

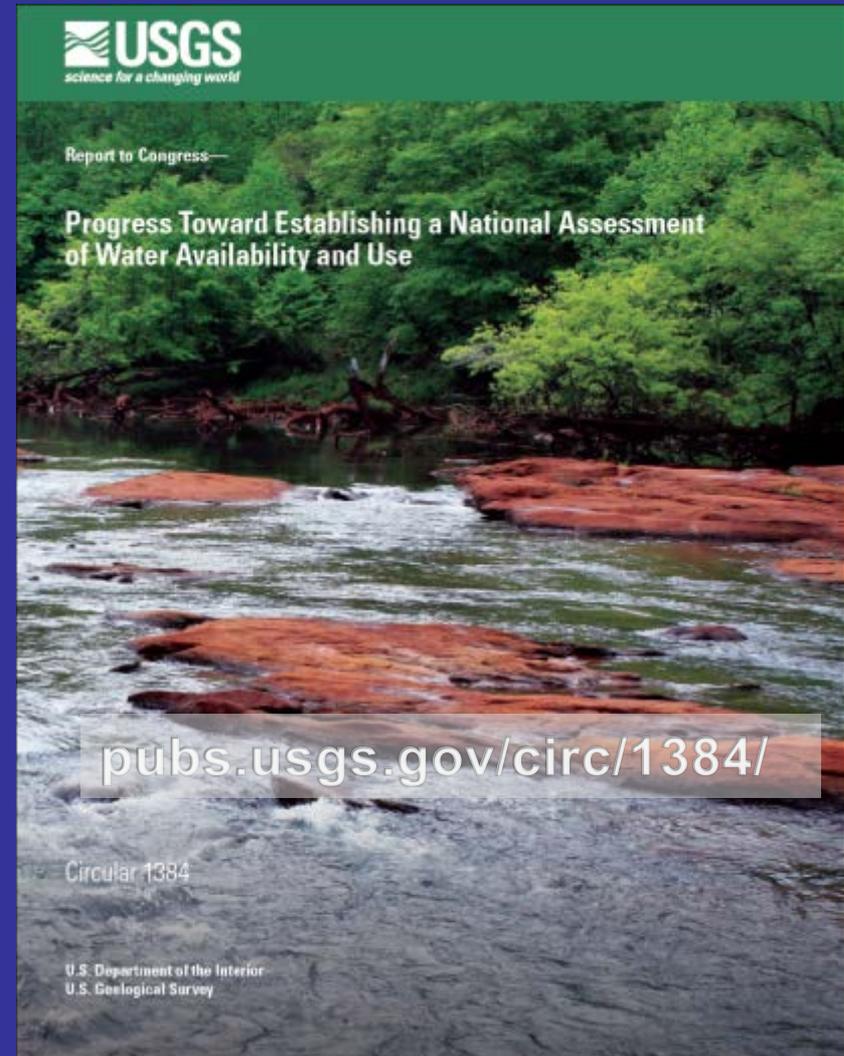


The National Water Census

* Part of the



Initiative



Our objective for the Water Census

To place technical information and tools in the hands of stakeholders, allowing them to answer questions they face about water availability:

- Does the Nation have enough freshwater to meet both human and ecological needs?
- Will this water be present to meet future needs?

SECURE Water Act
Public Law 111-11, § 9507 and 9508

Water Availability Analysis

The process of determining the quantity and timing-characteristics of water, which is of sufficient quality, to meet both human and ecological needs.

Types of Information

Technical

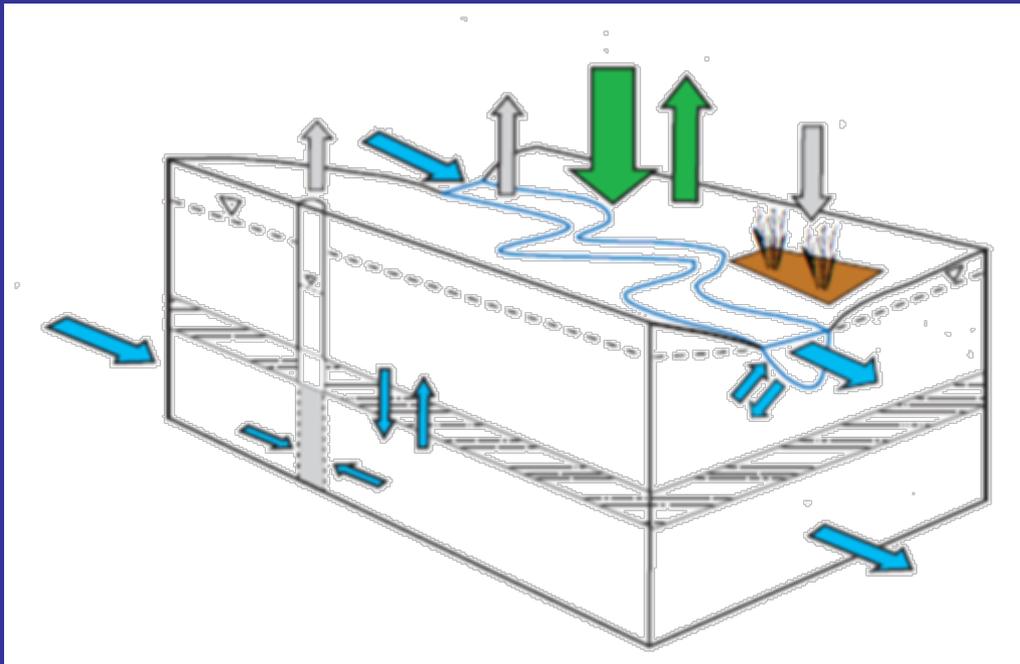
Socio-economic

Legal

Regulatory

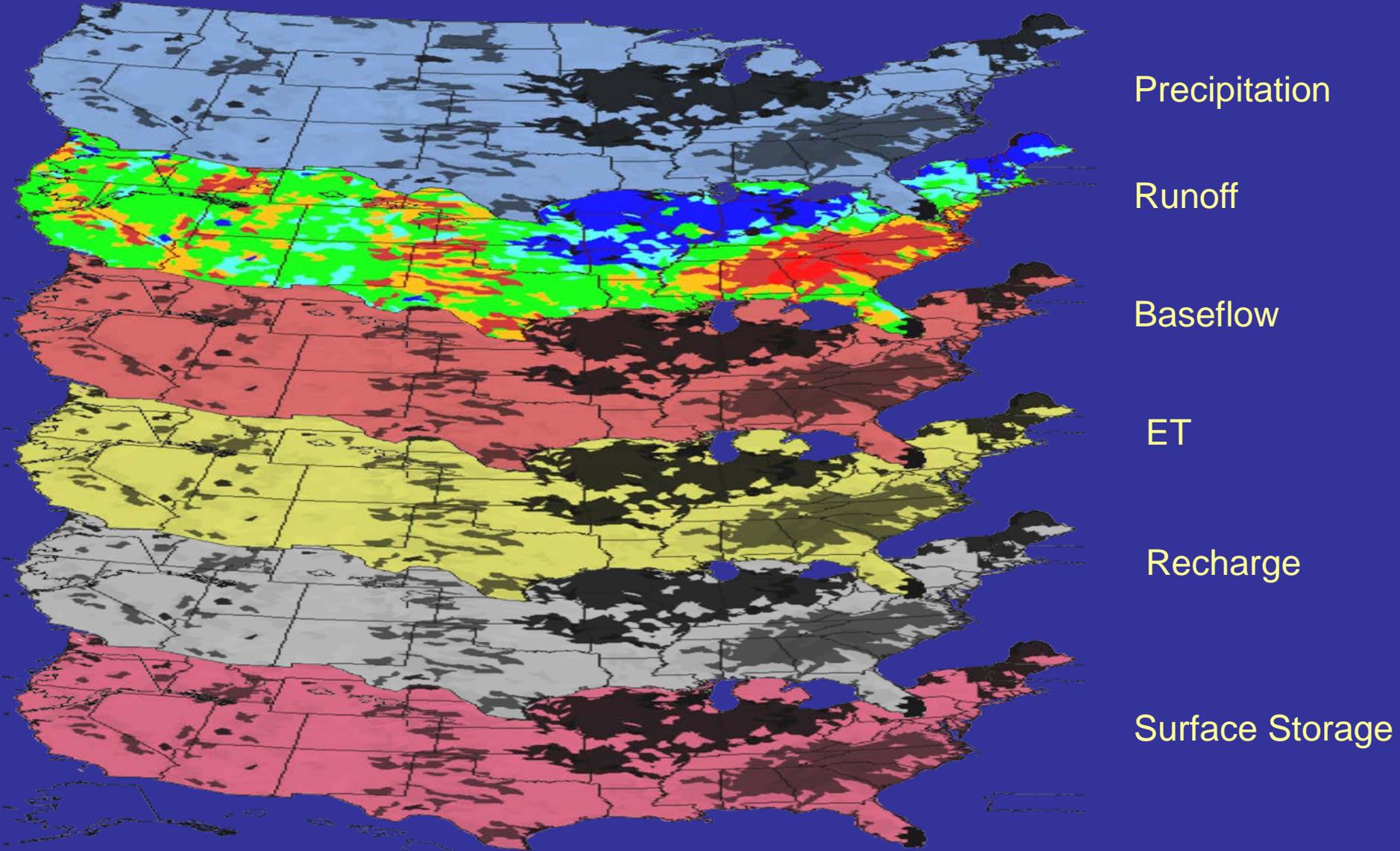
Political

Account for water with a “budget”



$$\begin{aligned} & \textit{Precipitation} \\ & + \\ & \textit{Flow in} \\ & = \\ & \textit{Evapotranspiration} \\ & + \\ & \textit{Storage Change} \\ & + \\ & \textit{Flow out} \end{aligned}$$

A Nationwide System to deliver water accounting information



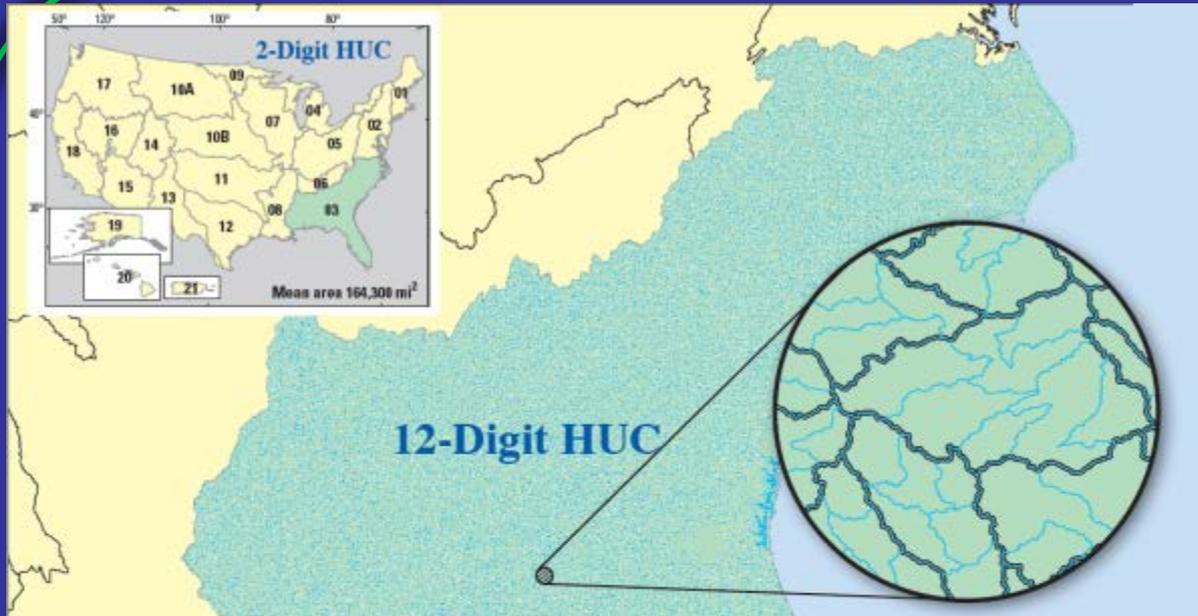
Information delivery

A web application for delivering water availability information at scales that are relevant to the user

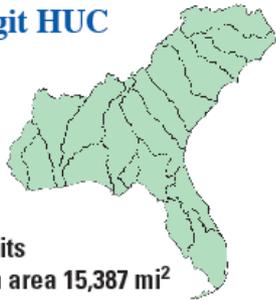


water.usgs.gov/watercensus/

Scale Matters

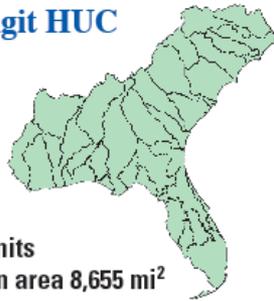


4-Digit HUC



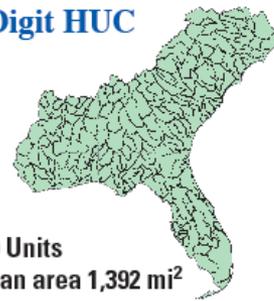
17 Units
Mean area 15,387 mi²

6-Digit HUC



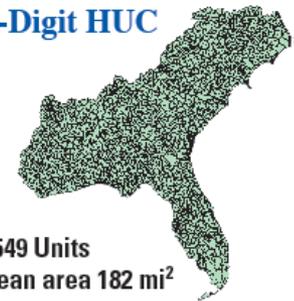
31 Units
Mean area 8,655 mi²

8-Digit HUC



199 Units
Mean area 1,392 mi²

10-Digit HUC



1,549 Units
Mean area 182 mi²

Density of hydrologic unit codes (HUCs) at different levels illustrated by using the 2-digit HUC Region 03

Beta Testing the Water Census Data Portal

**Scientists, Modelers,
Managers...**

**User Interfaces and
Scripts**

**Integration and
Processing Services**

**Data Distribution
Services**

**Canonical Persistent
Archives**

Water Budget



Discover water budget data for watersheds and counties.

Streamflow Stats



Access streamflow statistics for stream gages and model results.

Aquatic Biology



Access aquatic biology data and streamflow statistics for related sites.

Data Discovery



Search and browse datasets, publications, and project descriptions.

Demo!

<http://cida.usgs.gov/nwc/>



National Water Census - BETA ⓘ

Notice: This web page is in a beta state. It should be considered provisional and subject to change. If you find any issues or have suggestions, please contact dblodgett@usgs.gov. This web page is most compatible with the Chrome and Firefox browsers. Internet Explorer 9 through 11 will be supported soon.

☰ Menu

[Water Budget](#)

[Streamflow Stats](#)

[Aquatic Biology](#)

[Data Discovery](#)

Water Budget



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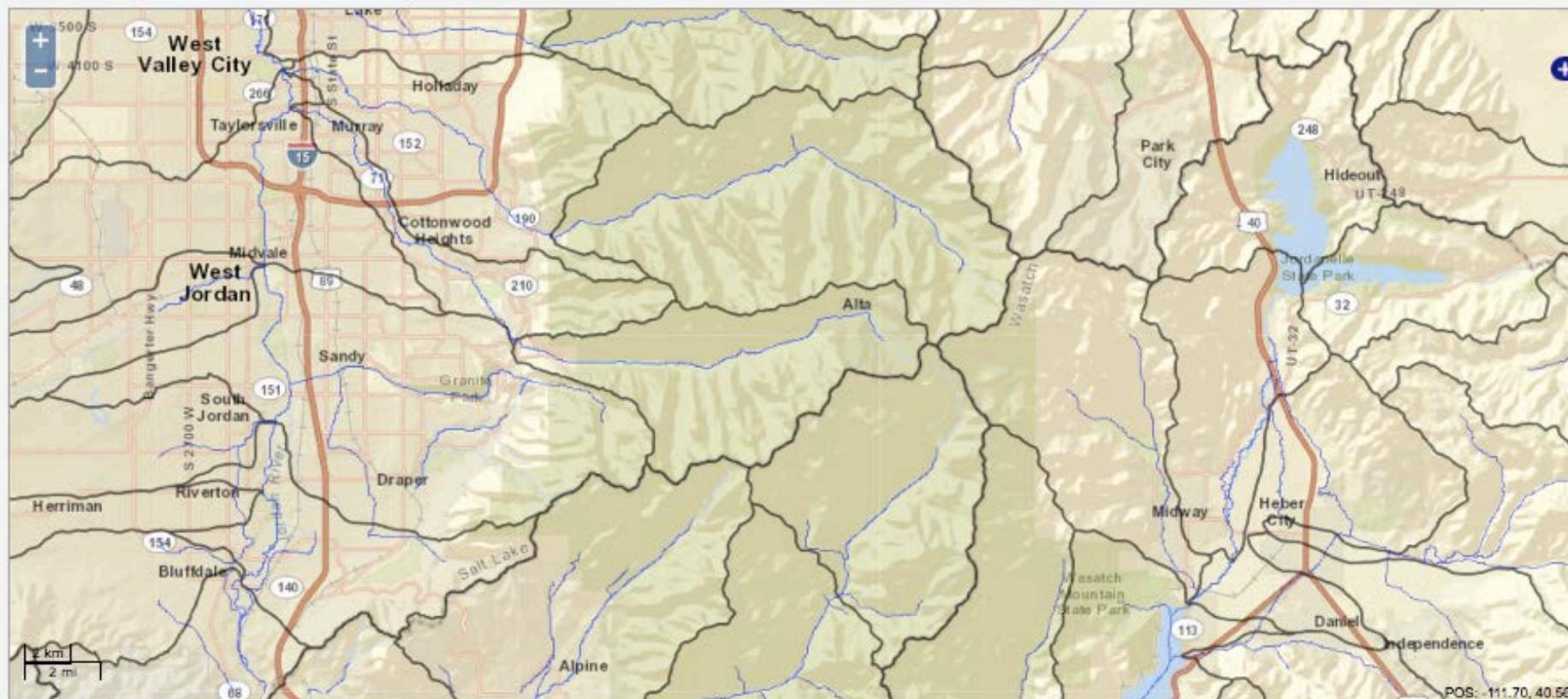
Search and browse datasets, publications, and project descriptions.

Share this page

Available Water Budget Components

Discover and access water budget data for watersheds and counties. Select a watershed of interest for precipitation and evapotranspiration data. County water use data for counties intersecting the watershed is also available.

Map Controls: **Select** **Pan** **Zoom** Single click selects sites or watersheds. Pan by click and drag. Zoom with double click, map buttons or scroll wheel.



Available Water Budget Components

Discover and access water budget data for watersheds and counties. Select a watershed of interest for precipitation and evapotranspiration data. County water use data for counties intersecting the watershed is also available.

US Customary

Metric

Precipitation and Evapotranspiration for the Selected HUC

Hydrologic Unit Code

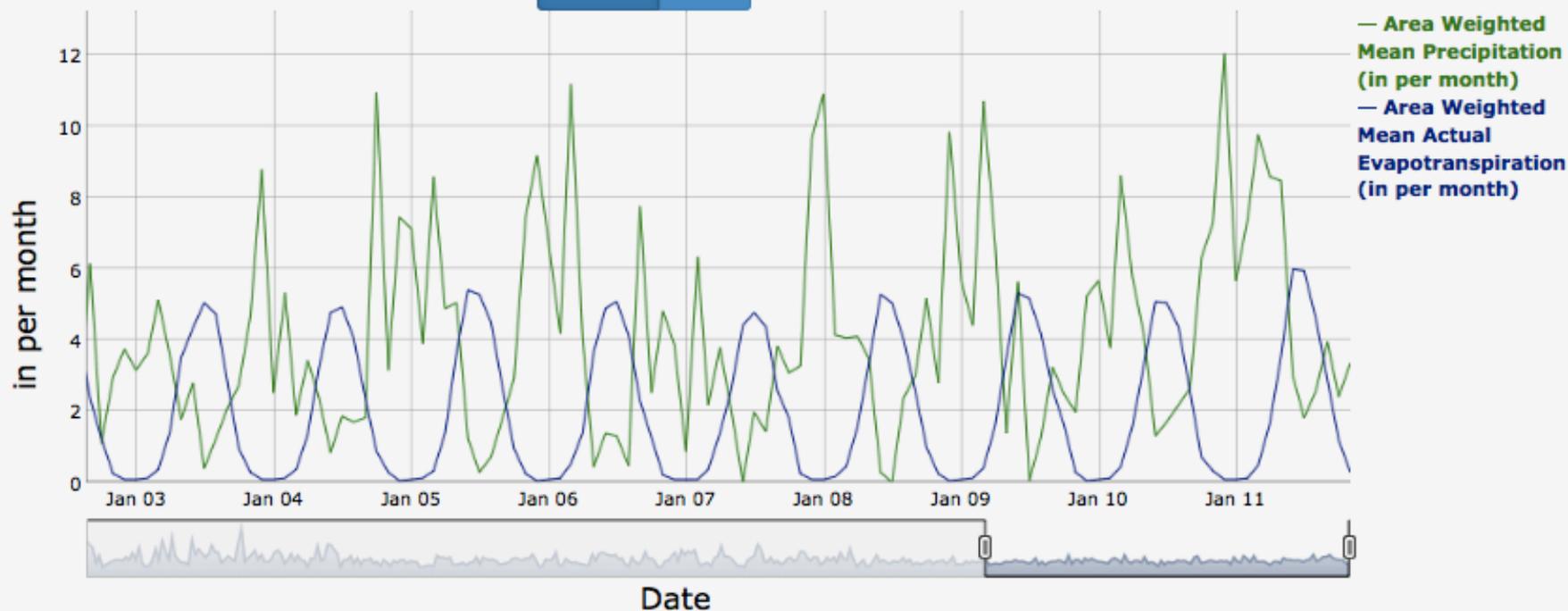
160202040202

HUC Name

Big Cottonwood Creek-Jordan River

Monthly

Daily



To access custom subsets of these and other data, visit the [Geo Data Portal](#).

[Download Evapotranspiration](#)

[Download Precipitation](#)

[Plot Nearby Water Use Data](#) →

Available Water Budget Components

Discover and access water budget data for watersheds and counties. Select a watershed of interest for precipitation and evapotranspiration data. County water use data for counties intersecting the watershed is also available.

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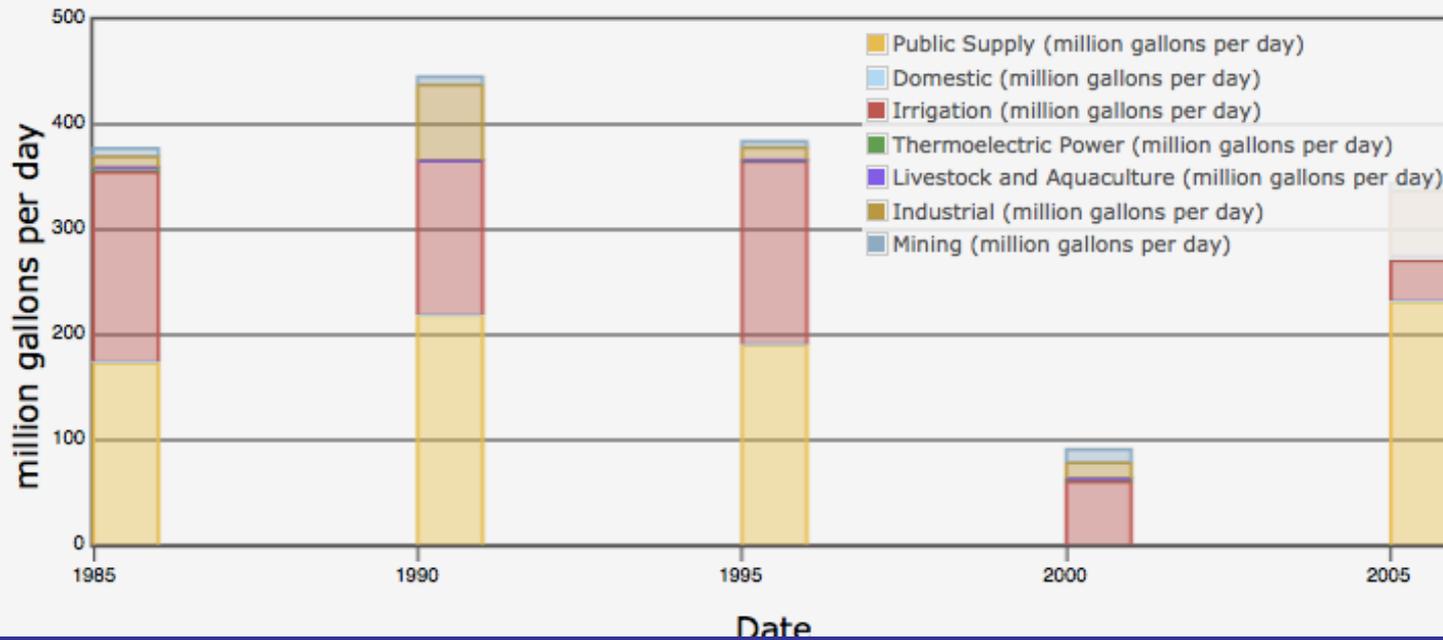
US Customary

Metric

Total County Water Use

Area Normalized County Water Use

Water Use for Salt Lake County



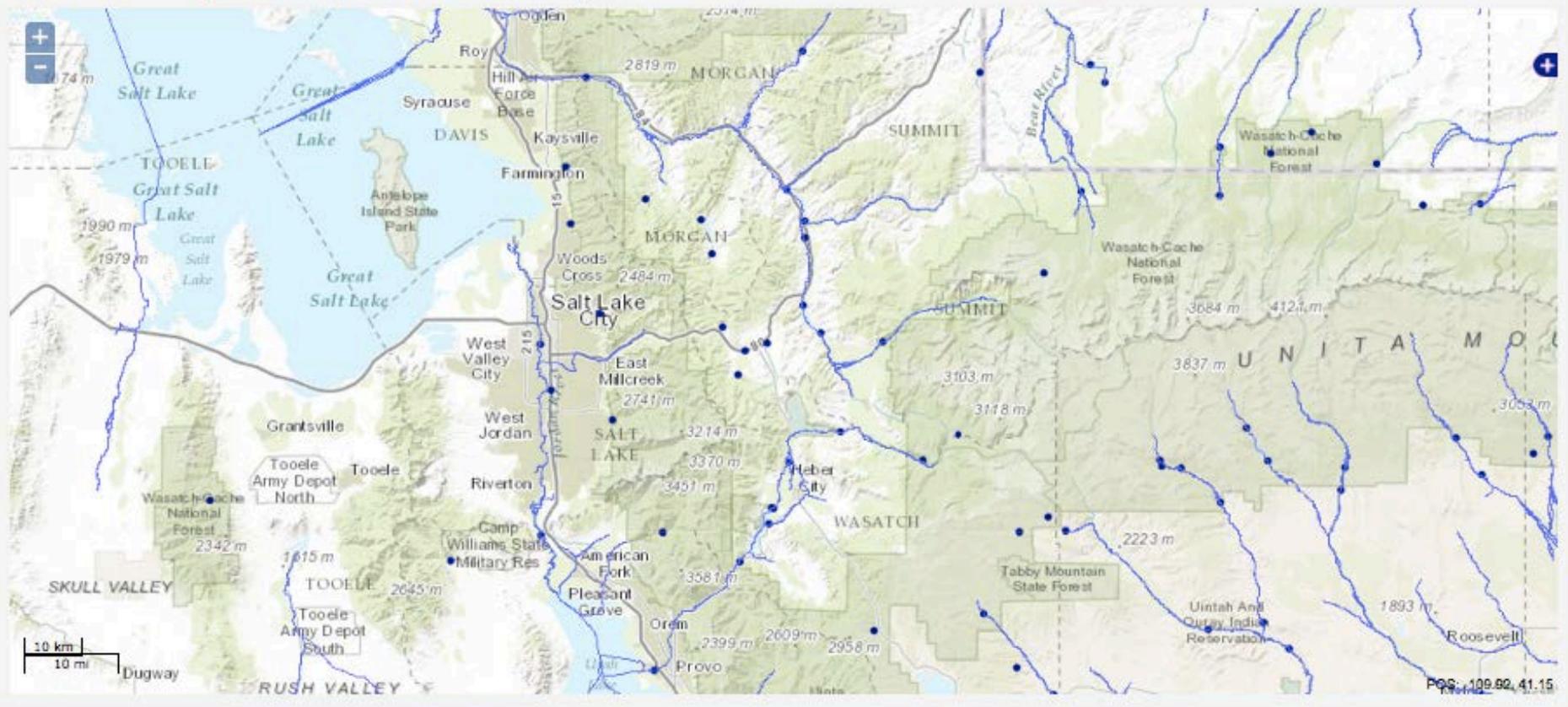
Streamflow Statistics Calculator

Access streamflow statistics for National Water Information System gages and modeled daily flow in some regions. Select a gage or watershed, provide a time period for which statistics are required, and choose statistics to receive. Software to calculate these statistics is also available as an open-source package on GitHub: <https://github.com/USGS-R/EflowStats>

Streamflow Type: **Observed** Modeled Observed streamflow from National Water Information System Gages.

Map Controls: **Select** Pan Zoom Single click selects sites or watersheds. Pan by click and drag. Zoom with double click, map buttons or scroll wheel.

Stream Gage Filters: **Gages for Evaluating Streamflow -** Options to filter displayed stream gages from the Gages II dataset



Streamflow Statistics Calculator

Access streamflow statistics for National Water Information System gages and modeled daily flow in some regions. Select a gage or watershed, provide a time period for which statistics are required, and choose statistics to receive. Software to calculate these statistics is also available as an open-source package on GitHub: <https://github.com/USGS-R/EflowStats>

Preliminary Subject to Change

Modeled streamflow is **preliminary** and subject to change. [Documentation in Review.](#)

Streamflow Type: Observed Modeled

Map Controls: Single click selects sites or watersheds. Pan by click and drag. Zoom with double click, map buttons or scroll wheel.



Hydrologic Unit Code

031501041105

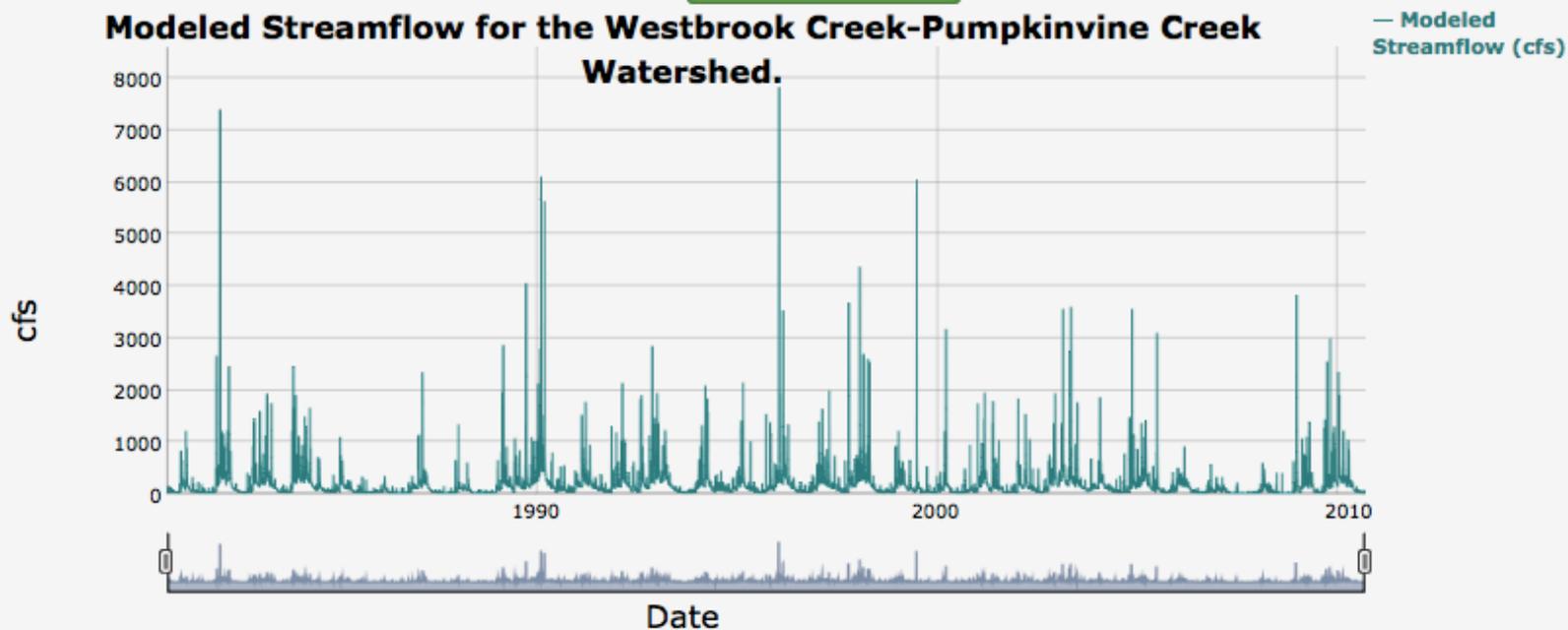
HUC Name

Westbrook Creek-Pumpkinvine Creek

Drainage Area (km²)

364.00816808

Streamflow Data Plot

[Download Modeled Streamflow](#)**Download These Statistics**

Name	Value	Description
site_no	031501041105	
min_date	1980-10-01	
max_date	2010-09-30	
lam1Obs	181.56	Mean of the daily streamflow for the period of record.
tau2Obs	0.56	Coefficient of L-variation (Hosking and Wallis, 1994, eqn. 2.61) of the daily streamflow for the period of record.
tau3Obs	0.51	L-skewness (Hosking and Wallis, 1994, eqn. 2.60 with r equal to 3) of the daily streamflow for the period of record.
tau4Obs	0.34	L-kurtosis (Hosking and Wallis, 1994, eqn. 2.60 with r equal to 4) of the daily streamflow for the period of record.

Aquatic Biology Data and Related Streamflow Statistics

Access aquatic biology data from the **BioData** database and calculate streamflow statistics for near-by stream gages or model results. Select a collection of aquatic biology sites and access the data from the BioData system. Coming Soon: Select a collection of related stream-flow gages, specify a time range of interest, and choose statistics to receive. Software to calculate these statistics is also available as an open-source package on GitHub: <https://github.com/USGS-R/EflowStats> .

Map Controls: **Select** **Pan** **Zoom** Click and hold to drag a bounding box around sites.

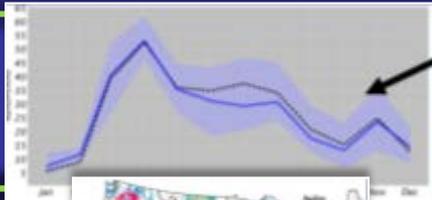


We need your feedback!

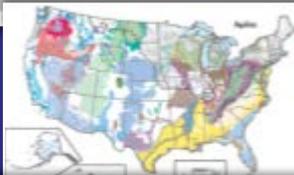
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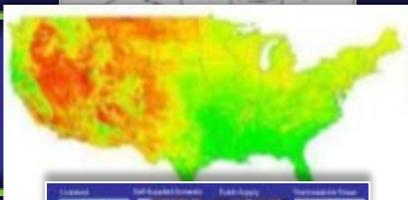
Five Areas of Nationwide Topical Work



Estimation of Flow at Ungaged Locations



Groundwater Information



Estimation of Evapotranspiration



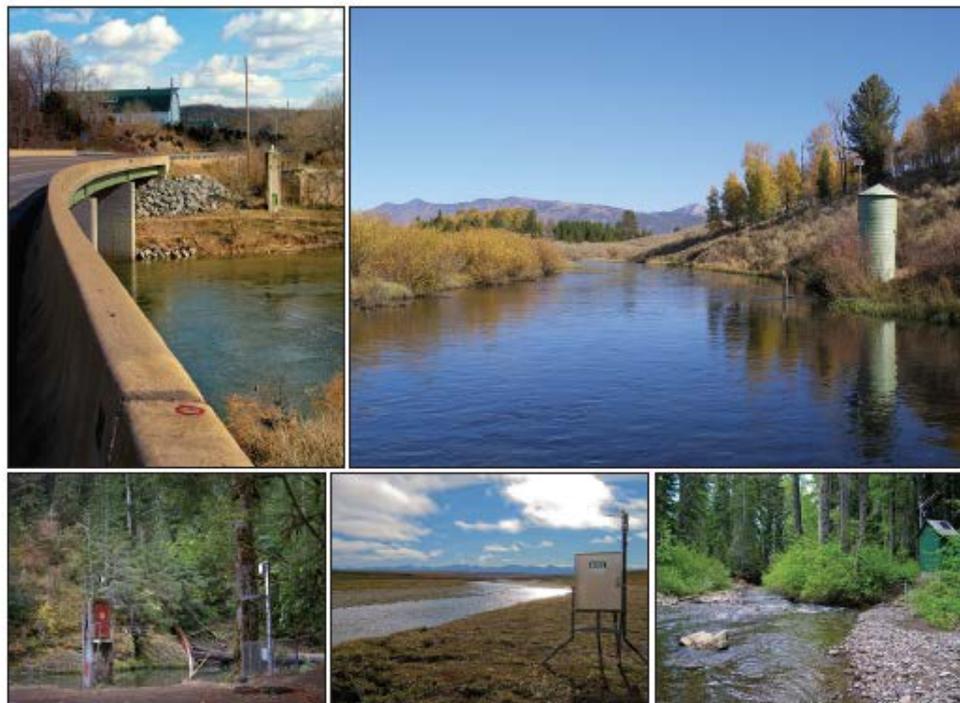
Water Use



Ecological Water Science

Prepared in cooperation with the U.S. Fish and Wildlife Service

A National Streamflow Network Gap Analysis



Scientific Investigations Report 2013–5013

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

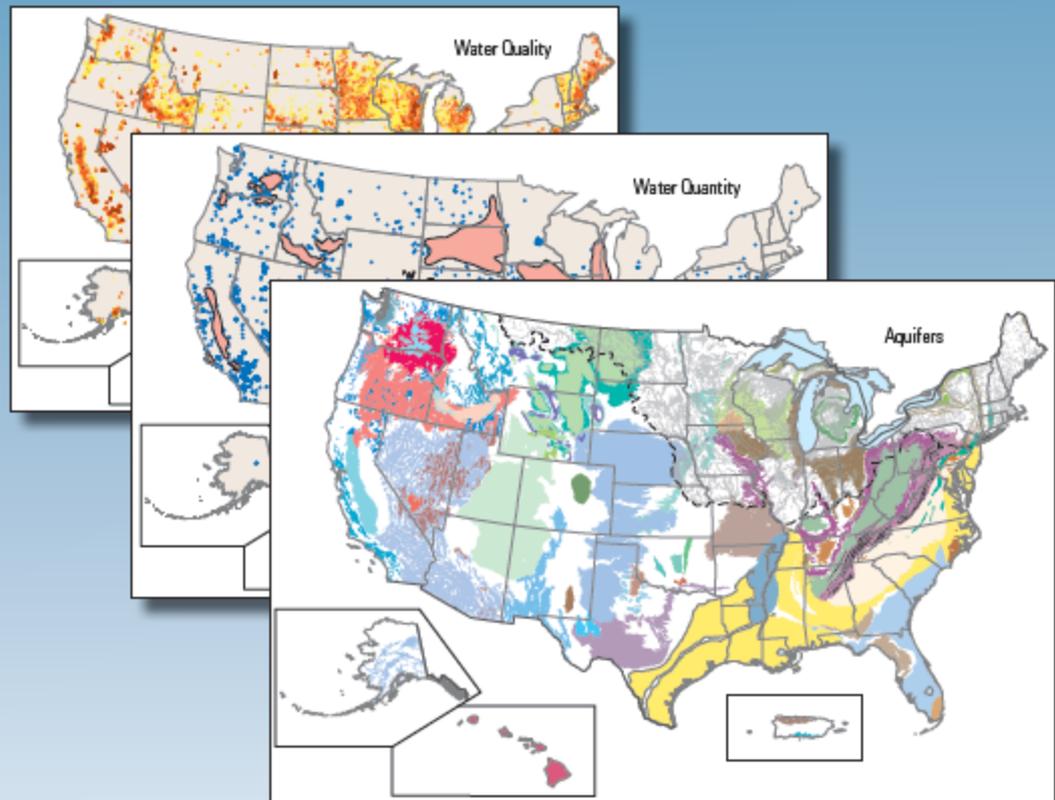
Assess Groundwater's role in Water Availability

Use the strength of and enhance the resources within this program to provide the information on:

- Recharge
- GW yields
- Changes in storage.
- Trends in GW Indices
- GW/SW Interactions

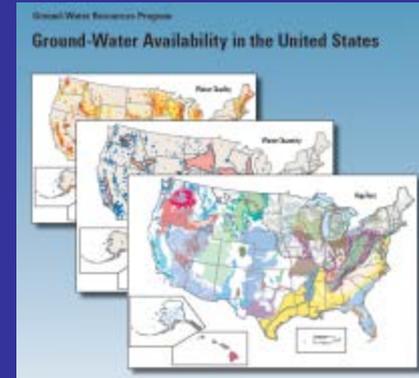
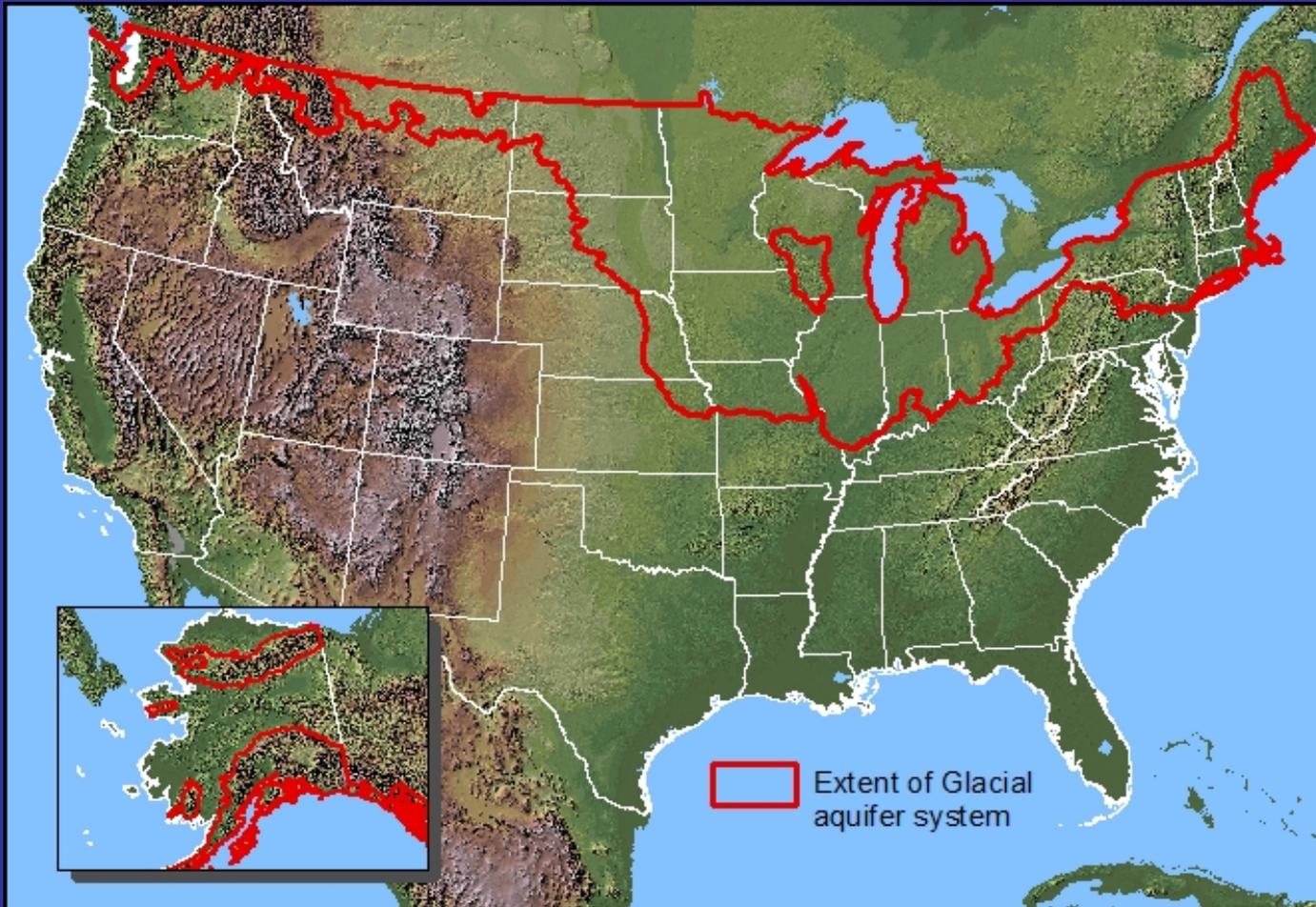
Ground-Water Resources Program

Ground-Water Availability in the United States

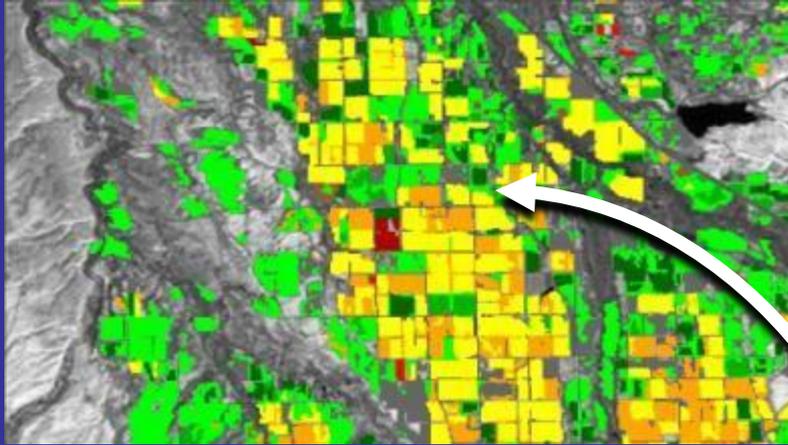


Assess Groundwater's role in Water Availability

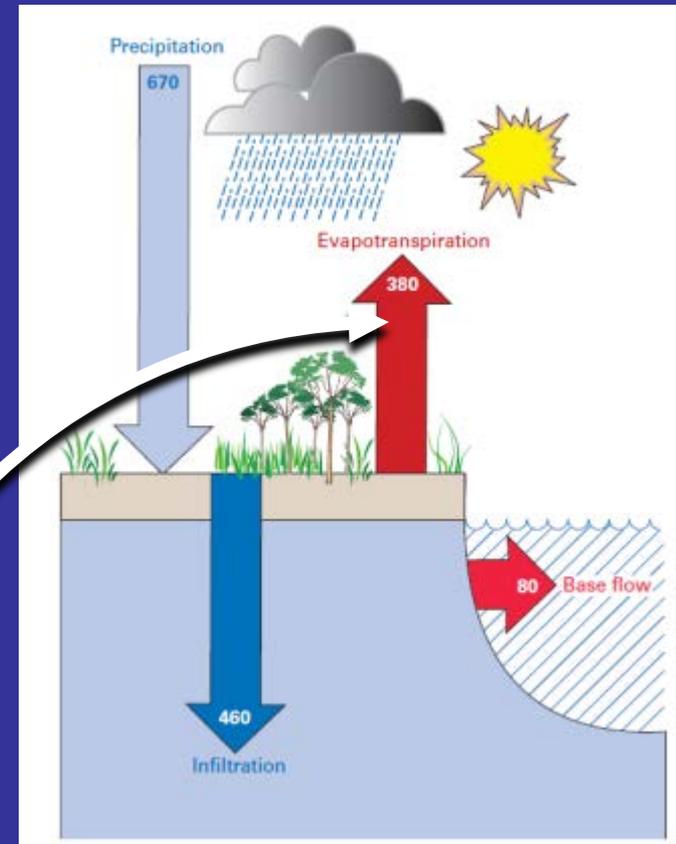
Study of the Glacial System



ET



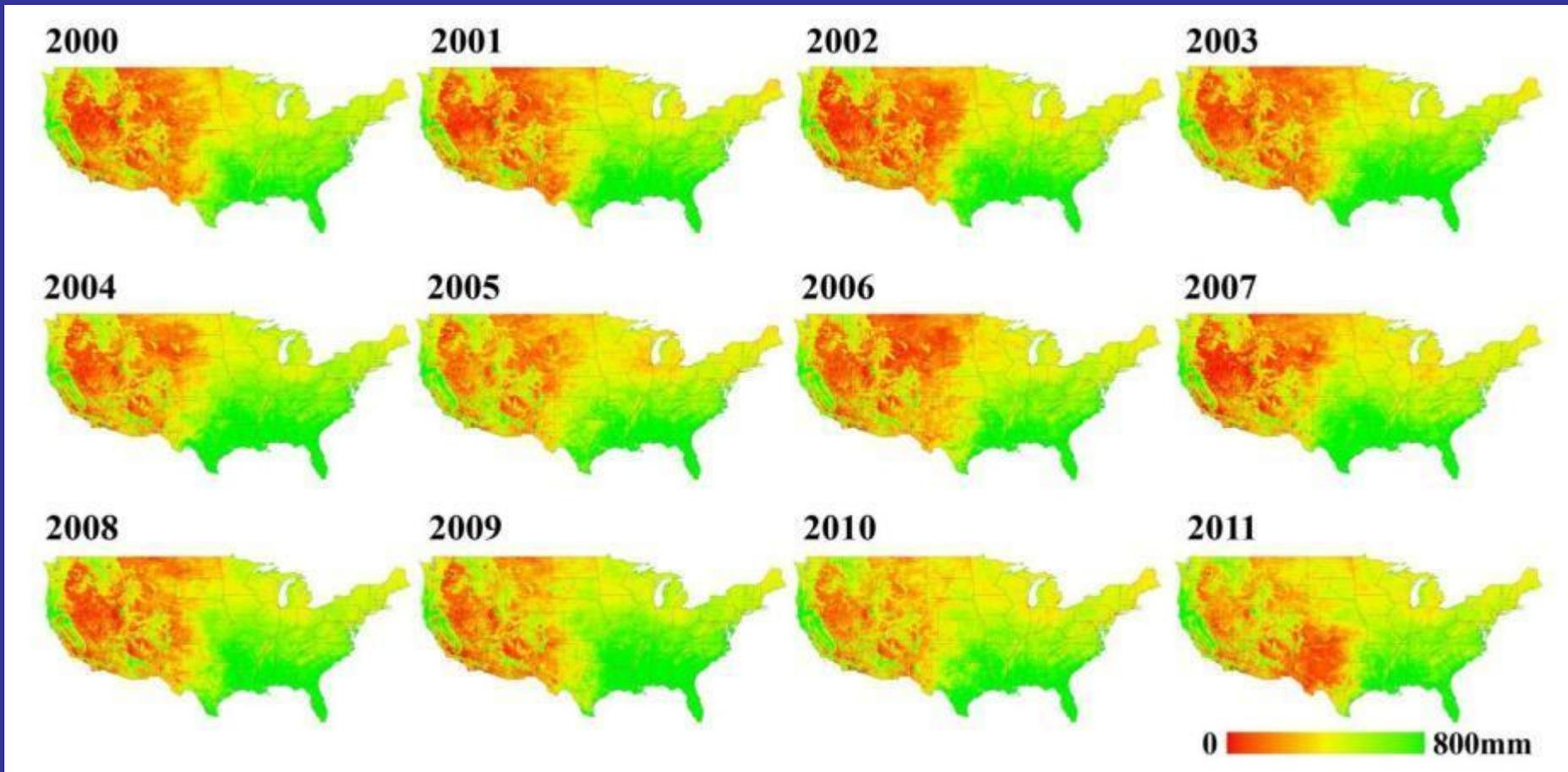
Water Use Effort:
For irrigation water use to
estimate consumptive use.



Water Budget Effort:
Total ET as a component of
the water budget.

Small Watershed Scale

Annual and Monthly ET Totals from MODIS



Senay, Gabriel B., Stefanie Bohms, Ramesh K. Singh, Prasanna H. Gowda, Naga M. Velpuri, Henok Alemu, James P. Verdin. 2013. Operational Evapotranspiration Mapping Using Remote Sensing and Weather Datasets: A New Parameterization for the SSEB Approach. *Journal of the American Water Resources Association (JAWRA)*. 49(3):577-591

Water Use

Livestock



Less than 1 percent

Self-Supplied Domestic



1 percent

Public Supply

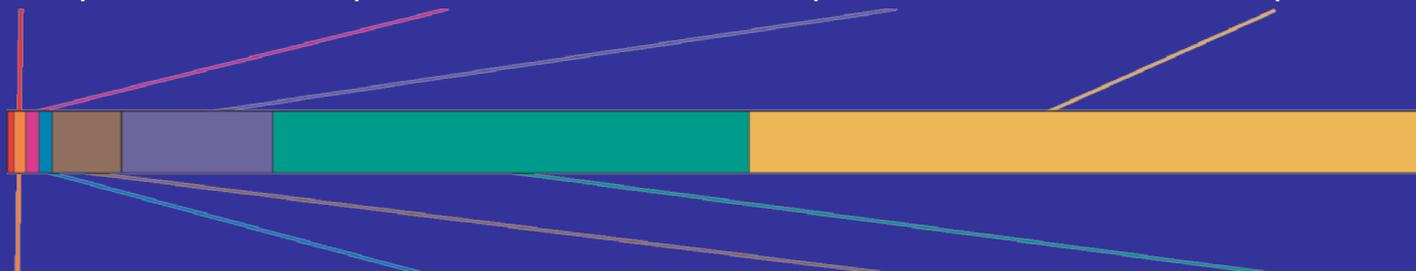


11 percent

Thermoelectric Power



49 percent



1 percent



Mining

2 percent



Aquaculture

4 percent



Self-Supplied Industrial

31 percent



Irrigation

Thermoelectric Withdrawals



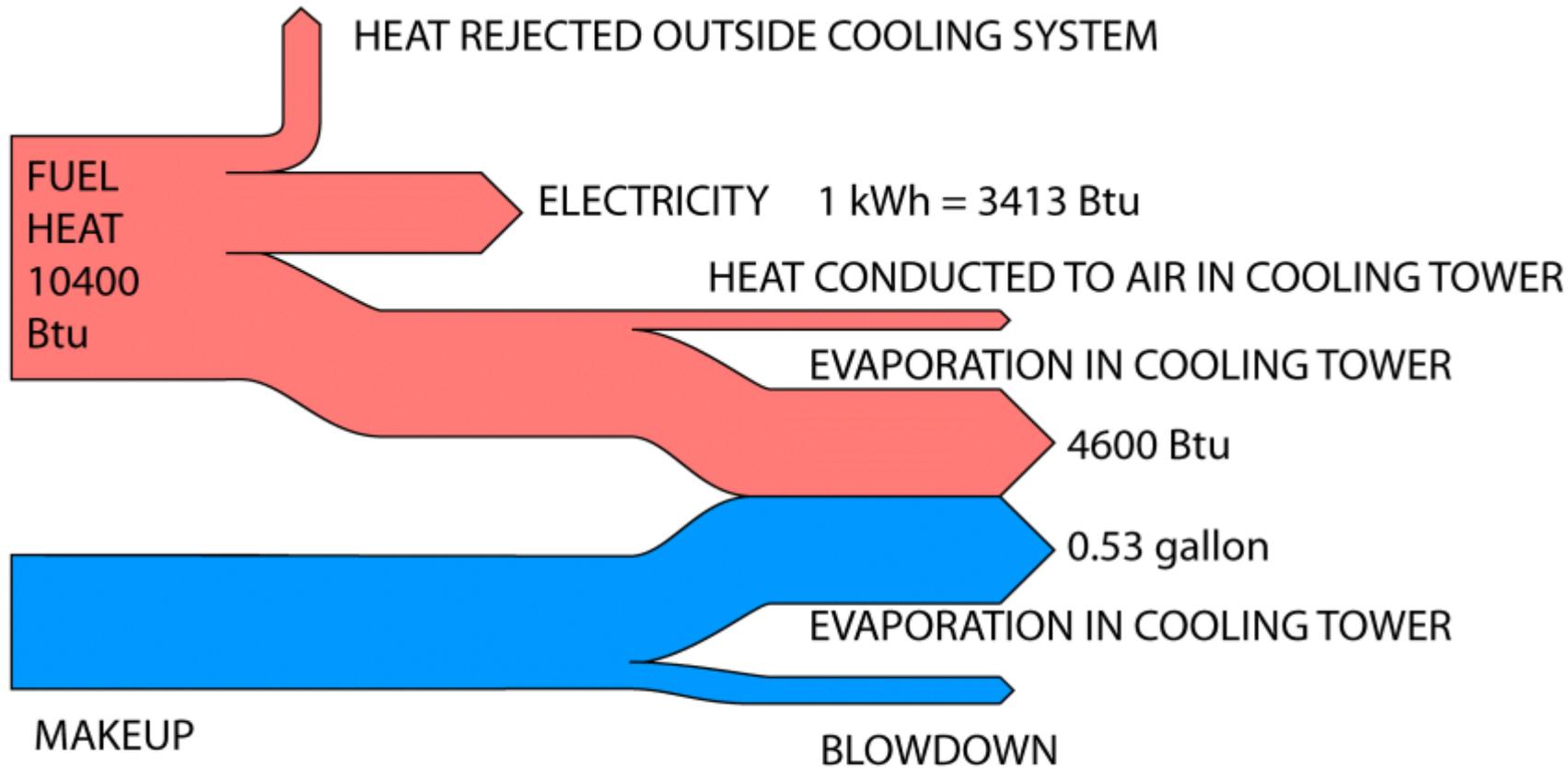
USGS National Water Census and National Streamflow Information Program

Methods for Estimating Water Consumption for Thermoelectric Power Plants in the United States

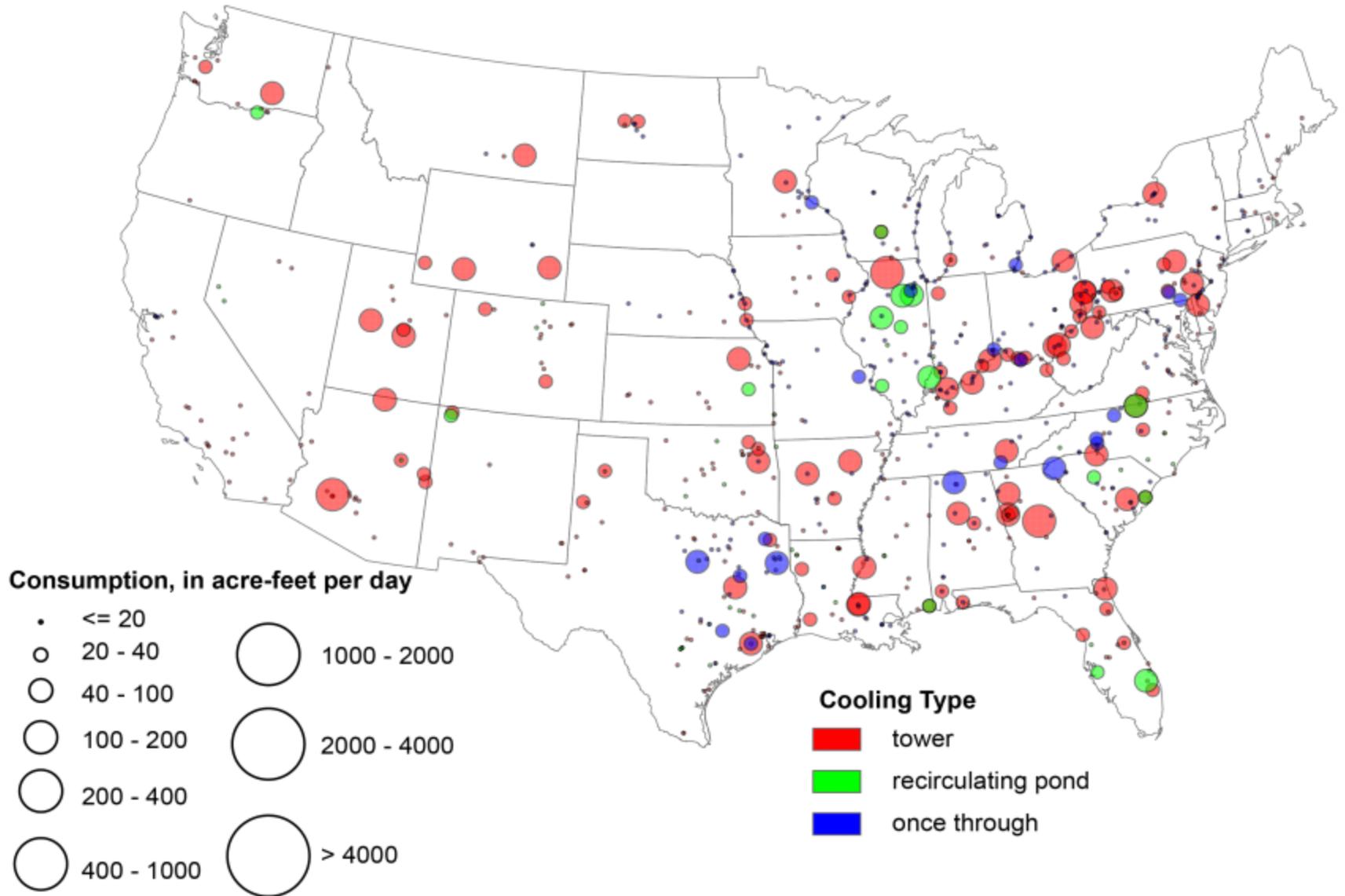


Scientific Investigations Report 2013–5188

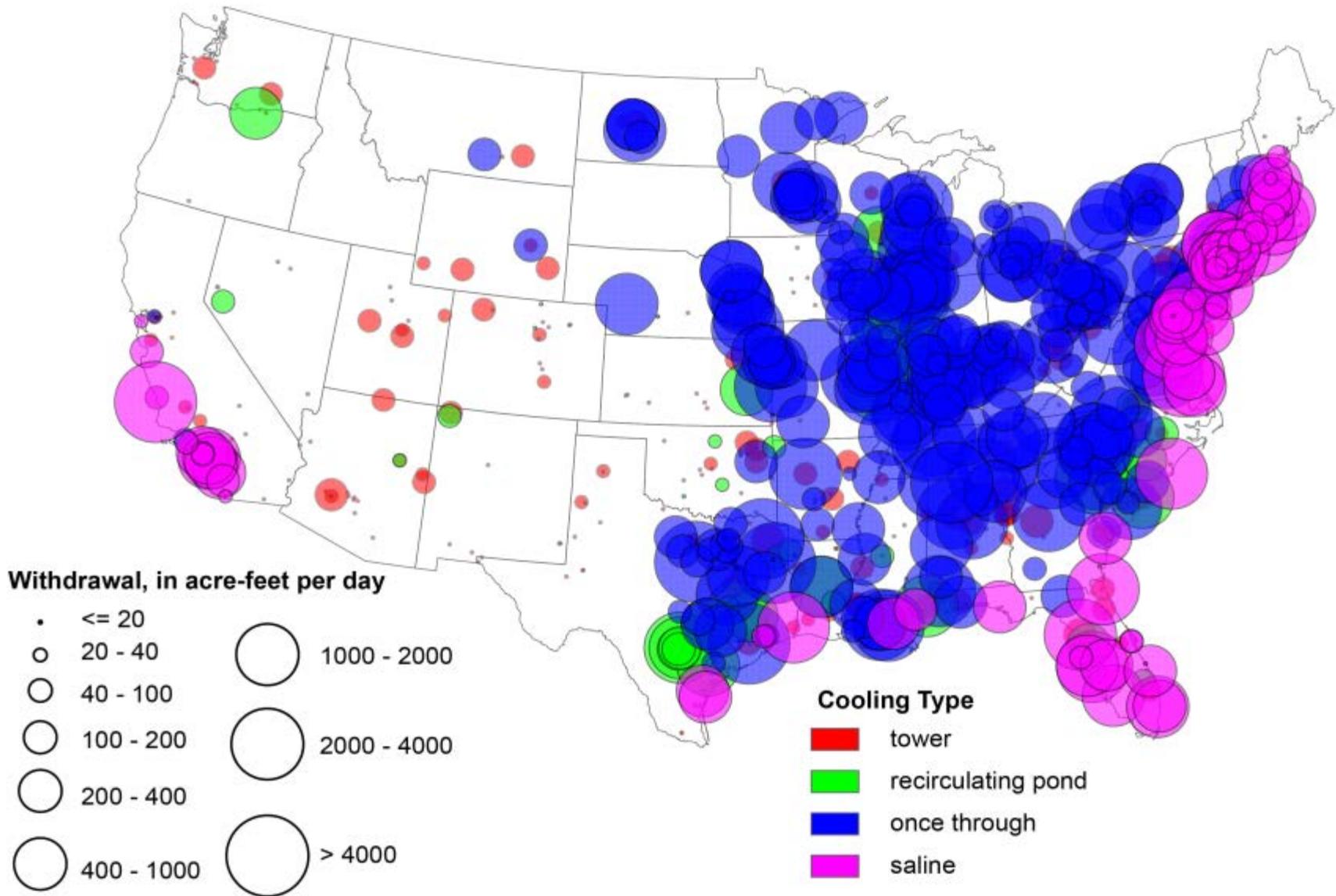
U.S. Department of the Interior
U.S. Geological Survey



Consumptive Use



Thermoelectric Withdrawals



Flows Needs for Wildlife and Habitat

- Classify streams - hydro-ecological type
- Tools to systematically assess ecological affects of hydrologic alteration
- Develop flow alteration – ecological response relationships by “h-e” type



RIVER RESEARCH AND APPLICATIONS

River Res. Applic. (2013)

Published online in Wiley Online Library
(wileyonlinelibrary.com) DOI: 10.1002/rra.2710

AN OBJECTIVE AND PARSIMONIOUS APPROACH FOR CLASSIFYING NATURAL FLOW REGIMES AT A CONTINENTAL SCALE

S. A. ARCHFIELD^{a*}, J. G. KENNEN^b, D. M. CARLISLE^c AND D. M. WOLOCK^d

^a *Massachusetts-Rhode Island Water Science Center, US Geological Survey, Northborough, Massachusetts USA*

^b *New Jersey Water Science Center, US Geological Survey, West Trenton, New Jersey USA*

^c *National Center, US Geological Survey, Reston, Virginia USA*

^d *Kansas Water Science Center, US Geological Survey, Lawrence, Kansas USA*

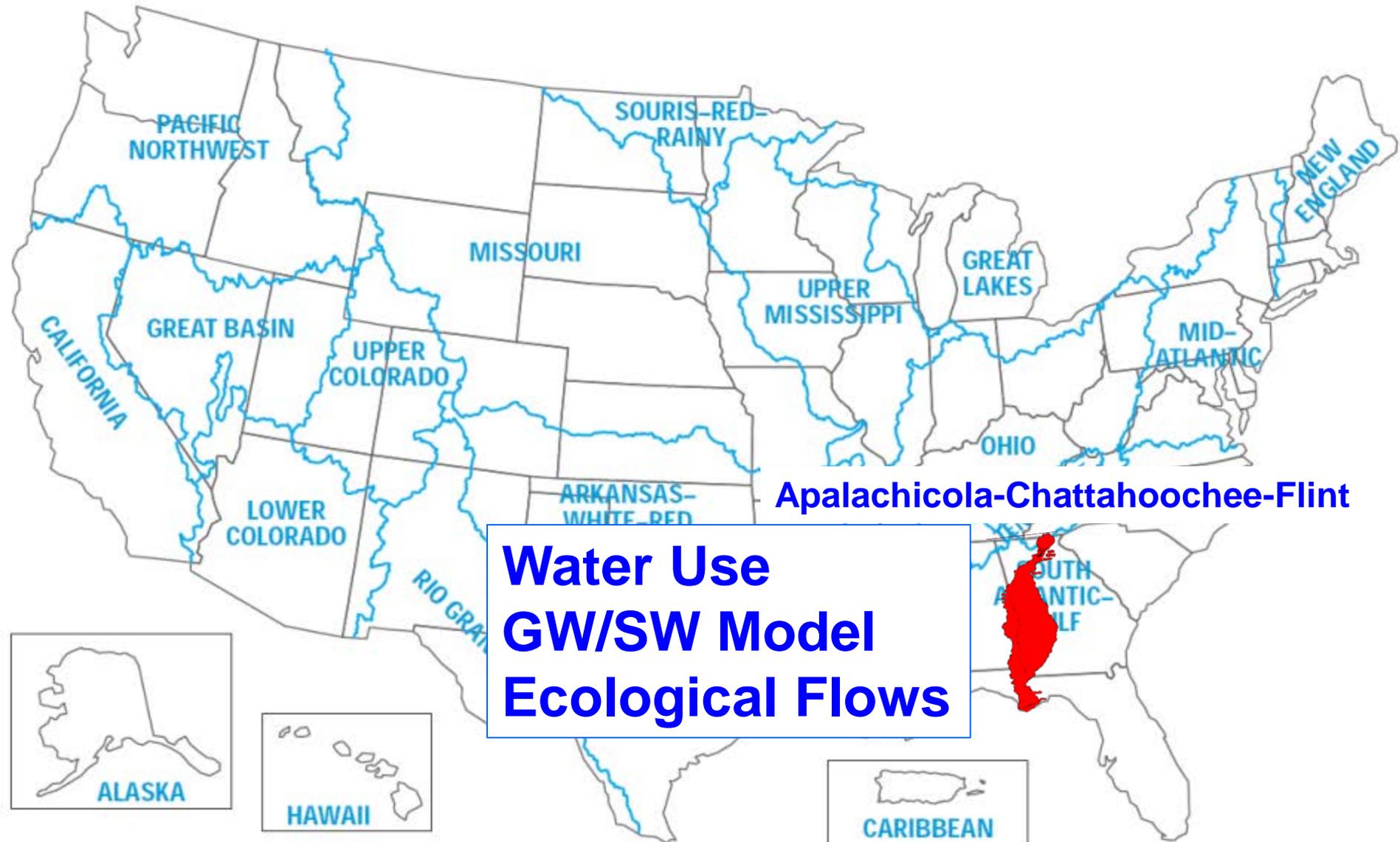
Article first published online: 30 Sept. 2013 | DOI: 10.1002/rra.2710

Finally, three studies focused on selected watersheds: the Colorado River, the Delaware River, and the ACF Rivers - where there is significant competition over water resources. Here, the USGS will work collaboratively with stakeholders to comprehensively assess the technical aspects of water availability.

Focused Water Availability Assessments



Focus Area Studies within Water Resource Regions

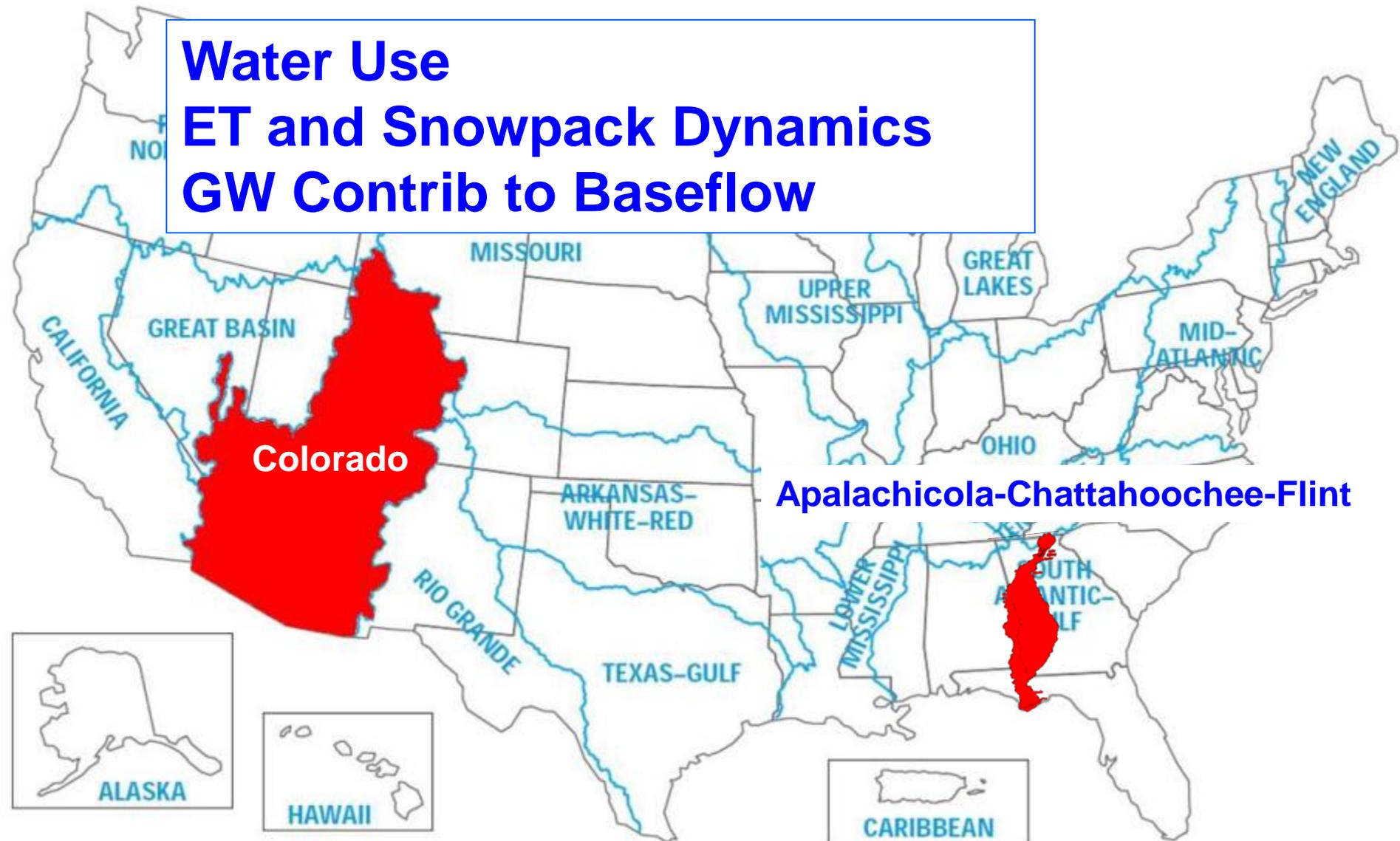


Focus Area Studies within Water Resource Regions

Water Use
ET and Snowpack Dynamics
GW Contrib to Baseflow

Colorado

Apalachicola-Chattahoochee-Flint



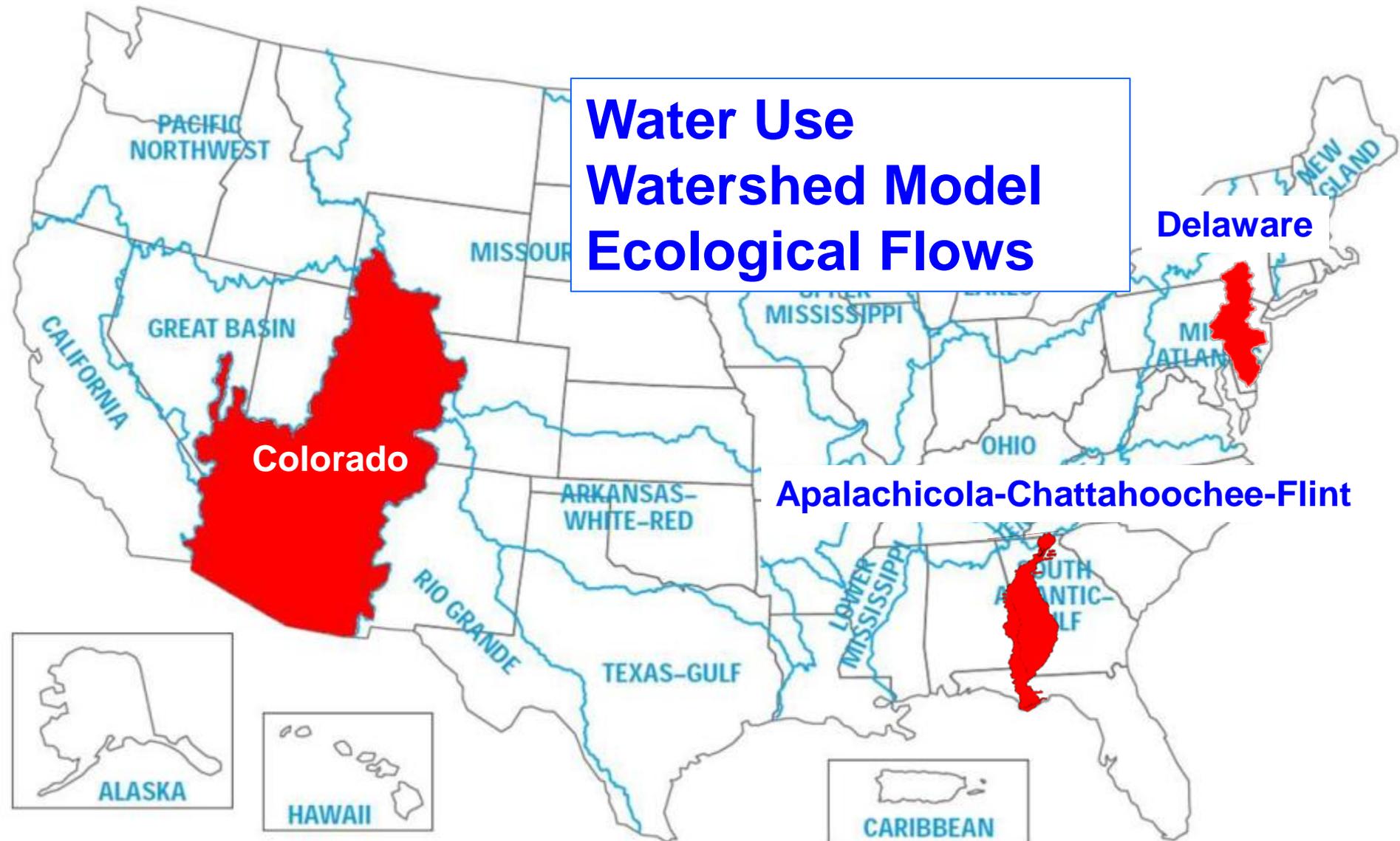
Focus Area Studies within Water Resource Regions

**Water Use
Watershed Model
Ecological Flows**

Delaware

Colorado

Apalachicola-Chattahoochee-Flint





Eric J Evenson
Water Census Coordinator
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