



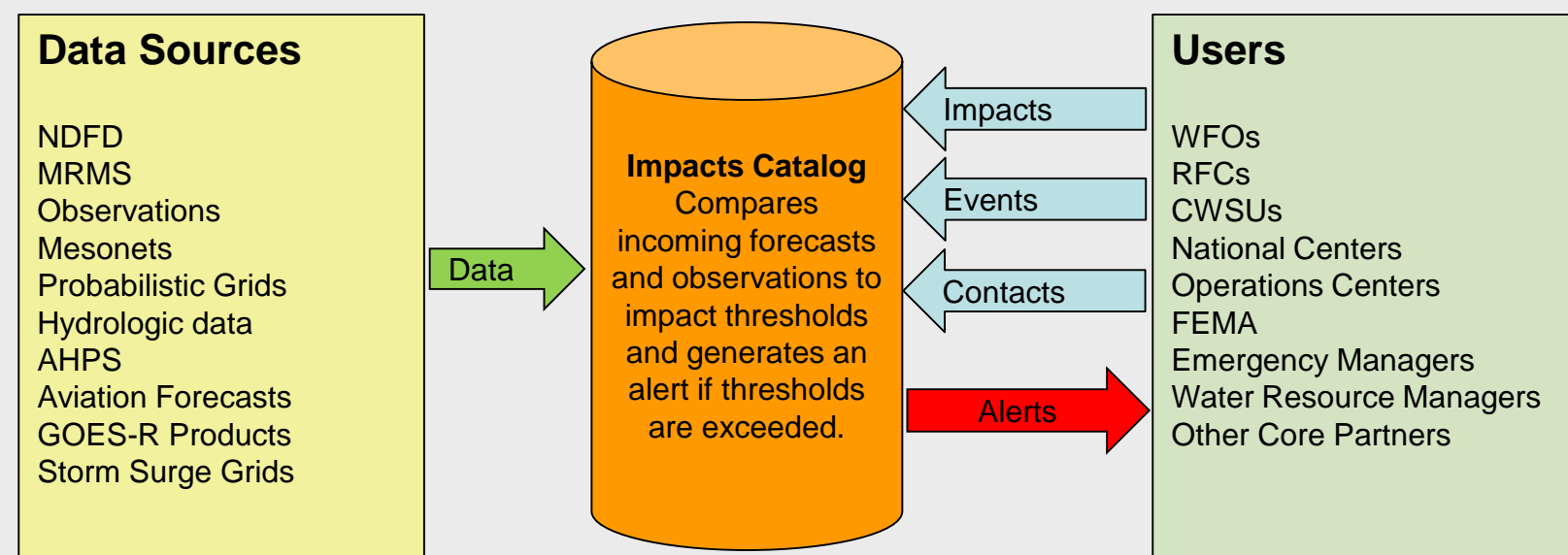
Impact-Based Decision Support and the Impacts Catalog

Matt Davis¹, John Crockett^{1,3}, Gwen Akom⁵, Armando Perea^{1,4}, Scott Reiter⁶, Bryan Schuknecht⁷, Jeremy Schulz⁸, Mike Sutton⁹, Guohui Wang^{2,4}

¹NOAA/NWS, Office of Science and Technology Integration, Meteorological Development Laboratory, Decision Support Branch, Silver Spring, MD
²NOAA/NWS, Office of Science and Technology Integration, Meteorological Development Laboratory, Digital Forecast Services Branch, Silver Spring, MD
³Cooperative Institute for Research in the Atmosphere, Colorado State University, Fort Collins, CO ⁴Ace Info Solutions, Inc., Reston, VA
⁵WFO Marquette ⁶WFO Dodge City ⁷WFO Central Illinois ⁸WFO Pocatello ⁹WFO Grand Rapids



Impacts Catalog Diagram at full operational phase



Key Components

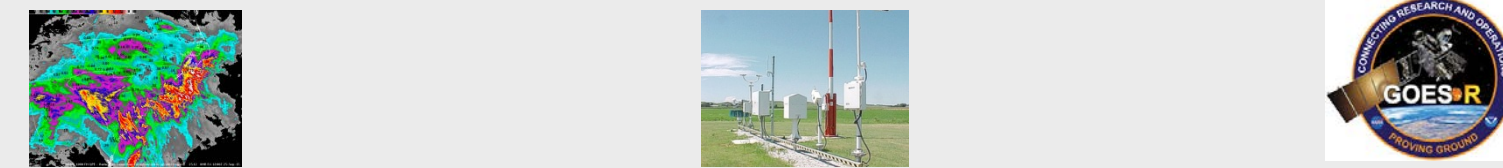
- The **NWS IDSS Partner Portal** is an external web interface which allows NWS core partners to sign up for IDSS services in a single location. Deep relationship core partners will eventually be able to enter information into the Impacts Catalog through this interface.
- The **Impacts Catalog** is a central database of meteorological and hydrologic hazards based on hydrometeorological thresholds set by core partners.
- The **Impact Alert Processor** is a system which continuously monitors official NOAA forecasts and observations. It generates an alert if an impact's thresholds are exceeded by these data.
- Email and SMS Services** will be leveraged to send email or SMS alerts of impact exceedance directly to the core partner who entered them.

What is an "Impact"?

An impact is a collection of four types of information which, when taken together, define a threat.

- An area in which the threat occurs
- A time frame of the threat (possibly continuous)
- A contact for notifications of impact occurrence
- A set of hydrometeorological elements which define the parameters of the threat

Impacts Catalog Data Sources – Current and Future

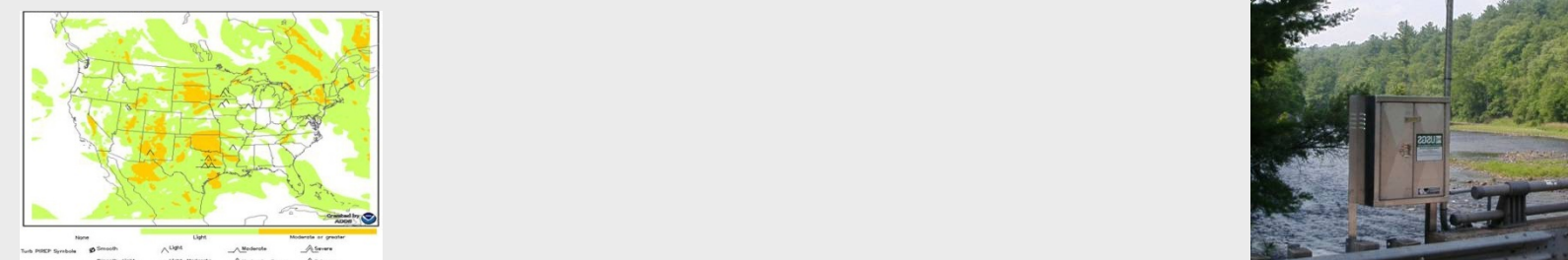


Data sources against which impacts are currently evaluated:

- Most NDFD gridded forecast elements
- ASOS, AWOS, and RAWS Observations

Future data sources slated for impact comparison:

- All NDFD elements, including aviation grids
- Hydrologic observations and forecasts
- MRMS Products, including QPE and Lightning
- GOES-R products such as lightning mapper
- Storm surge and tsunami inundation products
- Probabilistic Hazard Information



Impacts vs. NWS Hazardous Weather Products

- Official NWS hazardous weather products follow a **fixed set** of requirements based on weather and water hazards, applicable to the general population.
- Impacts are based on **user-defined** weather and water thresholds which may differ from the official NWS criteria and which may change based on antecedent conditions, ongoing research, or seasonal criteria.

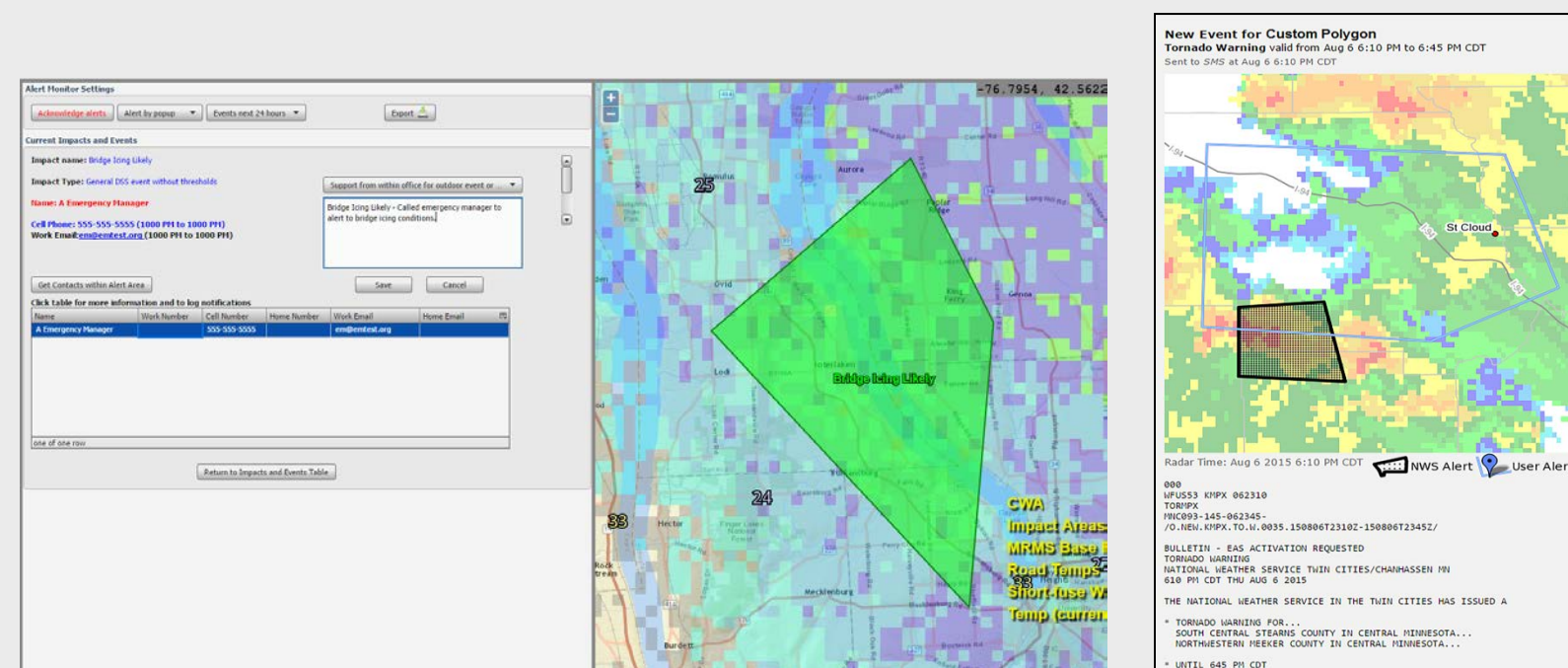


Fig.1 Impacts Catalog Alert for Bridge Icing

Fig.2 INWS SMS Message of a Tornado Warning

Milestones

- Currently, the Impacts Catalog is operating in an Operational Test and Evaluation status at 26 NWS offices and is available internally to the NWS only. This effort began in 2014.
- The Impact Catalog system is hosted on servers of the Integrated Dissemination Program in College Park, MD, with backup in Boulder, CO. Continuous support and monitoring of the system has been provided by NCEP Central Operations since January 2016.
- It is anticipated that the NWS IDSS Partner Portal will enter an experimental phase in the summer of 2017, allowing partners to register with the NWS.
- The first Impacts Catalog interface for deep relationship core partners of the NWS is expected to become available in the fall of 2017 via the IDSS Partner Portal.
- The ongoing integration of new comparison data sets will occur throughout the project's lifecycle as they become operational, e.g., Probabilistic Hazards, GOES-R/S, etc.
- In 2018, it is anticipated that the capabilities currently provided by the iNWS system will be integrated into the NWS IDSS Partner Portal.

The Development Team

Matt Davis - Project Technical Lead
 John Crockett - Deputy Technical Lead
 Gwen Akom - Client Developer
 Armando Perea - Java Developer
 Scott Reiter - Documentation
 Bryan Schuknecht - Client Developer
 Jeremy Schulz - Client Developer
 Mike Sutton - User Interaction / Testing
 Guohui Wang - Database / Java Developer



(L-R) Bryan Schuknecht, Matt Davis, John Crockett, Jeremy Schulz, Gwen Akom, Guohui Wang, and Scott Reiter at a recent team meeting in Boulder, CO.

For more information

Operational questions: Wendy Marie Thomas, AFS Operations Lead, (wendy.marie.thomas@noaa.gov)
Technical Questions: Matt Davis, MDL Technical Lead (matt.w.davis@noaa.gov)
Website: <https://vlab.ncep.noaa.gov/group/impacts-catalog/home>