



June 26, 2014

Steering Committee Meeting

Open Water Data Initiative

Kevin T. Gallagher
USGS, Associate Director, Core Science Systems

Open Water Data Ad Hoc Working Group

- ◆ Anne Castle, Department of Interior, Assistant Secretary for Water and Science
- ◆ Lori Caramanian, Department of the Interior, Deputy Assistant Secretary for Water and Science
- ◆ Jerry Johnston, Department of the Interior, Geospatial Information Officer, Managing Partner representative for the Geospatial Platform
- ◆ Bill Werkheiser, USGS, Associate Director for Water
- ◆ Jerad Bales, USGS Chief of Research and Science for Water and representative to IWRSS
- ◆ Nate Booth, USGS, Chief - Office of Water Information
- ◆ Don Cline, NOAA, National Weather Service, Chief-Hydrology Laboratory, NWS representative to IWRSS
- ◆ James Dalton, US Army Corps of Engineers, Chief of Engineering and Construction, USACE representative to IWRSS
- ◆ David Maidment, University of Texas, Professor of Civil Engineering
- ◆ Kevin T. Gallagher, USGS, Associate Director for Core Science Systems
- ◆ Ivan DeLoatch, USGS, Executive Director, FGDC Secretariat



Background & Motivation

- ◆ Quantifying the availability, use, and risks to our national water resources is an issue of national importance for the present and the foreseeable future.
- ◆ Improving access to data and enabling open exchange of water information is foundational to identifying and understanding existing water resources issues - **particularly in the face of climate change and unprecedented drought.**



Background & Motivation

- ◆ There have been numerous studies, reports, and publications indicating fragmentation of water information.
- ◆ "Foundational to [meeting the global water challenge] is the need to **improve access to and exchange of water data and information**, including better modeling of the hydrologic cycle, to include the impact of human-use decisions." – John Holdren



White House Climate Data Initiative (March 2014)

- Assembly and exposure of federal government information to **communities and private sector**
- Engagement to develop new applications for **citizens, and industry**



The poster features the White House logo at the top center. Below it, the event details are listed: "White House Climate Data Initiative Launch", "Wednesday, March 19, 2014 | 5:15 p.m. to 6:45 pm", "Eisenhower Executive Office Building | South Court Auditorium, Washington, D.C.", and "#ClimateData". A horizontal line separates the event details from the list of speakers. The speakers are listed in descending order of their titles, each with their name in bold and their affiliation in italics below.

White House Climate Data Initiative Launch
Wednesday, March 19, 2014 | 5:15 p.m. to 6:45 pm
Eisenhower Executive Office Building | South Court Auditorium, Washington, D.C.
#ClimateData

Dr. John P. Holdren
*Assistant to the President for Science and Technology and Director
White House Office of Science and Technology Policy*

Michael Boots
*Acting Chair
White House Council on Environmental Quality*

John Podesta
Counselor to the President

Jack Dangermond
*Founder and CEO
Esri*

Dr. Kathryn D. Sullivan
*Under Secretary of Commerce for Oceans and Atmosphere
U.S. Department of Commerce*

Stephen Harper
*Global Director, Environment and Energy Policy
Intel Corporation*

Joel Dunn
*Executive Director
Chesapeake Conservancy*

Denice Ross
*Director of Enterprise Information
City of New Orleans*

Dr. Ellen Stofan
*Chief Scientist
National Aeronautics and Space Administration*

Rachel Kyte
*Vice President and Special Envoy for Climate Change
World Bank*

Rebecca Moore
*Founder
Google Earth Engine*

◆ Frame a **Possibility**

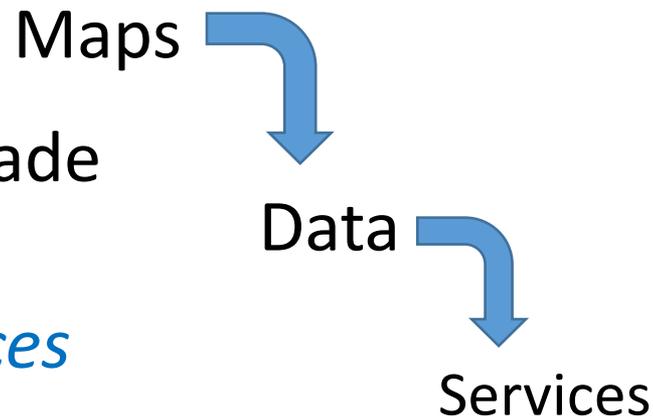
◆ Capture your **Imagination**

◆ Inspire you to **Action**



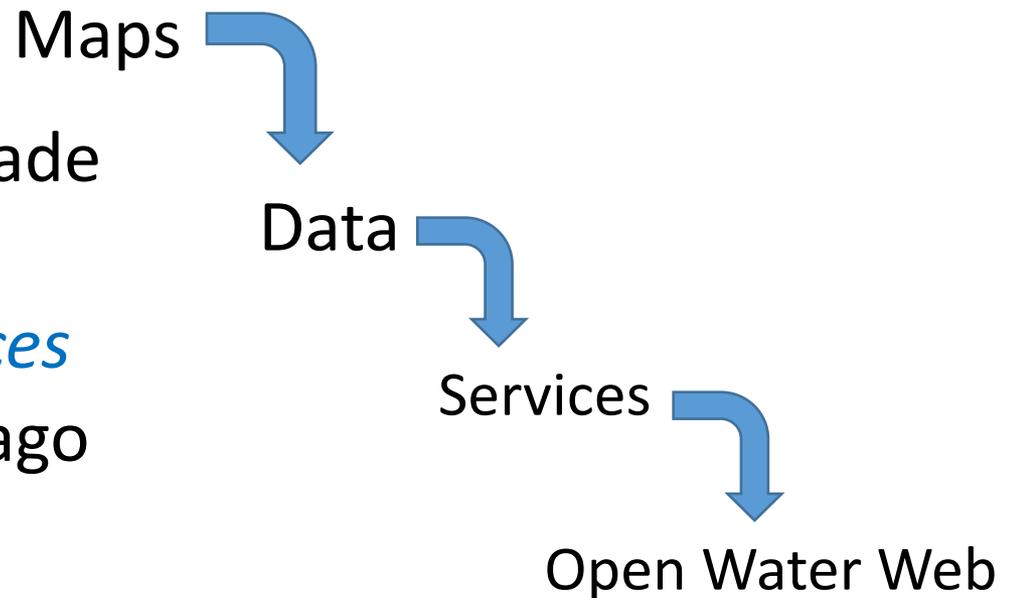
Major Transitions in Geospatial Info

- *Paper maps to digital data*
 - National Spatial Data Infrastructure development
 - Started in 1990's
 - Took more than a decade to complete
- *Digital data to web services*
 - Started several years ago
 - Will take years to complete



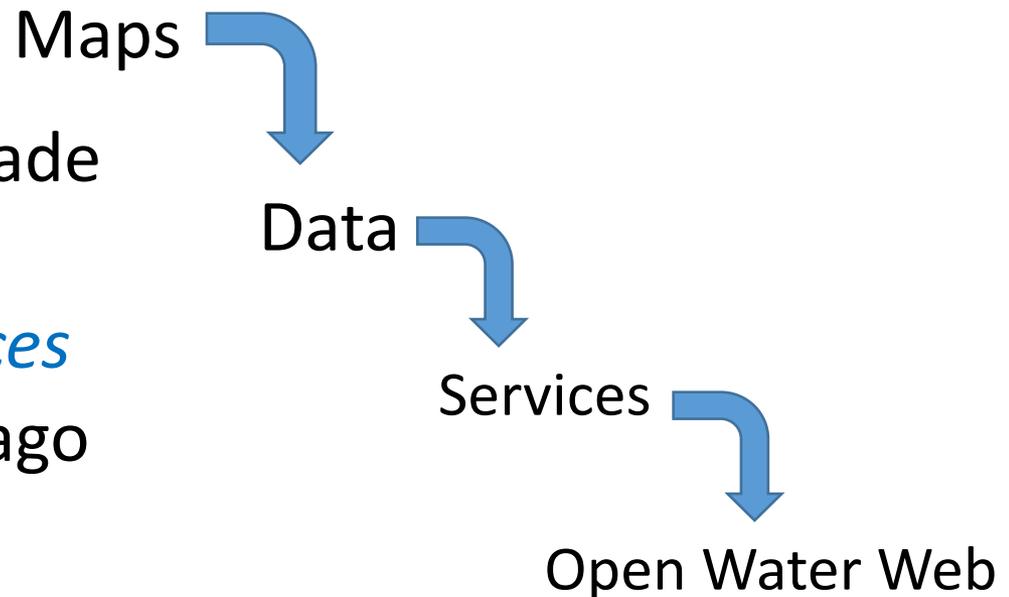
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What would that look like?

Open Water Data Vision

- ◆ Foundational **National** Data Sets with **Data Services** to support a wide variety of water user applications
- ◆ Water data **metadata, web services** and a **community** accessible on the Federal Geospatial Platform
- ◆ Access to integrated **real-time monitoring data**
- ◆ Data Assimilation for a **National Modeling** capability
- ◆ Water Maps and other **Derivative Products** that integrate geospatial & water observations
 - Such as: current conditions, precipitation estimates, reservoir storage
- ◆ **Marketplace of open source applications** (models, data visualizations, etc.) built upon **Open Water Web Services**



National Spatial Data Infrastructure

National Spatial Data Infrastructure Strategic Plan
2014–2016



Federal Geographic Data Committee

Public Comment Draft (Version 2)
July 31, 2013

NOTE:

This revised draft of the NSDI Strategic Plan (Version 2) has been prepared for public review and comment. Instructions on submitting comments are posted at www.fgdc.gov/nsdi-plan. Comments are due by August 21, 2013. For additional information on the NSDI strategic planning process, please visit: www.fgdc.gov/nsdi-plan.

Desired Future State of NSDI

- Create network of resources and services
- Facilitate discovery, access and application of resources
- Leverage shared standard-based services
- Develop core set of information layers that interface with nonspatial data
- Use real-time data feeds and sensor webs

National Spatial Data Infrastructure

Desired Future State of NSDI

Can this vision be realized for water data?

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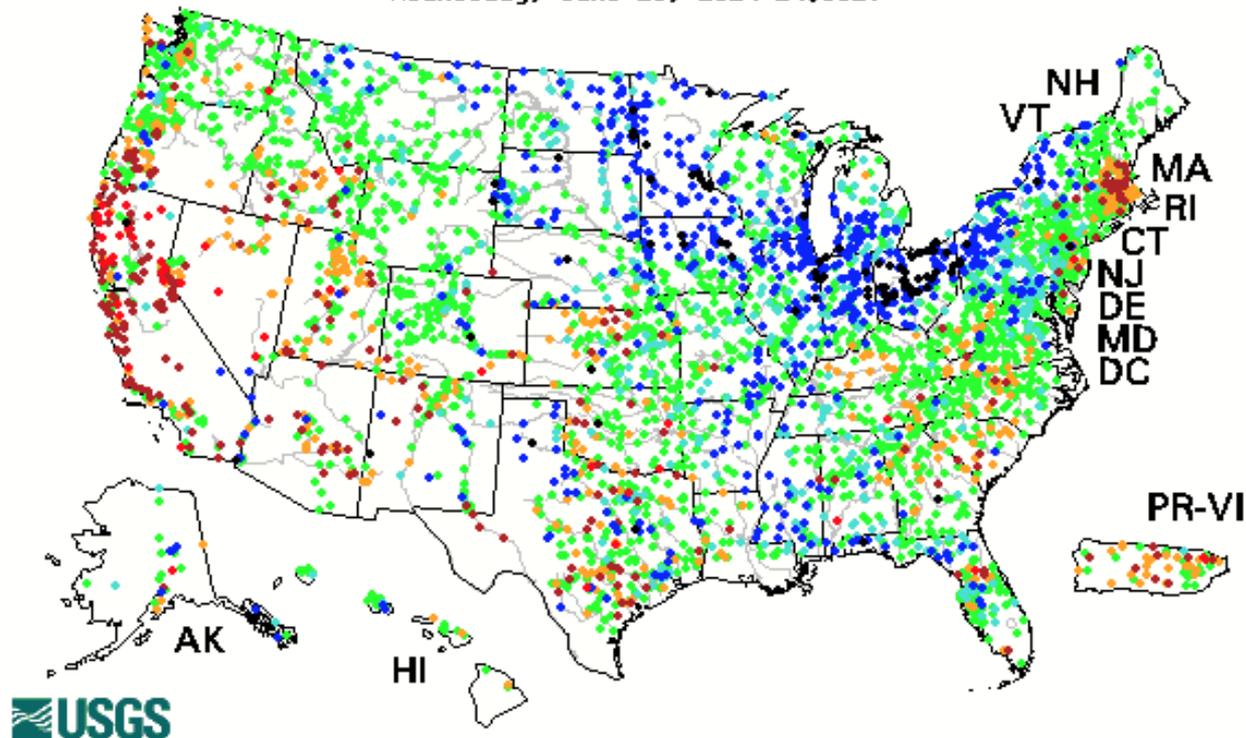
Map of real-time streamflow compared to historical streamflow for the day of the year (United States)

State

OR

Water-Resources Regions

Wednesday, June 25, 2014 14:30ET

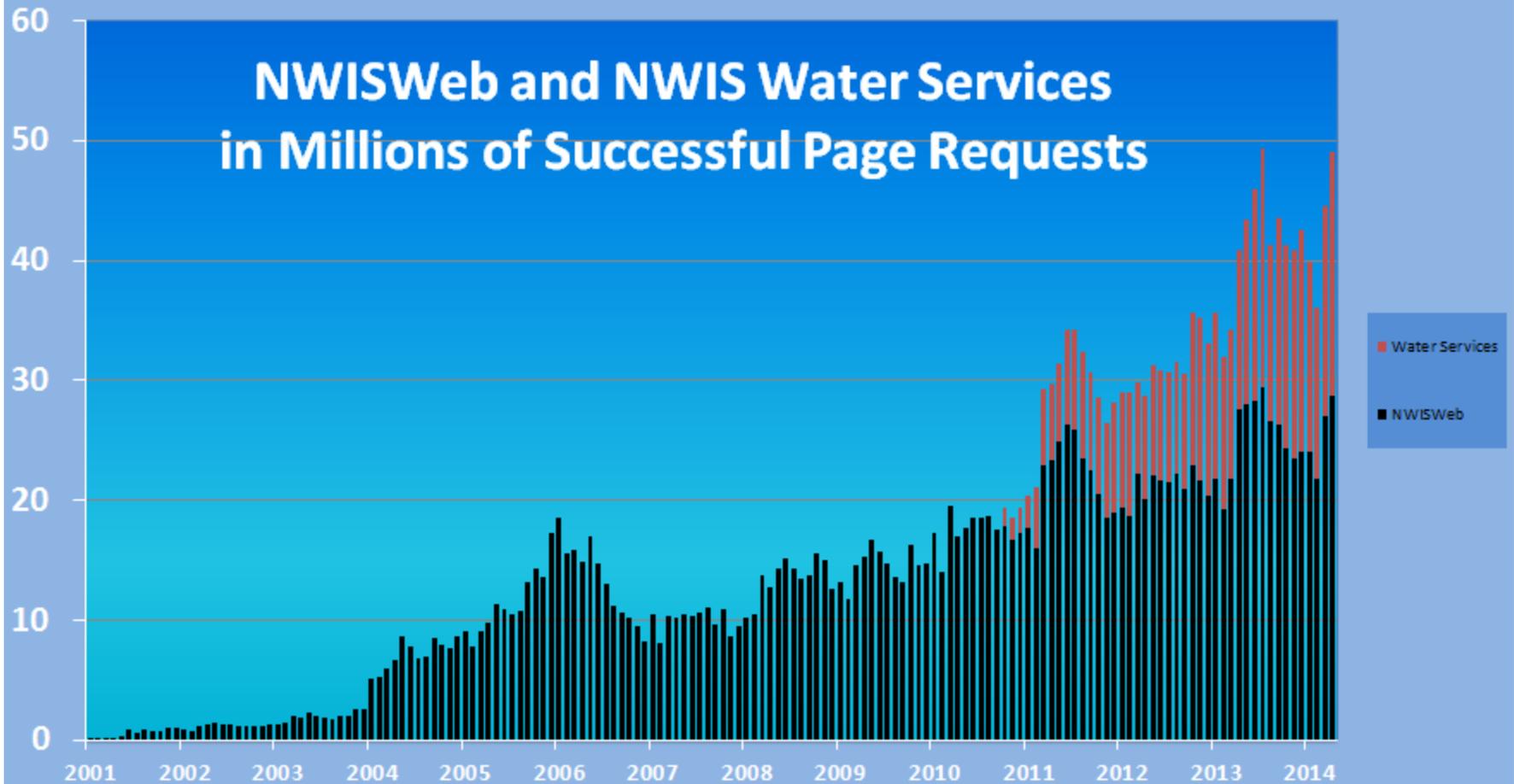


Choose a data retrieval option and select a location on the map

List of all stations in state, State map, or Nearest stations

Explanation - Percentile classes						
Low	<10	10-24	25-75	76-90	>90	High
	Much below normal	Below normal	Normal	Above normal	Much above normal	

NWISWeb and NWIS Water Services in Millions of Successful Page Requests



Foundational Water Data Sets

- ◆ Streamflow
- ◆ Groundwater levels
- ◆ Aquifers
- ◆ Water quality
- ◆ Reservoir storage
- ◆ Elevation
- ◆ Hydrography — NHD/WBD
- ◆ Landscape Variables
- ◆ Climate/Weather/ET
- ◆ Soil moisture
- ◆ Human water use
 - Withdrawals
 - Return flows
 - Diversions
 - Losses



Building Upon Success



ACWI – Advisory Committee on Water Information

WICP Water Information Coordination Program
ACWI Advisory Committee on Water Information

Advisory Committee on Water Information

▶ [About Us](#) ▶ [Members](#) ▶ [Meetings](#) ▶ [Contacts](#) ▶ [Products](#) ▶ [Old Features](#)

Features:
Mark your calendars

9th National Monitoring Conference

April 28 - May 2, 2014

Location:
Cincinnati



Water Information Coordination Program
The WICP ensures collaborative efforts among Federal Agencies to improve water information for decisionmaking about natural resources management and environmental protection.

Advisory Committee on Water Information
The ACWI represents the interests of water-information users and professionals in advising the Federal Government on Federal water-information programs and their effectiveness in meeting the Nation's water-information needs. ([ACWI Fact Sheet](#))

◆ Established in 1991

CUAHSI Water Data Center

[Home](#)[Data Services](#)[Technology](#)[Community](#)[About](#)[Contact](#)

Welcome to the CUAHSI Water Data Center

The WDC provides data services to the hydrologic science community and other critical-zone science communities that require access to various sources of water data to perform research on fundamental challenges in hydrology and Earth System science. We enable the water research community through supporting data access and publication, software development and curation, in addition to the development of standards.

Tweets

[Follow](#)



CUAHSI
@CUAHSI

7h

thanks to all who joined our cyberseminar yesterday! stay tuned for more sessions and send us your ideas on what you'd like to see next!

OGC/WMO Hydrology Domain Working Group

4-Year International Effort – WaterML

A time series for one variable at one location

WaterML2

Hydrology Domain Working Group formed
OGC observer at CHy-13

November 2009

*MEMORANDUM OF UNDERSTANDING
BETWEEN
THE WORLD METEOROLOGICAL
ORGANIZATION
AND
THE OPEN GEOSPATIAL CONSORTIUM, INC.*

Technical Meetings Each 3 Months
Four Interoperability Experiments
(Surface water, groundwater, forecasting)
Annual week-long workshops
Involvement by many countries

Acknowledgements: OGC, WMO, GRDC, NWS, CUAHSI,
BoM/CSIRO, USGS, GSC, Kisters,

2008

2009

2010

2011

2012



Overview: National Water Center (NWC)

- ◆ Common Operating Picture for Water Resources
- ◆ Geo-Intelligence Laboratory
- ◆ Science and software studio
- ◆ Systems proving ground
- ◆ Distance learning



INTEGRATED WATER RESOURCES
SCIENCE AND SERVICES (IWRSS)

SUMMIT TO SEA

Proposal

- ◆ We are proposing an Open Water Data Initiative that will:
 - integrate currently fragmented water information into a connected, national water data framework
 - leverage existing shared infrastructure and tools to provide a platform for innovation, modeling, and data sharing and solution development.
 - capitalize on cross-government interest in big data, IT innovation, Open Data, Data.gov, etc.
 - Build on the ground-breaking work of the FGDC, OGC, IWRSS, CUASI, ACWI, and others.



Charge for the FGDC

- ◆ In collaboration with the ACWI and other partners – Advance an Open Water Data Initiative, including:
 - Reviving and populating the joint Subcommittee on Spatial Water Data to design a national open water data infrastructure;
 - Supporting IWRSS consortium members in the scoping and implementation pilot activities;
 - Creating an integrated water data portfolio for specific hydrologic regions or basins;
 - Developing a technical reference architecture that supports the sharing of water data and links observations to geospatial data;
 - Leveraging the Geospatial Platform to make water data more accessible and to support water data community collaboration;



Charge for the FGDC cont.

- Identifying how existing investments in water data sharing can be integrated and leveraged;
- Engaging the international community in standards and technology development including the Open Geospatial Consortium;
- Identifying and prioritizing improvements to relevant framework geospatial data (National Hydrographic Dataset, Watershed Boundary Dataset, National Elevation Dataset, National Geologic Map Database, and the National Cooperative Soil Survey);
- Utilizing the FGDC coordination and governance structure to support related activities in the federal water sector.



Next Steps

- ◆ Endorse revival and re-populating of Subcommittee on Spatial Water Data
- ◆ Issue charge to the subcommittee
 - Work with IWRSS consortium members to:
 - ◆ Refine charge going forward
 - ◆ Define and implement Pilot Projects
- ◆ Schedule “periodic” check-ins with the Steering Committee



Questions?

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Science Systems

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