NOAA Emergency Services Provided by:
National Geodetic Survey
Center for Operational Oceanographic Products and Services
Office of Coast Survey (draft 10 25Aug2019)

Emergency Services (products and services) provided by NOAA are a valuable resource for federal, state and local governments and the public that are provided in a timely and efficient manner. As with any service or product new areas of research and development is needed to ensure that services and products are provided utilizing the latest technology and tools. This paper provides examples of current services and products provided by NOAA agencies and recommendations to enhance the emergency services provided by NOAA.

The first requirement that drives NOAA's emergency services efforts arises from the National Response Framework (NRF) which tasks the Department of Commerce as a Supporting Agency. Support agencies are those entities with specific capabilities or resources that support the primary agency in executing the mission of the Emergency Support Function (ESF).

The second requirement driver is the Coast & Geodetic Survey Act of 1947, an organic authority for National Ocean Service (NOS) navigation services, "To provide charts and related information for the safe navigation of marine and air commerce, and to provide basic data for engineering and scientific purposes and for other commercial and industrial needs

Examples of a NOAA emergency response efforts

National Geodetic Survey Remote Sensing Division (NGS/RSD)
In order to support NOAA's homeland security and emergency response requirements, RSD has the capability to acquire and rapidly disseminate high resolution digital photography. During times of natural or human induced disasters, these capabilities are available for the collection and delivery of high-resolution datasets, to a variety of users; federal, state, and local government agencies, as well as the general public. The data collected is disseminated and promoted in a manner to facilitate support efforts, such as aid planning and response decision-making, damage assessment through comparison of post emergency response imagery with historical imagery, assisting with creation of setbacks, rebuilding of damaged properties, and prioritizing beach replenishment projects.

Regional Navigation Managers (RNM) and Navigation Response Teams (NRT)
NRT's are essential components of Port recovery efforts by immediately verifying channel contours, noting any sub-surface obstacles, and ensuring vital navigational channels are ready to re-open. NRTs are essential members of any Port's United States Coast Guard (USCG) Marine Transportation System Recovery Unit (MTSRU) that is activated during, and immediately after any event, whether natural or man-made. NRTs works with other NOAA offices, other federal agencies, state and local governments, and port authorities to quickly resume maritime commerce after a storm event or other disaster. NRTs are strategically deployed so that NRT survey teams can be deployed within 24-48 hours so that waterways can be opened as quick as possible for safe navigation.

Ports/Channels

Aerial survey of ports and waterways is essential to reestablish safe transit. The time in doing this survey is vital due to the circumstances. The aerial imagery is a valuable tool for initial post event assessment. The overall efforts should be planned and coordinated accordingly, prioritizing the main need; to move people and other assets.

BENEFITS of NOAA'S Disaster Imagery, Geodetic Infrastructure, Regional Navigation Managers and Navigation Response Teams

- Post event imagery is collected in a timely manner and provided to the public
- Post event imagery provided to state and local governments is used for post event recovery
- Geodetic infrastructure supports post storm mapping, recovery efforts, and navigation
- RNM and NRT are essential component of Port recovery (to quickly and safely reopen ports and waterways)
- NOAA's nowCOAST.noaa.gov GIS-based online web mapping service that provides real-time coastal observations, forecasts and warnings

CHALLENGES

- Efforts and coordination within different entities (other federal agencies, state and local governments, ports, and airports) in a post recovery plan
- Allocation/deployment of trained personnel and resources in a relative time frame.
- Safe access to a disaster area

FUTURE FEDERAL ACTION RECOMMENDATIONS
NOAA/USACE and other partners should:

- Participate in Ports/Channel/Coasts preparedness/recovery workshops and provide coastal intelligence
- Develop a way to deliver a survey data quickly to COPT who will make final decision to re-open the port
- Create a support team to develop resilience and recovery strategies
- Share lesson learned with Federal, State and local agencies.
- Modernize tools/methods for aerial survey for large areas. (i.e:. Tampa Channel)
- Perform Artificial Intelligence (AI) research using remote sensing products to estimate debris, identify damaged infrastructure, and perform change detection of the shoreline
    - Performing research in the use of artificial intelligence (AI) and implementing AI use will strengthen NOAA's ability to provide emergency services more efficiently using modernized tools and techniques. One form of AI is machine learning. AI (machine learning) can be used to replace human review of post storm imagery to identify post storm debris, areas that teams need to be deployed, and prioritize areas that are most severely damaged related to navigation and port access. By using AI (machine learning) this will reduce the time to deployed disaster teams, enable ports to be opened quicker, and know where debris is located so that the debris can be efficiently remove in a timely manner in a post storm environment.