

Future of Water Management: Open Water Data Initiative

Moderated by Dwane Young, *U.S. Environmental Protection Agency*

2015 Exchange Network National Meeting

Supporting the Business of Environmental Protection

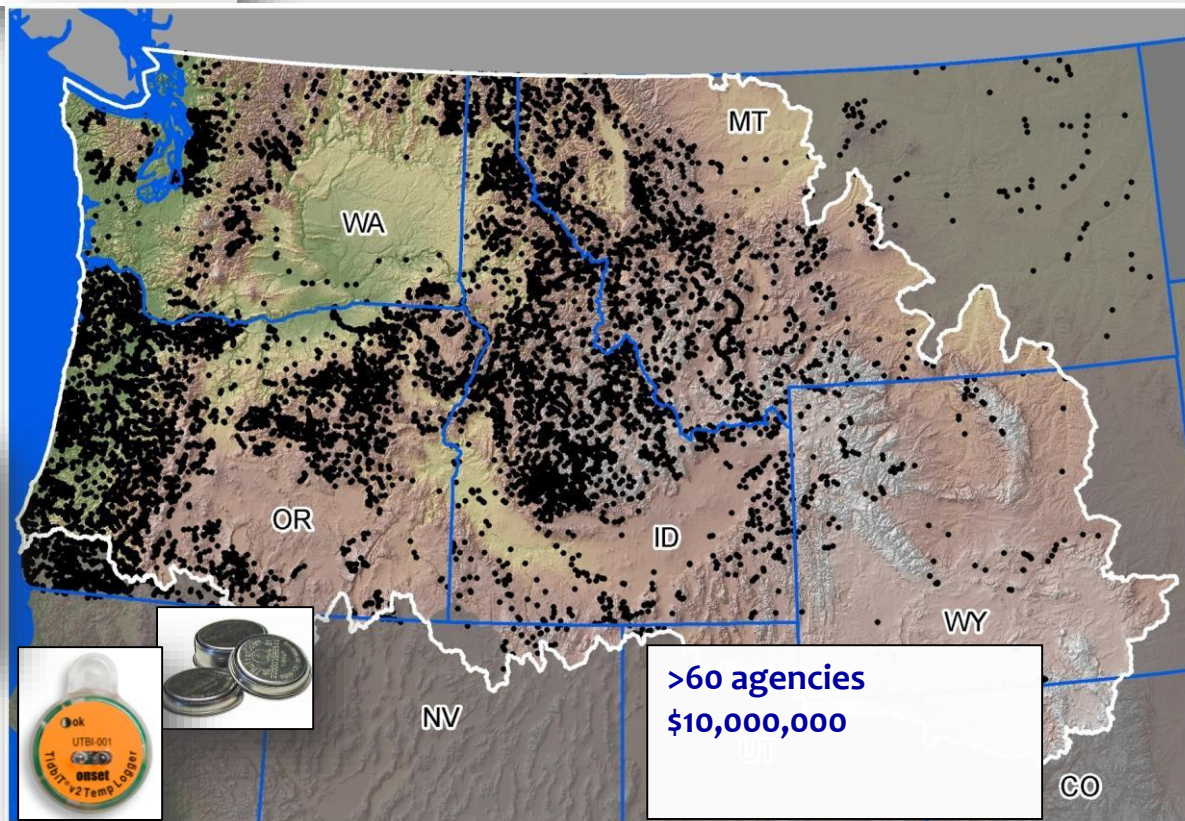
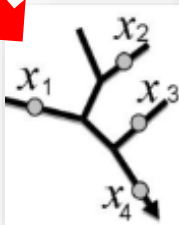
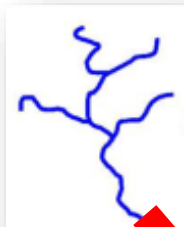
September 29–October 1, 2015
Sheraton Philadelphia Society Hill Hotel
Philadelphia, Pennsylvania

<http://www.exchangenetwork.net/en2015>

The Panelists

- **Alan Rea, *USGS*** – OWDI Overview
- **Ed Clark, *NOAA*** – National Flood Interoperability Experiment (NFIE)
- **Brett Rose, *ESRI*** – Role of Private Sector
- **Sara Larsen, *Western States Water Council*** – Importance of Metadata, and value to states
- **Dwane Young, *U.S. EPA*** – Wrap-up

>45,000,000 hourly records
>15,000 unique stream sites



>60 agencies
\$10,000,000

Open Water Web

Water Data Catalog	Water Data as a Service	Enriching Water Data	Community for Water Data, Tools
Find Source Data	Consensus Standards	Network Routing	Marketplace for Knowledge
Create Themes	Visualization and Delivery	Coupling Models	Usage Tracking
Recruit / Engage Partners	Catalog and Serve	Geospatial Framework	Best Practices

OWDI Working Groups



Work Group 1:

National Flood Interoperability Experiment

Identify flood data including stream-flow observations, forecasts and impacts
Developing *geospatial framework* and exploring data conflation



Work Group 2:

Drought Decision Support System

Identify water resources data including natural flow, reservoir storage and drought impacts
Explore visualization of drought in Lower Colorado

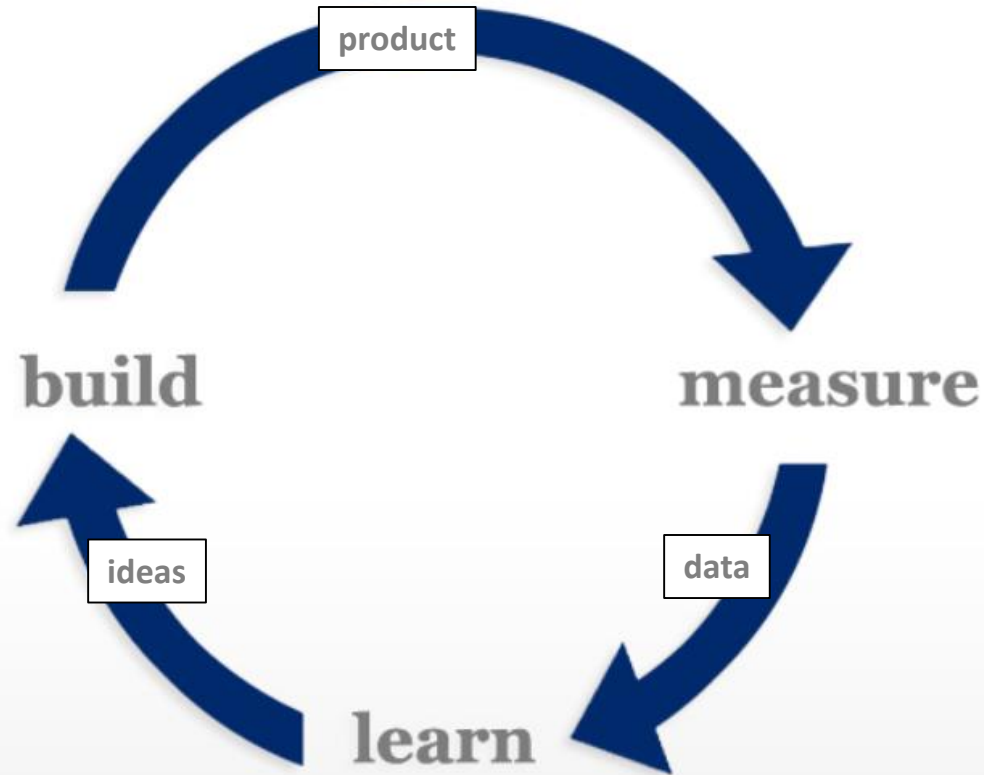


Work Group 3:

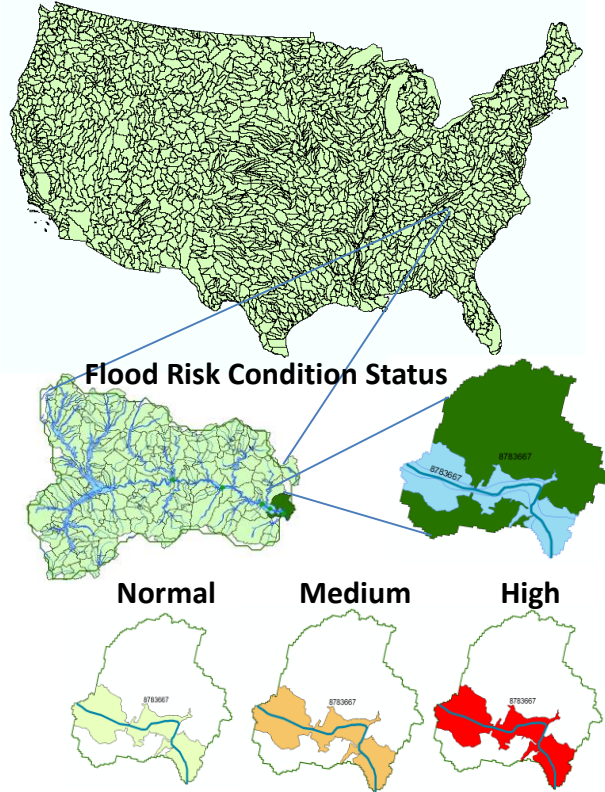
Spill Response Tool

Review existing modeling applications and data requirements
Exploring requirements for new/additional data (e.g. velocity forecasts and reservoir residence times)

Lean Startup Methodology



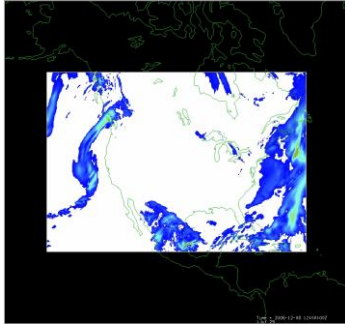
NFIE Goal: Demonstrate National Scale Flood Modeling integration with Local emergency planning



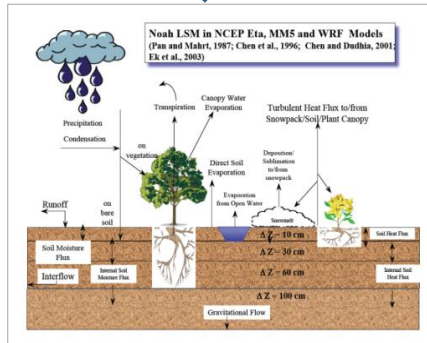
1. How can **near-real-time hydrologic simulations at high spatial resolution, covering the nation**, be carried out using the NHDPlus or *geospatial hydrologic framework* (e.g. data structure for hillslope, watershed scales)?
2. How can this lead to **informed emergency response** and community resilience?
3. How can an **improved interoperability framework** support the first two goals and lead to sustained innovation in the research to operations process?

NFIE: Hydrologic Forecasting Model Components

Weather model and forecasts



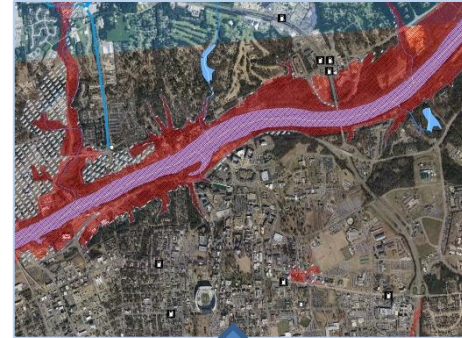
Weather ↓ Precipitation



Land-Surface Model

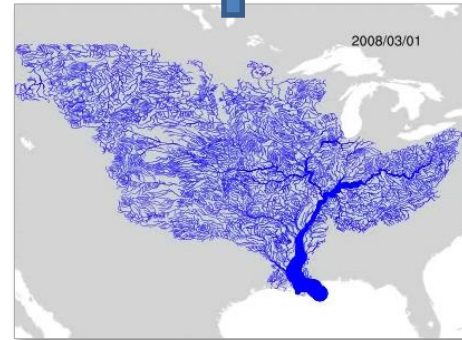


Runoff



Impacts

↑ Streamflow



Channel flow routing (for all continental US)

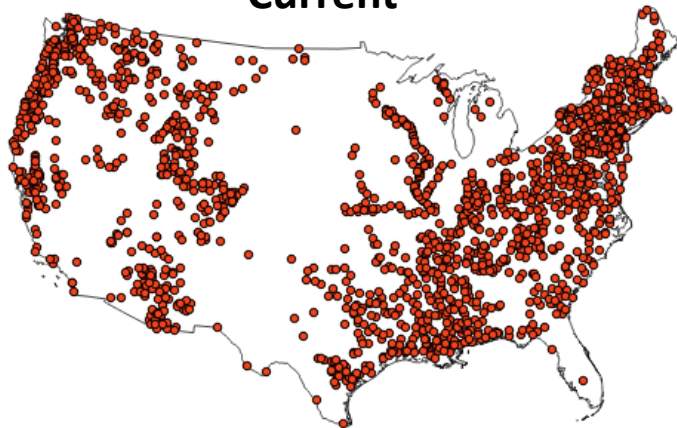
Flood Uses Case - National Flood Interoperability Experiment (NFIE):

- Demonstrate the National Water Center role in transforming NOAA's Hydrologic Forecasting paradigm
- Forecasts produced by River Forecasts
 - Current system – 3600 locations
 - Future – 2.67 million locations
- New, high-resolution information to support the emergency management community



700 times more

Current



Proposed



Data Providers and Data Quality

OWDI will hopefully support a wide variety of water-related data providers, some of which are centralized, well-established and trusted (e.g. USGS, EPA, etc.), some of which are smaller, distributed and/or less well known.

AGENCIES

Centralized, larger,
well-known, trusted

DATA

Well documented,
standardized, rigorous,
archive-ready



Distributed, smaller,
relatively unknown,
untested

Not standardized, context-
sensitive, variable budgets
and missions

**How to accommodate these new providers
while maintaining data quality and integrity?**

Data Providers and Data Quality

QUALITY of Data Quality Reporting



DATA GRADES	OGC	NEMS	USGS	WSC	WMO
GOOD	Good	QC 600			
FAIR	Suspect	QC 500	&		
POOR	Poor	QC 400	x		
ESTIMATED	Estimate	QC 300	e	E	E
UNCHECKED	Unchecked	QC 200			U
MISSING	Missing	QC 100			

Provider gives the data a grade or ranking (good, fair, etc.)

Provider reports data source (transparency)

(Source: E-book by Stu Hamilton, Communicating Hydrometric Data Quality)

Data Providers and Data Quality

Free(er) exchange of water data from monitoring organizations will be of tremendous value to the water world...

$$\text{Value} = (\text{Data} * \text{Quality}) \wedge \text{Sharing}$$

But, prudent wariness should be adopted by consumers.

Data providers need to do their part to improve data quality reporting too.

QUESTIONS:

Who are other partners in OWDI who have heterogeneous data?

Is simple transparency and citation enough?

Set a high or a low bar to participate?

Set low, while encouraging providers to adopt higher standards?

Try to use rankings that have already been developed by OGC, others?

Are there any other metrics we can use to evaluate quality/trust?

Relevance of OWDI to the Exchange Network

- Concepts of OWDI are very much in line with Phase 2 of the Exchange Network
- Need to have the discussion of 'How to states and tribes participate in this approach'
- Those who submit to WQX are already participating in OWDI

Questions and Discussion