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Water Availability and Use Science Program

Integrated Water Availability Assessments

The need for data and tools to evaluate water availability is increasing as the demand on water resources continues to grow. To meet these needs, the U.S. Geological Survey is conducting Integrated Water Availability Assessments (IWAAs) at national and regional scales. IWAAs are a multi-extent, stakeholder driven, near real time census and seasonal prediction of water availability for both human and ecological uses.

IWAAs will convey current and future conditions, and National trends, regarding the quantity and quality of water available providing a basis to evaluate where limits to availability exist or may develop for human and ecological use. National and regional IWAAs will evaluate the impacts of streamflow, groundwater supply, and water quality on water availability and examine connections to climatic conditions, human influences, and water use. National IWAAs will provide periodic snapshots of supply, demand, and factors influencing water availability across the U.S. These national assessments will be informed by model advancements and process-based insights made in regional IWAAs. Regional IWAAs will address water availability issues in priority river basins. Regional water availability will be driven by local impacts such as supply and demand, drought, quality, impacts on infrastructure, and economics. Each of these constraints may vary by region, thus the regional IWAAs require a great deal of local stakeholder input.

When fully implemented, the IWAAs will (1) evaluate current water supply and demand, (2) evaluate long-term trends in water availability, (3) provide seasonal to decadal forecasts of availability, and (4) inform water resource decisions through development of socioeconomic tools. The IWAAs are designed to meet the goals of the National Water Census as established through the SECURE Water Act.

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National Assessments

National IWAA development will be a multi-step process: model estimates and a concept map illustrating a near-real time census of water resources nationally will be developed initially. This will be expanded to include water quality as a factor affecting water availability, and expanded to integrate quantity, quality, and use delivered using a visualization tool. Seasonal to sub-seasonal predictions of availability will be made that incorporate projected withdrawal and based on seasonal climate forecasts.

Regional Assessments

A pilot regional IWAA in the Delaware River Basin is under development. This pilot will evaluate the impact of drought of record (1965) under current supply and demand restrictions and will be inclusive of quantity, quality, use, and ecoflows. Additionally, a pilot basin in the Western United States will be selected and goals for the pilot will be identified through stakeholder feedback.

Improved Water Use Reporting

Understanding the human component of water demand is a key factor in fully evaluating water availability at both the national and regional scale. A modeling strategy is under development for producing HUC-12 daily estimates of withdrawals for public-supply, thermoelectric, and irrigation water use nationally. Together, these three categories represent 90% of all water used in the US, accounting for this use holistically in a hydrologic model is critical to ensuring a complete evaluation of water availability. The models will be applied to deliver daily estimates of withdrawal for public-supply, thermoelectric, and irrigation that will be fully integrated into both national and regional IWAAs.

U.S. Department of the Interior
U.S. Geological Survey

For Additional Information
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Web Resources
USGS Water Mission Area: https://www.usgs.gov/missionareas/water-resources
National Water Census: https://water.usgs.gov/watercensus/
IWAAs: https://www.usgs.gov/iwaa