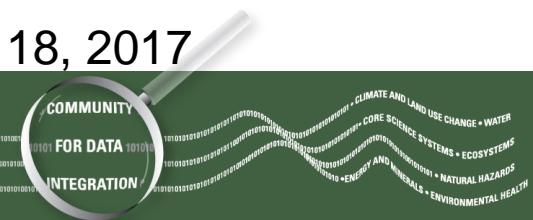


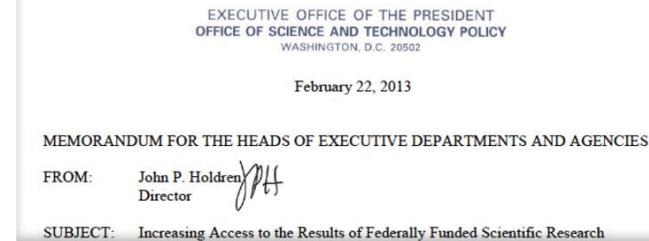
Challenges to and progress towards open science from both federal and community-driven perspectives

Lindsay Powers
US Geological Survey
National Geological and Geophysical Data Preservation Program

National Academies of Sciences, September 18, 2017



- One day, back in February 2013, Office of Science, Technology and Policy released a memorandum.
- The subject line said, “Increasing Access to the Results of Federally Funded Scientific Research”...
- ...and it asked that USGS produce a plan.



Executive Order

- Increasing Public Access to the Results of Federally Funded Scientific Research Feb. 22, 2013

Executive Order

- Making Open and Machine Readable: the New Default for Government Information May 9, 2013

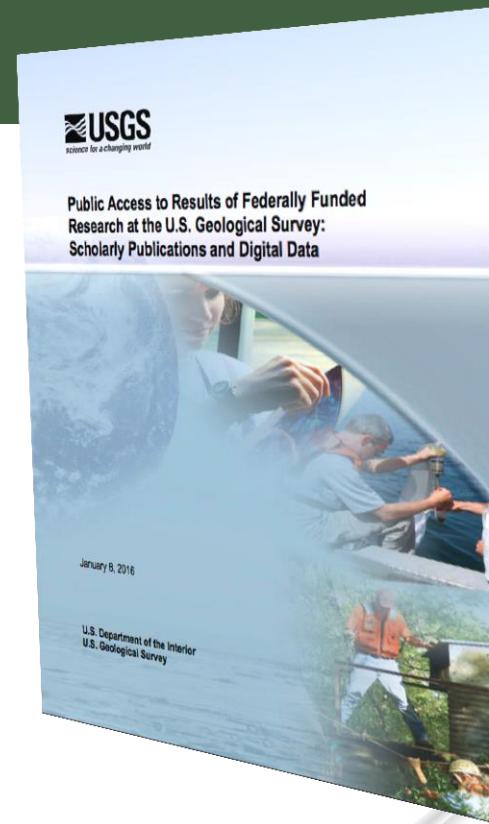
M-13-13 Open Data Policy

- Managing Information as an Asset



“Public Access to Results of Federally Funded Research at the U.S. Geological Survey: Scholarly Publications and Digital Data”

- outlines a framework for activities to increase public access to scholarly publications and digital scientific data resulting from research funded by the USGS



Components of an effective USGS Public Access Plan

OVERARCHING GOAL: electronic copy of final accepted manuscript or final publication of record AND supporting data is available free of charge for public access not more than 12 months after publication date.

Data Management Plans

Formal Data Management Plans must accompany all new research proposals

IPDS

(Information Product Data System) Full-text of all USGS final manuscripts, and USGS-funded publications by scientists extramural to USGS, will reside in **IPDS in a dark archive**

Pubs Warehouse

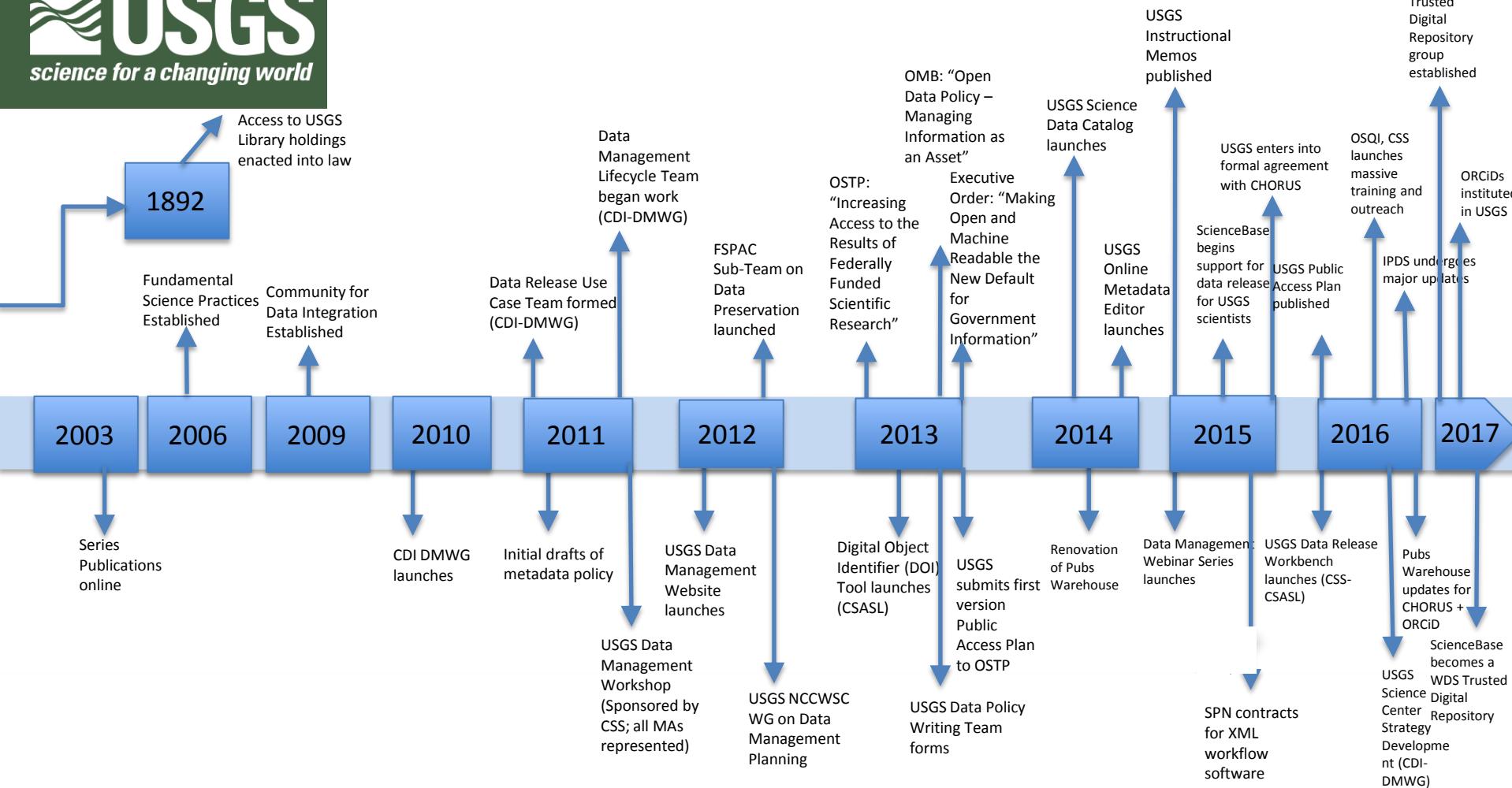
Catalog record of all USGS series pubs and externally published pubs in the USGS **Publications Warehouse.**

CHORUS

CHORUS (the Clearinghouse for the Open Research of the United States) will provide USGS with notification that extramural publications have been published on non-USGS websites.

More components of an effective USGS Public Access Plan

Review and Approval	USGS repositories	Science Data Catalog	Digital Object Identifiers	Publications	XML Publishing
<p>Data undergoes QA/QC, formal description, review and approval before release</p>	<p>Data are submitted to a USGS repository</p> <p>All intramural data and publications are stored in trusted digital repositories</p>	<p>USGS Data Metadata are indexed in USGS Science Data Catalog</p>	<p>Digital Object Identifiers assigned for data (USGS DOI Tool to access DataCite) and publications (IPDS assigns CrossRef DOI)</p>	<p>Full-text archive of all publications resulting from USGS-funded research available in Publications Warehouse</p>	<p>All USGS series publications available in machine - readable XML format.</p>



Some accomplishments

- **Communication:** ~75 presentations reaching ~1,600 employees in 2 months on policies and implementation options
- **Data Policies:** Instructional Memos updated and published as policy; FAQ guidance
- **Repositories:** designed and implemented a pilot for establishing trusted digital repositories in USGS, based on the World Data Center.
- **ORCiDs:** established formal agreement with ORCID; began process to update systems to accommodate ORCiDs, including Active Directory (still ongoing)
- **CHORUS:** The USGS Joined CHORUS to help monitor for scholarly publications becoming public after an embargo period of one year (if applicable).
- **IPDS:** updates to accommodate a dark archive for publications and data releases
- **Publications Warehouse:** catalog records of all series pubs and external publications; updated data model for ORCiDs, etc.
- **Science Publishing Network:** Completed contract for XML publishing progress
- **Data release applications:** Increased connections between established systems such as ScienceBase data repository and Pubs Warehouse/Science Data Catalog
- **IGSN issuance:** In progress





Connecting tools to meet policy and Public Access Plan

My Tasks					Search this site...						
Product Number	Task	Working Title	Start Date								
10-0714294	hutchison, Vivian B.	Core Science Analytics and Synthesis	Denver PSC	Bureau Approval							
10-087320	hutchison, Vivian B.	Core Science Analytics and Synthesis	Denver PSC	Bureau Approval							
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10-0714294	DATAONE and USGS Data Management System: Open Data and Analytics	hutchison, Vivian B.	New article, technical report, poster, presentation, video for news release	Core Science Analytics and Synthesis	Denver PSC	Bureau Approval					
10-087320	USGS Data Management System: Core Science Data Lifecycle	hutchison, Vivian B.	Poster, exhibit, newsletter, presentation	Core Science Analytics and Synthesis	Denver PSC	Bureau Approval					

Create Digital Object Identifier

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Author Email:	john.doe@example.com
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DOI URL:	https://doi.org/10.5281/123456789
DOI Version:	1

Optional Fields

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U.S. Geological Survey Science Data Catalog

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USGS Groundwater Data for the Nation
Water Resources Information System (WRIS)
Water Flow, Water Quality, and Instream Flow
Surface Water, and Eel Salter 1327C2344

The USGS provides online access to water-resources data collected by the USGS. Over 1.5 million sites in all 50 States, the District of Columbia, American Samoa, and the Commonwealth of the Northern Mariana Islands.

Map of the Northern Mariana Islands showing the locations of USGS monitoring sites.

Your source for open data within USGS

The USGS Science Data Catalog provides seamless access to USGS research and monitoring data from across the nation. Users have the ability to search, browse, or use a map-based interface to discover data.

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Biodiversity Information Serving Our Nation
South Florida Hydrology
Ocean Biogeographic Information System USA
Palauan Wildlife Research Center

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USGS Publications Warehouse

The Pubs Warehouse provides access to over 130,000 publications written by USGS scientists over the century-plus history of the bureau.

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New Publications by USGS Authors

-  Characterizing the Kathmandu Valley sediment response through strong motion recordings of the 2015 Gorkha earthquake sequence
2016, Tectonophysics
-  High resolution mapping of development in the wildland-urban interface using object-based image extraction
2016, Heliyon (2)
-  Atmospheric inputs of organic matter to a forested watershed: Variations from storm to storm over the seasons
2016, Atmospheric Environment
-  Climate change is advancing spring onset across the U.S. national park system
2016, Ecoparks (7) 1-17
-  Water-level altitudes 2016 and water-level changes in the Chicot, Evangeline, and Jasper aquifers and compaction 1973–2015 in the Chicot and Evangeline aquifers, Houston–Galveston region, Texas
2016, Scientific Investigations Map 3365
-  Massachusetts reservoir simulation tool—User's manual
2016, Open-File Report 2016-1136

Tweets by @USGS_Pubs

USGS Pub Warehouse @USGS_Pubs

#USGS mineral-resource assessment of Sagebrush Foothills [Final Report](#)



[View on Twitter](#)

Challenges that remain

There are still some challenges with implementing public access, but we're getting closer:

Challenge 1: Ensuring our systems and processes are ready for meeting data release/publication access requirements, including a wide variety of data types (open, sensitive, etc.)

Challenge 2: Assuring proper long-term resourcing of our trusted digital repositories, and consideration for the role of non-USGS repositories

Challenge 3: Large datasets – where to put them, how to manage them for the long term

Challenge 4: Positioning Centers and Programs to be successful in data release/management through training and continued improvements



Essentials for success

- **A shared vision/goal:** everyone understands where we are trying to go
- **Leadership:** Executive champions, accompanied by action-oriented leaders to guide the process
- **Contribution:** Open avenues for individual voices/ contributions create critical buy-in
- **Accountability:** Helpful for ensuring progress happens quickly
- **Communication:** transparency and openness about progress encourages interest and participation
- **Education and training:** Provide support in the trenches to facilitate use and implementation.



Thank you!

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Thanks to Viv Hutchison for the contribution of several slides.