Experimental Hazard Services --
Expanding the Concepts to
Communicate Hazard Information

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Outline

- Operational Hazard Services
- Flexibility Supports Extension to other Services
- Example Experimental Projects
  - Conduit for Leading Edge Science
  - Diversity of Hazard Characteristics
  - Multiple Products Disseminated
Operational Hazard Services: Unifying Legacy Applications

- **WarnGen**
  - (<1 hour)

- **Graphical Hazard Generator**
  - (Hours, Days)

- **RiverPro**
  - (Days)
Multiple Communication Pathways

“Raw” Hazard Information
--area
--duration
--type
--cause

Text Products

XML Formats
Conduit for transforming leading edge science into actionable information for decision-makers

Leading Edge Science

Hazard Services

Actionable Information

A better-informed Weather-Ready Nation that is resilient in the face of high impact weather and environmental events

Move to Higher Ground NOW!
Unifying Legacy Applications -- Customization and Extensibility

All three legacy applications independently developed frameworks for customization.

- **WarnGen**
  (Algorithms and Templates)

- **Graphical Hazard Generator**
  (Smart Tools and Python Scripts)

- **RiverPro**
  (Recommenders and Templates)

**Hazard Services**
(Recommenders, Metadata in Hazard Information Dialog, Product Generators and Formatters)
Can be extended to different domains and problem spaces

Shared platform across local and national scales for collaboration and consistency

Leading the way to Forecasting a Continuum of Environmental Threats (FACETs)

Conduit for Science

Diversity of Hazard Characteristics

Multiple products
Gage Data for River Floods

Hazard Services for Forecast Offices
Multi-Radar / Multi-Sensor (MRMS) Data for Flash Floods

FLASH – Flooded Locations and Simulated Hydrographs Project
Turbulence and Icing for SIGMETs (Significant Meteorological Information)

Aviation Weather Centers
Multi-Radar / Multi-Sensor (MRMS) ProbSevere Data for Convective Events

Probabilistic Hazard Information
Conduit for Science

Storm Scale Ensemble of Opportunity (SSEO) coupled with Flooded Locations and Simulated Hydrographs (FLASH) for Excessive Rainfall

Weather Prediction Center
Conduit for Science

Refined Calibrated Guidance for Severe Convection
-- combining Short Range Ensemble Forecast (SREF) with Storm Scale Ensemble of Opportunity (SSEO)

Storm Prediction Center
Diversity of Hazard Characteristics

River Flooding
Diversity of Hazard Characteristics

Convective Flash Flooding
Diversity of Hazard Characteristics

SIGMET (Significant Meteorological Information) for Aviation Icing and Turbulence
Diversity of Hazard Characteristics

Probabilistic Hazard Information for Severe Convective
Multiple Products Disseminated

Text Products

XML Formats
• Operational Hazard Services for legacy WFOs continues
• Expanding the concepts to other domains and programs
• Integrating improved capabilities in the process
  • New science for first guess hazard
  • Diversity of hazard characteristics
  • Multiple products disseminated
Extra Slides
Hazard Services Solution: Build Frameworks that allow user to modify and extend the baseline capabilities using Python code to match full power of legacy applications

“Give a man a fish, he eats for a day; teach him to fish, he eats for a lifetime.”

• Most efficient solution -- faster to build a framework than to handle all of the scenarios deterministically