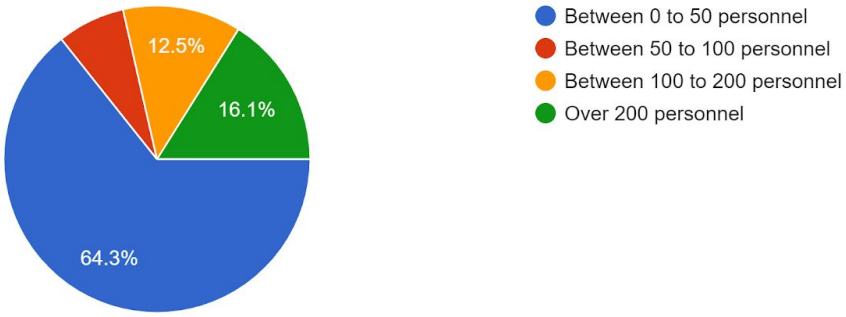
i. American Samoa Department of Commerce Coastal Zone Management Zone
j. Georgia DNR
k. Office of Planning
l. Division of Coastal Zone Management
m. Research planning, inc

---

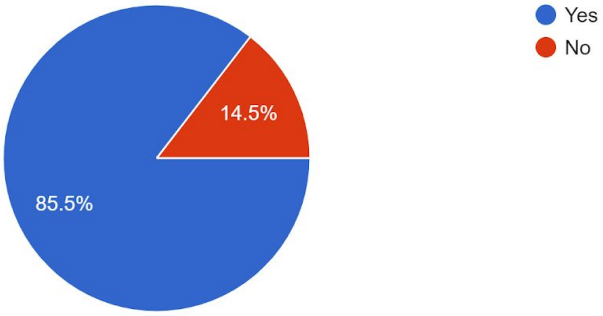
2. Region/State you represent

a. National (9 responses)
   i. Florida (6 responses)
   ii. Texas (4 responses)
   iii. Georgia (2 responses)
   iv. Hawaii (2 responses)
   v. Maryland (4 responses)
   vi. Alabama (2 responses)
   vii. Mississippi
   viii. Narragansett Bay region (RI/MA)
   ix. South Carolina
   x. Virginia (2 responses)
   xi. Washington State
   xii. Louisiana (2 responses)
b. US Virgin Island
c. Puerto Rico
d. Mid-Atlantic region (2 responses)
e. American Samoa
f. Eastern Region
g. Southeast Region
h. Northwest Region
i. North Carolina/South Carolina/Maryland/Alaska
j. Gulf coast and beyond
k. Gulf coast/Texas and Louisiana
l. Gulf of Mexico (3 responses)
m. Caribbean (4 responses)

3. **Number of personnel in your immediate organization/agency**



4. **Does your organization/agency have a hurricane preparedness/response plan?**



5. **Please check your top three preparedness responsibilities for the 2020 hurricane season. (select only three)**

Responsibility	Responses
How to keep your people safe (COVID-19)	87% (47 responses)
Determining whether you have enough PPE	40.7% (22 responses)
Access to state and federal partner resources	35.2% (19 responses)
Access to funding to support hurricane response	25.9% (14 responses)
Communication capacity and protocols	66.7% (36 responses)
Other:	
Deploying onsite	1.9% (1 response)
Mitigating as much damage to infrastructure as possible	1.9% (1 response)
Save lives and property	1.9% (1 response)

Being prepared for the unknown	1.9% (1 response)
Ensuring the same service delivery to support hurricane response given our telework posture	1.9% (1 response)
Providing decision support to partners	1.9% (1 response)
Securing property while maintaining a safe distance	1.9% (1 response)
Hurricane related marine debris/response	1.9% (1 response)
Mission Execution: Providing weather, water, and climate data, information, and knowledge for the protection of life and property in the Florida Keys.	1.9% (1 response)
Providing science support remotely	1.9% (1 response)
Keeping people and assets safe in a storm	1.9% (1 response)
Securing unit personnel and facilities prior to a real threat	1.9% (1 response)

---

6. **How has the COVID-19 pandemic altered your facilities, people, and resource preparedness actions towards potential hurricanes?**
    a. No change (6 responses)
    b. Remote work/support (22 responses)
    c. Travel justification required
    d. Follow agency/state/federal COVID-19 guidelines (13 responses)
        i. Purchase and use of PPE, masks, social distancing, Limiting personnel interactions ,wipe down common areas, etc.
    e. Limits on preparation activities (less personnel, secure vehicles, boats, equipment and support partners) (3 responses)
    f. More time to prepare/start preparedness early (5 responses)
        i. Ex: Turn off electronics that are not in use, cover certain electronics with plastic since they are getting used very infrequently, bring in all loose items now
    g. Minimize on-scene personnel (5 responses)
    h. Limit duration of on-scene response
    i. Inability to respond quickly to hurricane issues (3 responses)
    j. Vessel operation shutdown
    k. Case-by-case basis

l. Less capacity (2 responses)
m. All on-scene response is in question (2 responses)
n. Re-assigning tasks to employees (due to limited staff, COVID-19 high risk) (2 responses)
o. Communication/coordination difficulties
p. No access to local/state offices (facilities or personnel) (2 responses)
q. Voluntary basis for deployment
r. Need response protocol (2 responses)
s. Stress preparing home preparedness kits and plans

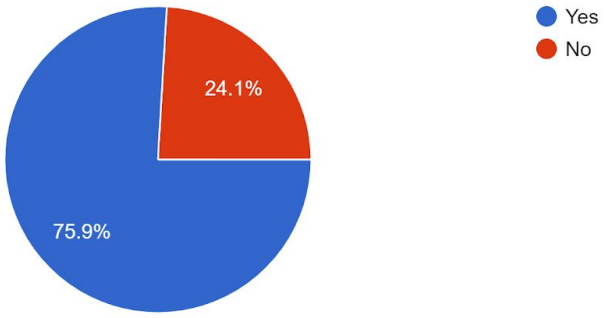
---

7. Where do you see the biggest challenges in your ability to protect your people and infrastructure? (check all that apply)

Challenges	Responses
How to keep your people safe (COVID-19)	81.5% (44 responses)
Access to adequate PPE	38.9% (21 responses)
Access to funding to support hurricane response efforts	25.9% (14 responses)
Other:	
On site support to partners	1.9% (1 response)
Consistent messaging and support from NOAA down regarding the capability and capacity during COVID-19	1.9% (1 response)
Deciding when remote or on site deployment is necessary	1.9% (1 response)
Being prepared for the unknown	1.9% (1 response)
Challenges regarding loss of power, internet, cell service	1.9% (1 response)
Mitigating as much damage to infrastructure as possible	1.9% (1 response)
Complacency of others in our area with using social distancing and PPE	1.9% (1 response)
We have the PPE and we have developed protocols and best practices to keep staff safe as possible. The biggest unknowns and inability to control are working conditions in a command post, available lodging and local conditions.	1.9% (1 response)
Access to COVID-19 testing	1.9% (1 response)

Size and impact of storm	1.9% (1 response)
Unique constraints involving access to our site and facilities via passenger ferry	1.9% (1 response)

8. **Based on your answer to the previous question, has your organization/agency identified ways to mitigate those challenges?**



9. **Please explain any specific mitigation strategies.**
    a. Post signs on buildings requesting use of PPE
    b. Require use of PPE by boats that are chartered
    c. Minimize on-scene personnel (2 responses)
    d. Some form of remote support (12 response)
    e. Designate certain people to secure the building with staggering their work hours to maintain a social distance
    f. Follow agency/state/federal COVID-19 guidelines (18 responses)
        i. Purchase and use of PPE, masks, social distancing, Limiting personnel interactions ,wipe down common areas, foot traffic directional, only one person in a room at a time, etc.
    g. Creating/updating organizational plans (5 response)
    h. Close coordination/increased communication (2 responses)
    i. Weather tracking
    j. Preparedness plans/tabletop exercise (3 response)
    k. Limit travel (2 response)
    l. Writing external grants for improvements/working with state legislators for hurricane funding (1 response)
    m. Risk Mitigation Strategy that assesses the situation based on emergent/imminent risk to life, property and the environment. It is requested by the USCG Captain of the Port or other authorities (2 responses)

n. Station repairs may be delayed if there is damage from hurricanes, which could prevent data from being available for subsequent storms.
o. Puerto Rico's residents at all levels, public and private organizations and communities have experienced CAT4 and 5 hurricanes. People are effective at preparing for CAT 1-2 hurricanes; however, after hurricanes Irma and Maria (2017) people do not trust electric power and water infrastructure. DNER;s preparedness and response plan is an important component of the Island-wide Mitigation and Response Plan.
p. Temporarily halted routine survey operations
q. Limit small boat operations to just significant response efforts, two person crew versus a normal three person crew.
r. Re-assigning tasks to employees (due to limited staff, COVID-19 high risk) (2 responses)
s. Secure equipment and materials and make necessary preparations to suspend ongoing experiments involving biological materials and/or hazardous chemicals if needed; any boat not in the water should be trailered and gathered in the maintenance area, and any boat in the water should be fueled up and readied to transport staff and equipment; a general survey should be conducted around each building and loose items should be brought inside or secured to prevent loss or damage by wind; propane and/or heating fuel tank shall be turned off

---

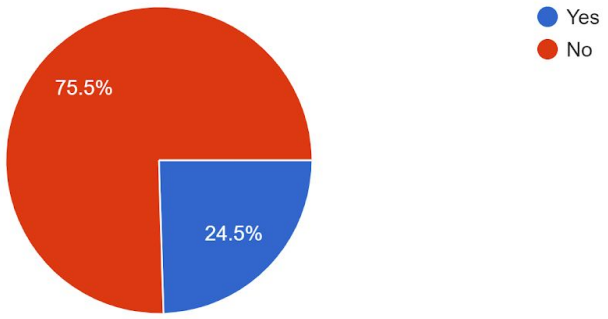
10. What are your hurricane response capabilities during a normal hurricane season? (check all that apply)

Response Capabilities	Responses
Secure boat storage	35.2% (19 responses)
Access to boats	33.3% (18 responses)
Specialized vehicles	18.5% (10 responses)
Launching (for both launch and salvage)	25.9% (14 responses)
Emergency power/generator	35.2% (19 responses)
Staging areas (for both launch and salvage)	25.9% (14 responses)
Berthing quarters (that can be socially distanced)	7.4% (4 responses)
Living quarters equipped with a kitchen	16.7% (9 responses)
Detailed map of infrastructure and/or critical natural resources	55.6% (30 responses)

Meeting rooms	37% (20 responses)
Hardened communications	27.8% (15 responses)
Other:	
Secure office and science laboratory chemicals and samples	1.9% (1 response)
Staffed on site, 24/7, and provide mission- critical data, information, and knowledge to our local, state, and federal partners before, during, and after a hurricane impact	1.9% (1 response)
Data management, GIS, consultations, environmental assessment	1.9% (1 response)
Data management and mapping	1.9% (1 response)
Coordination	1.9% (1 response)
We work across state and federal agencies to connect people and communities with response and recovery resources	1.9% (1 response)
Providing advisory services about resilience and hurricane preparedness	1.9% (1 response)
Delivery of real-time storm surge and meteorological information to be used by Federal, State and local partners	1.9% (1 response)
Response personnel, ICS expertise, pollution mitigation expertise	1.9% (1 response)
Assisting local/state partners in response remotely or deploying to an incident command post	1.9% (1 response)
Satellite analysis	1.9% (1 response)
ER imagery	1.9% (1 response)
Our unit staff are non-essential, must evacuate when directed	1.9% (1 response)

Maintain critical observing station (water level, MET, currents, air gap, etc.) data	1.9% (1 response)
Marine debris	1.9% (1 response)
Aircraft Response-Collection of Imagery	1.9% (1 response)
FEMA support for ESFs	1.9% (1 response)
Move animals to secure location, securing offices, communication with staff	1.9% (1 response)
N/A - provide scientific support, either remotely or in person during command post staffing	1.9% (1 response)

11. Do you represent a State Trust Resource Partner?



12. What is your role in hurricane response?

a. Coordinating Natural Resource surveys (mangroves, seagrass, coral reefs, beach erosion) , assuring environmental best practices in response to hurricanes (debris removal, vessel, vegetative, stormwater repairs, road repairs)
b. Coastal Section Administrator, overseeing CZM and Weeks Bay NERR, also serving as Interim Reserve Manager. I review and direct hurricane response for the Coastal Section.
c. Sunken Vessels Removal, Coastal, Marine and Nearshore Debris Removal, Coral Reefs, Beaches, Dunes and Wetlands damage assessments.

d. Assisting local/state partners in response to marine debris remotely or by deploying to a command post
e. Prep staff and facilities pre-storm, assessment of facilities and reopening post-storm
f. Emergency Permitting, Pipeline/Oil and Gas Infrastructure, and Public Fuel Supply
g. preparedness, communication, data acquisition, risk reduction
h. NCCOS Safety Officer, Safety of all NCCOS personnel
i. Communications support, Chief of Staff for OR&R
j. Coordinate with DMR on GBNERR assets and use
k. Provide support in all areas.
l. Communication and logistics
m. Overall Incident Commander
n. Safety

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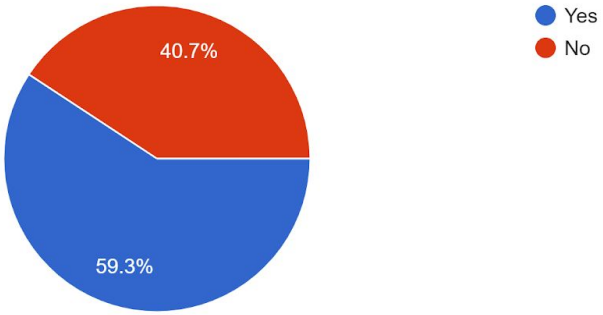
13. Does your organization/agency have established criteria for response during the COVID-19 pandemic?



14. **Please explain the criteria used by your organization/ agency?**
    a. Follow agency/state/federal COVID-19 guidelines (14 responses)
        i. Purchase and use of PPE, masks, social distancing, Limiting personnel interactions, wipe down common areas, etc.
    b. Some for of remote support (5 response)
        i. Use of virtual support via scientific tools/programs (trajectory modeling, weather/satellite imaging)
    c. Risk Mitigation Strategy that assesses the situation based on emergent/imminent risk to life, property and the environment. It is requested by the USCG Captain of the Port or other authorities
    d. Detailed plans for response/re-entry (3 response)

e. Station repairs may be delayed if there is damage from hurricanes, which could prevent data from being available for subsequent storms.
f. Travel justification required
g. Self - identified symptom questionnaire
h. Geographic position
i. Permitted to do emergency maintenance on certain tide gauges that are mission essential. Repairing gauges in the path of a storm/responding afterword
j. NWS field employees are mission-essential, emergency federal employees. Supports local, state, and federal partners with meteorological and oceanographic expert consultation and decision support, but also the scientific and operational work which supports those risk communication activities, such as releasing weather balloons, maintaining radar and surface observing equipment, and 24/7 meteorological and oceanographic situational awareness, analysis/diagnosis, forecasting, and warning.

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15. Do responders in your organization/agency have discretion as to whether or not to respond?

Yes = 60.8%
No = 21.6%
Other = 17.6%

- Staff may be detailed to other departments to support recovery efforts.
- All travel must be assessed at the agency level for mission critical.
- Not yet determined - staff safety is top priority but it's unclear when a mission will drive staff to respond in ways that may conflict with COVID-19 prevention measures.
- We do not have direct supervisory authority over first responders in the State Lands Division, as they report to the Lands Assistant Director.

- Would need to meet agency mission critical approval by senior leadership outside of our office.
- Safety first then respond as requested.
- We work as a team in a coordinated effort with NWS Southern Region, NWSHQ and NOAA leadership.

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16. What changes are planned/anticipated in your capacity to respond to a hurricane under the current COVID-19 pandemic?

a. No change (10 responses)
b. More layers of approval
c. Essential services must respond (2 responses)
d. Case-by-case basis (3 responses)
e. Some form of remote response (9 responses)
    i. Ex: Remote data collection tools to support response
f. Increase in time for preparedness
g. Minimize on-scene personnel (8 responses)
h. Limitations for on-scene support (4 responses)
i. Follow agency/state/federal COVID-19 guidelines (10 responses)
    i. Purchase and use of PPE, masks, social distancing, Limiting personnel interactions ,wipe down common areas, etc.
j. Prioritizing employee safety (5 responses)
    i. Have to choice to go to a response
k. Need for specific operation plans (3 responses)

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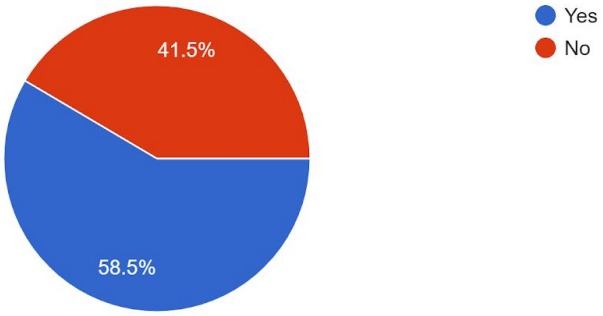
17. What are new challenges in hurricane recovery (facilities and people) are you expecting because of the COVID-19 pandemic?(check all that apply)

Challenges	Responses
How to keep your people safe (COVID-19)	92.6% (50 responses)
Access to adequate PPE	55.6% (30 responses)
Access to funding to support hurricane response	25.9% (14 responses)
Return to pre-storm operational capacity	46.3% (25 responses)
Other:	
Being prepared for the unknown	1.9% (1 response)
Significant travel restraints	1.9% (1 response)

Confusion over response posture	1.9% (1 response)
Some delays in purchasing	1.9% (1 response)
Same as pre-pandemic challenges	1.9% (1 response)
Lengthy approval process for travel	1.9% (1 response)
Housing would be a huge limiting factor for evacuation and also for recovery due to COVID	1.9% (1 response)

18. Based on your answer to the previous question, has your organization/agency identified ways to mitigate those challenges?



19. Please explain those mitigation strategies.

a. Prepared "go kits" with PPE for on-site staff
b. Empowered staff to make decisions on what is safe on scene
c. Multiple agencies working together to keep mission-essential employees safe.
d. Following agency/state/federal guidelines and best practices (10 responses)
    i. Acquiring and using PPE, Physical distancing, sanitation, personal hygiene, frequent communication
e. Post - response COVID-19 testing
f. Prioritizing tasks that require limited personnel and communication
g. Preparing and communication prior to an event
h. Access satellite data remotely - continue to provide maps
i. Closed offices
j. Remote work + webinars + virtual meetings
k. Looking to acquire PPE (3 responses)
l. Developing COVID-19 deployment guidelines (4 responses)

Hurricane Summit III Survey Responses Summary- TOTAL

1. **Organization/Agency Name**
    a. DOC/NOAA
    b. NOAA (general) (5 responses)
        i. National Ocean Service (NOS)
            1. Center for Operational Oceanographic Products and Services (CO-OPS) (2 responses)
            2. National Geodetic Survey (NGS)
            3. National Centers for Coastal Ocean Science (NCCOS)/BSB
            4. Office for Coastal Management (OCM)
            5. Office of Coast Survey (OCS)
            6. Office of National Marine Sanctuaries (ONMS)
                a. Papahānaumokuākea Marine National Monument
            7. Office of Response and Restoration (OR&R) (2 responses)
                a. Emergency Response Division (ERD) (2 responses)
                b. Disaster Preparedness Program (DPP) (2 responses)
        ii. National Weather Service (NWS)
            1. Key West, FL and Southeast and Caribbean Regional Collaboration Team (SECART)
        iii. National Estuarine Research Reserves (NERR)
            1. Jobos Bay, PR and Puerto Rico Department of Natural and Environmental Resources
            2. Chesapeake Bay, VA
            3. Sapelo Island, GA
            4. Rookery Bay, FL and Florida Department of Environmental Protection
            5. Weeks Bay, AL and Alabama Department of Conservation & Natural Resources - State Lands Division, Coastal Section
    c. FEMA Region 4 (1 response) *duplicated survey responses*
    d. EPA
    e. Sea Grant:
        i. Maine Sea Grant
        ii. UGA Marine Extension and Georgia Sea Grant
    f. Coastal Zone Management:
        i. Massachusetts Office of Coastal Zone Management
        ii. Virginia Coastal Zone Management Program
        iii. American Samoa Coastal Management Program

g. Maine Emergency Management Agency
h. Florida Fish and Wildlife Conservation Commission (2 responses)
i. Research Planning, Inc.
j. Cousteau Reserve/Rutgers University
k. US Fish and Wildlife Service (USFWS)
l. US Fish and Wildlife ES office (USVI)
m. United States Coast Guard (USCG) Eighth District
n. Guam Homeland Security/Office of Civil Defense
o. General Land Office
p. Pennsylvania Emergency Management Agency
q. South Carolina Emergency Management Division
r. Alabama Department of Environmental Management

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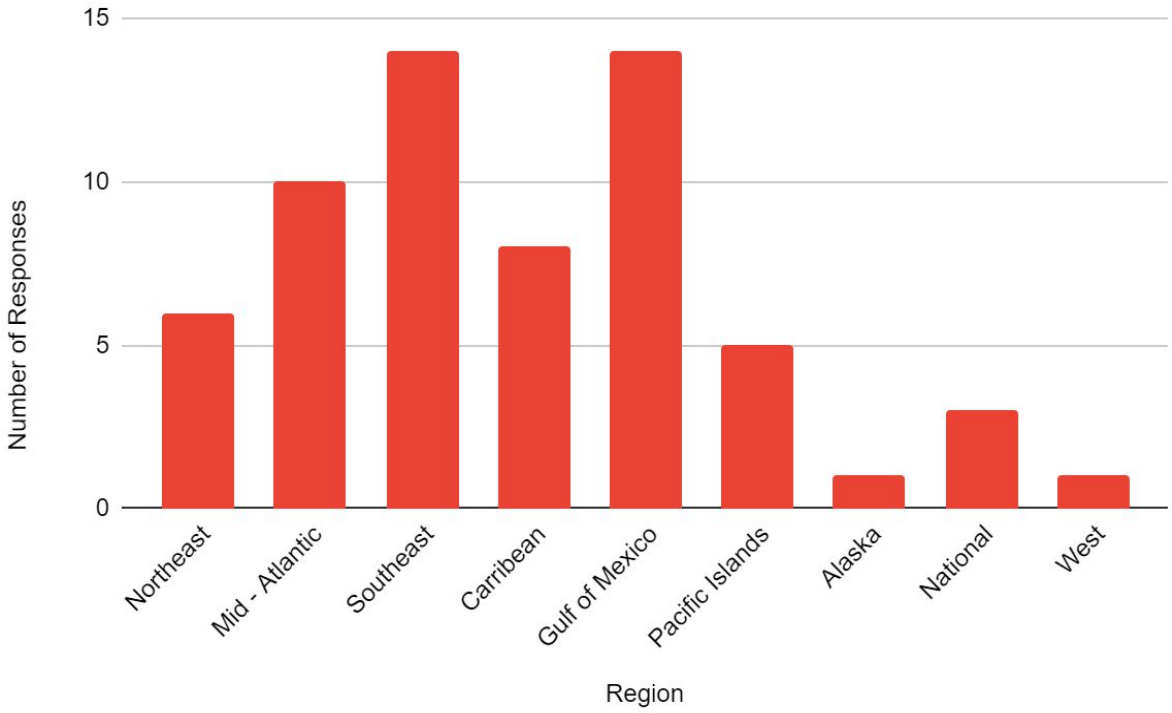
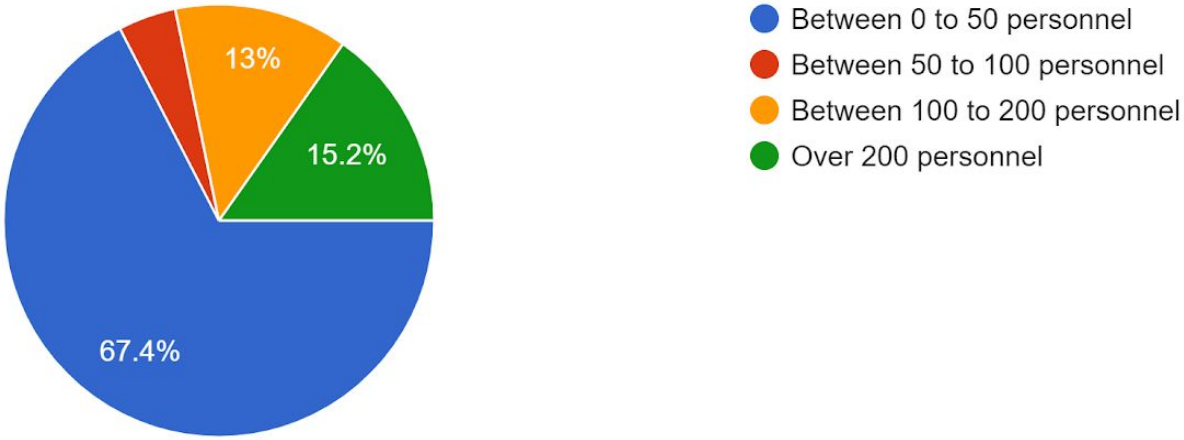
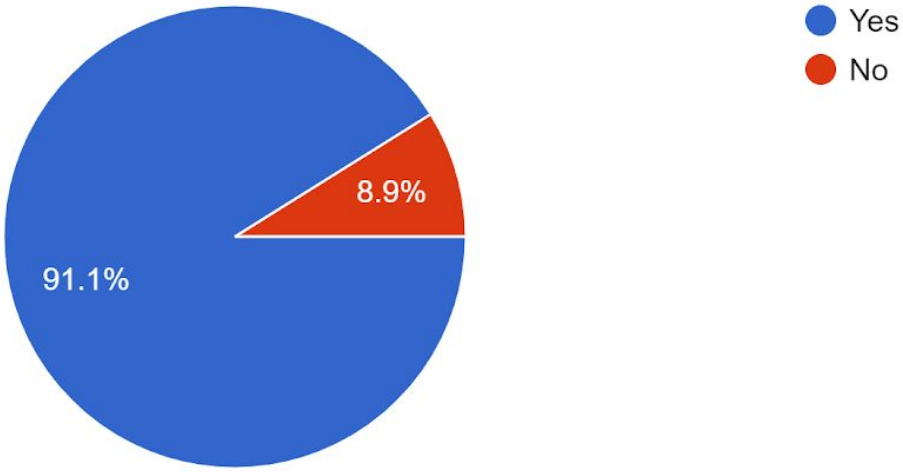
2. **Region you represent (check all that apply)** (46 responses)



3. **Number of personnel in your immediate organization/agency** (46 responses)



4. **Does your organization/agency have a hurricane preparedness/response plan?** (45 responses)



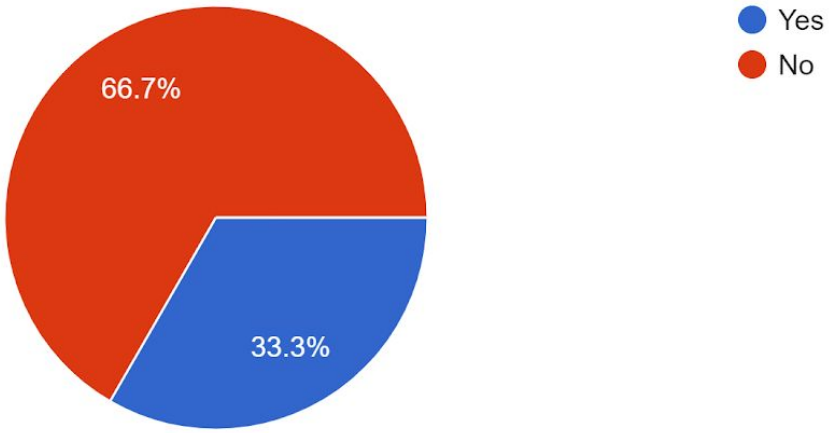
5. **What are your hurricane response capabilities during a normal hurricane season? (check all that apply)** (45 responses)

Response Capabilities	Responses
Secure boat storage	**33.3%** (15 responses)
Access to boats	**40%** (18 responses)
Specialized vehicles	**22.2%** (10 responses)
Launching (for both launch and salvage)	**31.1%** (14 responses)
Emergency power/generator	**37.8%** (17 responses)
Staging area (for both launch and salvage)	**20%** (9 responses)
Berthing quarters (that can be socially distanced)	**4.4%** (2 responses)
Living quarters equipped with a kitchen	**15.6%** (7 responses)
Detailed maps of infrastructure and/or critical natural resources	**44.4%** (20 responses)
Meeting rooms	**35.6%** (16 responses)
Hardened communications	**24.4%** (11 responses)
Specialized response/mission staff (SME, ICS trained etc.)	**57.8%** (26 responses)

Other:

- ❏ Major threat is flooding (more water miles in CONUS than any other state)
- ❏ DLE
- ❏ Hardened facility and storage up to category 5 hurricane
- ❏ Emergency response activities
- ❏ ESF-10 Oil and Hazmat Response
- ❏ Public information and warning
- ❏ Jurisdiction's watch office/state warning point operations
- ❏ Territorial emergency operations center
- ❏ Provide critical water level and meteorological data before, during and following storms
- ❏ Agency continuity of operations plan for emergencies
- ❏ Storm damage assessment team

6. **Do you represent a tribal/territorial/state/federal Trust Resource?** (45 responses)



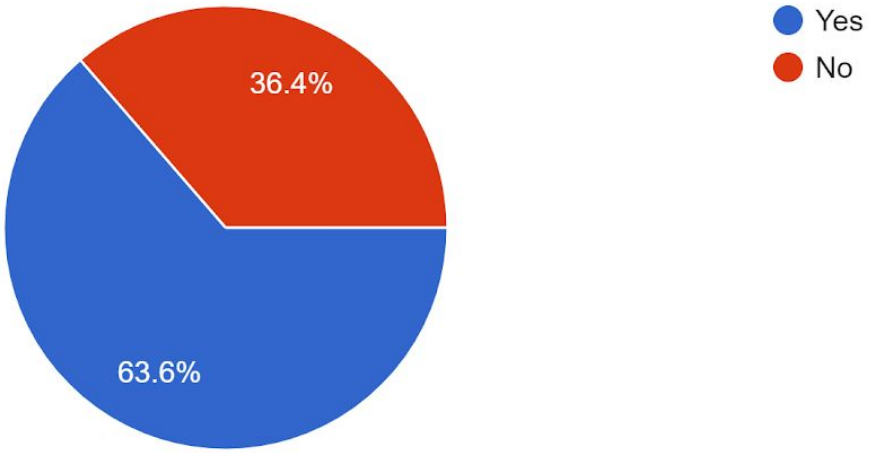
7. **(If yes to Question 6) In one to two sentences, please describe your role in hurricane response.** (15 responses)

- *PA Emergency Management Agency* - Hurricane, tropical storm, tropical depression response, recovery, preparedness, protection and mitigation and not all in that order. Agency is responsible for the EOP (and many other planning documents), Statewide Notification and Warning, response and resource support, legislation and external affairs outreach, VOAD coordination and the PA Business EOC in the CRCC that we activate.
- *PR DNER Jobos Bay NERR* - As director, I supervise the preparation of the equipment, ensure that we have gasoline in the vehicles, communication method with the work team, debris cleaning team and area ready to receive people who need a shelter for a short time.
- *MA Office of Coastal Zone Management* - Our office coordinated the Rapid Response Coastal Storm Damage Assessment Team and provided technical assistance to local and other state officials regarding appropriate responses to address storm related damages.
- *Alabama Dept Conservation & Natural Resources State Lands Division Coastal Section and Weeks Bay NERR* - I serve as Coastal Section Administrator, reporting to State Lands Assistant Director and Director. I coordinate implementation of response for the Coastal Section office at Five Rivers and Weeks Bay NERR.
- *Florida DEP- Rookery Bay NERR* - I am the IC. My team has responsibilities for preparation, response and recovery. We participate on the Florida ESF 10 and support other areas affected by storms.
- *Florida Fish and Wildlife Conservation Commission* - Varied throughout the agency including law enforcement, boating & waterways, displaced vessels, protection of natural resources.
- *Florida Fish and Wildlife Conservation Commission -* ESF-10 Natural Resource Advisor, PI for statewide Hurricane Irma marine debris removal and hot spot mapping grant and

Co-PI for a Hurricane Michael debris removal, agency marine debris coordination (response, assessment, removal, research, mitigation, prevention).

- ❏ *NOAA (DPP)* - Southeast Regional Preparedness Coordinator for the NOAA DPP. I support DPP activities in the Southeast including coordination, training, exercises, and active response efforts. Act as an NOS liaison to FEMA Region IV and state emergency management agencies.
- ❏ *NOAA* - Support USCG and State with ESF-10 response focusing on removal of pollution threats primarily from displaced vessels.
- ❏ *NOAA* - Long term response.
- ❏ *NOAA (NOS/ ORR)* - Information gathering and data support to response decision makers within ICS.
- ❏ *General Land Office* - Dedicated staff work the Emergency Control Center and oversee Oil spill response.
- ❏ *Virginia Coastal Zone Management Program* - Focus on adaptation and building resilience rather than response.
- ❏ *Cousteau Reserve/Rutgers University* - Staff safety and secure facilities.
- ❏ *US Fish and Wildlife Service* - ESF-10 trustee representative.

8. **(If yes to Question 6) If you are a tribal/territorial/state trustee do you know how to work through FEMA to get access to NOAA and other federal agency expertise?** (11 responses)



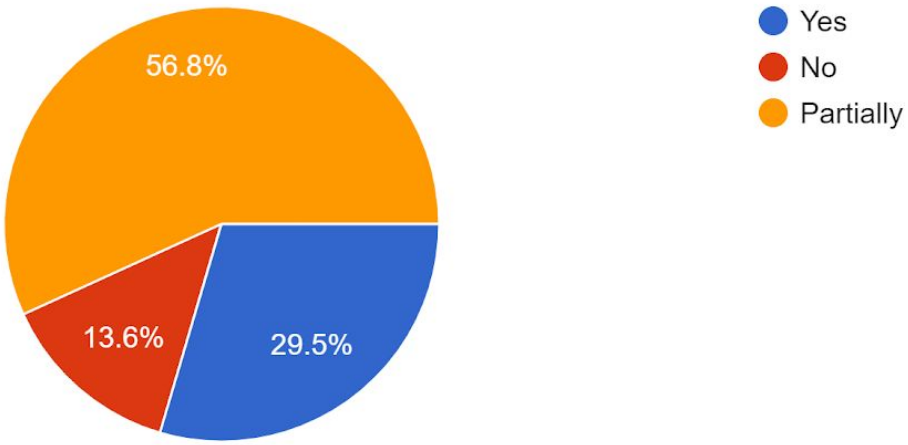
9. **What are some of your most significant planning challenges for hurricane response and recovery due to the pandemic? (check all that apply)** (46 responses)

Challenges	Responses
Staff safety during evacuations and/or Continuity of Operations Planning (COOP)	**60.9%** (28 responses)
How to keep your people safe and maintain access to adequate PPE during response activities	**76.1%** (35 responses)
Access to funding to support additional hurricane response requirements due to the pandemic	**26.1%** (12 responses)
Return to pre-storm operational activities/capacity	**41.3%** (19 responses)

Other:

- ❑ Adequate facilities.
- ❑ Response logistics (ie. travel and contingencies for stricken or quarantined personnel).
- ❑ How to safely conduct recovery operations with other agencies and the public.
- ❑ Coordinating multiple levels of government response during the pandemic.
- ❑ Loss of power and/or blocked roads makes the job more difficult to complete.
- ❑ Sheltering capacity is greatly reduced and most counties are in a deficit (according to the latest HES).
- ❑ Working remotely has increased our capacity to continue operations in the face of a hurricane

10. **Based on your answer to the previous question, has your organization/agency identified ways to mitigate those challenges?** (44 responses)

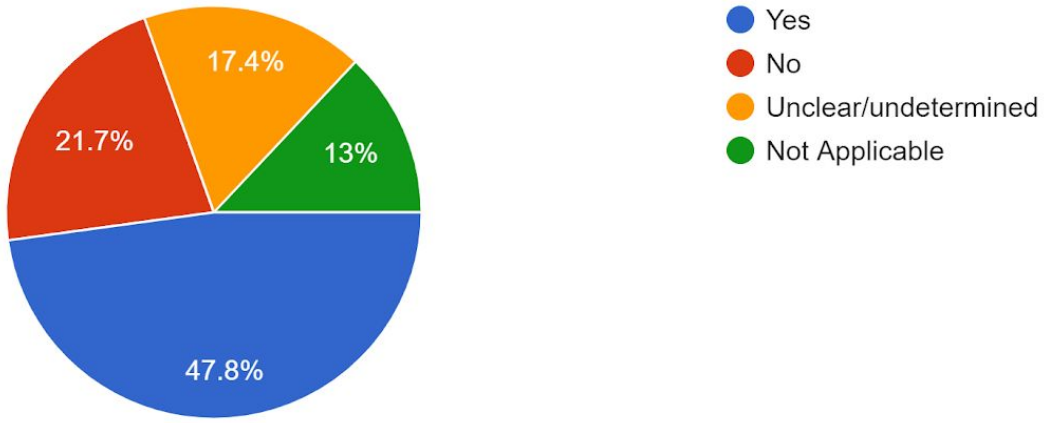


11. **In one to two sentences, please describe your recommended best practices for hurricane response and recovery beyond general pandemic guidance (PPE, social distancing, personal hygiene).** (40 responses)
    - ❏ *NOAA (NOS/ORR/DPP/DRC)* - Everything takes longer to do, so plan in advance of a storm.
    - ❏ *NOAA (DPP)* - (1) Prepare facilities and infrastructure far in advance of a storm to prevent concentrations of staff from going into labs or offices at the same time. (2) Ensure staff are adequately trained to respond during a pandemic.(3) Develop a plan for responder availability based on risk and location.
    - ❏ *NOAA (NOS/ ORR*) - Response practice needs to be drilled within the office before the actual event to ensure the plan is sufficient.
    - ❏ *NOAA (NOS / CO-OPS)* - As with most locations, our main office in Silver Spring has transitioned to working in a virtual (telework) environment. Our systems are built in such a way that almost all core work on the data dissemination side can be done via teleworking. This includes hurricane support through our Storm QuickLook and Coastal Inundation Dashboard web products.
    - ❏ *NOAA (ORR)* - We are now primarily a telework, work force. If power goes down, many of us will also lose internet access. Not sure how it would affect cell phones. Building in team redundancy to make sure that our critical roles can be met is important. I think we should pair up with team members that are in different areas to make sure that that redundancy exists and have a culture of "leaving bread crumbs", documenting how to accomplish our tasks.
    - ❏ *NOAA* - If possible, COVID-19 testing at least once a week for active (on site/field or ICP) personnel. But, mainly, when possible, work remotely.
    - ❏ *NOAA* - No real PPE (only face masks), social distancing, and hand cleaning recommendations.
    - ❏ *NOAA* - Have a plan on the following prior to response to improve preparedness and reduce "winging it": remote support when possible, what to do when response staff get COVID - 19, training staff on in-person response/recovery during the pandemic.
    - ❏ *NOAA (OCM)* - Social distancing and personal hygiene.
    - ❏ *NOAA* - Identifying displaced vessels in environmentally sensitive environments. Developing BMPs for the removal of pollution threats and/or displaced vessels.
    - ❏ *NOAA (NOS/NGS)*-Work with AOC to ensure we are ready to cover MEF activities.
    - ❏ *NOAA (NOS/NCCOS/BSB)* - My director and facilities staff have addressed all requirements.

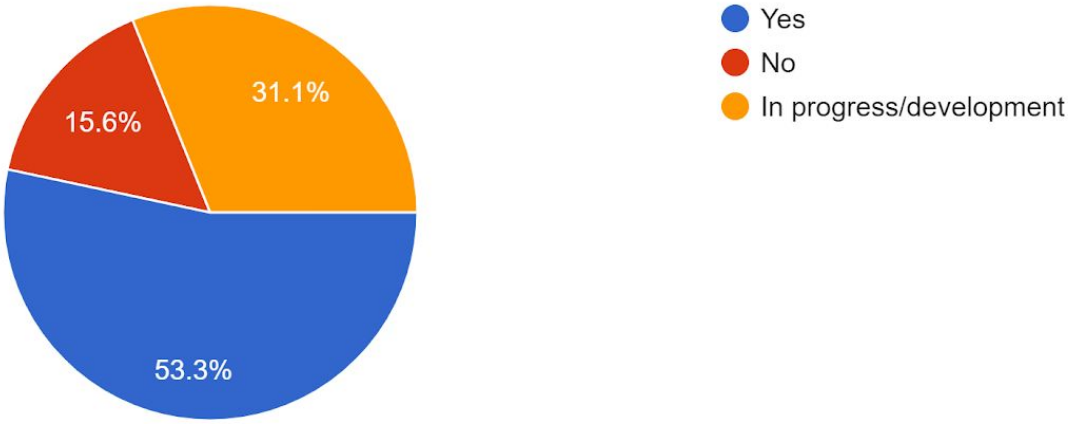
- *NOAA (OCS)* - We plan to reduce staffing as much as possible and reduce the scope of operations to the minimum necessary to reopen ports. We may decline to survey some areas if we feel that the risk is too high.
- *NOAA (NOS/ORR/ERD)* - ORR has developed a full set of guidance for hurricane response during the pandemic.
- *DOC/NOAA* - Seek safe shelter as soon as possible, secure items if time permits.
- *Florida DEP - Rookery Bay NERR* - Adding in time for preparation and anticipating any staff that evacuate will have to quarantine after they return. Therefore, we expect a longer recovery time.
- *Florida Fish and Wildlife Conservation Commission* - Identify response activities that can be conducted remotely (support functions), limit staff in command posts to essential only, focus field activities on life safety, postpone non-critical responses.
- *Florida Fish and Wildlife Conservation Commission* - We follow amplified guidance based on health department and CDC recommendations and travel is mission critical.
- *US Fish and Wildlife Service* - Report to the command posts as early as possible - get ahead of the curve
- *PR DNER Jobos Bay NERR -* Protocols have been established in our work area.
- *MA Office of Coastal Zone Management* - Our office coordinated the Rapid Response Coastal Storm Damage Assessment Team and provided technical assistance to local and other state officials regarding appropriate responses to address storm related damages.
- *FEMA (Region 4)* - Follow CDC guidelines. Decompress in-person response of all non-essential who can support remotely. Staff critical functions with minimal in-person staff and provide reach back for specialists. Masks inside all buildings.
- *Maine Emergency Management Agency* - Provide planning guidance and support to lower echelons. Now we provide adequate time to complete duel incident planning.
- *Virginia Coastal Zone Management Program* - Access to adequate technology to continue operations and support for the use of said technology are critical.
- *US Fish and Wildlife ES office (USVI)* - Stockpile water and food. Food and water were hard to find after Irma and Maria.
- *ONMS/ PMNM* - Prepare early, have a plan, practice the plan, have adequate supplies, food, water, medication for 14 days including mask and disinfecting supplies.
- *Maine Sea Grant* - Equipment, staff and community mobilization/organization to assist those most affected should be prioritized.

- *Cousteau Reserve/Rutgers University* - Elevate critical instrumentation, recover field-deployed data loggers in advance of the hurricane, off-site backup of data.
- *Chesapeake Bay NERR VA* - Enhanced communications; identify clear roles for essential personnel.
- *Research Planning, Inc.* - Have go kits with initial PPE, encourage teams to follow social distancing, training.
- *AL Dept. Environmental Management* - Stock up with PPE prior to potential events, if possible.
- *Sapelo Island NERR* - Our staff generally don't participate in response and recovery operations.
- *PA Emergency Management Agency* - Standing up the PABEOC working with the private sector, staffing of the PADOH EOC early (first floor of our CRCC), agility to go virtual as needed with IT staff and clear messaging to employees and stakeholders.
- *EPA* - We have developed detailed personnel mobilization guidance and self-isolation requirements upon return from field activities. Staff have identified their willingness/ability to respond for field activities, support operations virtually, etc. We have also assembled and staged personal disinfection kits for field personnel in our equipment room.
- *USCG Eighth District*- Engage federal and state agencies in annual pre-hurricane season discussions to ensure alignment. USCG Eighth District and field commands also participate in pre and post landfall calls to ensure information exchange and efficiency.
- *American Samoa Coastal Management Program*- Prep shelters, educate everyone on how to implement pandemic guidelines during hurricanes, purchase adequate PPE, and do mock drills.
- *Alabama Dept Conservation & Natural Resources State Lands Division Coastal Section and Weeks Bay NERR* - We have provided masks and guidance for social distancing during work activities. Response would require vigilance in social distancing during interactions with first responders. Majority of staff are not considered first responders, and as such will respond only as needed to secure facilities and equipment.
- *Guam Homeland Security/Office of Civil Defense* - Whole community and whole government engagement in All-Hazards Planning in a pandemic environment.

12. Does your organization/agency allow personal/individual discretion as to whether to respond? (46 responses)



13. Does your organization/agency have established criteria for staff deployments during the pandemic? (45 responses)



14. (If yes or in progress/development to Question 13) In one to two sentences, please explain the criteria used by your organization/agency for staff deployments during the pandemic. (35 responses)

- G*uam Homeland Security/Office of Civil Defense* - During a pandemic, the Director of the Department of Public Health and Social Services has the authority for the overall response protocol. The Director, DPHSS, and the Governor of Guam, are supported by SMEs comprising the Surgeon Cell. All staff deployments and other requirements are influenced by science, models and advisements, and are strictly directed by the Governor's Executive Orders, guidance, memo directives, plans, procedures, and protocols.

- *Alabama Dept Conservation & Natural Resources State Lands Division Coastal Section and Weeks Bay NERR* - Staff are required to social distance as appropriate, governor ordered mask mandate, be vigilant of close contact situations.
- *Florida Fish and Wildlife Conservation Commission* - In development.
- *Florida Fish and Wildlife Conservation Commission -* Agency amplified procedures based on health department guidelines. Limited to mission critical deployments.
- *USCG Eighth District* - The USCG continues to perform all 11 statutory missions. We respond and conduct work as necessary, but the operational commanders do have discretion.
- *NOAA (NOS/NGS)* - Follow DOC/NOAA as well as AOC guidelines to conduct response activities.
- *NOAA* - Staff can be deployed for in-person response if: (1) work cannot be done effectively remotely (2) staff are comfortable with deploying (3) appropriate pandemic related response training has been completed (4) proper PPE can be provided.
- *NOAA* - Going on-scene requires approval from upper management. The need to provide on-scene support needs to be deemed essential.
- *NOAA* - Readiness and willingness to deploy.
- *NOAA* - Reviewed at higher management levels.
- *NOAA* - ICS trainings (100,200,300,700,800), HAZWOPER24, General Response capacity.
- *NOAA (OCS)* - We cancelled routine operations to keep staff on telework to reduce exposure. Staff must report general health and have a temp below 100.4 deg. PPE is available as are pulse oximeters. Anyone who feels ill during or after a deployment will be tested.
- *NOAA (OR&R ERD)* - FOSC requests presence; ability to drive vs. fly; need to be on-site vs. remote
- *NOAA (NOS/ORR/ERD)* - We have a range of criteria, actual decisions highly dependent on situation.
- *NOAA (NOS / CO-OPS)* - With regards to deploying staff or requesting contract staff visit stations to conduct repairs, this has been occurring on an ad hoc basis and has primarily been limited to day trips by Field Operations Division staff, eliminating the need for hotel stays. We have also been using local contacts for limited maintenance where trained individuals exist.
- *SECART and NOAA/NWS/Key West, FL* - If our emergency management partners need us to deploy to support weather and water decisions involving protection of life and property, then we will deploy.

- *NOAA (NOS/ ORR)* - Staff must volunteer to travel (which we may not have enough), travel is only suggested when remote support is not feasible for an activity.
- *NOAA (NOS/ORR/DPP/DRC)* - General CDC Guidelines and testing before deployment for vessels.
- *NOAA (NOS/NCCOS/BSB*) - We are kept up to date regarding returning to the lab.
- *NOAA (ORR)*- I don't know what they are, just that I believe they are working on them.
- *NOAA (NOS/CO-OPS/Gulf Coast Team*) - We have a risk assessment flow chart that takes into account staff safety and comfort with traveling, covid testing numbers (at point of origin, destination, & points in between), and availability of PPE.
- *EPA* - Our region has developed pandemic emergency response procedures, which address such factors as responder deployment considerations, environmental impacts and evaluation to determine the need to deploy, H&S tailgate meetings, how to address on-site illness, and post-response procedures.
- *PA Emergency Management Agency* - Internal and external Office of Administration guidelines
- *Sapelo Island NERR* - Not familiar with criteria or whether they are even written down
- *AL Dept. Environmental Management* - The majority of our staff are required to have basic training (ICS, HazWoper, etc.)
- *Research Planning, Inc.* - Family with no pandemic related morbidity issues, trained, experienced.
- *Cousteau Reserve/Rutgers University* - Essential personnel are asked to maintain critical research operations and assess damage.
- *US Fish and Wildlife ES office (USVI) -* Must be approved at the Regional level.
- *FEMA Region 4* - Essential personnel only. Regional (driveable) travel only.
- *UGA Marine Extension and Georgia Sea grant* - Voluntary.
- *MA Office of Coastal Zone Management* - We deploy our Storm Damage Assessment Team individuals and go out to conduct assessments individually.
- *PR DNER Jobos Bay NERR* - The employees have to get tested and get negative test results.
- *US Fish and Wildlife Service* - Deployment has to be mission critical and cannot be done remotely

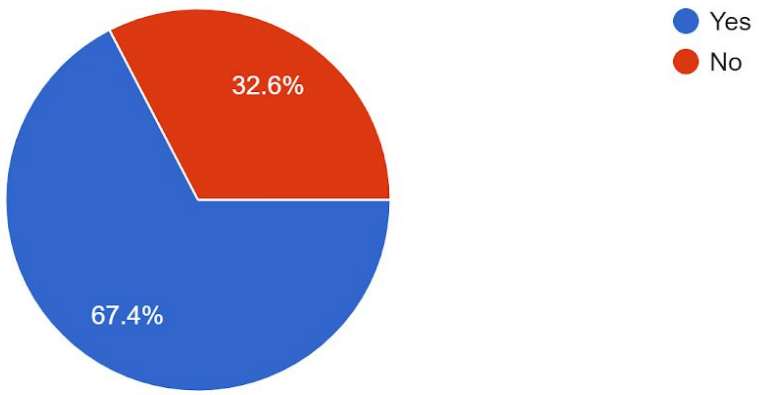
15. **As a responder or a supervisor of responders, what are your top concerns about response during the pandemic? (check all that apply)** (46 responses)

Concerns	Responses
Being able to maintain my personal or my employees health	**82.6%** (38 responses)
Figuring out a viable screening strategy	**21.7%** (10 responses)
Having enough qualified personnel to respond	**50%** (23 responses)
Being able to provide safe, socially distanced travel	**56.5%** (26 responses)
Being able to provide adequate PPE for response staff	**43.5%** (20 responses)
Being able to address impacts to tribal, territorial, state and/or federal trust resources	**39.1%** (18 responses)

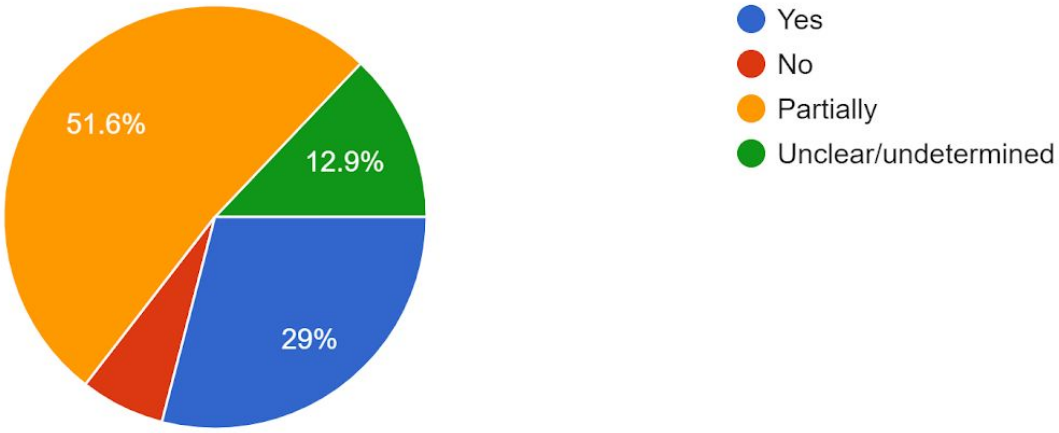
Other:

- ❏ No established criteria to guide on scene vs remote support.
- ❏ Maintaining adequate communications in the event of infrastructure disruption.
- ❏ May need to evacuate and respond simultaneously.
- ❏ Loss of power and possible interruptions in communication.
- ❏ Ensuring the safety of local personnel.
- ❏ Not applicable (not responders).

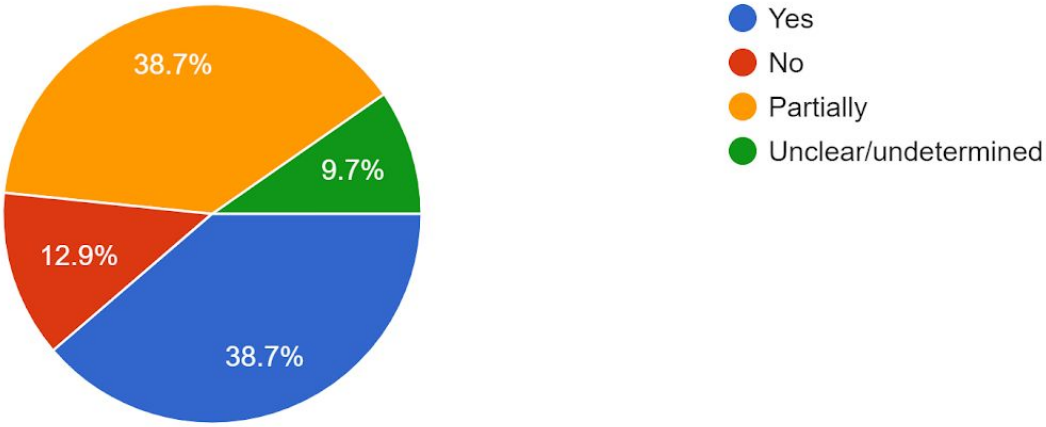
16. **Do you have a Mission Essential Function (MEF) or Emergency Support Function (ESF) role in hurricane response?** (46 responses)



17. (If yes to Question 16) Is your organization/agency's response and recovery activities in a command post the same as they were pre-pandemic? (31 responses)

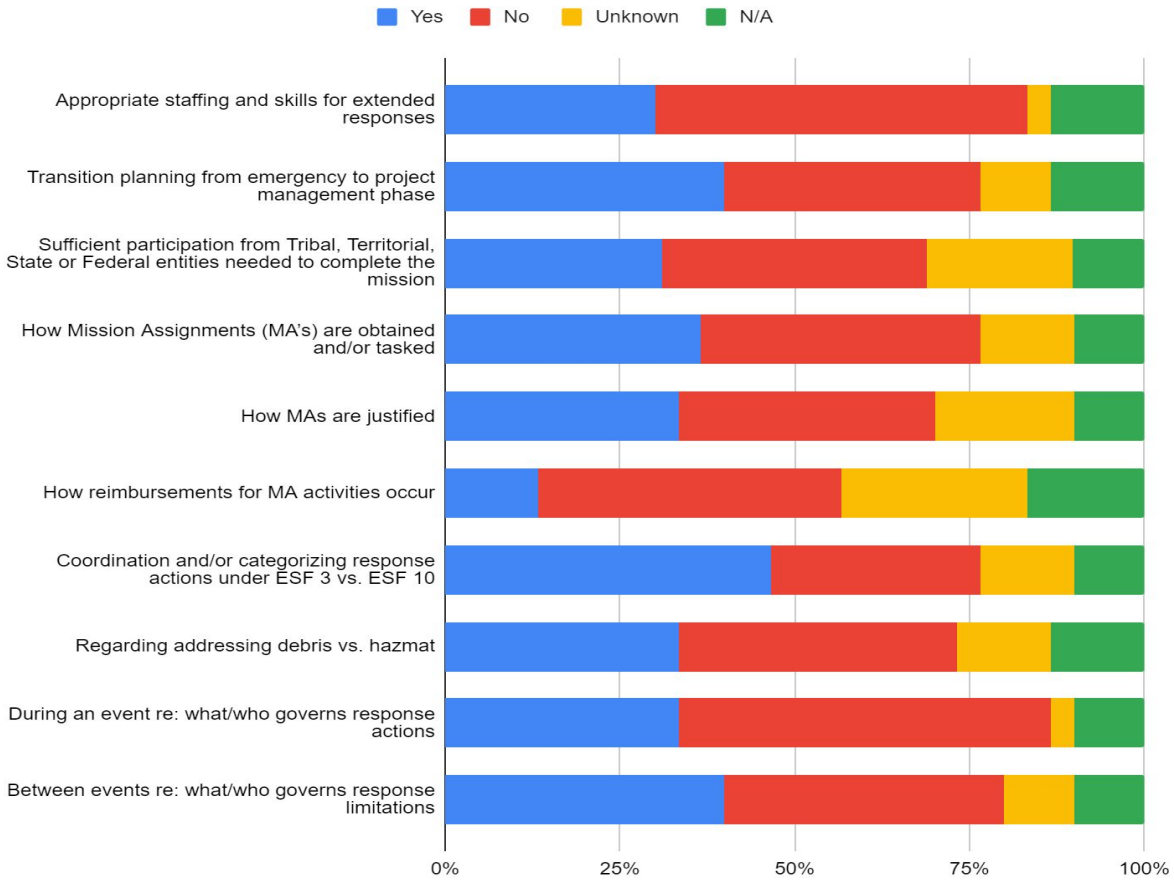


18. (If yes to Question 16) Is your organization/agency's response and recovery activities in the field the same as they were pre-pandemic? (31 responses)

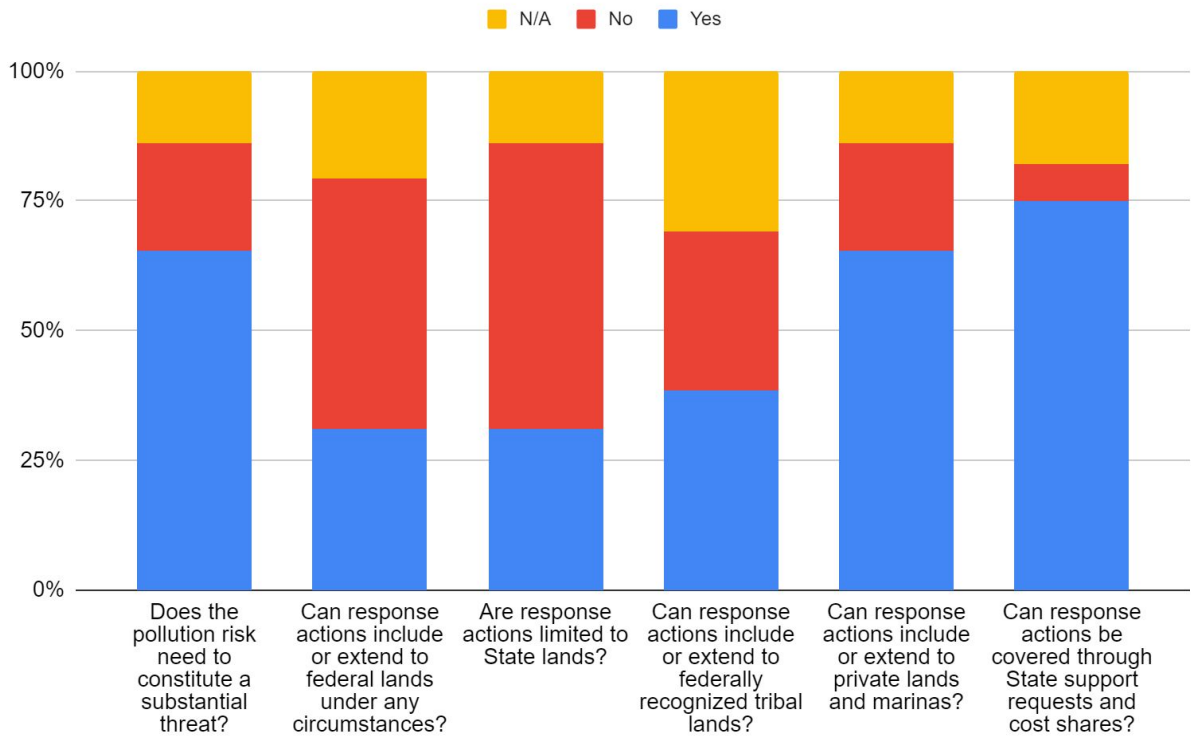


19. Does your organization/agency have an Emergency Support Function (ESF) 3 or 10 response mission? (44 responses)

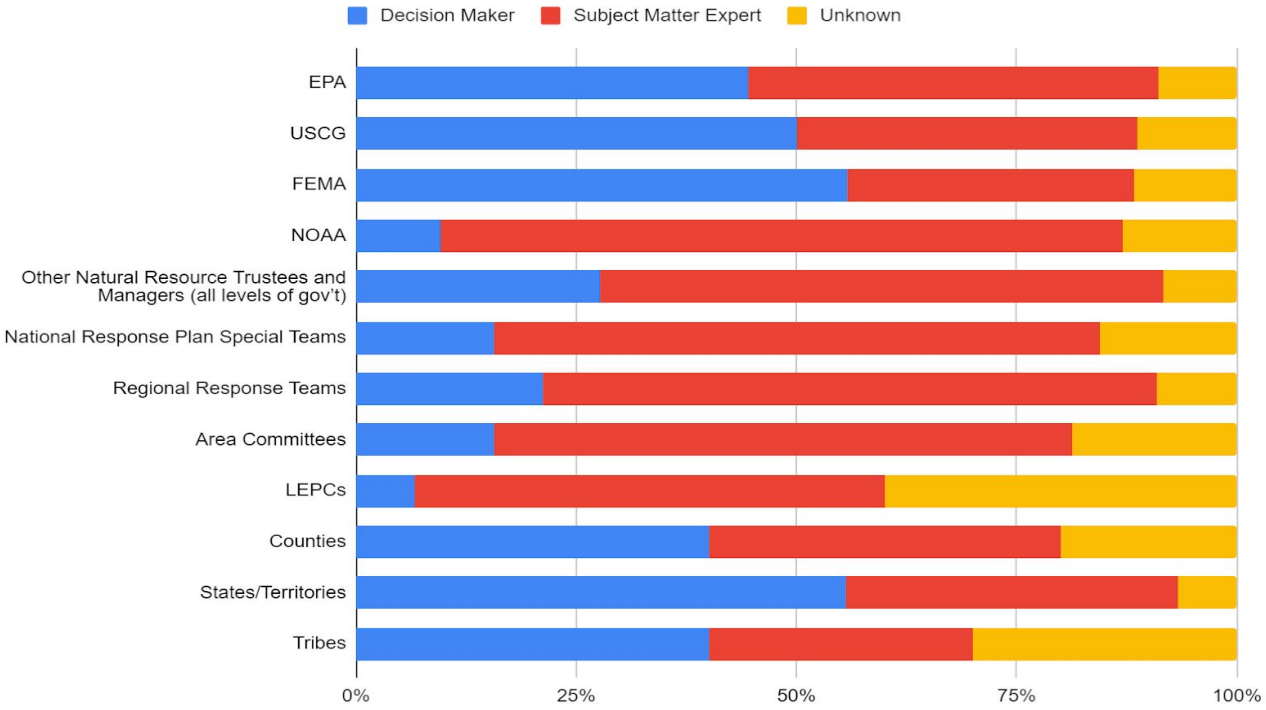
20. (If yes to Question 19) During ESF 3 or ESF 10 response following a hurricane, have you experienced confusion and/or inconsistencies with regard to guidance from FEMA, EPA, and/ or USCG on any of the following issues:



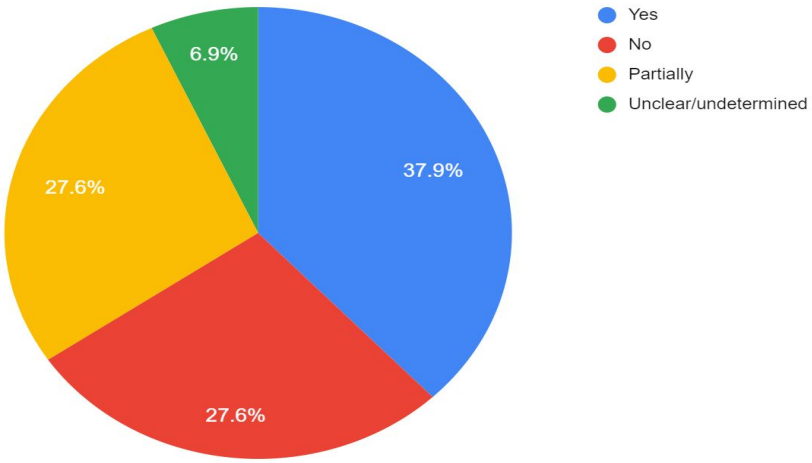
21. (If yes to Question 19) In your experience, specific to ESF 3 and/or ESF 10, please evaluate the following:



22. (If yes to Question 19) What role/ responsibility does each of the following have in ESF 3 and/or ESF 10 response activities?



23. (If yes to Question 19) Can response actions for ESF 3 and ESF 10 be combined under a single mission assignment? (29 responses)



24. **(If no to Question 23) In one to two sentences, describe what protocols would be helpful for coordinating the ESF 3 or ESF 10 missions in the coastal zone.** (6 responses)
    - *Guam Homeland Security/Office of Civil Defense* - The Territorial EOC SOP, the Guam CEMP, and the Guam Catastrophic Plan help to coordinate ESF 3 or ESF 10 under the leadership of the Unified Coordination Group (UCG).
    - *PA Emergency Management Agency* - We are not a Hurricane state so don't have the coastal issues that those states do. We work well with the USCG in Lake Erie and around Philadelphia.
    - *NOAA (ORR)* - Need to establish what virtual conferencing/ meeting system works across all agencies. Communication is a challenge.
    - *NOAA* - Have 2 separate teams, one to address ESF 3 and another to address ESF 10, but absolute need to coordinate and share data collection.
    - *US Fish and Wildlife ES office (USVI)* - How to maintain communications between FEMA funded projects and crews on the ground regarding SOP's and protocols to be followed.
    - *Research Planning, Inc.* - Clear guidance on all the points in the previous questions.

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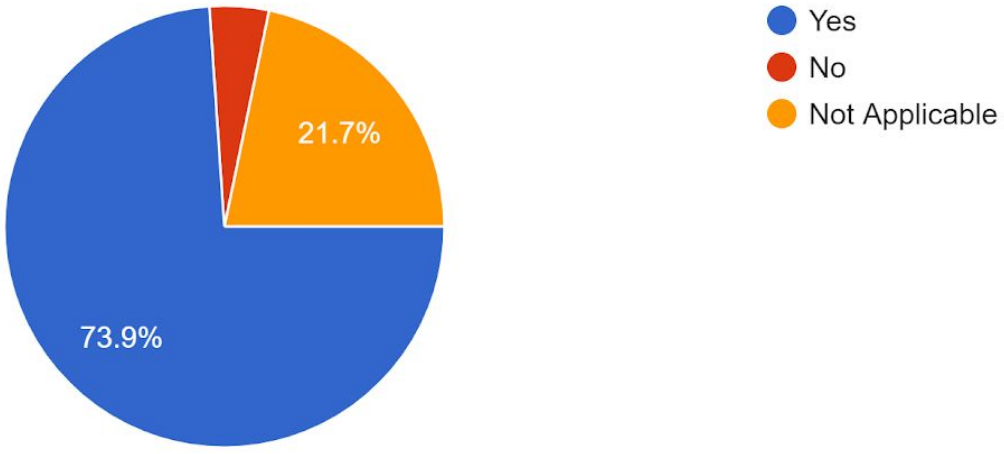
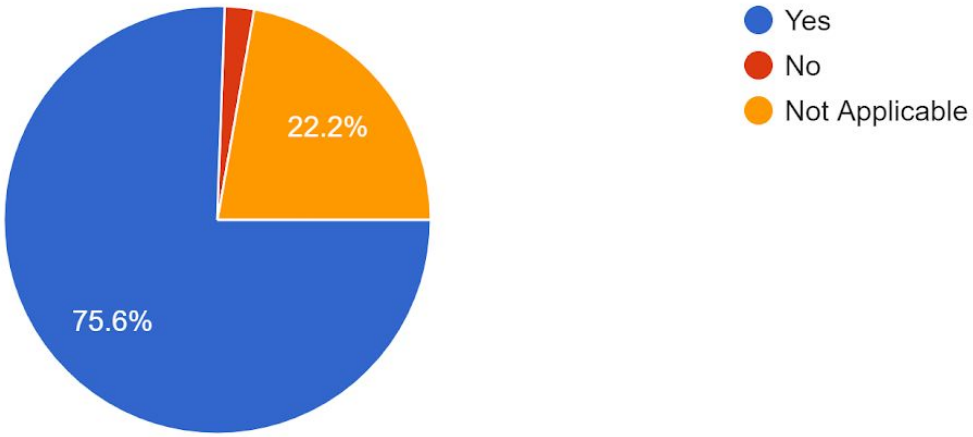
25. **Would it be helpful to have an operationally focused "playbook" or manual to guide all aspects of ESF 3 and 10 response? This guide would provide consistent and clear ESF mission guidance with regard to administrative and operational implementation and represent a common mission vision from perspectives of FEMA, USCG, EPA, USACE and States.** (46 responses)



26. Would you find developmental or informational training useful to help perform ESF activities better? (45 responses)



27. Would scenario-based exercises be useful for planning contingencies relative to pandemic related response issues including staffing, on-scene criteria, evacuations, safety, and protocols for dealing with positive COVID-19 cases during a response? (45 responses)