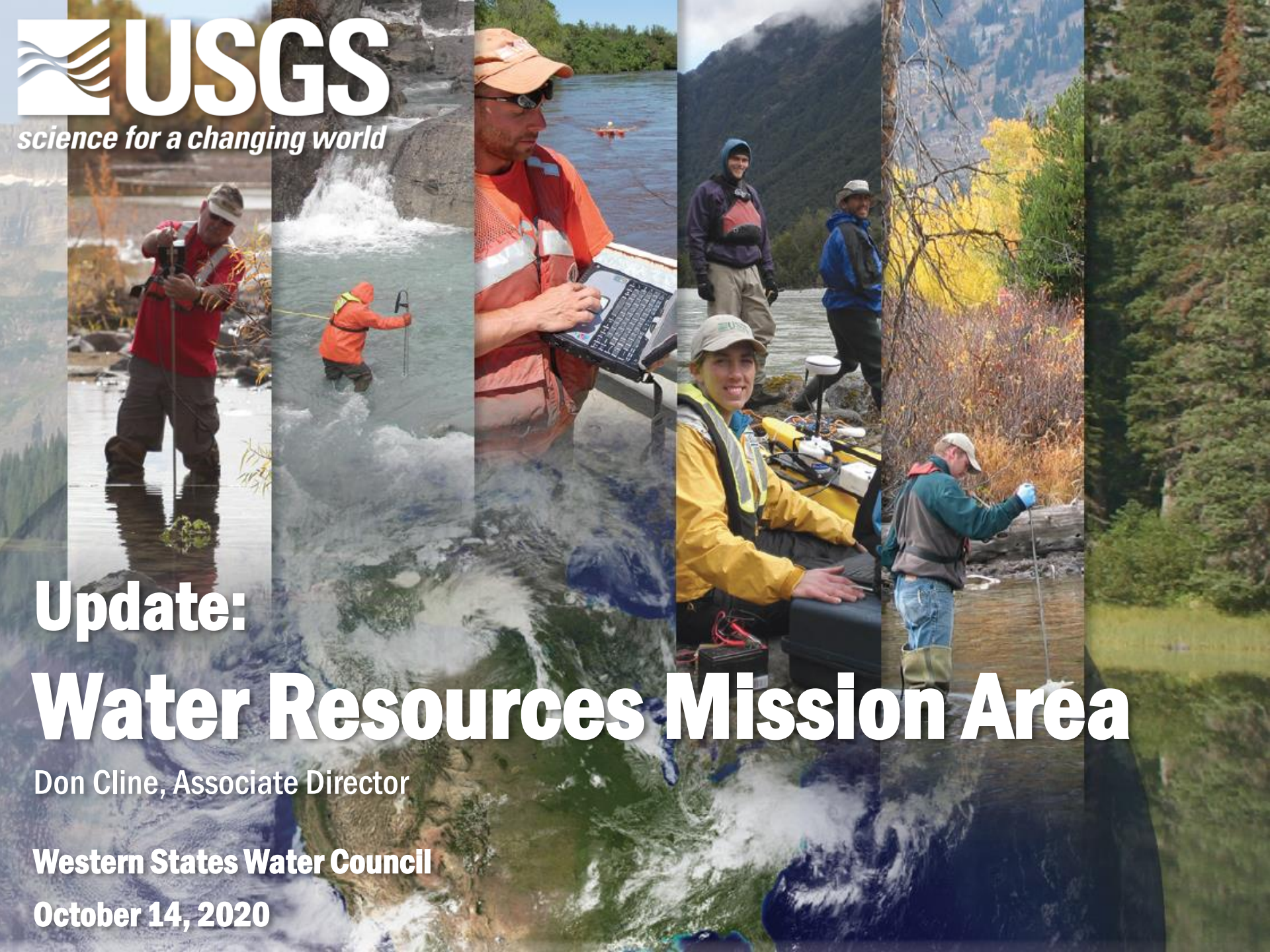


USGS
science for a changing world

Update:
Water Resources Mission Area

Don Cline, Associate Director

Western States Water Council

October 14, 2020

USGS
science for a changing world

Circular 1383-G, 2013

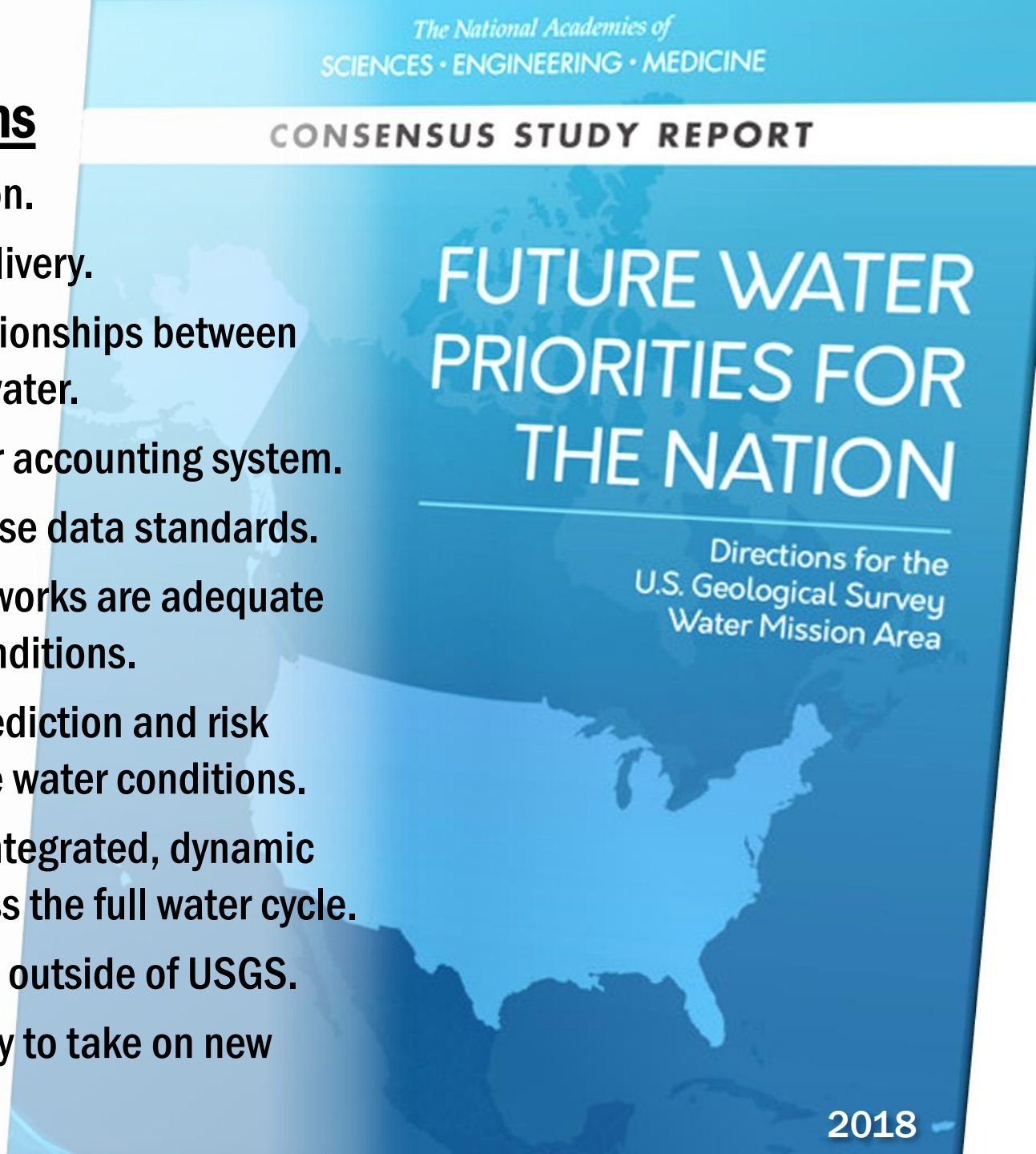
U.S. Geological Survey Water Science Strategy—Observing, Understanding, Predicting, and Delivering Water Science to the Nation

Five Goals:

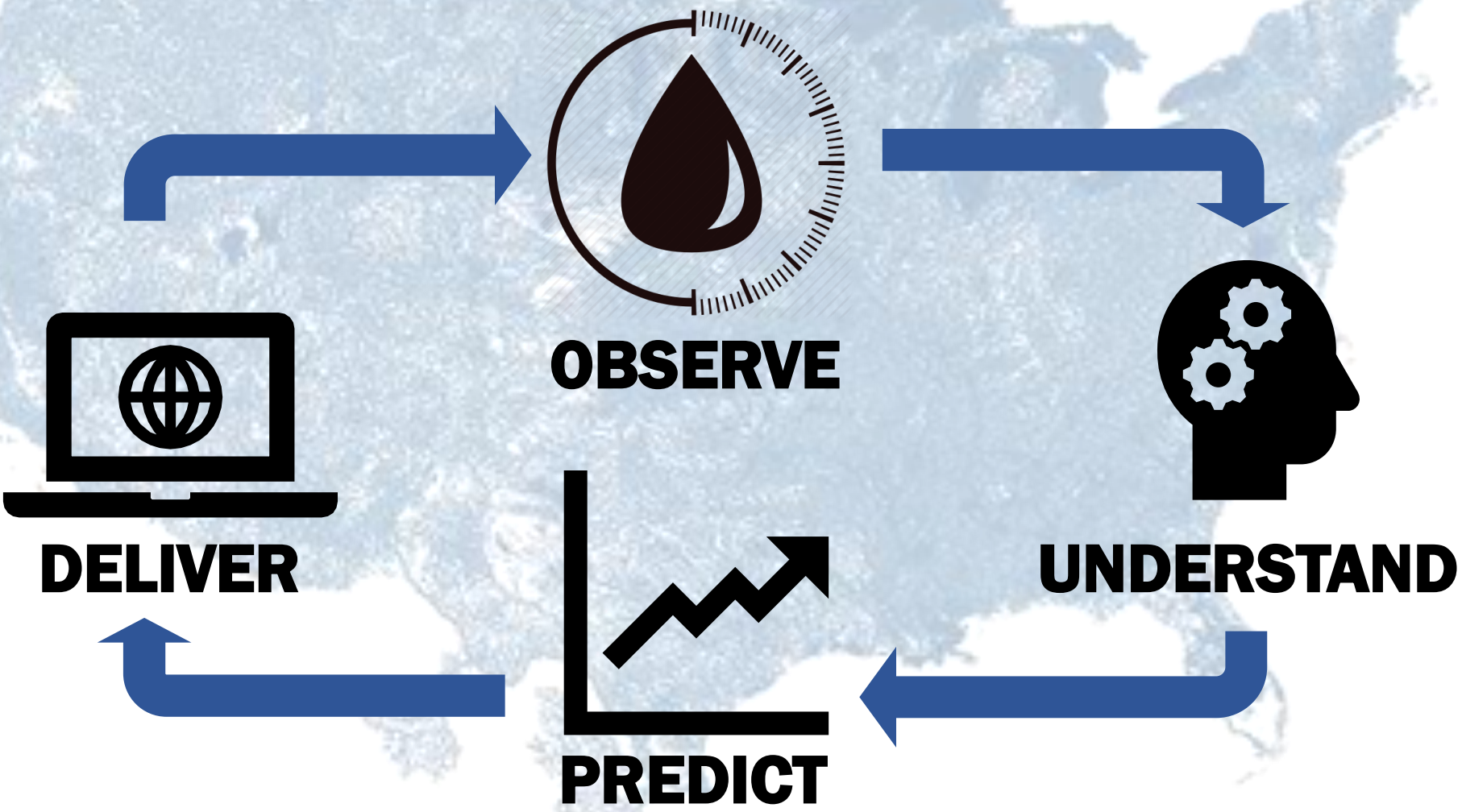
1. Provide society the information it needs regarding the amount and quality of water in all components of the water cycle at high temporal and spatial resolution, nationwide.
2. Advance understanding of processes that determine water availability.
3. Predict changes in the quantity and quality of water resources in response to changing climate, population, land-use, and management scenarios.
4. Anticipate and respond to water-related emergencies and conflicts.
5. Deliver timely hydrologic data, analyses, and decision-support tools seamlessly across the Nation to support water-resource decisions.

10 Recommendations

1. Enhance data collection.
2. Coordinate on data delivery.
3. Increase focus on relationships between human activities and water.
4. Develop a robust water accounting system.
5. Collaborate on water use data standards.
6. Ensure monitoring networks are adequate to assess changing conditions.
7. Focus on long-term prediction and risk assessment of extreme water conditions.
8. Develop multi-scale, integrated, dynamic models that encompass the full water cycle.
9. Collaborate within and outside of USGS.
10. Build a workforce ready to take on new water challenges.



Integrated Water Science Process



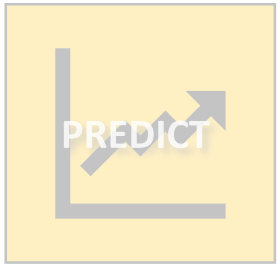
USGS Integrated Water Science Initiatives

Next Generation Water Observing System (NGWOS)

NGWOS collects real-time data on water quantity and quality in more affordable, rapid, and intensive ways than has previously been possible. The flexible monitoring approach enables USGS networks to evolve with new technology and emerging threats.

Integrated Water Availability Assessments (IWAA)

IWAAs examine the supply, use, and availability of the nation's water. These regional and national assessments evaluate water quantity and quality in both surface and groundwater, as related to human and ecosystem needs and as affected by human and natural influences.



Integrated Water Prediction (IWP)

IWP builds a powerful set of modeling tools to predict the amount and quality of surface and groundwater, now and into the future. These models use the best available science to provide information for more rivers and aquifers than can be directly monitored.

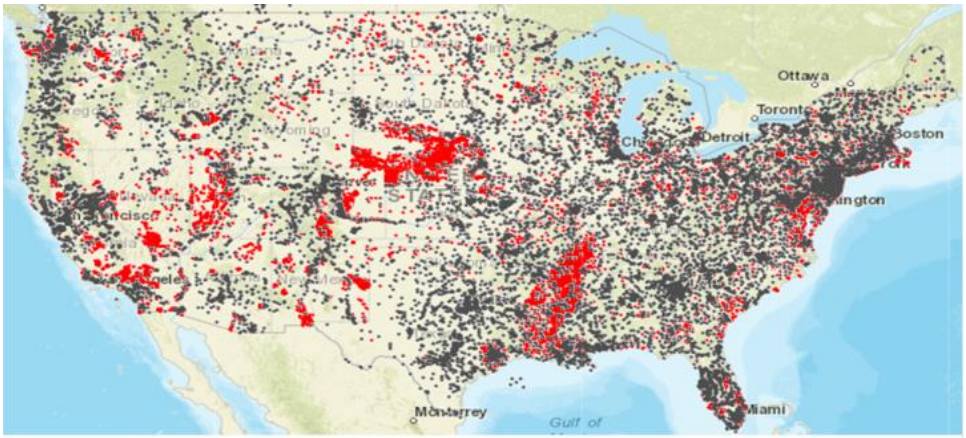
National Water Information System (NWIS) Modernization; National Water Dashboard

NWIS data systems that house USGS water information are being modernized to maximize data integrity, simplify data delivery to the general public, automate early warning to enable faster response times during water emergencies, and support the new National Water Dashboard.

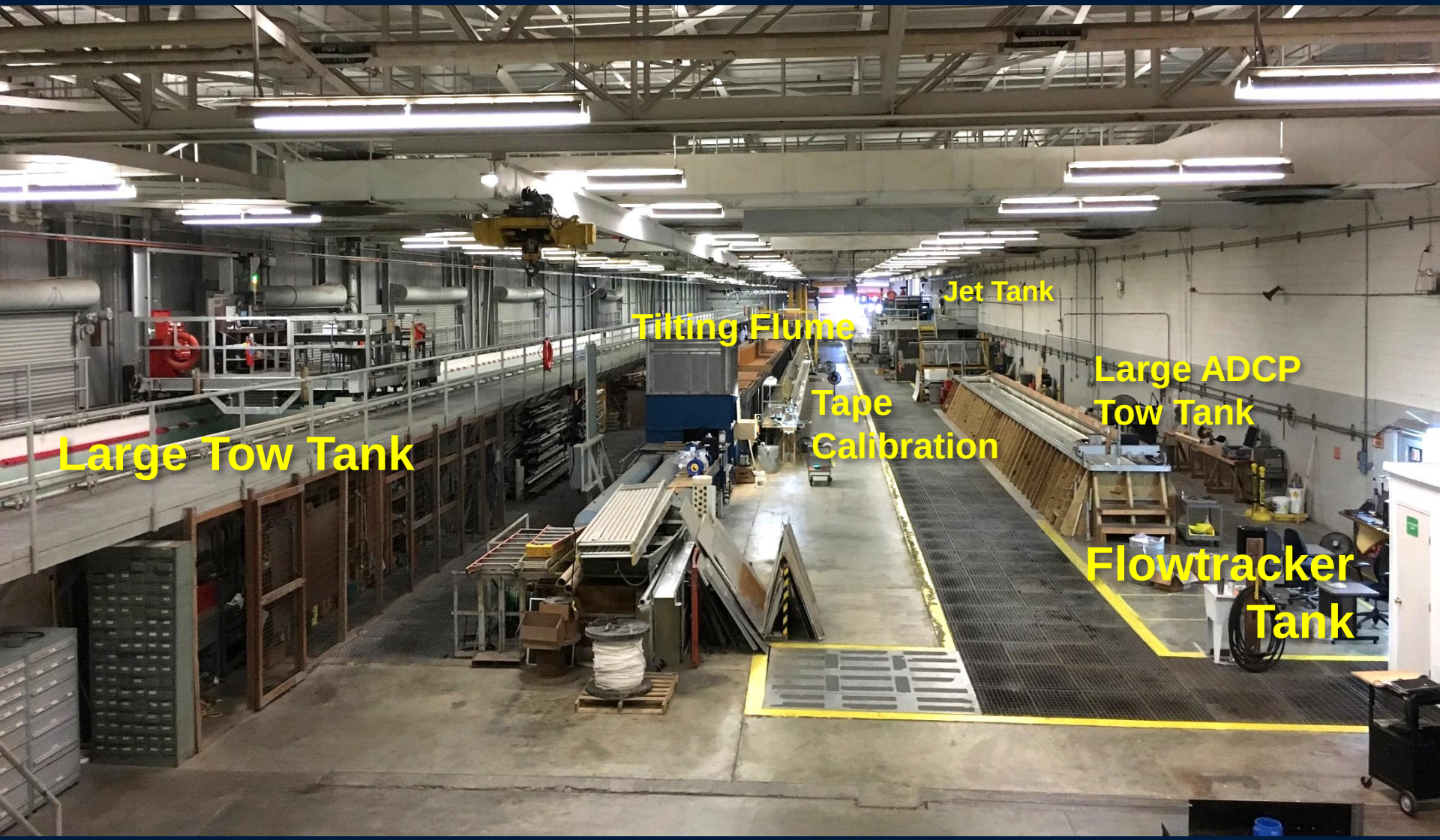
Observations Underpin Water Science

USGS operates the Nation's largest water observing system:

- Continuous streamflow data from 10,000+ real-time streamgages
- Discrete data from ~80,000+ manual streamflow measurements per year
- Groundwater conditions monitored at 17,000+ wells
- Continuous water-quality monitored from 2,100+ stations
- 1.2 billion data requests last year through NWIS web
- Funded by USGS and over 1600 partners



The Hydrologic Instrumentation Facility (HIF) Underpins USGS Water Observations (c. 1972)



New Hydrologic Instrumentation Facility
Planned December 2022

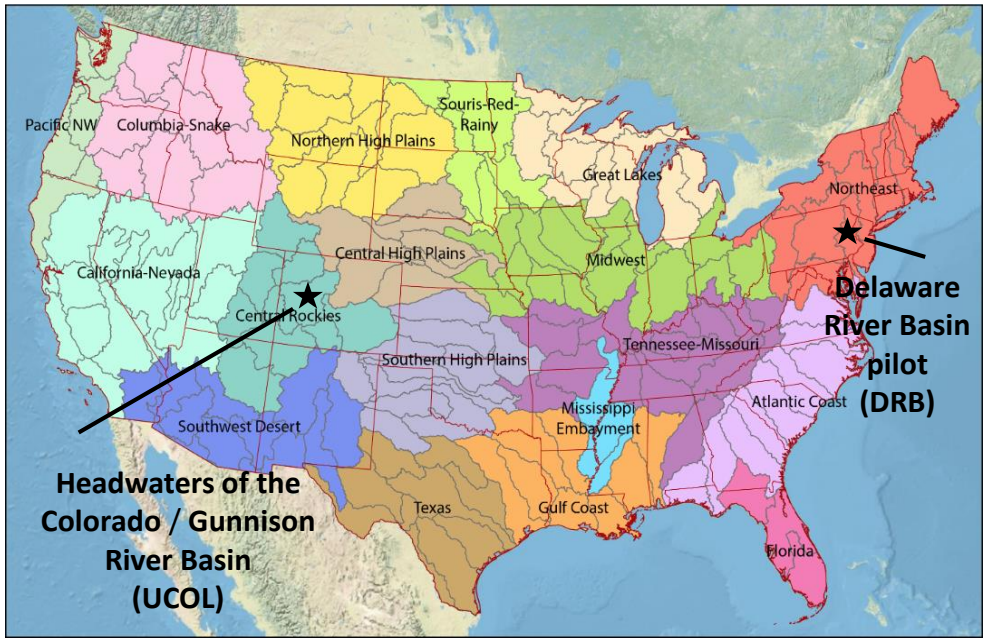
- State-of-the-art hydraulics laboratory for testing, calibration
- Network Operations Center for USGS water observing systems

- Water Sensor Innovation Facility
- Water Science Training Center
- Indoor and Outdoor Research Testbeds

Integrated Water Science Basins

10 Intensive Reference Basins to Drive the Future of Integrated Water Science:

- Regional focus areas for intensive observation, assessments, modeling, and prediction
- 10 river basins (10,000-20,000 mi^2) representative of larger water-resource regions
- Goal: Establish 10 basins in 10 years
- Develop a deep, integrated under-standing that can be extended to the broader region
- Basin selection process includes quantitative metrics and extensive stakeholder engagement



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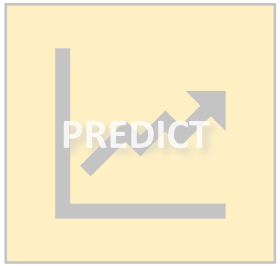

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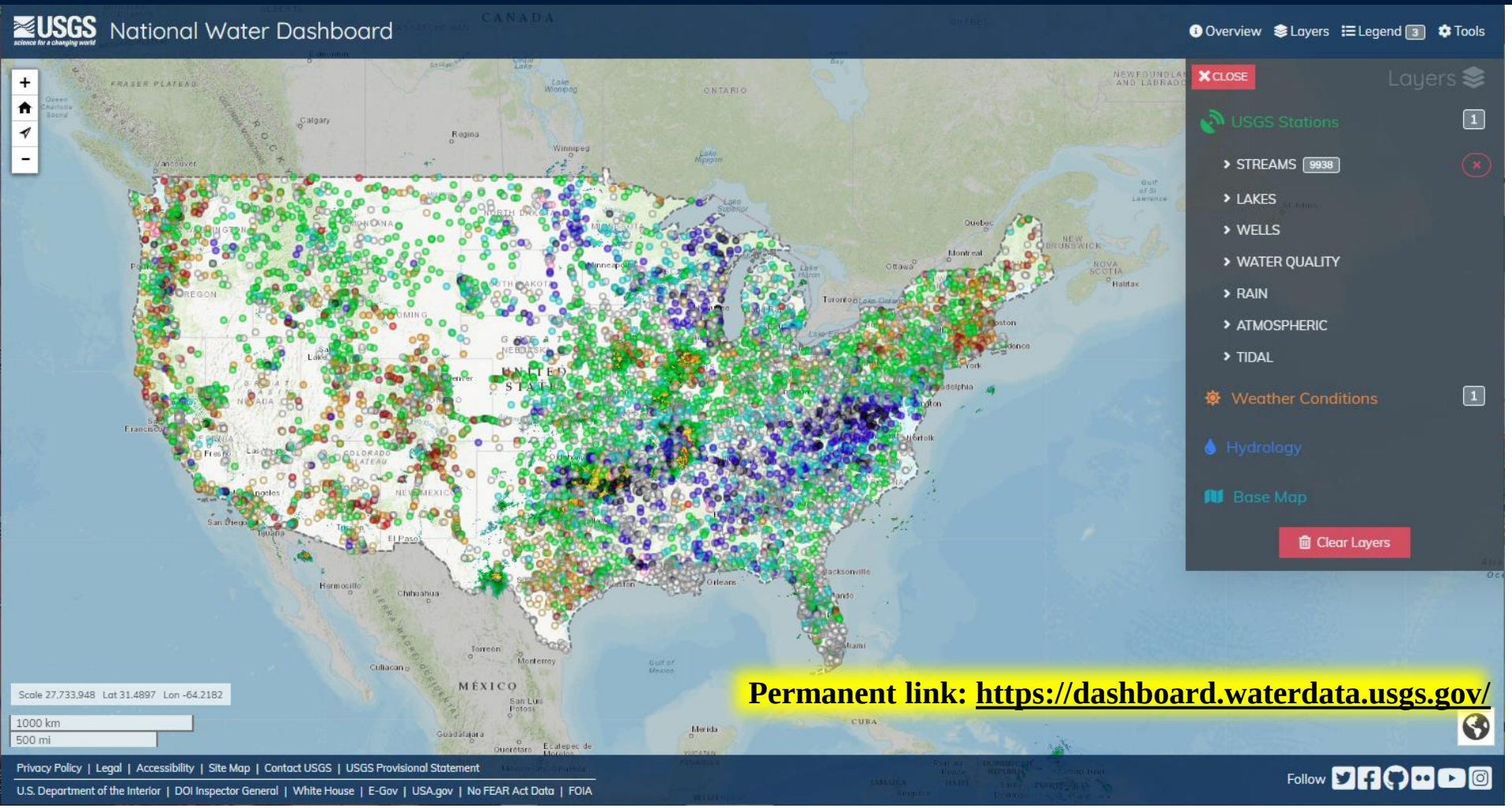
Coming October 2020: National Water Dashboard



USGS

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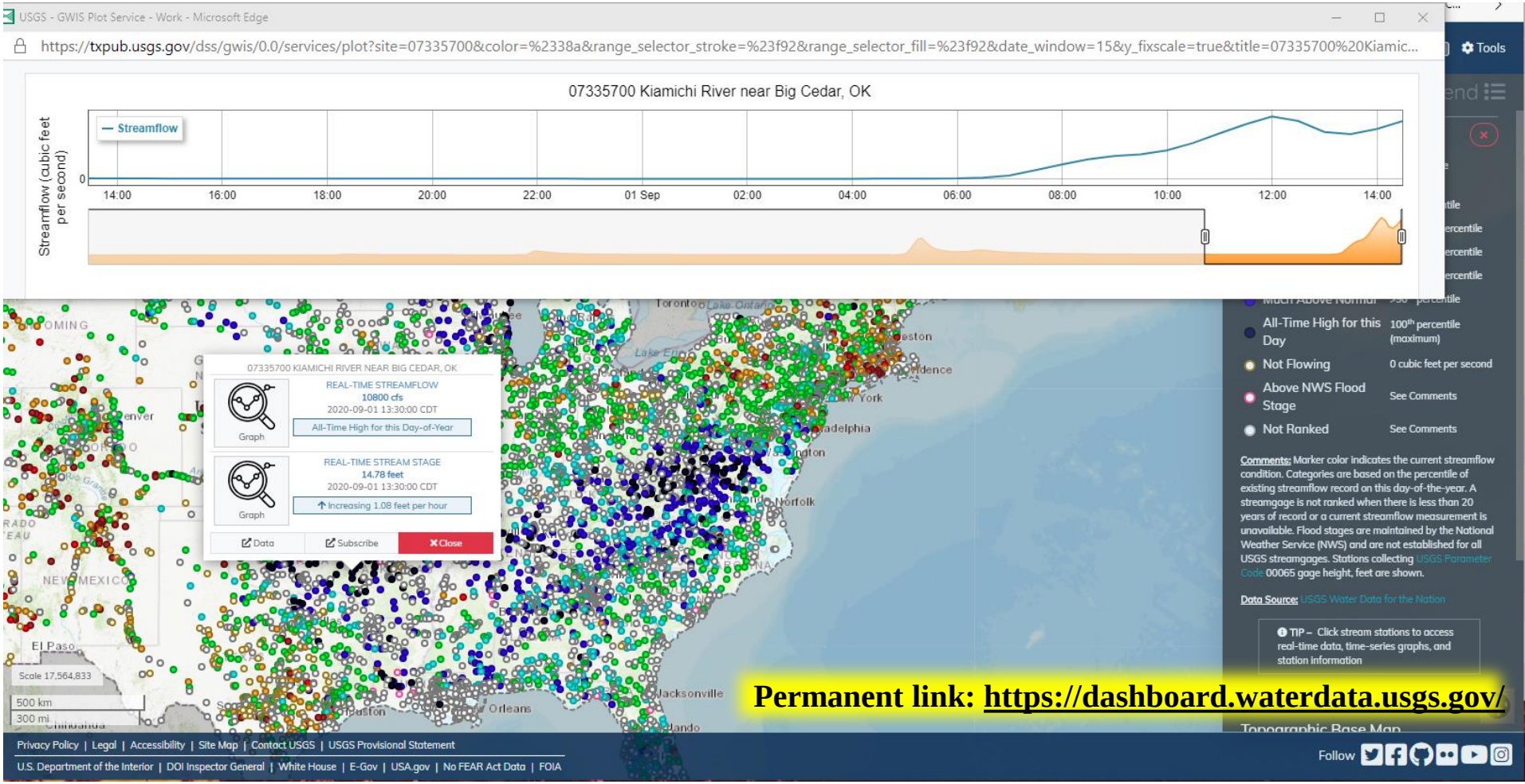

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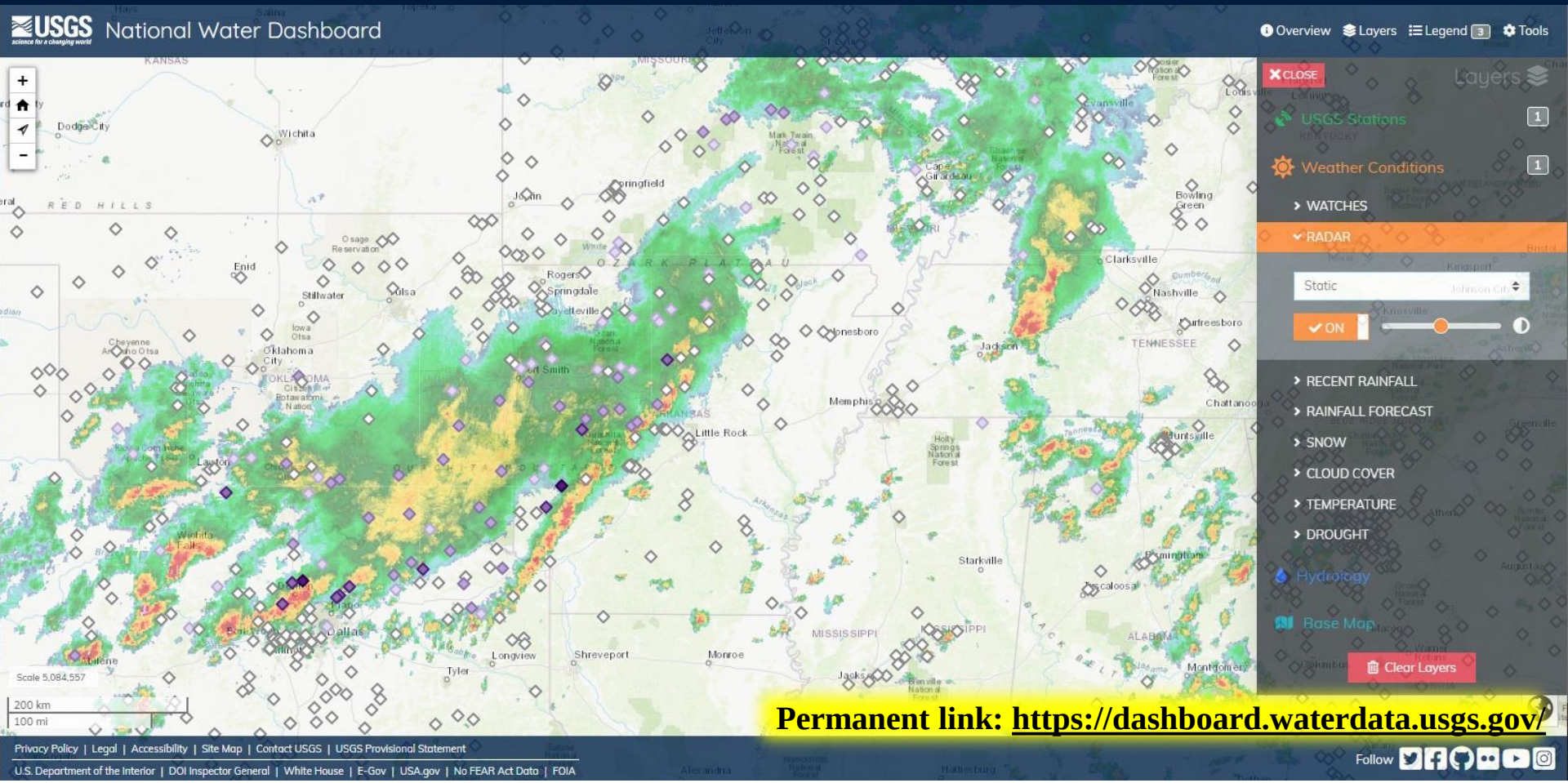

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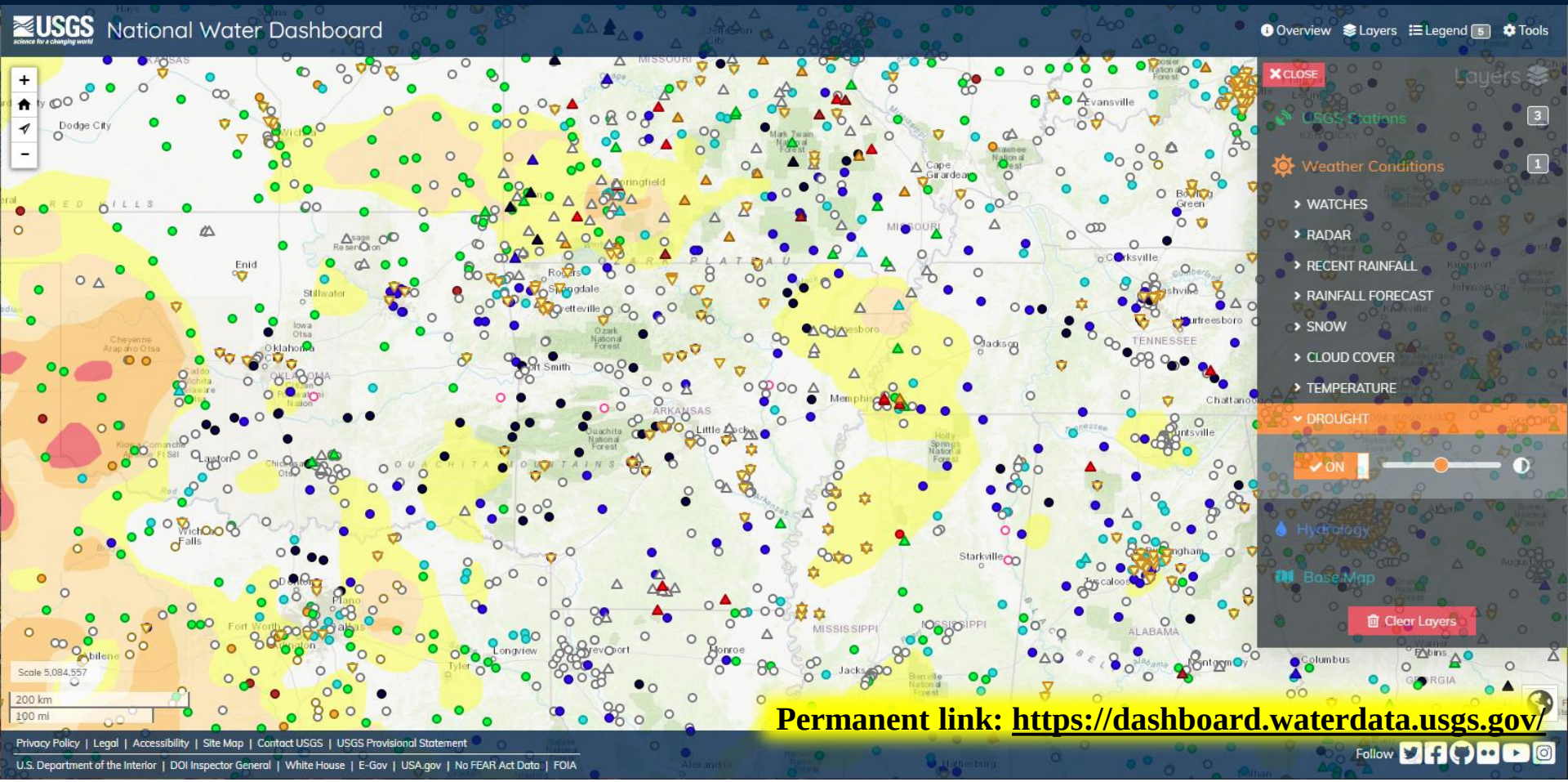

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Contact

Don Cline

Associate Director for Water Resources

dcline@usgs.gov

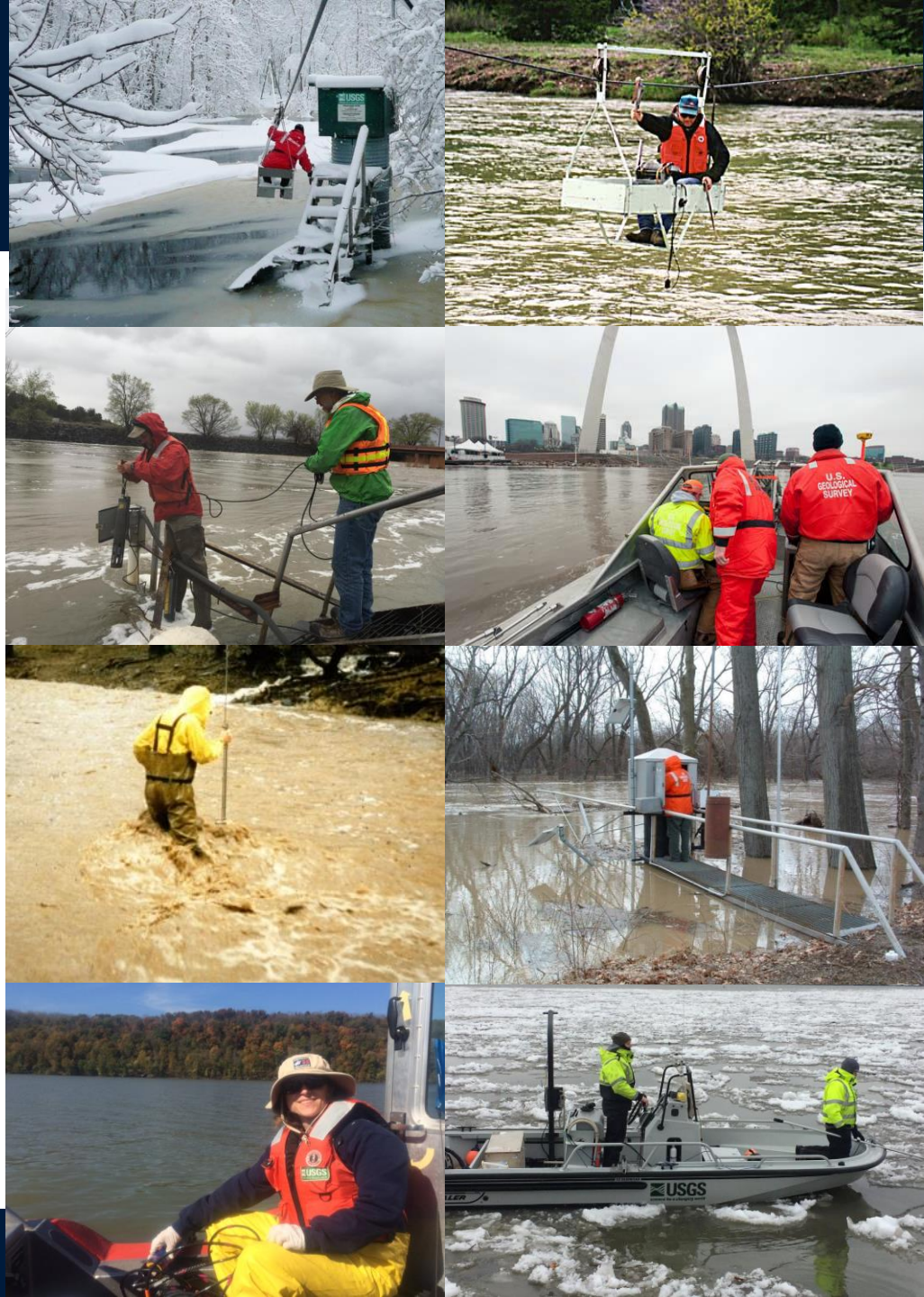
703-648-4557

Bill Guertal

Deputy Associate Director for Water Resources

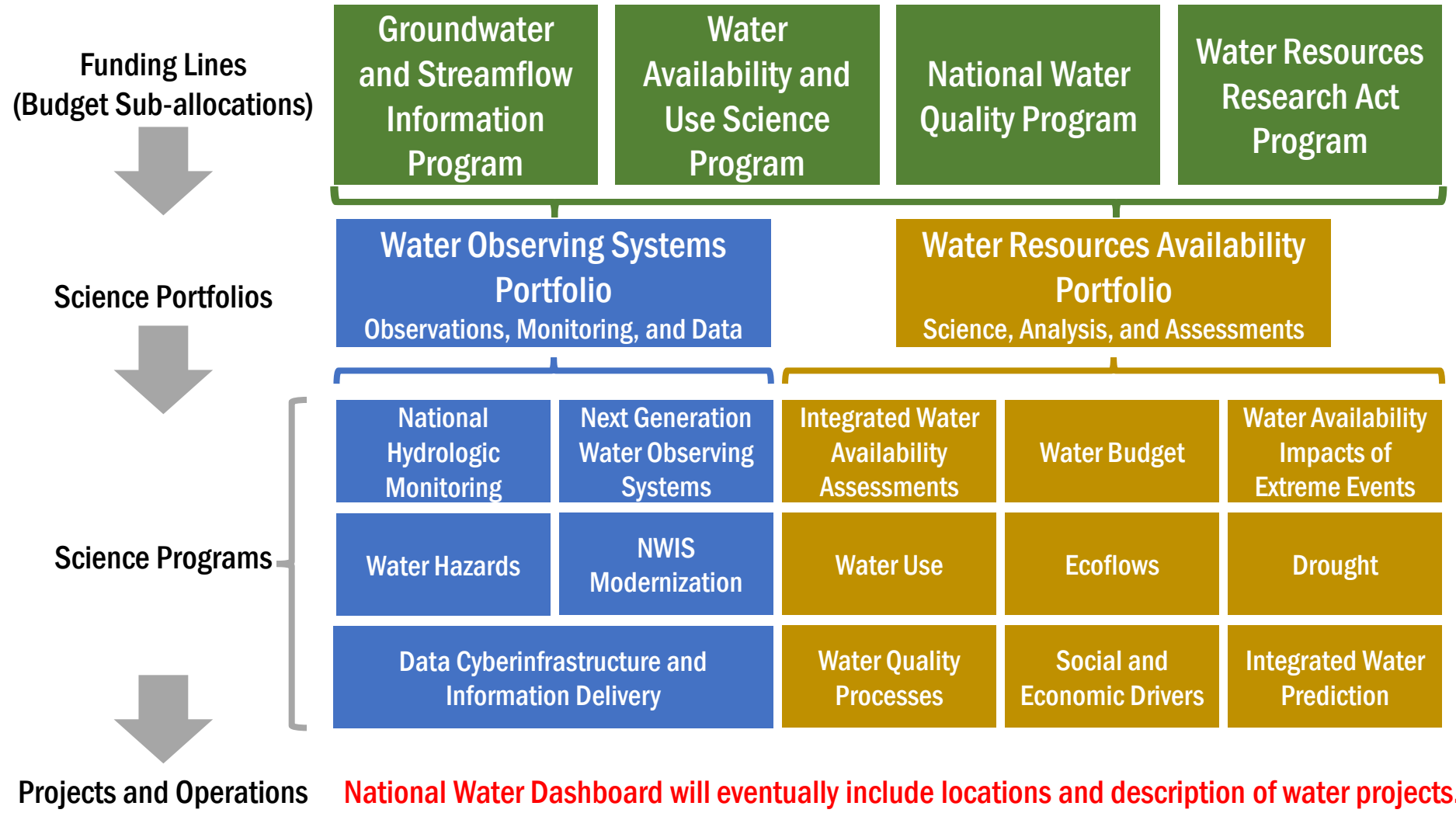
wguertal@usgs.gov

703-648-5060



USGS

Water Mission Area Science Portfolio Structure



2021 Budget Status

Water Resources Mission Area Programs (dollars in millions)	2020	2021			
	Enacted	Program Changes* (from 2020)	President's Budget Request	House Mark	Change from 2020
Water Resources (Overall)	$234.1	-$53.3	$180.8	$237.4	+$3.3
Water Availability and Use Science Program	$47.5	-$14.1	$33.4	$46.0	-$1.5
Groundwater and Streamflow Information Program	$84.2	-$10.9	$73.3	$85.8	+$1.6
National Water Quality Program	$92.4	-$18.3	$74.1	$94.6	+$2.2
Water Resources Research Act Program	$10.0	-$10.0	$0	$11.0	+$1.0