

USGS Updates

-
- **National Water Availability Assessment Report**
 - **Water Use Models and Data**

What is the National Water Availability Assessment?

Comprehensive, scientific assessment of water availability in the United States, integrating water quantity, quality, and use

First of its kind – provides **new water availability information**, including potential imbalance between water supply and demand

Complementary to forthcoming Regional Water Availability Assessments

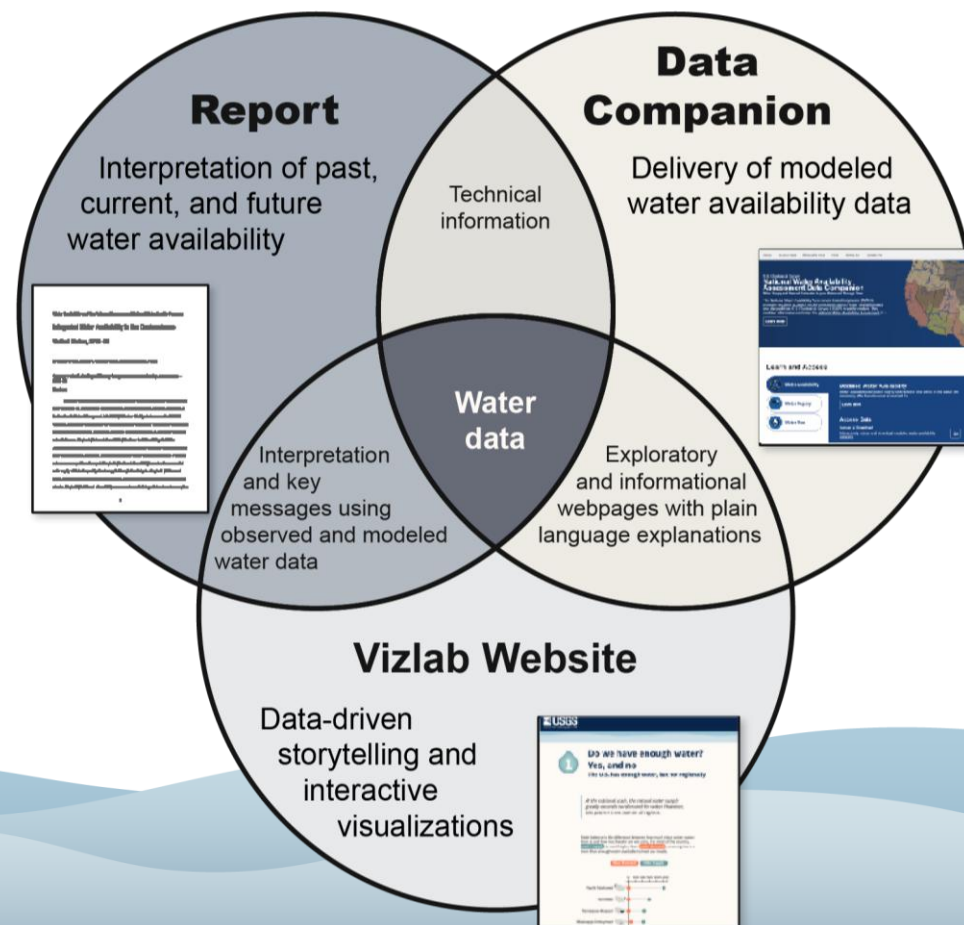
How to Access the National Assessment



Read the full interpretation of the National Assessment in the **Report**

Explore the modeled water availability data in the **Data Companion**

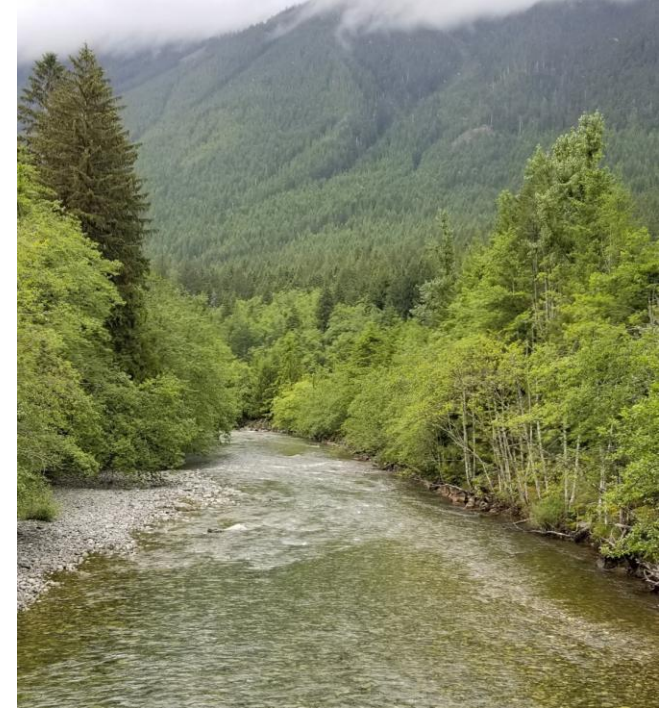
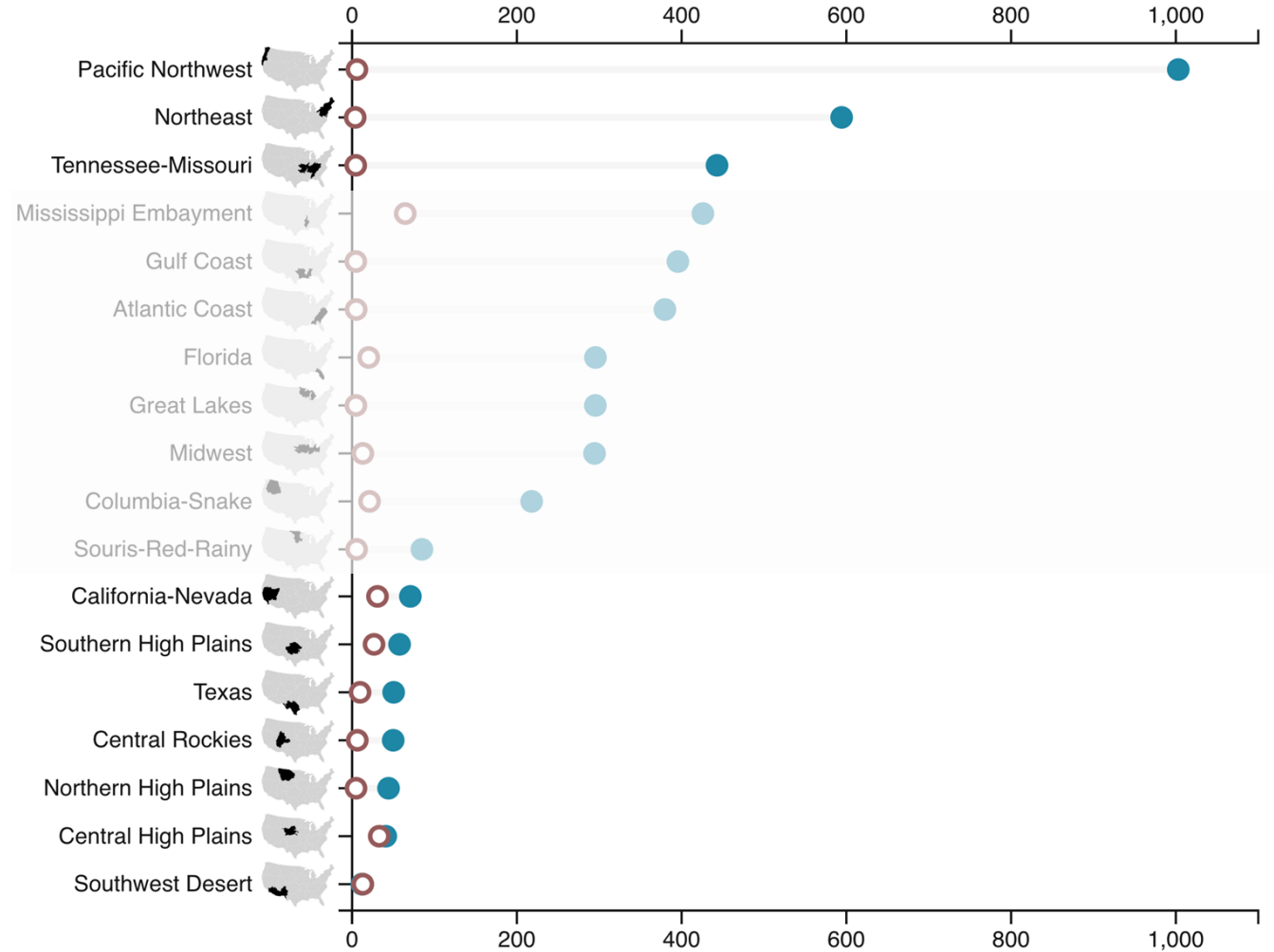
Learn about the key takeaways on the **Vizlab Website**



Water demand vs water supply

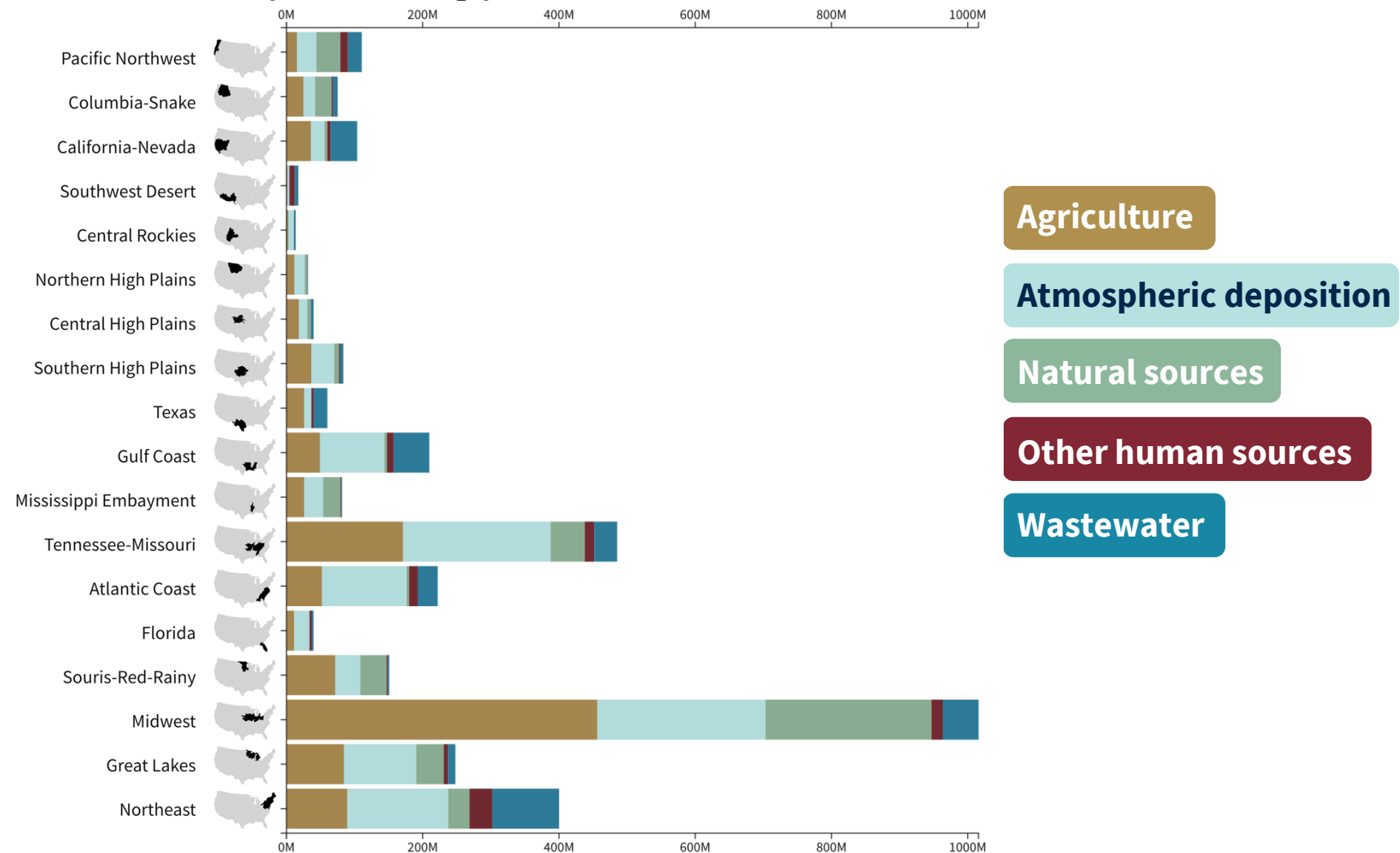
Surface water supply

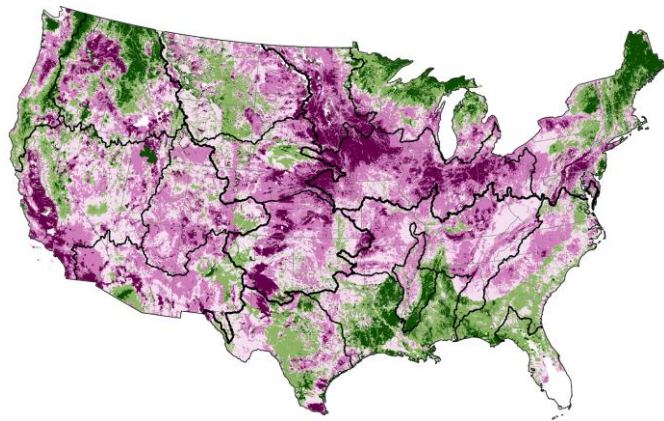
Average surface runoff, mm yr⁻¹



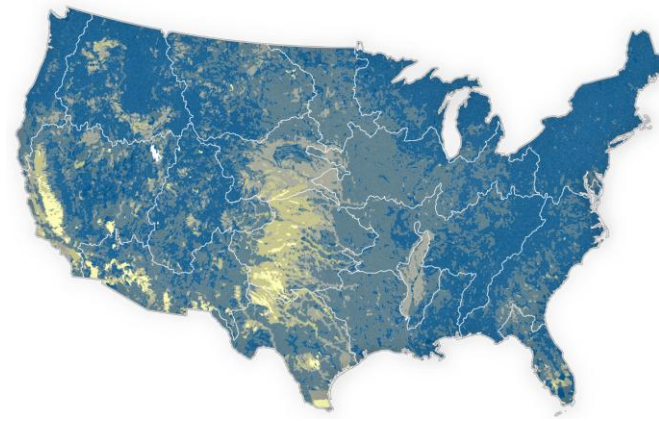
Sources of Nitrogen in surface water

Nutrient loads by source in kg/year

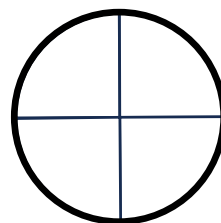




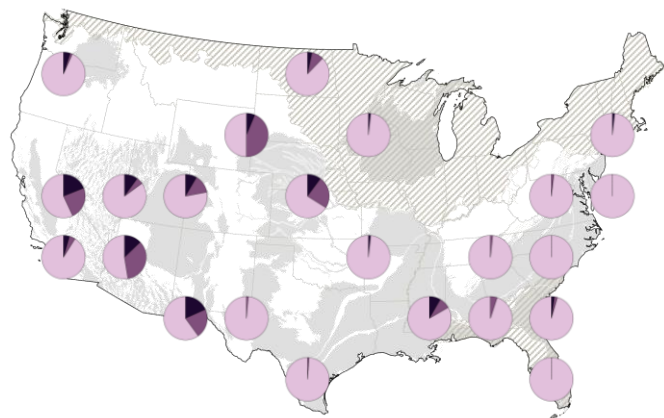
Surface-water quality
Stream nitrogen and phosphorus



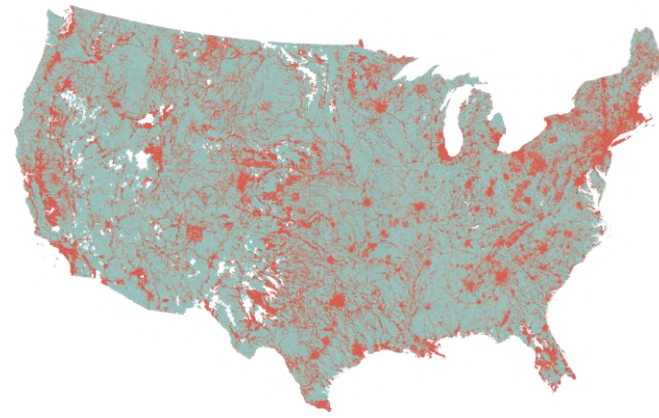
Water quantity
Supply and Use Index



Groundwater quality
Groundwater arsenic and nitrate



Ecoflow alteration
Compatibility with ecological needs



Average daily water use

Millions of gallons used per day



Public supply

Public use is constant but per capita use is decreasing



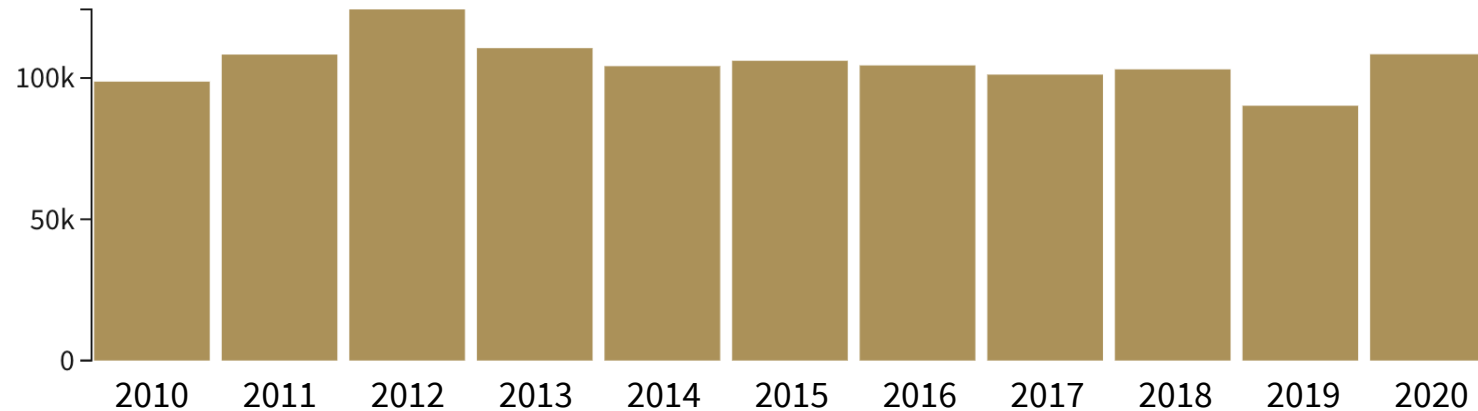
Thermoelectric power

Thermoelectric use is decreasing



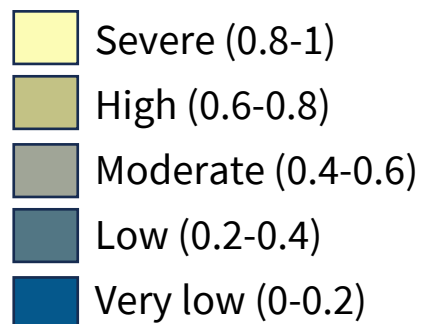
Crop irrigation

Irrigation increases in years of drought

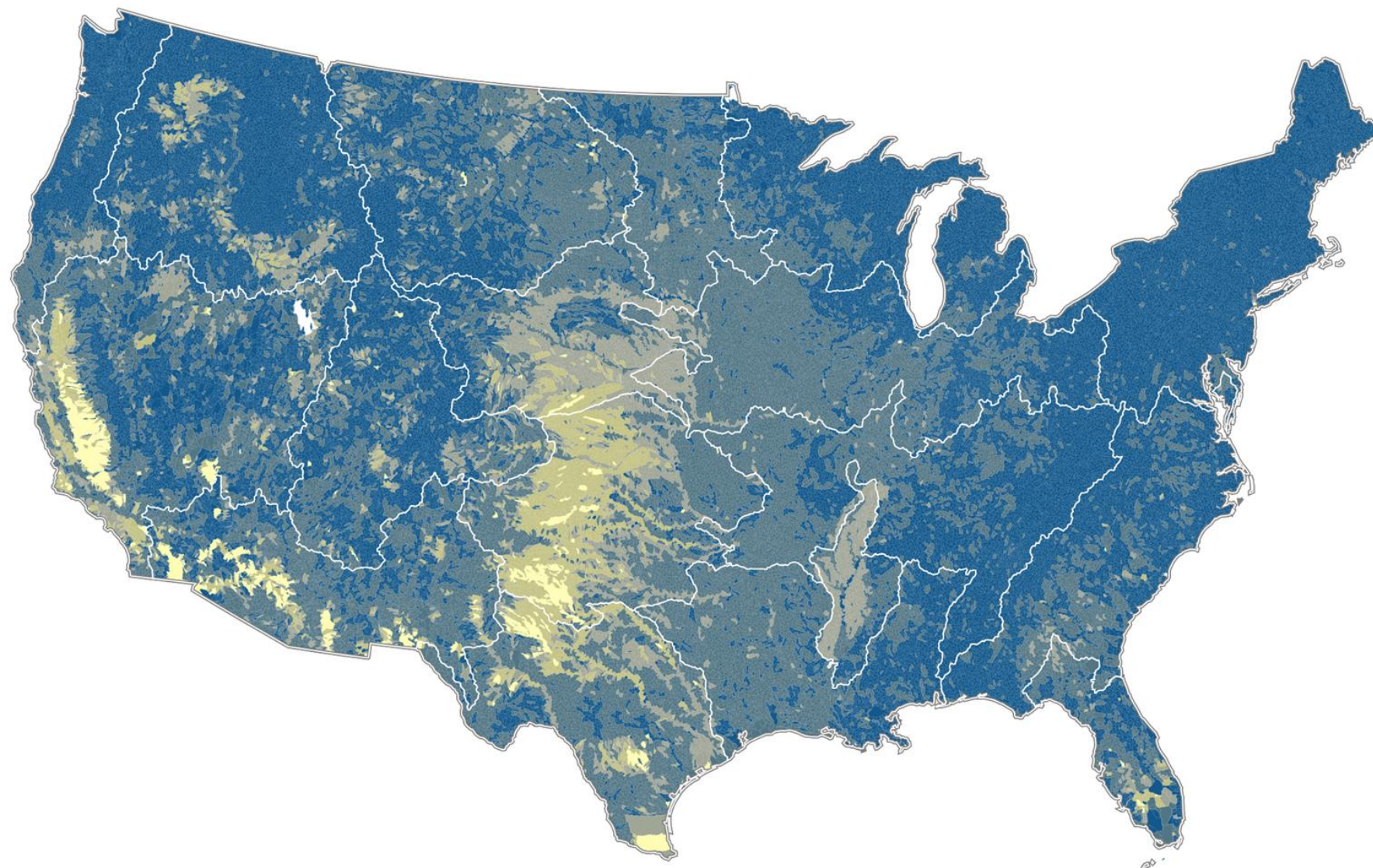


Water limitation

Supply and Use Index (SUI)



SUI is the imbalance between surface water supply and water use.



What's next for water availability assessments?

Version 1a

Water Availability in the United States: Current Status

2025

Version 2

Water Availability in the United States (Regional and National): Trends, Status, and Projections

2030

Version 4

Water Availability in the United States (Regional and National): Trends, Status, and Projections

2040

2026

Version 1b

Water Availability in the United States: Historical Trends and Regional Perspectives on Water Availability

2035

Version 3

Water Availability in the United States (Regional and National): Trends, Status, and Projections

Get the data:
water.usgs.gov/nwaa-data

[Home](#) [Access Data](#) ▾ [About the Data](#) ▾ [Help](#) ▾ [About Us](#) ▾ [Contact Us](#)

U.S. Geological Survey

National Water Availability Assessment Data Companion

Water Supply and Demand Estimates in your Watershed Through Time

The National Water Availability Assessment Data Companion (NWDC) provides regularly updated, model-based estimates of water availability and use, derived from U.S. Geological Survey (USGS) scientific models. This modeled information underlies the [National Water Availability Assessment](#). [↗](#)

[Learn More](#)

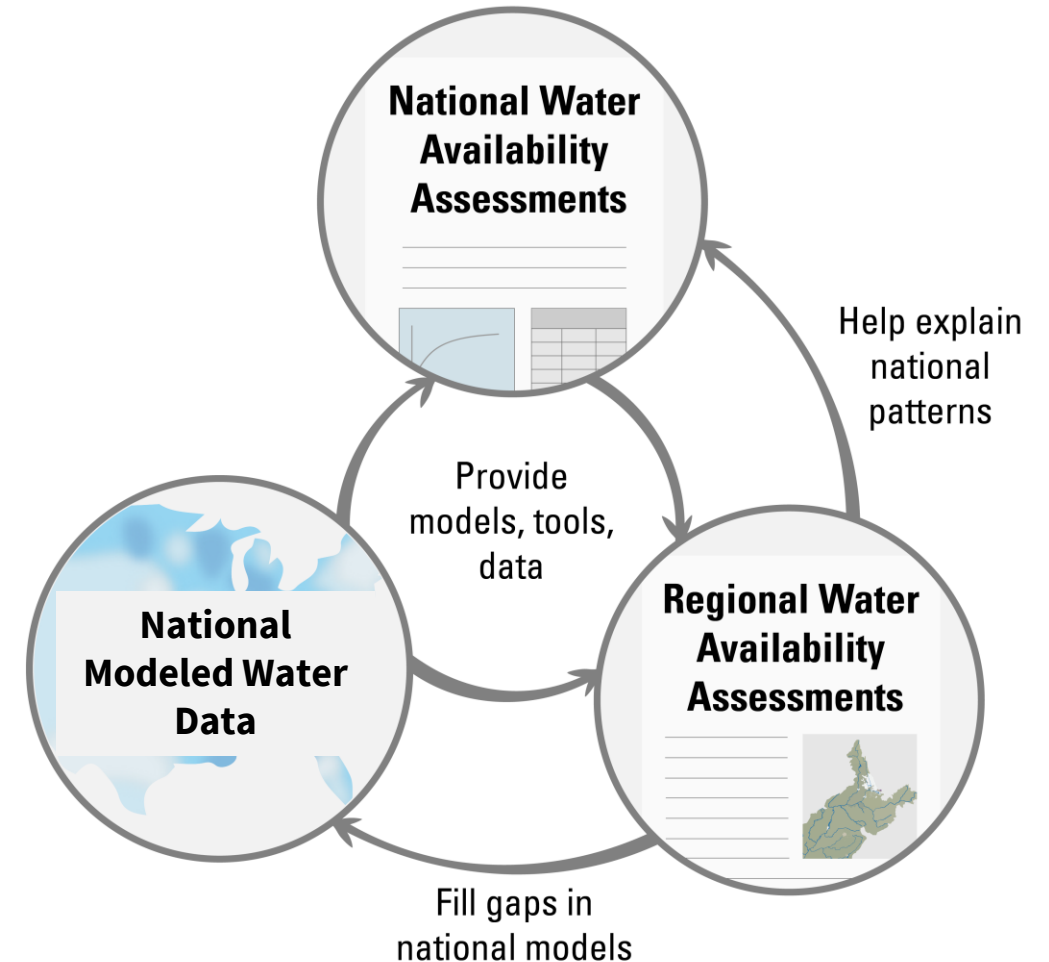


New data delivery system will share the national-scale model outputs from the National Water Availability Assessment

Water Availability Core Indicators



Integrated Water Availability Assessments



New data delivery system will share the national-scale model outputs from the National Water Availability Assessment



Visit NWDC at
water.usgs.gov/nwaa-data
or using this QR code

A screenshot of the USGS National Water Availability Assessment Data Companion website. The page has a dark blue header with the USGS logo and tagline "science for a changing world". Below the header, the main content area is also dark blue and features the title "National Water Availability Assessment Data Companion" in large white text, followed by the subtitle "Water Supply and Demand Estimates in your Watershed Through Time". A paragraph describes the NWDC as providing regularly updated, model-based estimates of water availability and use, derived from USGS scientific models. A "Learn More" button is located at the bottom of this section. On the right side, a white sidebar menu is open, showing a list of navigation links: Home, Access Data (highlighted with a blue border), Subset & Download Tool, Data File Directory, Web Services, About the Data, Help, About NWDC, and Contact Us. A small map of the western United States is visible in the background of the main content area.

NWDC model outputs

Spatial extent:

Entire country,
spatially continuous

Spatial resolution:

HUC12 sub-watersheds
(~80k polygons)

Time period:

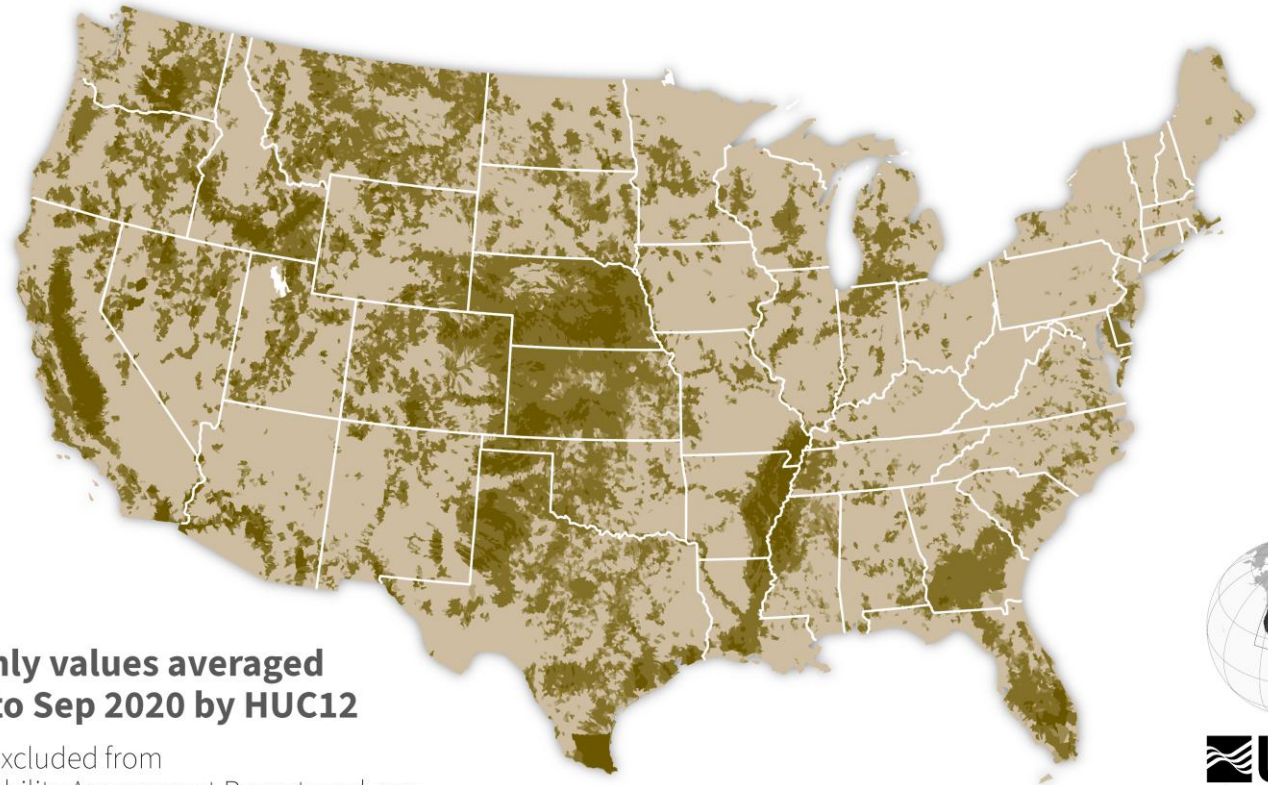
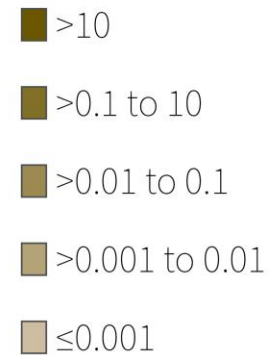
Historical,
1980-2020 or 2000-2020

Timestep:

Monthly

Crop irrigation withdrawals | fresh total

millions of gallons per day



**Modeled monthly values averaged
from Oct 2009 to Sep 2020 by HUC12**

HUCs in white were excluded from
National Water Availability Assessment Report analyses.



NWDC model outputs

Published modeled water availability outputs from 3 sectors



Human Water Use

Outputs include thermoelectric, public supply, and irrigation water withdrawals and consumptive use



Natural Water Quantity

Outputs include soil moisture, evapotranspiration, snow water equivalent, baseflow, and more



Integrated Water Availability

Outputs include total water supply, total water use, water supply and use index, and more



NWDC demo

Visit NWDC at
water.usgs.gov/nwaa-data
or using this QR code

Summary of NWDC data access methods

Data Access Methods for General Public Users

Interactive Data Catalog

Subset and Download Tool

Interactive Map (later)

Watershed Pages (later)

Data Access Methods for Technical Users

File Browser Site

API / Web Services

R / Python Package (later)

NWDC data catalog + info pages



science for a changing world

Home

Access Data

About the Data

User Guides

About Us

Contact

National Modeled Water Atlas Data

Data Catalog

The National Modeled Water Atlas provides nationally consistent data used by scientists, policymakers, resource managers, private industry, and the public to understand the status of water systems across the Nation.

Looking for measured water data?

Water resources data collected at approximately 1.9 million stream gaging stations across the Nation. Modeled data served by the National Modeled Water Atlas, including the status of water systems across the Nation.

Explore available datasets:

Click on a variable or model name to access data

Download data or generate syntactically correct queries

Search columns by typing in the search box to filter results

Sort columns by clicking the arrows inside the column headers

Don't see what you're looking for?

Additional datasets are planned in future releases. View the [Data Catalog](#) for more information.

All Columns

Search table...

Variable	Sector
Actual evapotranspiration	Water Supply
Irrigation Total Withdrawal	Water Use
Public Supply Total Withdrawals	Water Use
Snow Water Equivalent	Water Supply
Streamflow	Water Availability
Water Availability Assessment Model	Water Availability Assessment Model



science for a changing world

National Water Modeled Atlas

Data

Visualizations

Technical Resources

How to Use

About

Contact Us

[Home](#) > [About the Data](#) > [Sector: Water Use](#) > Model: Public Supply Withdrawals

National Modeled Water Atlas

Model: Public Supply Withdrawals Water Use

Access Data

Subset & Download

Interactively subset and download modeled water availability datasets

Go

Complete File Browser

Download full files of modeled water availability datasets

Go

Query Web Services

Download national-extent modeled water availability datasets via a file browser site

Go

Description

Summary
This dataset contains the amount of water withdrawn for public supply each month over the period from 2000-2020 for all 12-digit USGS Watershed Boundaries of Subwatersheds (HUC12) in the conterminous United States (CONUS). The machine-learning model that generated this dataset combines historical information and an array of different factors that drive public supply withdrawals including hydroclimatic, demographic, economic, geographic, and social variables. Ultimate concepts will include public supply system losses, deliveries, withdrawals, consumption.

Output Variables

Click on a variable for more information.

Variable	Description
Public Supply Withdrawal	Monthly public supply reanalysis of withdrawals
Public Supply Groundwater Withdrawal	Estimated monthly public supply groundwater withdrawals
Public Supply Surface Water Withdrawal	Estimated monthly public supply surface water withdrawals



science for a changing world

National Water Modeled Atlas

Data

Visualizations

Technical Resources

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[Home](#) > [About the Data](#) > [Sector: Water Use](#) > [Model: Public Supply Water Use](#) > Variable: Public Supply Withdrawals

National Modeled Water Atlas

Variable: Public Supply Withdrawals

Access Data

Subset & Download

Interactively subset and download modeled water availability datasets

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Go

Description

Information on this page reflects the current version of the [Public Supply Water Use Model](#). See the [source model version history](#) for additional information.

Summary

This estimate provides the total amount of water withdrawn by public water suppliers.

Technical Description

Monthly and daily public supply withdrawal estimates for the period 2000-2020 over all service areas in the nation with populations greater than 5,000.

Example Map



Temporal Information

Scenario

Historical

Temporal Coverage

Overview

General Information

Sector
Water Use

Model
Public Supply Water Use Model

Source Model
[Public Supply Water Use Model](#)

Data Source
[ScienceBase DOI](#)
[Publication DOI](#)

Units
Million Gallons / Day

Release Information

Release Status
Formally published or released

Update Frequency
Annual
Last updated: YYYY-MM-DD

Originator
U.S. Geological Survey

License
Public Domain

Data Archive
[Open FTP archive](#)

NWDC data catalog + static maps



[Home](#) [Access Data](#) [About the Data](#) [User Guides](#) [About Us](#) [Contact](#)

National Modeled Water Atlas Data

Data Catalog

The National Modeled Water Atlas provides nationally consistent modeled water availability, water supply, and water use information used by scientists, policymakers, resource managers, private companies, environmental advocates, media sources, and the public to understand the status of water systems across the Nation.

Looking for measured water data?

Water resources data collected at approximately 1.9 million sites across the Nation can always be found on the [USGS Water Information System](#). Modeled data served by the National Modeled Water Atlas supplements these existing datasets by filling in spatial and temporal gaps between period sampling.

Explore available datasets:

- Click** on a variable or model name to access detailed information
- Download** data or generate syntactically correct web service URLs using the Subset and Download Tool
- Search** columns by typing in the search box to filter table rows
- Sort** columns by clicking the arrows inside the column header

Don't see what you're looking for?

Additional datasets are planned in future releases. View the [Data Availability Timeline](#) to learn more.

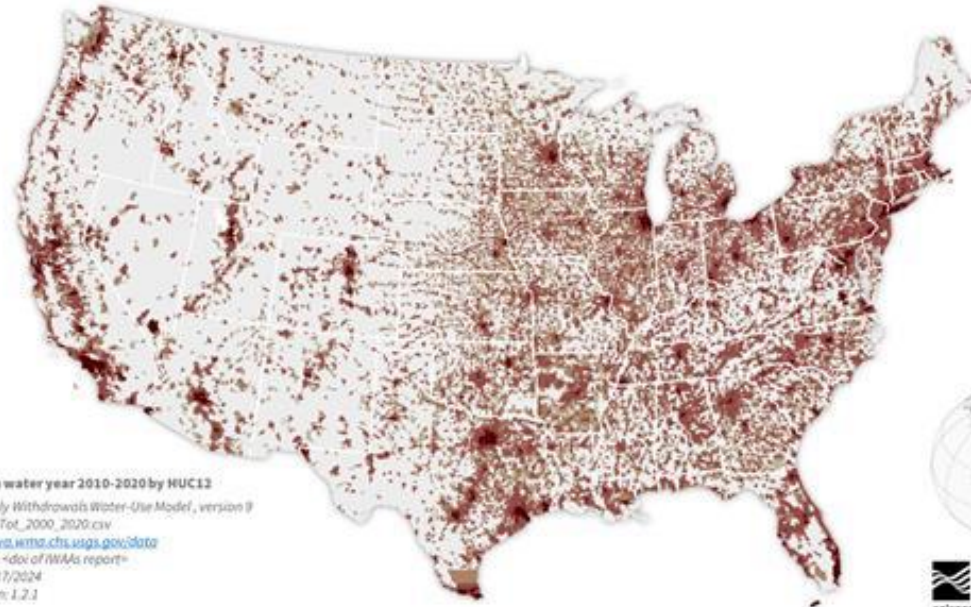
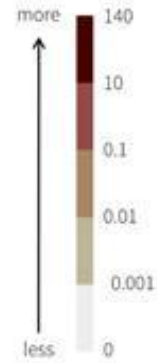
All Columns Search table...

Variable	Sector	Model
Actual evapotranspiration	Water Supply	National Hydrologic Model - PR
Irrigation Total Withdrawal	Water Use	Crop Irrigation Water Use Model
Public Supply Total Withdrawals	Water Use	Public Supply Water Use Model
Snow Water Equivalent	Water Supply	National Hydrologic Model - PR
Streamflow	Water Availability	Water Availability Assessment Model

Public Supply Total Withdrawal

Public supply withdrawal | total

millions of gallons per day



Modeled values averaged from water year 2010-2020 by HUC12

Public Supply Withdrawals Water-Use Model, version 9
PS_HUC12_Tot_2000_2020.csv
<https://bitwa.water.chs.usgs.gov/data>
Read more: <doi of RWAs report>
Created: 6/17/2024
yomi version: 1.2.1



NWDC subset and download tool

 An official website of the United States government

[Here's how you know](#) ▼



[Home](#) [Access Data](#) ▼ [About the Data](#) ▼ [User Guides](#) ▼ [About Us](#) ▼ [Contact](#)

National Modeled Water Atlas Data

Subset & Download

Use this tool to access NMWA datasets by model and to generate syntactically correct URLs to use with the web service. Datasets can be downloaded for the entire spatial extent and historical record or subset by specific region or time period.

How to use:

1. Select the values of interest in the fields below. All fields are required.
2. Click the **Generate Web Service URL** button at the bottom to get a URL that can be used for automated data downloads or in custom web applications. Click the **Run Generated URL** link to see the results in your browser.
3. Click the **Download Data** button to retrieve a file in the specified response format.

1

Select a Model and Variable(s)

First, select a model to show the available variables. Then, select one or more variables within the chosen model. **Multiple variables can only be downloaded or queried at the same time if they are all from the same model.**

For additional information about model and variable association, please visit [Data Catalog](#).

NWDC API / web services

National Water Availability Assessment Data Companion

Web Services

USGS's National Water Availability Assessment Data Companion (NWDC) offers web services that provide access to national-scale USGS modeled water availability data underlying the National Water Availability Assessment.

This page contains comprehensive user documentation for the NWDC API. [Swagger](#) or [Redoc](#) documentation are also available. For a more interactive way of interfacing with the API, you can use our [Subset & Download Tool](#). All web service queries generated by any of these pages or tools (including this current documentation page, Swagger, Redoc, and the Subset & Download Tool) will be exactly equivalent.

Getting Started

Data

Models

Variables

Getting Started

Step 1: Make a request

To make a request use the base url with one of the endpoint paths appended.

Base URL

```
https://api.water.usgs.gov/nwaa-data/{endpoint}
```

NWDC API 1.2.0 OAS 3.1

</nwaa-data/openapi.json>

Servers

/nwaa-data

default

GET

/data Read Data

GET

/models/{model_name} Read Model

GET

/models Read Models

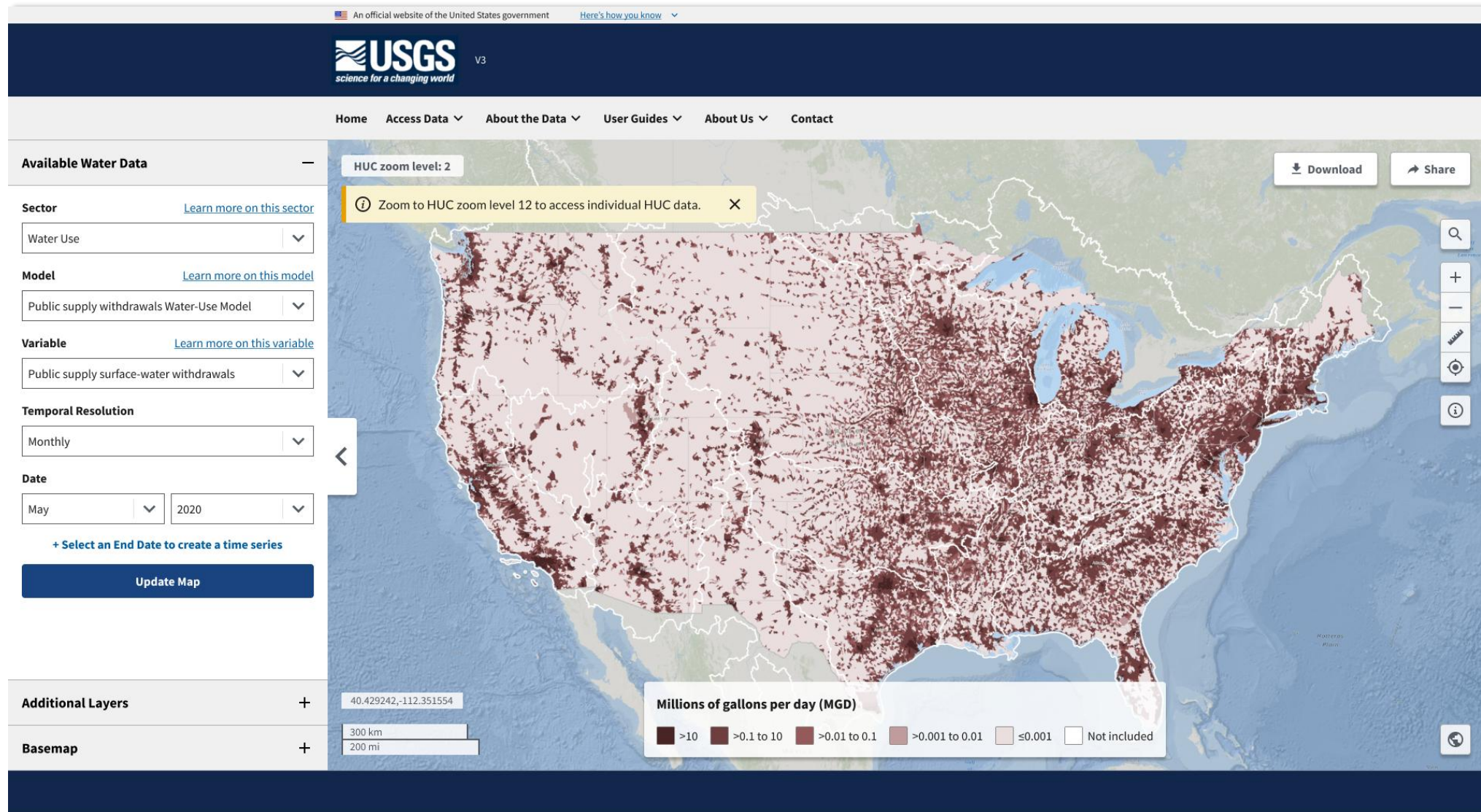
GET

/variables/{variable_name} Read Variable

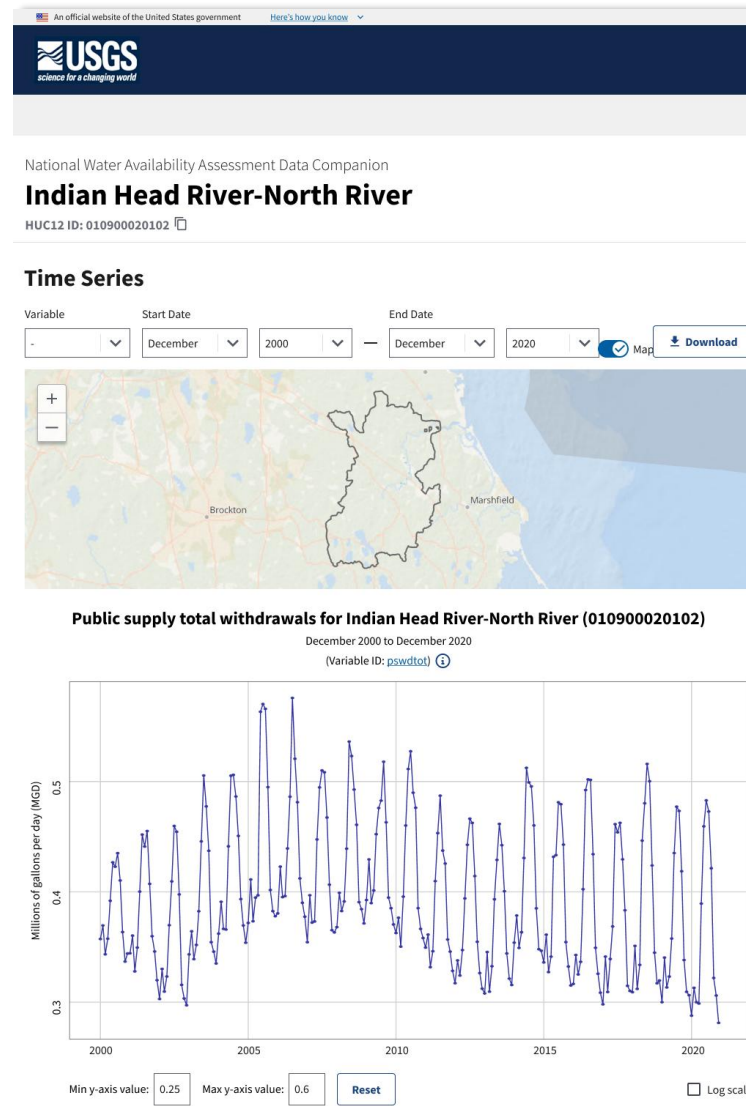
GET

/variables Read Variables

NWDC interactive map (later)



NWDC watershed pages (later)



Visualizations for specific area of interest, to tentatively include:

- *Map*
- *Time series*
- *Other relevant plots specific to sector*

NWDC R or Python package (later)

Water /  dataRetrieval



dataRetrieval 

☆ Star 4 ⋮

🔑 main ▾

dataRetrieval

History

Find file

Code ▾



Merge pull request #733 from ldecicco-USGS/newDe...



Unverified



25ec8af2

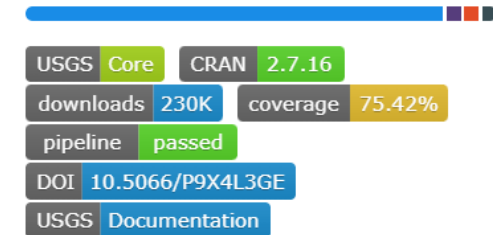


Laura DeCicco authored 10 hours ago

Name	Last commit	Last update
📁 .github	update GH actions?	2 months ago
📁 .gitlab/issue_templates	Add gitlab templates	1 year ago
📁 R	use to uses, add "3.0 WQP" to...	14 hours ago
📁 docker	suddenly need pandoc?	5 months ago
📁 inst	Add some NEWS	2 days ago
📁 man	use to uses, add "3.0 WQP" to...	14 hours ago
📁 pkgdown	Spent too much time figuring ...	11 hours ago

Project information

This R package is designed to obtain USGS or EPA water quality sample data, streamflow data, and metadata directly from web services. For more information, see: <https://doi-usgs.github.io/dataRetrieval/>



🔗 2,670 Commits

🔑 2 Branches

🏷 61 Tags

🚀 55 Releases

Summary of NWDC data access methods

Data Access Methods for General Public Users

Interactive Data Catalog

Subset and Download Tool

Interactive Map (later)

Watershed Pages (later)

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NWDC tutorials

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National Water Availability Assessment Data Companion

Tutorials

This tutorial series is designed to provide step-by-step instructions on how to access and use NWDC data. It includes both tutorials that focus on specific use cases and foundational introductions to NWDC tools. Get started using one of the links below.

Action-Driven Use Cases

Create a map



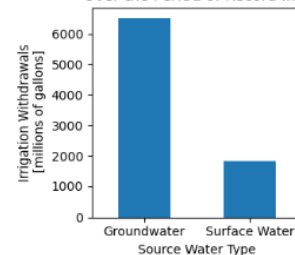
Create CONUS map of historical water use

Use Python to visualize patterns in public supply water consumption across the lower 48 United States.

[Start Tutorial](#)

Create a bar plot

Irrigation Ground and Surface Water Withdrawals Over the Period of Record in RI

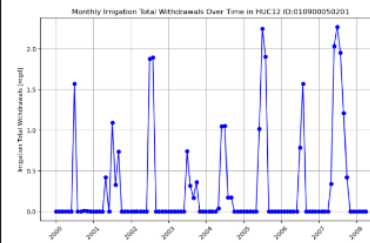


Create bar graphs of state-wide water use

Use Python to create bar graphs of irrigation withdrawals across a state, allowing for easy comparison and analysis of water use patterns.

[Start Tutorial](#)

Plot time series



Plot time series of irrigation withdrawals in a local HUC12

Use Python to show irrigation withdrawals over time in a local 12-digit hydrologic unit code (HUC12, subwatershed) area.

[Start Tutorial](#)

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water.usgs.gov/nwaa-data
or using the QR code

