

**National Weather Service
December 6-7, 2017 Partners Workshop Summary**

On December 6-7, 2017, the National Weather Service (NWS) conducted a Partners Workshop with a broad range of participants from the Weather Enterprise, including America's Weather Industry, Emergency Management, Academia, and NWS leadership from forecast offices and headquarters.

The workshop represented a new approach for the NWS as part of a continuing evolution for our Partners meetings to make them as effective as possible. More specifically, this workshop was developed in response to what we heard from Partners at the August 1, 2017 meeting who desired to have more time to sit down and work through issues on NWS implementation of Impact-based Decision Support Services (IDSS) and discuss the future of NWS dissemination services.

The workshop also provided a means for the NWS to hear and take stock of stakeholder feedback on a forthcoming NWS Service Description Document for IDSS and craft specific ideas of how we can improve delivery of IDSS going forward.

The overall objectives for the meeting were:

- NWS demonstrates collaboration with Partners to achieve NWS mission through shared learning.
- NWS understands and works through Partner questions through recent case studies.
- Weather enterprise partners collectively know how to support our stakeholders.

The Partners began by expressing their desires for the workshop in real-time, resulting in the word cloud below that showed a high interest in collaboration, understanding, and clarity.



DAY 1: Impact-Based Decision Support Services (IDSS)

NWS Deputy Director Mary Erickson provided opening remarks and highlighted:

- The Weather Research and Forecasting Innovation Act of 2017 recognizes the key role NWS will play in providing IDSS to support a government role in protecting the public.
- America's weather industry plays a critical role in building a Weather Ready Nation - we can't do it alone!
- The workshop is about working together on how WE as the collective Weather Enterprise can meet the needs of all of our stakeholders using Impact-based decision support services. Together we'll begin to move forward to engage in discussion of a more strategic nature on roles of NWS and our Enterprise partners in providing IDSS to various sectors.
- Partnerships protect people from property damage and personal tragedy.

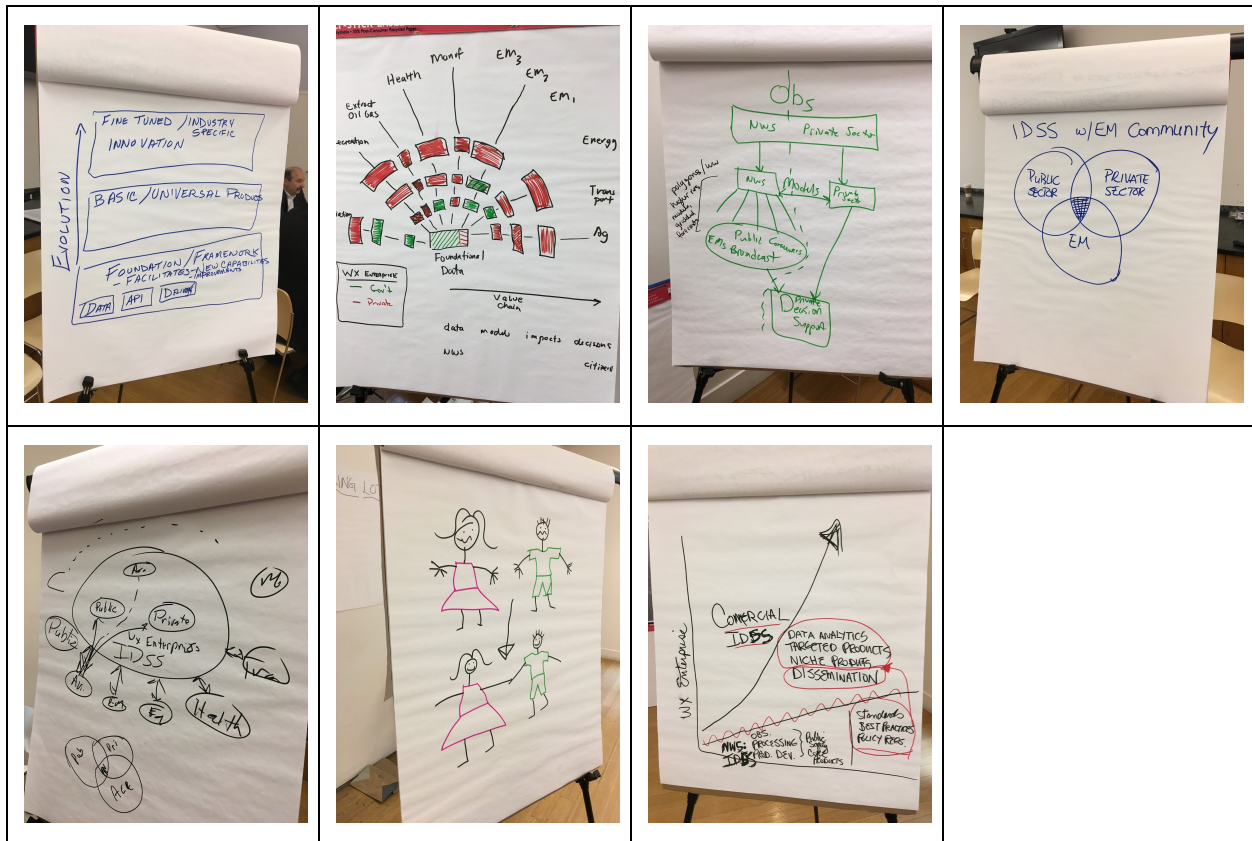
Emergency Management Partners had a chance to describe their relationship with the weather enterprise and used specific weather events (e.g. case studies) to describe their experiences and needs. These weather events included recent events from 2015-2017 such as Hurricane Harvey in Houston, TX; Hurricane Maria impacts on the Guajataca Dam in Puerto Rico; tornadoes in South Carolina; a blizzard in the DC-metro region, and flash flooding in Ellicott City, MD. After the presentations from emergency managers, all participants had a chance to ask questions and discuss these case studies, including what worked well?; what did not work as well?; and what could be done differently? Common themes from both the emergency managers and the participant discussions included the following:

- Weather forecasts are reliable and are increasingly more accurate
- Engagement and planning with the NWS, emergency managers and industry well before major weather events is critical
- The federal government (NWS) is looked upon as the authoritative voice for emergency managers
- Emergency managers need a consistent and common message from all sources, private and public
- There is an impression the general public wants weather information to find them and clarity is needed by weather enterprise on how people get their information
- Social media is fundamentally changing how emergency management communicates with public
- Emergency managers would like to know more about how private industry can also support them
- Consider opportunities for the NWS and America's weather industry to partner on continuity of operations

Participants then had a chance to hear from America's Weather Industry Partners who presented their perspectives on trends and emerging capabilities across the enterprise and national economy. The presentation afforded additional input and context to think about public safety decisions needed at all levels. Some key points included:

- Industry focuses on leveraging government foundational data sets, commercial data and emerging S&T capabilities
- There are emerging technologies for environmental sensors, commercial application of environmental models, machine and deep learning systems, and weather alert micro-messaging direct into client systems
- Emerging market trends are showing that government organizations are relying upon industry for weather capabilities and corporate entities are utilizing services from industry for safety and business optimization
- Markets for weather information exist across all sectors of the United States economy
- There is a challenge of scale for meeting the needs of all sectors
- The NWS and industry should work together to optimize best outcomes for all sectors, including acknowledgement of where gray areas exist.

Finally, the participants were asked to draw their view of the future state of IDSS in the next 3-5 years. The images below were drawn by groups made up of NWS, Industry, and EM participants:



The participants were then allowed time to synthesize their drawings by discussing the commonalities among them which highlighted the following:

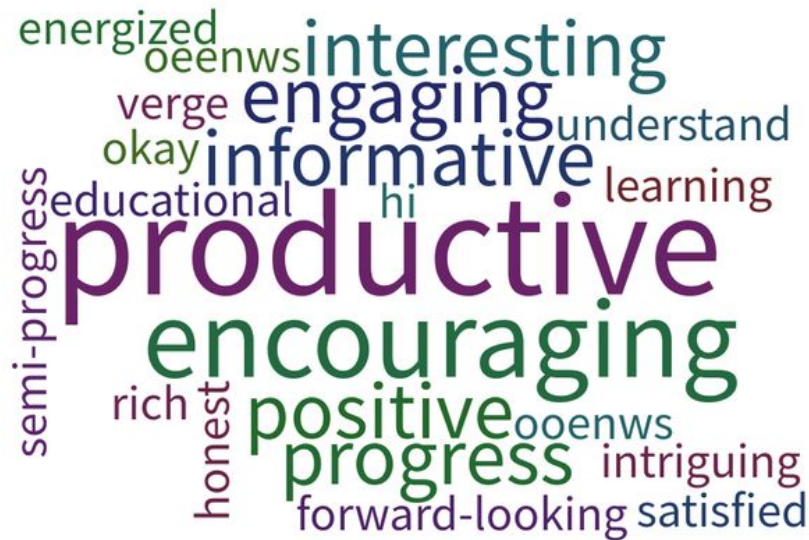
- The Weather Enterprise provides all the information needed for public/different sectors and delivers IDSS - there are expanding economic opportunities across all sectors

- Relationships and partnerships across public, private, and academia are key
- Co-dependence and interdependence - we rely on each other
- NWS and academia provide foundational information and science

The participants then developed a set of proposed actions for follow-up:

- Develop enterprise shared values for IDSS
- Develop community standards for IDSS
- Greater role clarity is needed for NWS (e.g. distribute Service Description Document);
- More regular and open communication between NWS and America's Weather Industry (AWI) is desired. Some ideas for consideration are:
 - NWS should consider offering a special NWS Chat for major events with external partners
 - Industry should visit with NWS Weather Forecast Offices
 - NWS should update NWS websites with industry information
 - NWS should include information in NWS on-boarding training about AWI
 - Regional and local level meetings to discern how IDSS should work at local levels
 - Industry could use non-disclosure agreements to share information with NWS
 - Engage with American Meteorological Society Commission on Weather, Water, Climate Enterprise

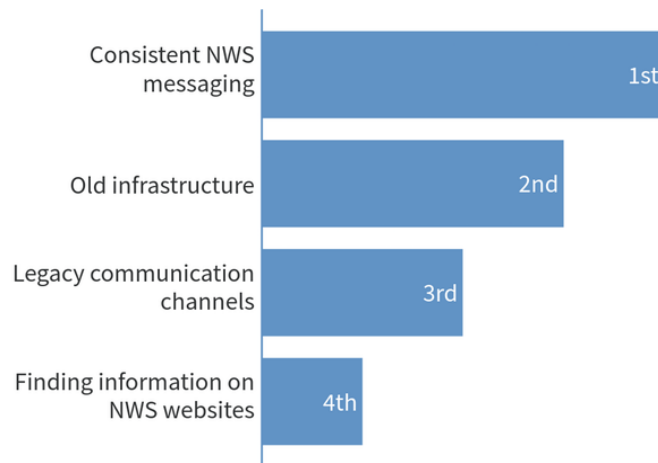
At the end of the first day, participants were asked to describe their experience and words such as productive, encouraging, progress and informative are illustrated in the word cloud below:



DAY 2: Dissemination

NWS Director Louis Uccellini provided opening remarks reflecting on the 2017 hurricane season and overall success of the weather enterprise in forecast accuracy and communication of safety information. It was then highlighted that there is a continued need for thinking about the future of dissemination services for the enterprise and our Partners.

Participants were asked to rank the most important aspect to advance NWS dissemination services with the results below:



Participants were then asked to reflect on the case studies presented and discussed the previous day and answer three questions in the context of dissemination: 1) From a decision making perspective, what does our EM community need? 2) From a business/client perspective, what does the weather industry need?; and 3) How should dissemination change/improve to meet those needs?

Common themes and questions heard in the report out from the discussion are listed below. The feedback evolved from specific NWS dissemination needs to broader delivery concerns:

- NOAA should improve access to its model data
- NOAA should provide more user friendly data formats
- Policy questions were raised on NOAA branding (e.g. apps with NOAA name on them) and how NOAA can work more closely with cellular and other communication providers?
- How does the enterprise best serve vulnerable or underserved populations?
- More alert mobility and flexibility is needed - weather needs to find user
- How does enterprise resolve time sensitivity delivery issues?;
- Could criteria or standards for dissemination and delivery of information be developed?
- How can GIS and scalability of data improve response from end users?

During the discussion of NWS dissemination and the needs of Partners, it became clear there is a need to distinguish and clarify the difference between the NWS description of “dissemination”

(distribution of its information) and broader context of “delivery” (transfer and translation of information to the end user). For NWS, dissemination refers to the systems used to provide and distribute products and services generated by the NWS. Delivery is the broader term representing the multiple roles and means of the Weather Enterprise to get information to a wide range of customers and stakeholders (e.g. decision makers, general public).

Finally, participants discussed how dissemination might change in the future and identified several inputs for NOAA/NWS to consider going forward.

The future of dissemination:

- Delivery will be made up of “layered technologies” such as sirens and social media
- Legacy systems will still matter
- NWS will continue to invest in social science and identify best ways to reach different users
- NWS should determine push versus pull capabilities
- NWS should serve all citizens and ensure equity in its distribution of weather products and services
- Metrics will be in place to help NWS determine which watches, warnings, advisories to issue to reach a variety of audiences
- Polygon-based watches, warnings and advisories will be issued through all dissemination systems and will be geolocated with digital technology

Other ideas for NOAA consideration:

- Identify and minimize early disruptors of technology (e.g. don’t assume current social media platforms will always be there)
- Leverage the industry to help deliver the message
- Align NWS and all its components to not duplicate things that are being done elsewhere

Conclusion

Participants agreed that this workshop and the kind of interaction that occurred was very valuable. It opened up dialog on issues and afforded the opportunity for interactive discussion. People appreciated the ability to communicate directly with senior NWS officials and participate with other private sector members of the weather enterprise. Participation of emergency managers and field representatives of NWS brought new and valuable context in working collaboratively toward problem ideation and solution.

It was also recognized this workshop did not include the full range of NWS partners - there are other participants we should consider for future workshops and meetings. In particular, the workshop participants suggested including those from the media, cellular industry, social media companies, professional societies, other NOAA line offices, mass notification vendors, and electronic commerce and cloud computing companies.

Appendix:

The following live polling results illustrate the workshop participant affiliation.

