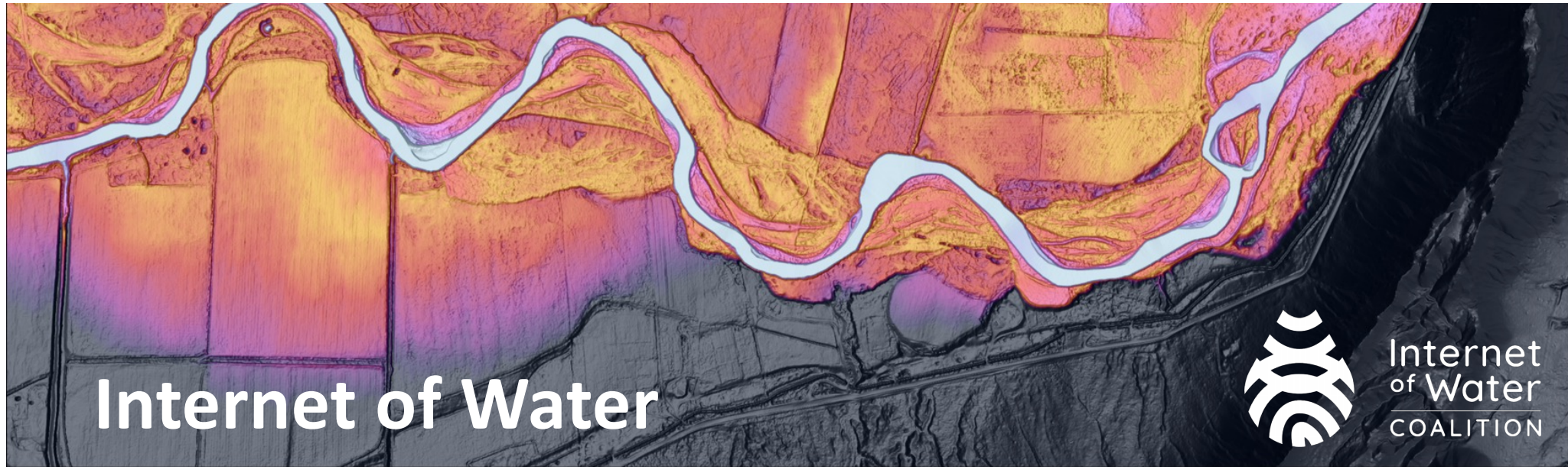




Internet
of Water
COALITION

Internet of Water

The Frontend, Backend, and Everything in Between

Kyle Onda, Director
konda@lincolninst.edu



CENTER FOR
**GEOSPATIAL
SOLUTIONS**



LINCOLN INSTITUTE
OF LAND POLICY

Agenda

- Introduction to CGS
- The Water Data Discovery Challenge
- Geoconnex Explorer
- How the Internet of Water Works
- Internet of Water Services



Agenda

- **Introduction to CGS**
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OUR MISSION

**To enable data-driven decisions
for the greater good of
land, water, and people.**





CENTER FOR **GEOSPATIAL SOLUTIONS**

Helping organizations on the frontlines of our most complex land, water, and social challenges leverage **data** and **technology** to accelerate **impact**.

2020

Founded by the Lincoln Institute
of Land Policy

24

Employees across the
United States

~40

Public and private
collaborations to date





CENTER FOR
**GEOSPATIAL
SOLUTIONS**



**Internet
of Water**
COALITION

CGS is the **technical engine** for the Internet of Water Coalition providing **digital infrastructure and implementation** support to help stakeholders across the water data ecosystem modernize water **data publication and management.**



— BUREAU OF —
RECLAMATION



NOAA



U.S. DEPARTMENT OF
ENERGY



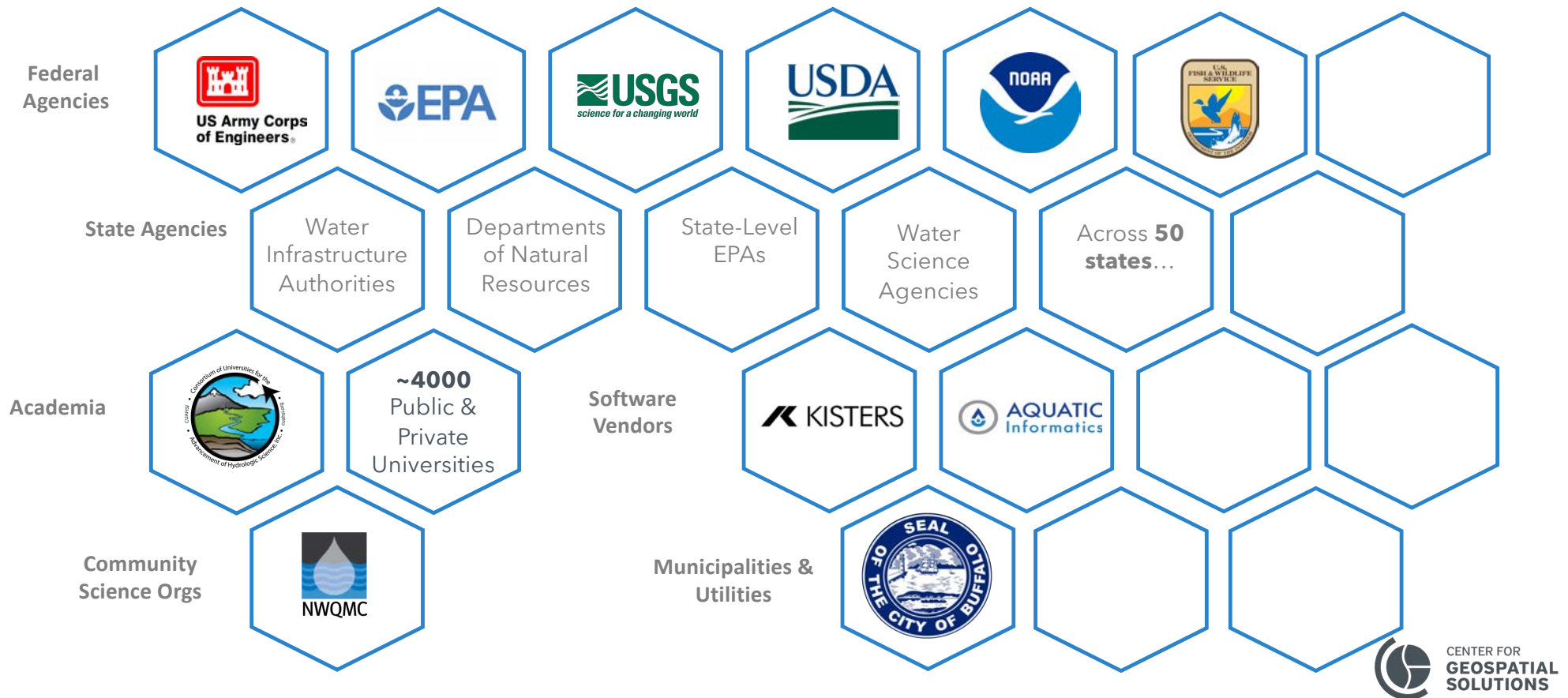
CENTER FOR
**GEOSPATIAL
SOLUTIONS**

Agenda

- Introduction to CGS
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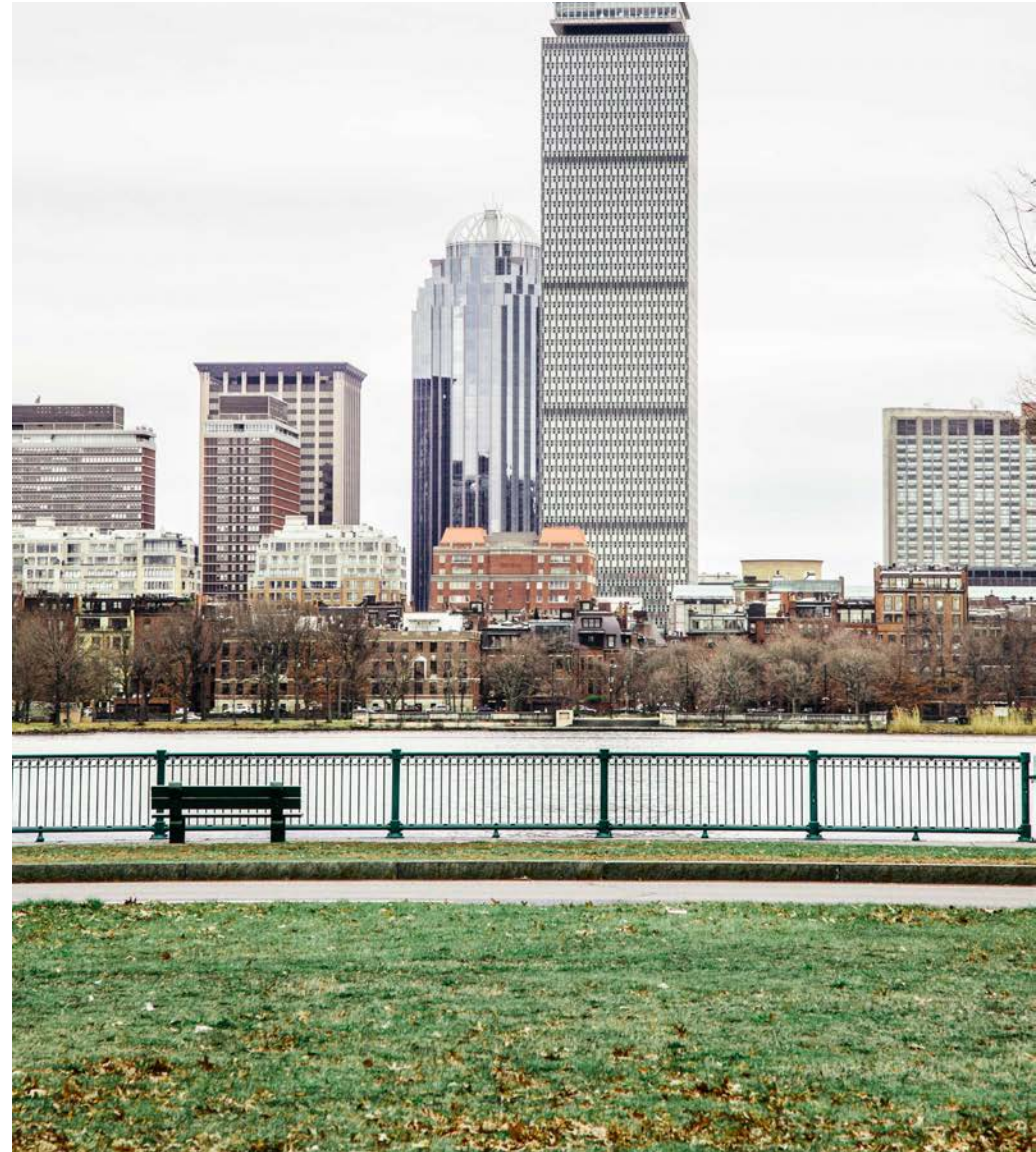


The Water Data Ecosystem



Our water future demands data-driven, real time, and accurate decision-making.

Our current water data ecosystem is **fragmented** with producers, users, and decision-makers lacking access to the information they need.



Geoconnex works by...



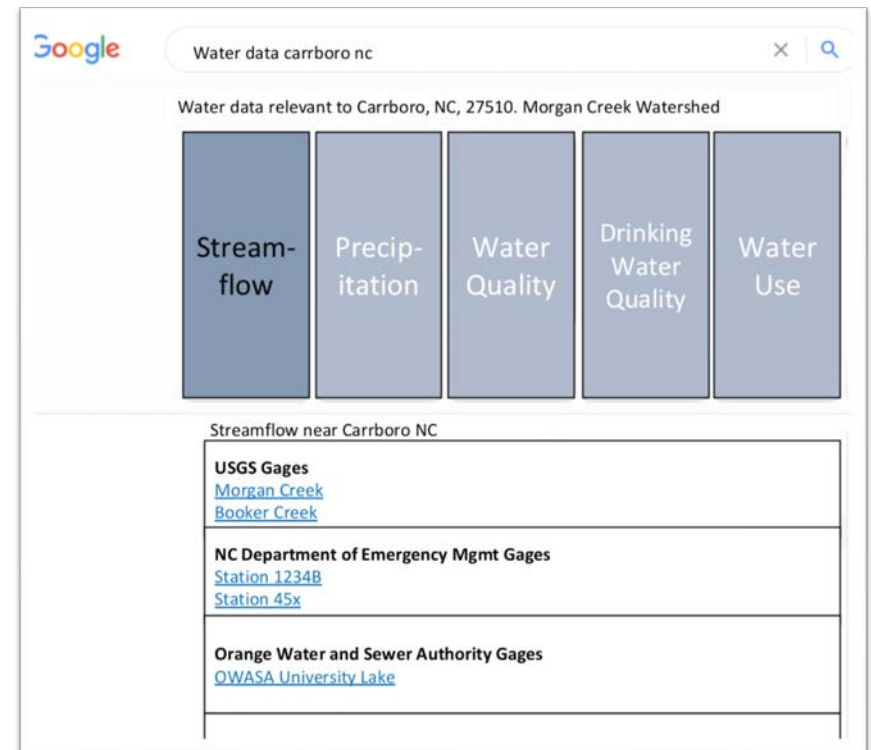
Helping water data producers **describe data sets** with common vocabulary



Establishing **persistent identifiers** for every water feature across the US



Unlocking the ability to **organize, link, connect, and access data** in one place



Today, Geoconnex is comprised of...



An **open, centralized**
knowledge-base serving as an
index for all water data.

The backbone of the Internet
of Water, exposing data with a
knowledge graph.

High frequency time series (Surface water, Groundwater, hydrological forecasting)

Water Quality Samples

Water Administration

Water Infrastructure

Drinking Water Quality

Reservoir Operations

Agenda

- Introduction to CGS
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- **Geoconnex Explorer**
- How the Internet of Water Works
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Exploring Geoconnex Today



Curious User

Interested in what data is available upstream or downstream of their water source

No technical skills required



Geoconnex Explorer



Savvy User

GIS user or programmer looking to visualize, analyze, and manipulate data

QGIS, or ArcGIS suite familiarity



REST Endpoints
OGC API



Super User

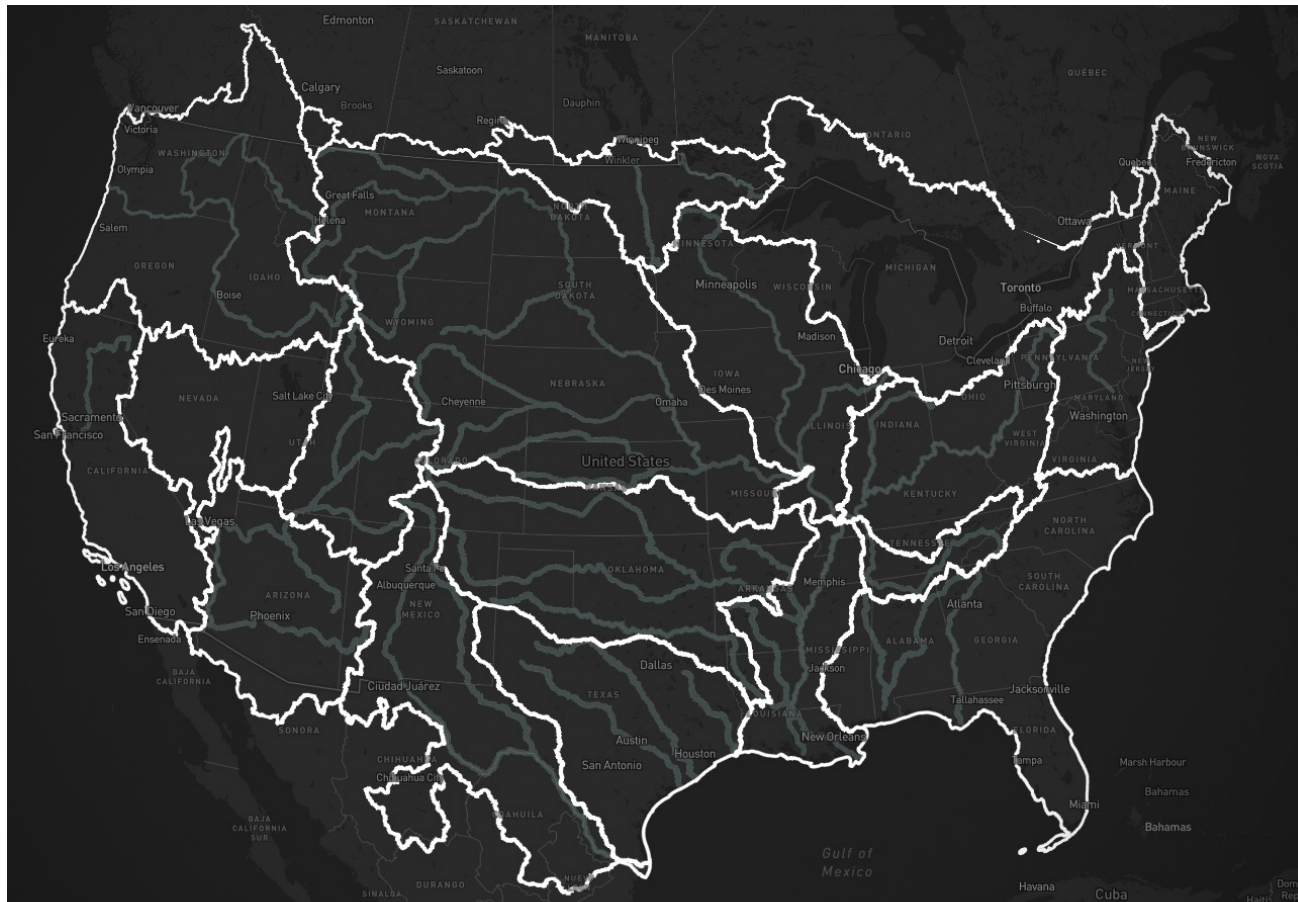
Data scientist/engineer, hydrologist, or developer

Python, SPARQL, R programming experience



Geoconnex Graph
HyRiver

Geoconnex Explorer



<https://explorer.geoconnex.us>

Geoconnex Explorer



<https://explorer.geoconnex.us>

Geoconnex Explorer

 **Geoconnex Explorer** 

[Map](#) [Table](#) [About](#)

Results 

Results sorted by **Outlet Drainage Area**.

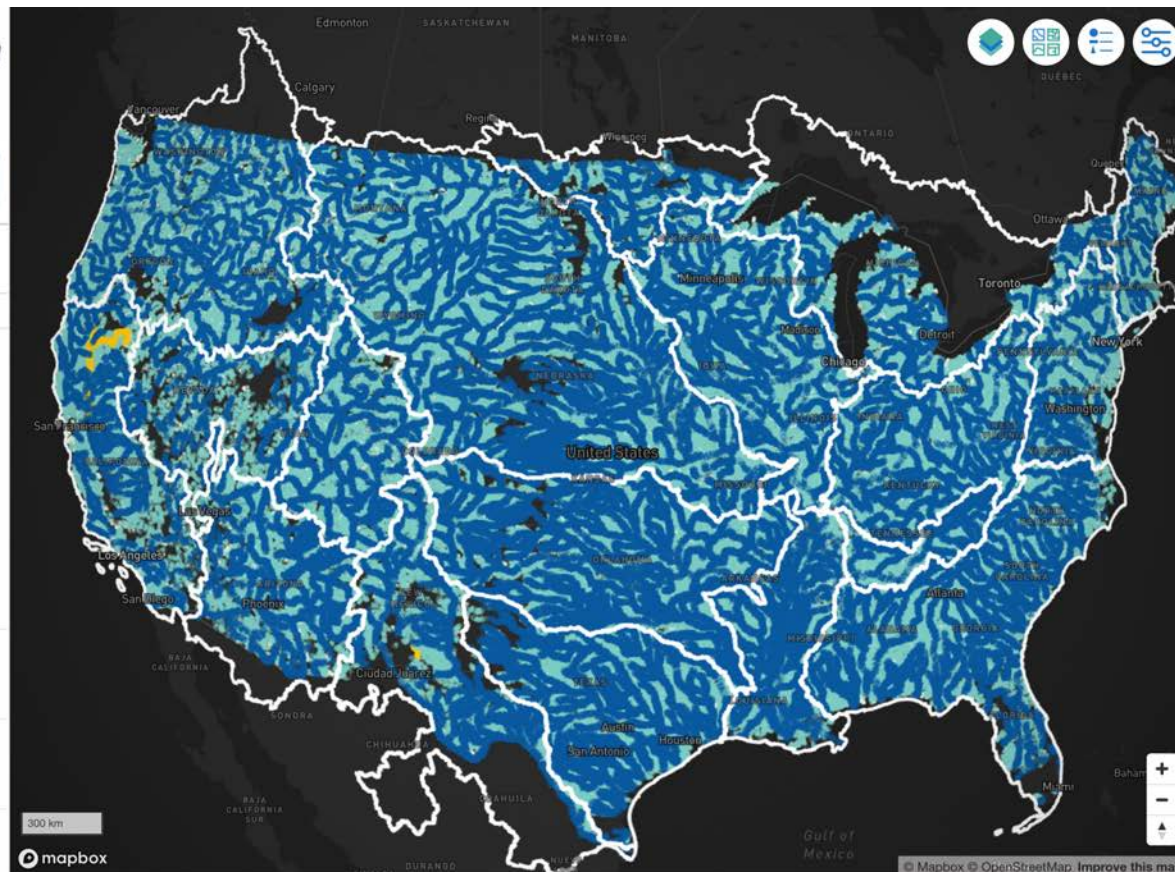
Sacramento River
<https://geoconnex.us/ref/mainstems/1>

- **Length (km):** 877.7
- **Total Sites:** 336
- **Total Datasets:** 28136
- **Top 5 Types:** Well, Stream, Other-Surface Water, River/Stream, Facility: Water-use establishment + 7 more
- **Top 5 Variables Measured:** pH, Specific conductance, Temperature, water, Sodium, Chloride + 844 more

Sacramento River
<https://geoconnex.us/ref/mainstems/1829>

Sacramento River
<https://geoconnex.us/ref/mainstems/2363917>

Sacramento Slough
<https://geoconnex.us/ref/mainstems/6283>



Geoconnex Explorer

 **Geoconnex Explorer** 

[Map](#) [Table](#) [About](#)

Results 

Filters 

Sacramento River 

- **Total Length (km):** 877.7
- **Visible Sites:** 120
- **Visible Datasets:** 14318

Site Types



Top 5 

Site Name	Site Type	Variable Measured	Variable Unit	Measurement Technique	Temporal Coverage	Monitoring Location	Distribution Format	Dist
USGS-384832121320201	Well	Nitrate	milligrams per liter as nitrogen	observation	1976-01-01T00:00:00Z/1976-12-31T00:00:00Z	Link	text/comma-separated-values	Wat
USGS-384832121320201	Well	Specific conductance	microsiemens per centimeter	observation	1976-01-01T00:00:00Z/1976-12-31T00:00:00Z	Link	text/comma-separated-values	Wat
USGS-384832121320201	Well	Chloride	milligrams per liter	observation	1976-01-01T00:00:00Z/1976-12-31T00:00:00Z	Link	text/comma-separated-values	Wat
USGS-384832121320201	Well	Magnesium	percent	observation	1976-01-01T00:00:00Z/1976-12-31T00:00:00Z	Link	text/comma-separated-values	Wat
USGS-384832121320201	Well	Bicarbonate	milligrams per liter	observation	1976-01-01T00:00:00Z/1976-12-31T00:00:00Z	Link	text/comma-separated-values	Wat
USGS-384832121320201	Well	Sodium	milligrams per liter	observation	1976-01-01T00:00:00Z/1976-12-31T00:00:00Z	Link	text/comma-separated-values	Wat
USGS-384832121320201	Well	Carbonate	milligrams per liter	observation	1976-01-01T00:00:00Z/1976-12-31T00:00:00Z	Link	text/comma-separated-values	Wat
USGS-384832121320201	Well	Inorganic nitrogen (nitrate and nitrite)	milligrams per liter as nitrogen	observation	1976-01-01T00:00:00Z/1976-12-31T00:00:00Z	Link	text/comma-separated-values	Wat

 Go to page: Page 1 of 144 | Total Datasets: 14318 | Show 100 

Geoconnex Explorer

An official website of the United States government

Here's how you know



NATIONAL WATER
QUALITY MONITORING
COUNCIL

Home

Explore WQP Sites

Help & About

i

New WQX 3.0 profiles are available at waterqualitydata.us/beta/. These profiles will contain recent USGS data added since March 11, 2024, which marks the beginning of limited accessibility for USGS data. Read more about the 3.0 profiles and associated changes [here](#). This user interface only serves WQX2.2 profiles, which do NOT contain USGS data added after March 11, 2024.

i

This site is experiencing performance degradation. USGS personnel will address when able.

[WQP Home](#) > [Providers](#) > [NWIS](#) > [USGS-CA](#) > [USGS-384832121320201](#)

011N004E09P003M (USGS-384832121320201) site data in the Water Quality Portal

Data Provider: NWIS ([Learn more about Water Quality Portal Data Providers](#))

This well site, maintained by the USGS California Water Science Center (identifier USGS-CA), has the name "011N004E09P003M" and has the identifier USGS-384832121320201. This site is in the watershed defined by the 8 digit [Hydrologic Unit Code \(HUC\)](#) 18020161. See more details of this site the the [USGS NWIS Web page for this site](#).

This site is located in Sutter County County, California at 38.80878869000000 degrees latitude and -121.53495790000000 degrees longitude using the datum NAD83. The horizontal location collection method was "Interpolated from MAP." and the accuracy is 1 seconds. The source map scale is 1:24000. This site is at an elevation of 24.00 feet and the accuracy of the elevation measurement, collected using the method "Interpolated from topographic map." is 2.5 feet. The vertical coordinate reference system is NGVD29.

This site is located in the "Central Valley aquifer system" aquifer. The well was constructed on 19740304. The well depth is 316 ft. The well hole depth is 415 ft.

To download the metadata about this site along with water quality data, go to the [Portal Page](#) and enter "USGS-384832121320201" into the "Site ID" box under Site Parameters

What other monitoring locations are upstream or downstream from this one?

Upstream and downstream locations

Exploring Geoconnex Today



Curious User

Interested in what data is available upstream or downstream of their water source

No technical skills required



Geoconnex Explorer



Savvy User

GIS user or programmer looking to visualize, analyze, and manipulate data

QGIS, or ArcGIS suite familiarity



REST Endpoints
OGC API



Super User

Data scientist/engineer, hydrologist, or developer

Python, SPARQL, R programming experience



Geoconnex Graph
HyRiver

Geoconnex Explorer

What's going on under the hood?

PREFIX hyf: <https://www.opengis.net/def/schema/hy_features/hyf/>

PREFIX gsp: <<http://www.opengis.net/ont/geosparql#>>

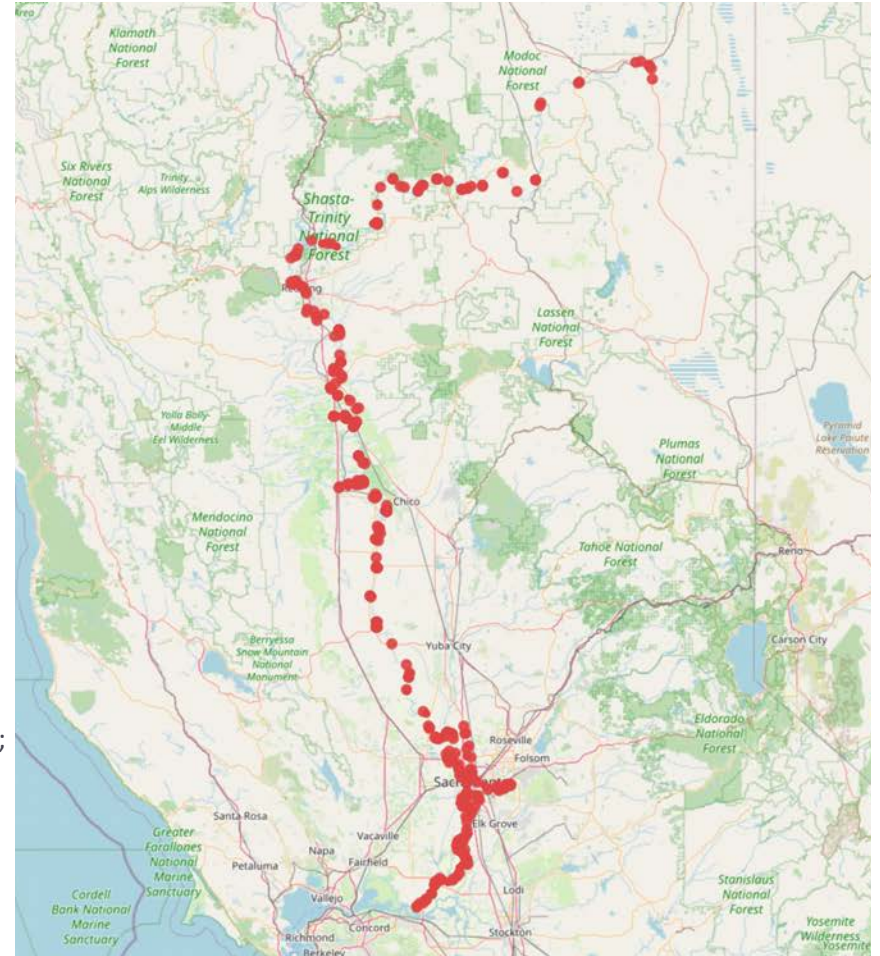
SELECT DISTINCT ?location ?wkt

WHERE {

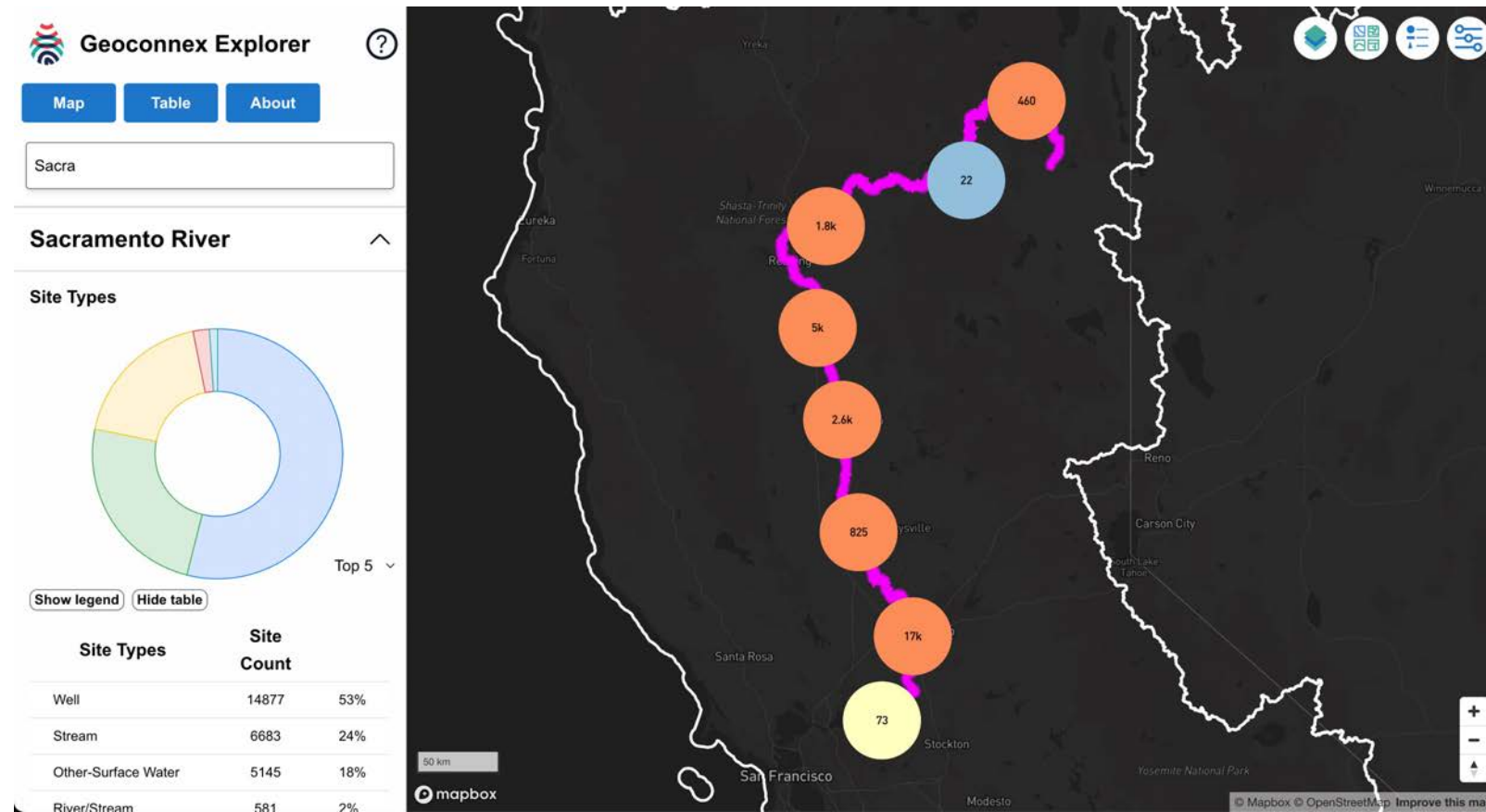
VALUES ?mainstem { <<https://geoconnex.us/ref/mainstems/1>> }

?location hyf:referencedPosition/hyf:HY_IndirectPosition/hyf:linearElement ?mainstem ;
gsp:hasGeometry/gsp:asWKT ?wkt .

}



Geoconnex Explorer



How can we change this query?

> Show upstream mainstems

PREFIX hyf: <https://www.opengis.net/def/schema/hy_features/hyf/>

PREFIX gsp: <<http://www.opengis.net/ont/geosparql#>>

SELECT DISTINCT ?mainstems ?wkt

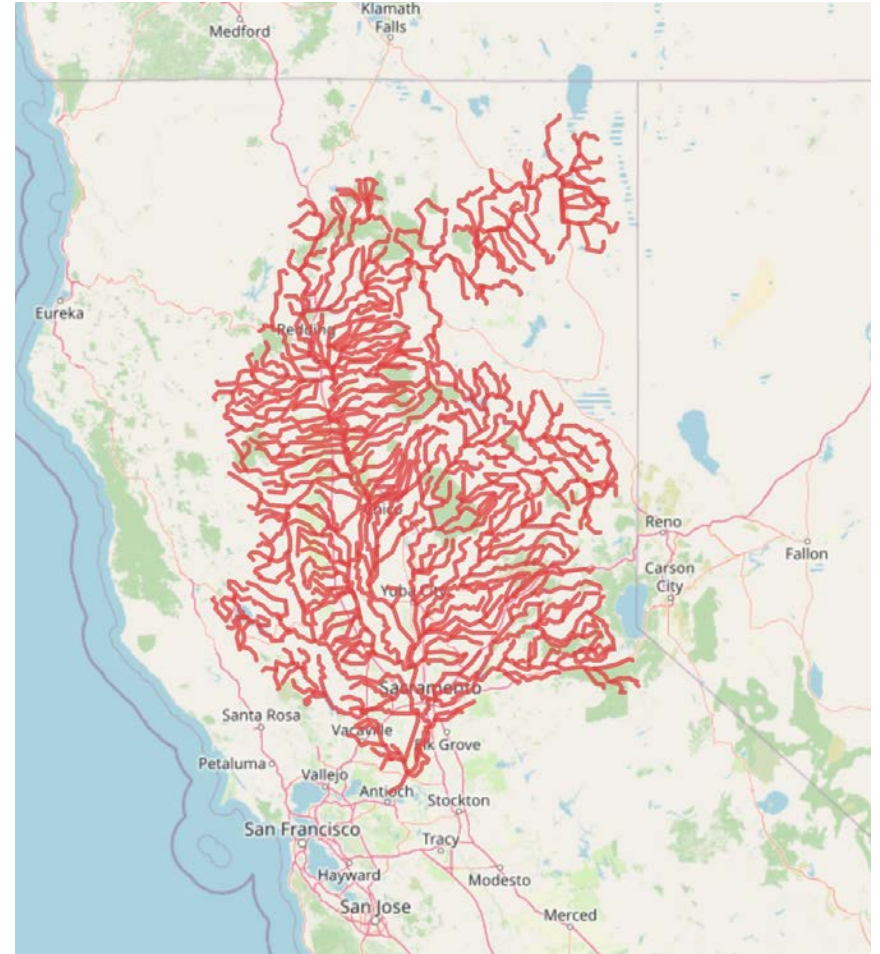
WHERE {

VALUES ?mainstem { <<https://geoconnex.us/ref/mainstems/1>> }

?mainstems hyf:downstreamWaterbody+ ?mainstem ;

gsp:hasGeometry/gsp:asWKT ?wkt .

}



How can we change this query?

> Show upstream monitoring locations

PREFIX hyf: <https://www.opengis.net/def/schema/hy_features/hyf/>

PREFIX gsp: <<http://www.opengis.net/ont/geosparql#>>

SELECT DISTINCT ?location ?wkt

WHERE {

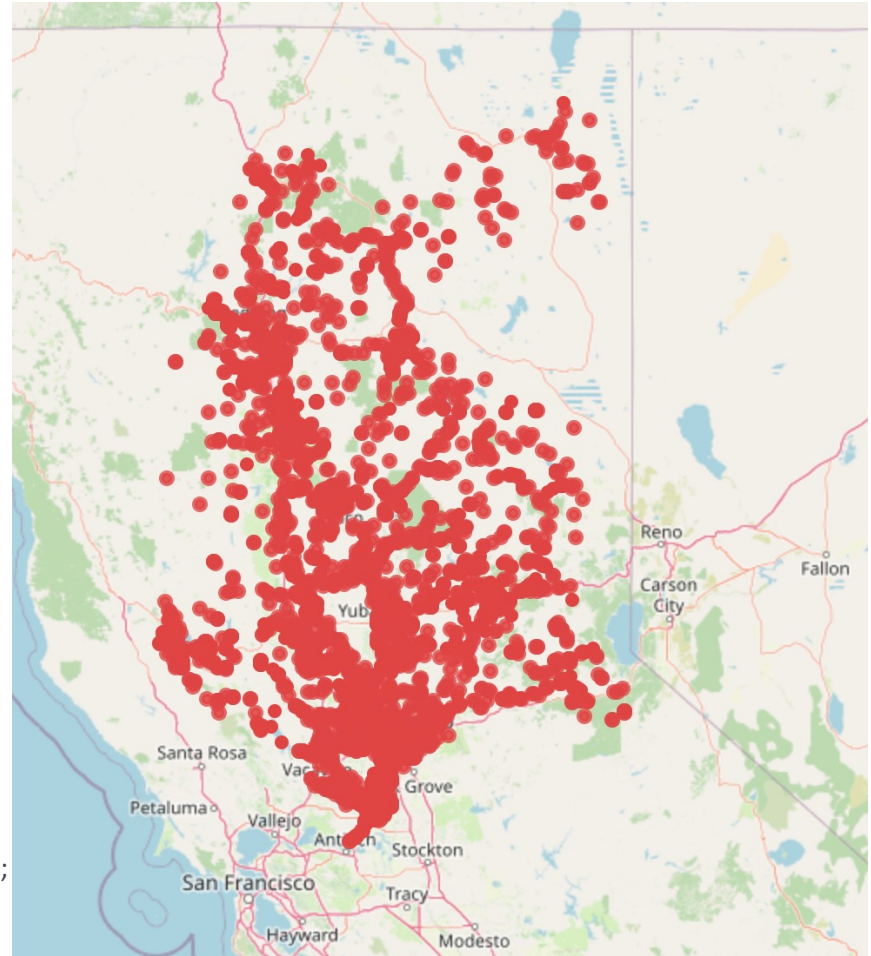
VALUES ?mainstem { <<https://geoconnex.us/ref/mainstems/1>> }

?mainstems hyf:downstreamWaterbody* ?mainstem .

?location hyf:referencedPosition/hyf:HY_IndirectPosition/hyf:linearElement ?mainstems;

gsp:hasGeometry/gsp:asWKT ?wkt .

}



... and so much more

The screenshot shows the 'Geoconnex SPARQL Query Helper' web application. The interface includes a top navigation bar with links for 'About', 'Contribute', 'Access Data', 'Best Practices & Data Standards', and 'Playgrounds'. A sidebar on the left lists 'SPARQL Query Helper', 'JSON-LD Playground', and 'Jinja templating'. The main content area features a search bar and tabs for 'Search' and 'Help and Background Info'. Below the title, there's a sub-header 'Geoconnex Sparql Query Helper' with 'Examples' and 'Help' buttons. The central part of the screen displays a SPARQL query in a code editor, with line numbers 1 through 23. The query is designed to retrieve information about the Animas River mainstem, including monitoring locations, site names, and variable measurements. The query uses various prefixes (schema, gsp, hyf) and includes a WHERE clause with a VALUES statement for the mainstem ID. The results are projected as a table with columns for monitoring location, site name, temporal coverage, URL, variable measured, and variable unit.

```
1 #All datasets about the Animas River mainstem
2 PREFIX schema: <https://schema.org/>
3 PREFIX gsp: <http://www.opengis.net/ont/geosparql#>
4 PREFIX hyf: <https://www.opengis.net/def/schema/hy_features/hyf/>
5 SELECT DISTINCT ?monitoringLocation ?siteName ?datasetDescription ?type ?url
6               ?variableMeasured ?variableUnit ?measurementTechnique ?temporalCoverage
7               ?distributionName ?distributionURL ?distributionFormat ?wkt
8 WHERE {
9   VALUES ?mainstem { <https://geoconnex.us/ref/mainstems/35394> }
10
11   ?monitoringLocation hyf:referencedPosition/hyf:HY_IndirectPosition/hyf:linearElement ?mainstem ;
12                       schema:subjectOf ?item ;
13                       hyf:HydroLocationType ?type ;
14                       gsp:hasGeometry/gsp:asWKT ?wkt .
15
16   ?item schema:name ?siteName ;
17         schema:temporalCoverage ?temporalCoverage ;
18         schema:url ?url ;
19         schema:variableMeasured ?variableMeasured .
20
21   ?variableMeasured schema:description ?datasetDescription ;
22                     schema:name ?variableMeasuredName ;
23                     schema:unitText ?variableUnit ;
```

<https://docs.geoconnex.us/playground/sparql>

Agenda

- Introduction to CGS
- The Water Data Discovery Challenge
- Geoconnex Explorer
- **How the Internet of Water Works**
- Internet of Water Services



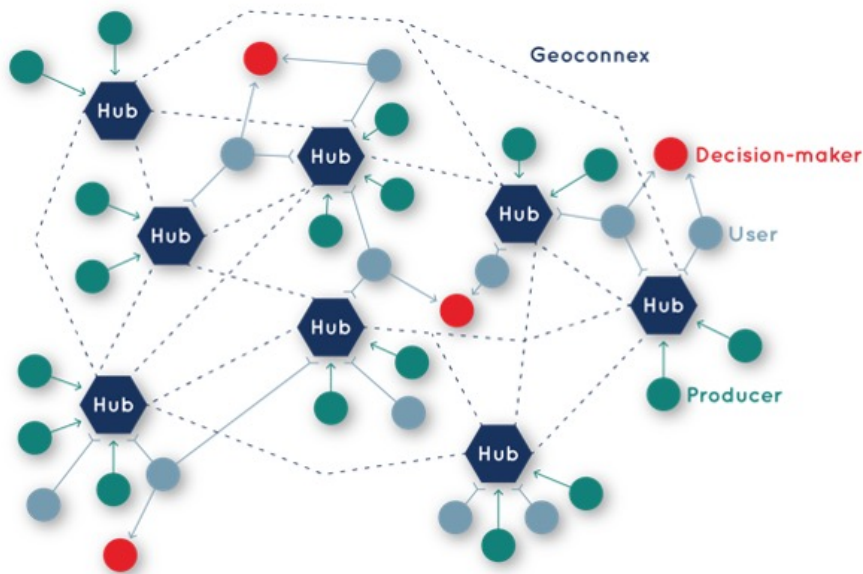
Internet of Water Principles

- 🌐 Commonly accepted data, metadata, and exchange standards should be adopted by water data producers to promote interoperability, efficiency, sharing, equity, and secondary uses of data
- 🌐 Federated, distributed systems of interoperable public water data generally provide scalability and flexibility to meet the diverse needs of data producers and users.

<https://internetofwater.org/internet-of-water-principles/>

How the Internet of Water Works:

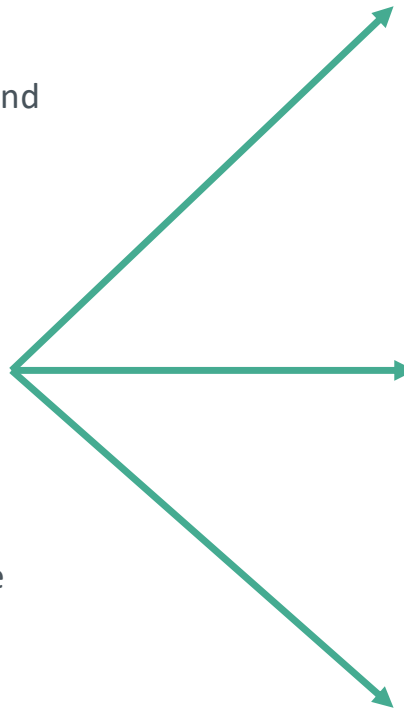
A decentralized community of data sharing practice



- **Producers** collect and QA/QC data
- **Hubs** aggregate and publish **FAIR** data, and ensure they are published on the web using **best practices** and **standards** compatible with **Geoconnex**
- **Geoconnex** links data across hubs
- **Users** discover, access, and integrate data from multiple Hubs, leveraging Geoconnex
- **Decision-makers** leverage tools and analyses built by **Users**

FAIR Principles:

- **Findable** – We know where the data are located and can utilize it
- **Accessible** – Data is downloadable
- **Interoperable** – Data with standards or metadata that allow the data to be used and connected to other data correctly
- **Reusable** – Many users over time can create value from the same data

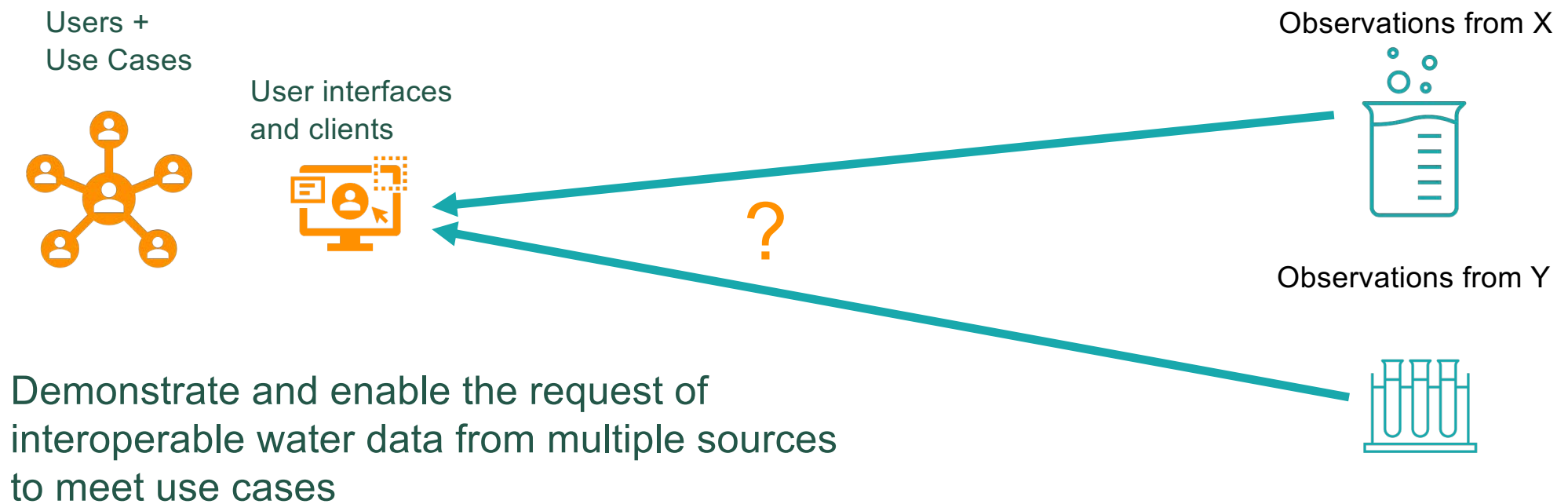


Technical: Can a given computer program open datasets from multiple sources?

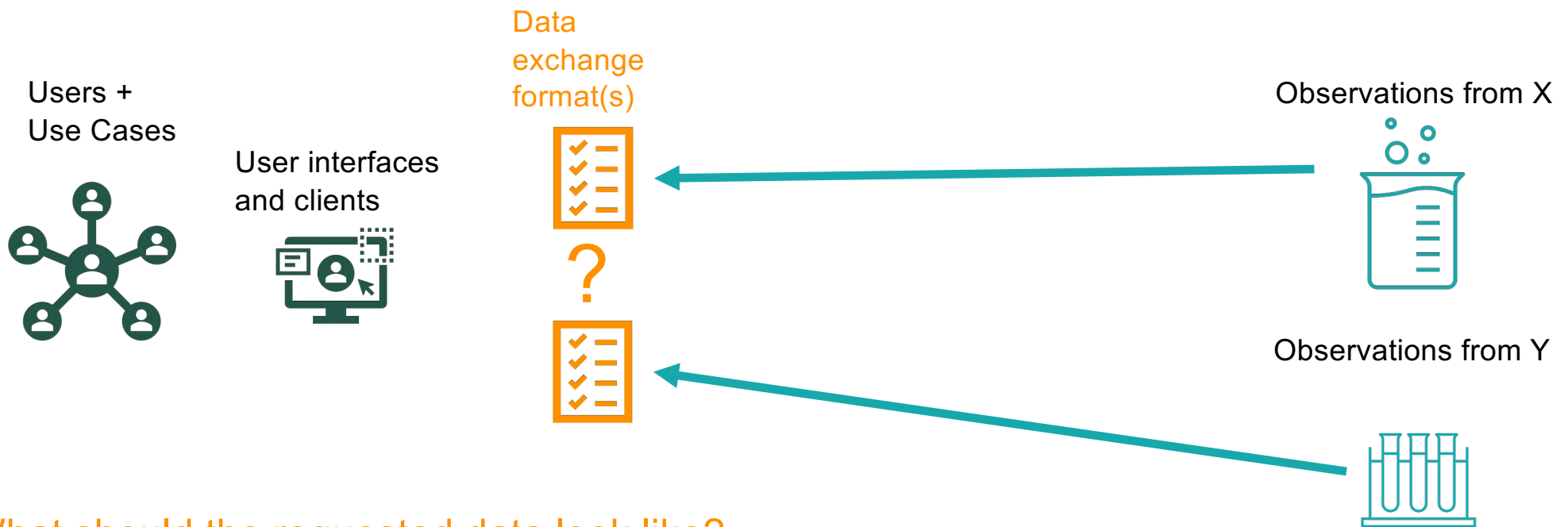
Semantic: To the data fields within multiple datasets make sense to be used together? (e.g. “discharge”, “streamflow” “Q”, “flow”)

Hydrologic: Are multiple datasets about the same real-world things or related things? (e.g. river, watershed, well, aquifer)

Facets of interoperability: Technical

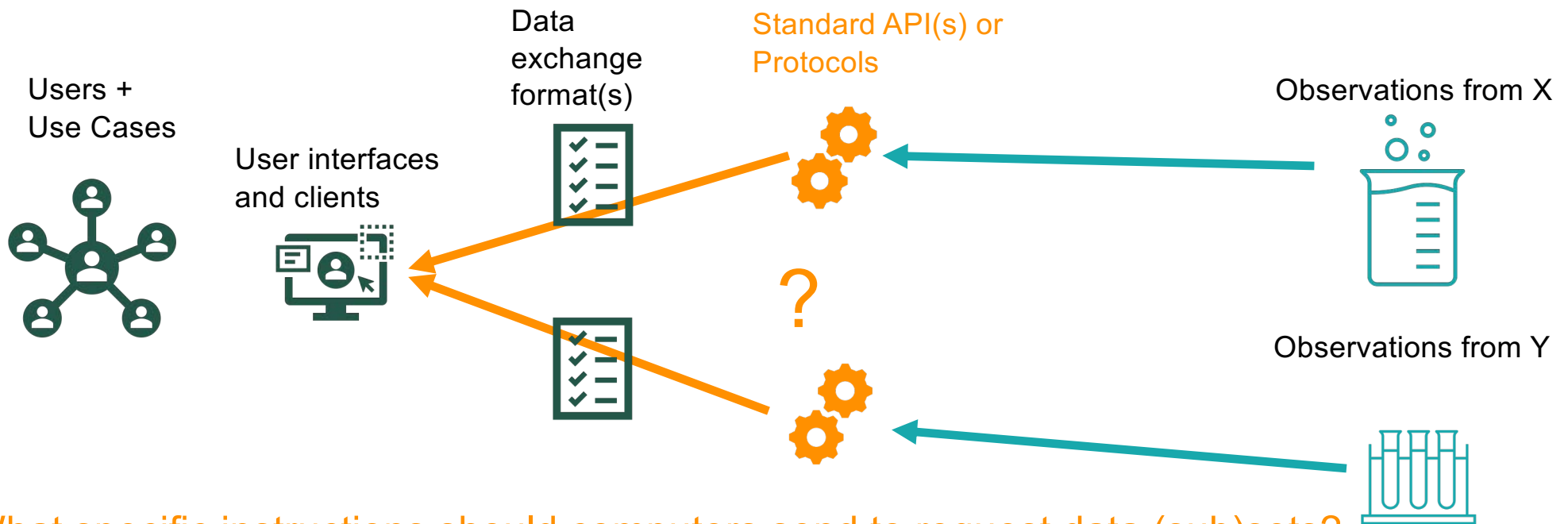


Facets of interoperability: Technical



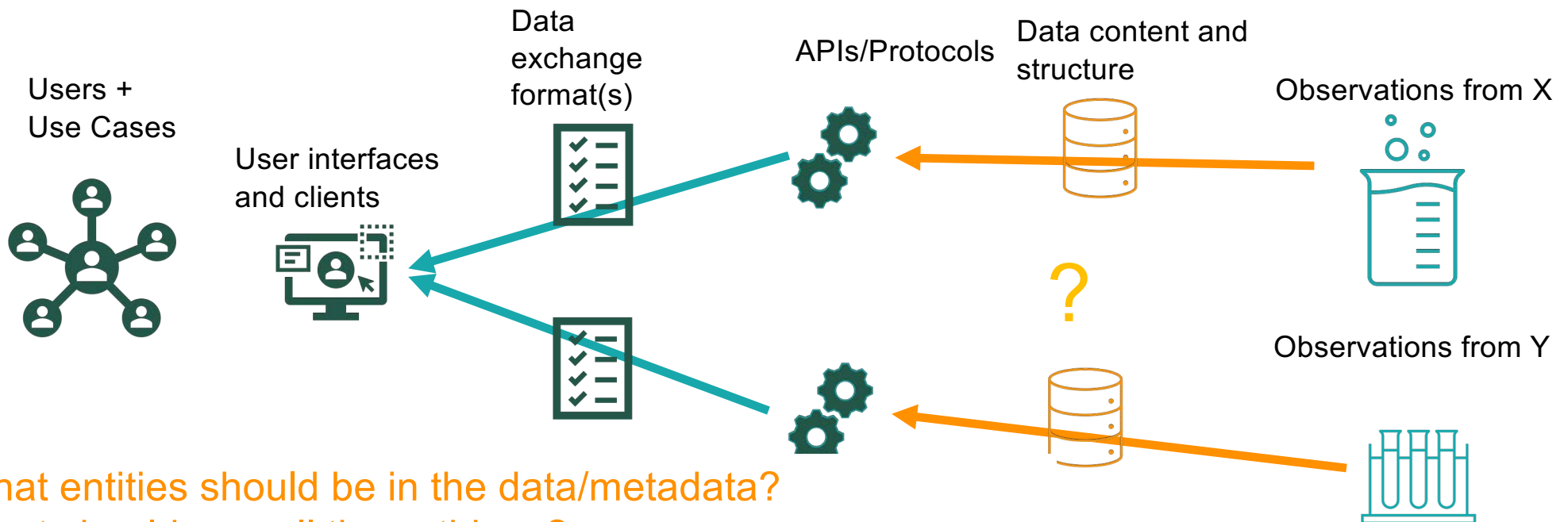
What should the requested data look like?

Facets of interoperability: Technical



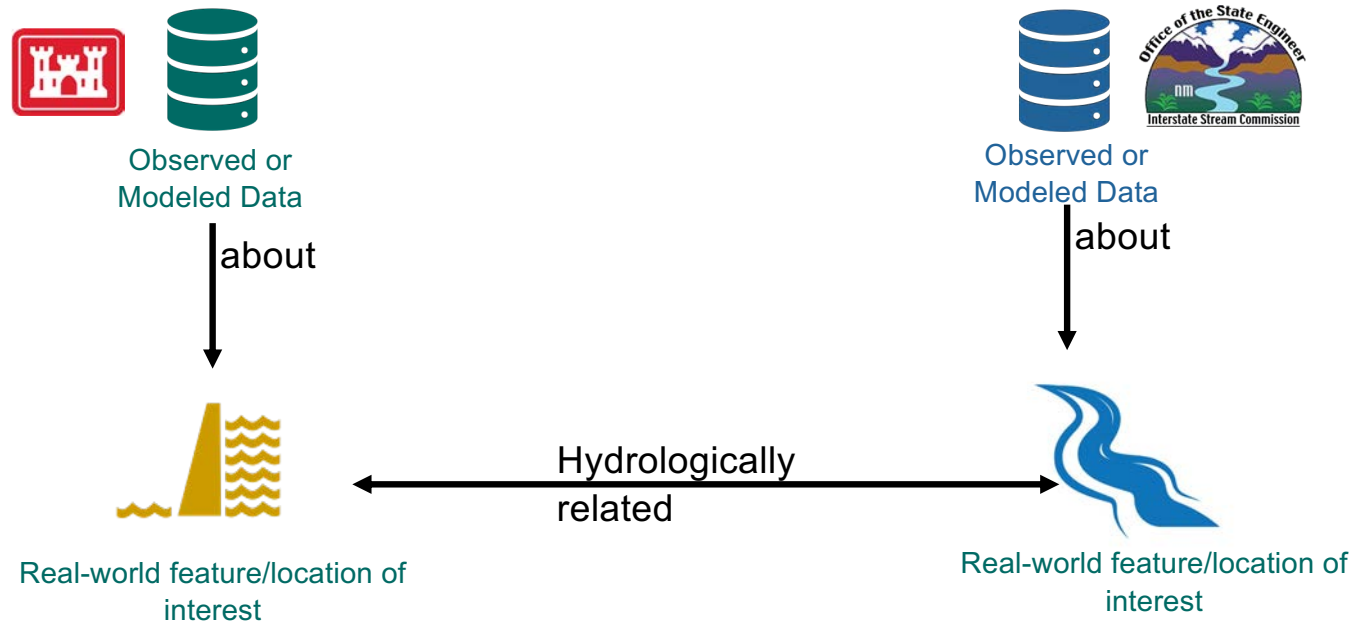
What specific instructions should computers send to request data (sub)sets?
What requests should be possible?

Facets of interoperability: Semantic

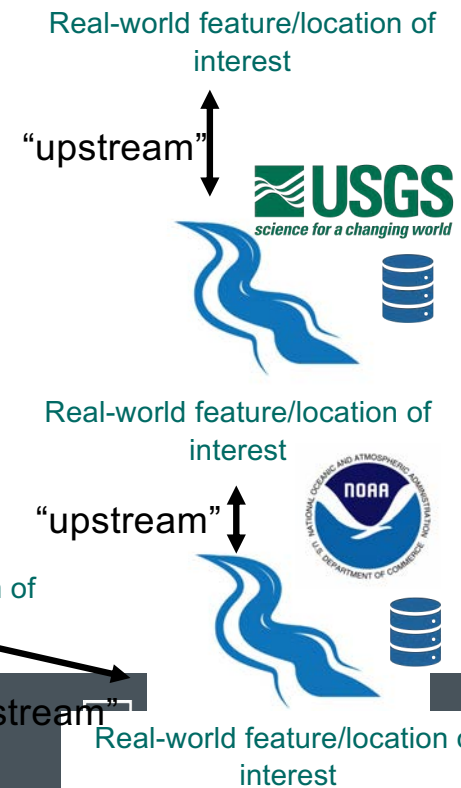
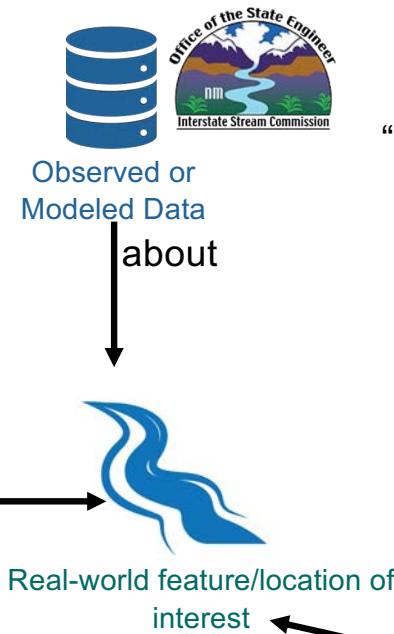
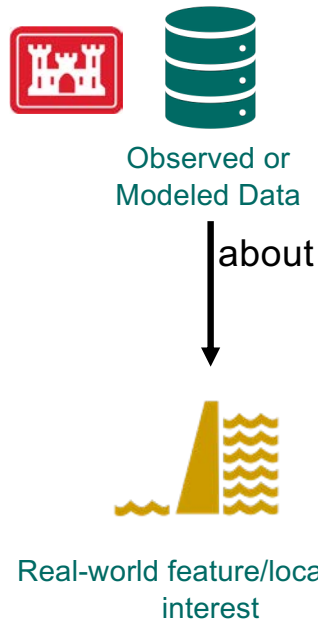


- What entities should be in the data/metadata?
- What should we call those things?
- What standard lists of terms exist that we can use?
- What lists of terms should exist?
- How can we use different terms that mean the same thing?

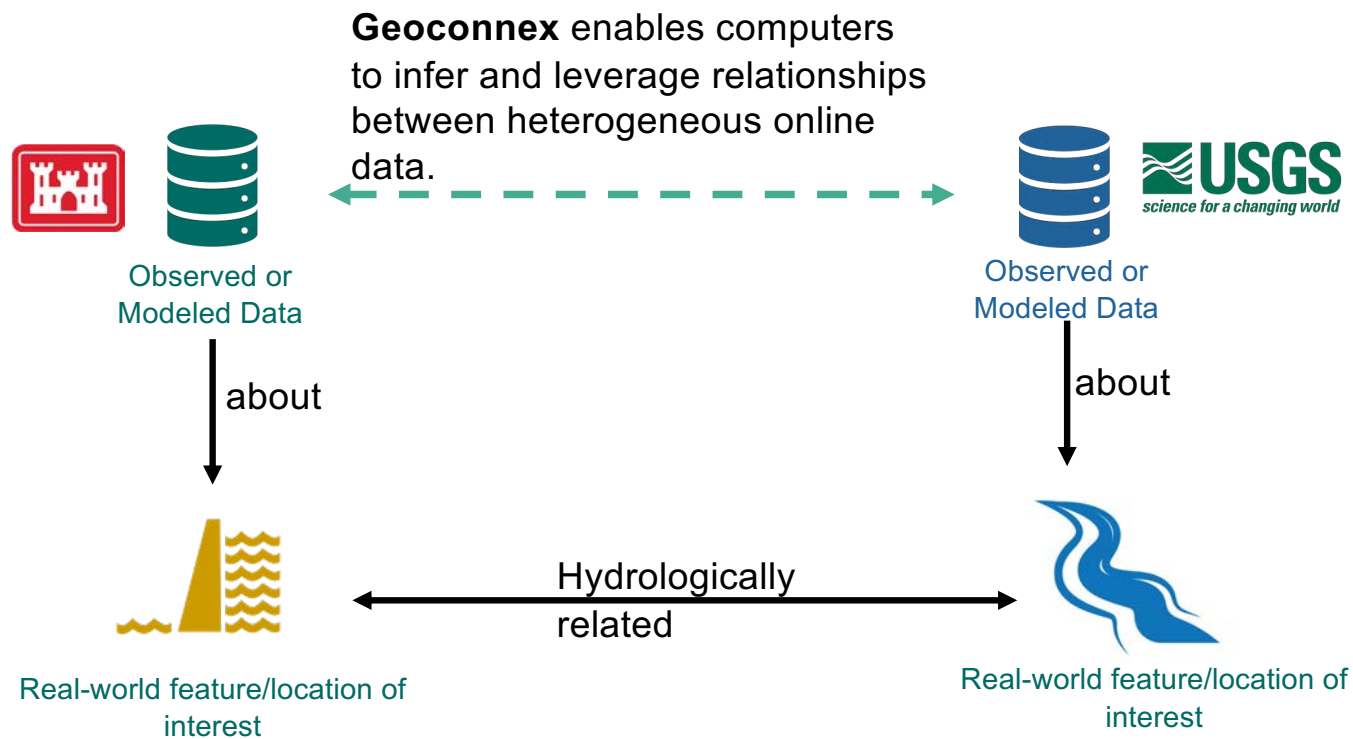
Facets of interoperability: Hydrologic

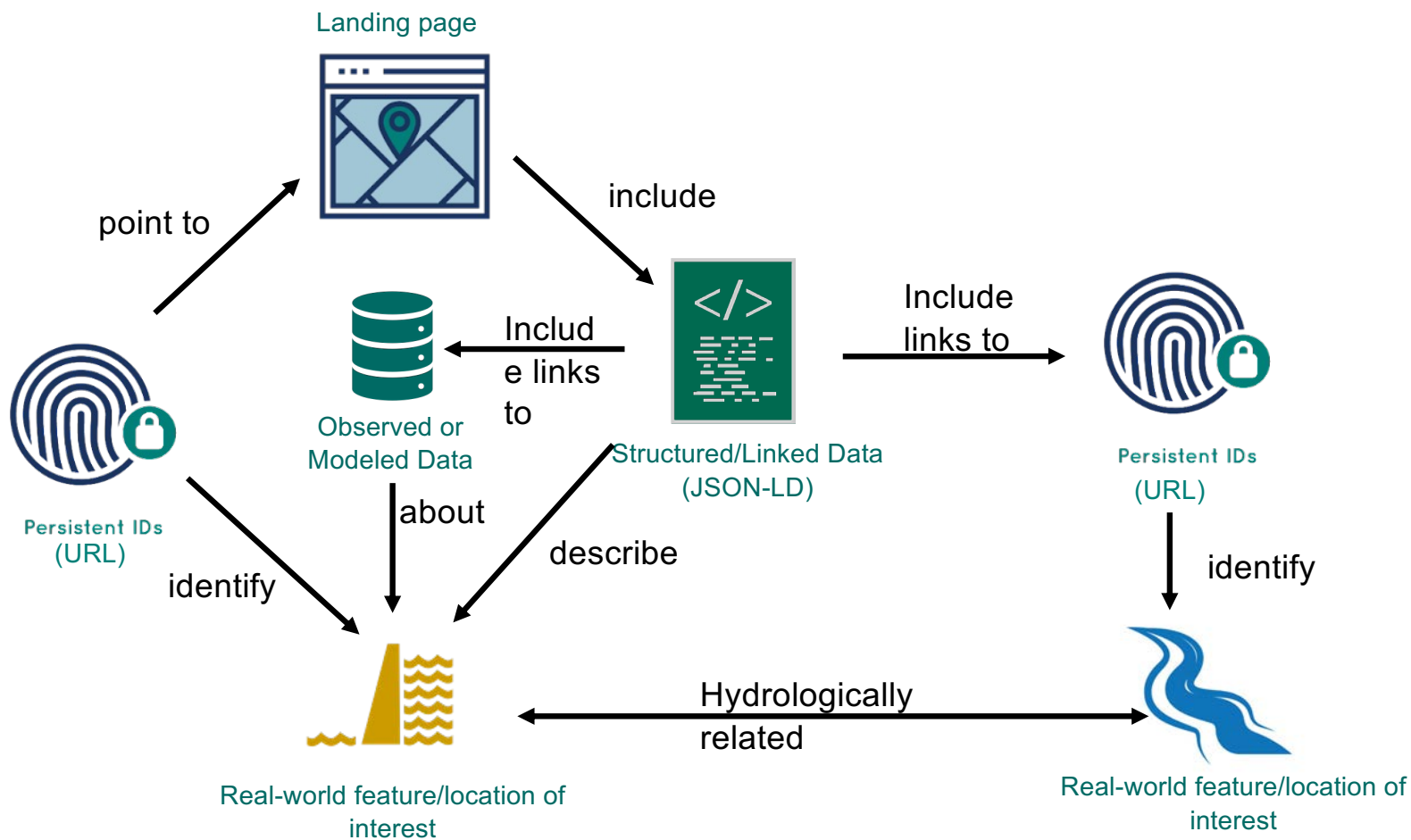


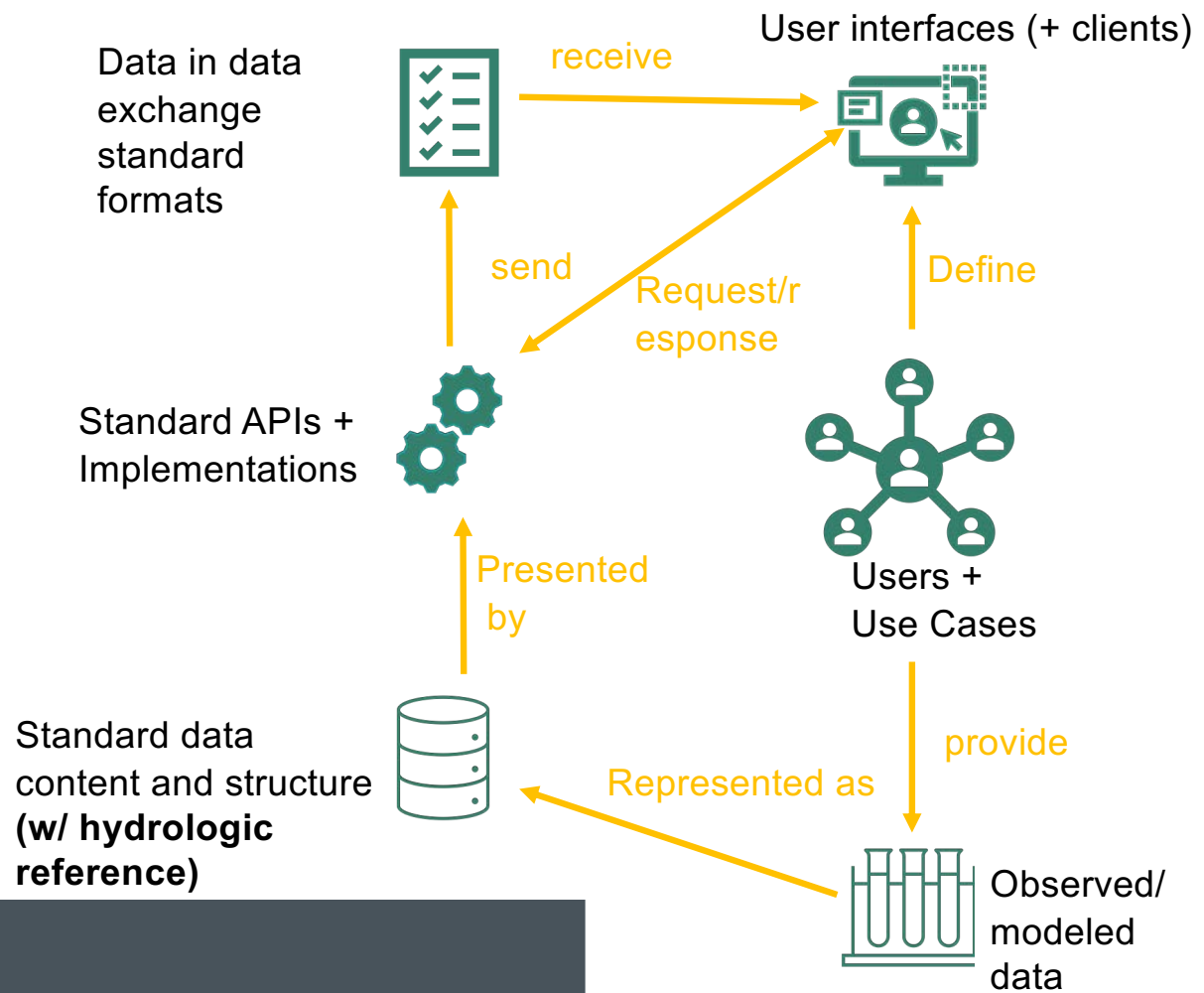
Facets of interoperability: Hydrologic

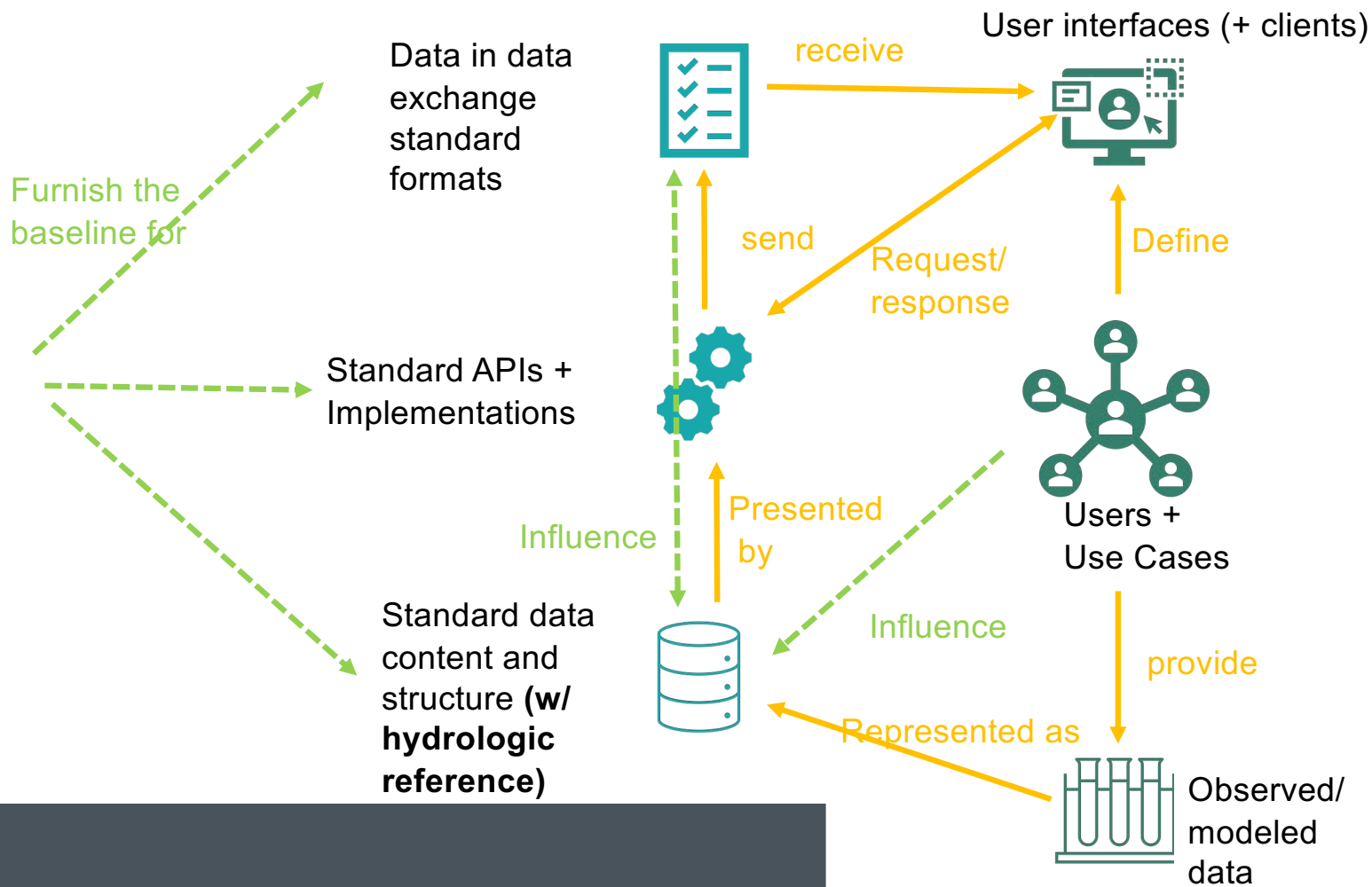


Facets of interoperability: Hydrologic









Geoconnex works by...



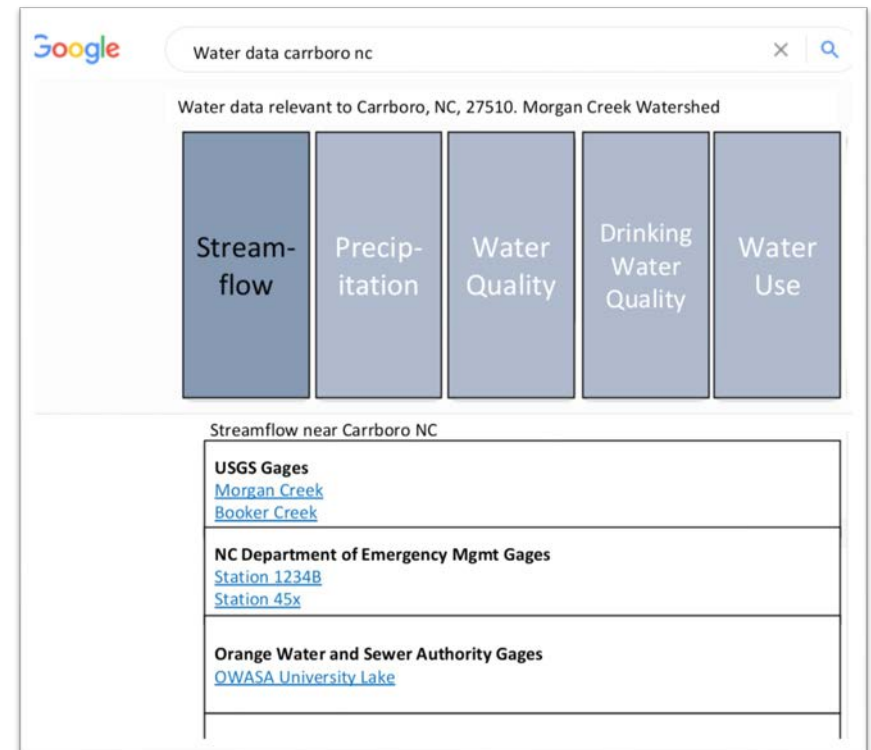
Helping water data producers **describe data sets** with common vocabulary



Establishing **persistent identifiers** for every water feature across the US



Unlocking the ability to **organize, link, connect, and access data** in one place



Today, Geoconnex is comprised of...



An **open, centralized knowledge-base** for all index data.

The backbone of the Internet of Water, exposing data with a knowledge graph.



A **suite of software** to equip organizations with modern data infrastructure.

Powered by open-source development, and designed to be adaptable, transparent, and community-driven.



A **documentation center** to provide developers with the technical details of the system.

A detailed guide to implementation, this is the how-to resource.

Software: Persistent Identifier Service

GEOCONNEX.US

Target (URL) Persistent Identifier (URI)

/wqp/([-a-zA-Z0-9_/\+].)*\$	WQP Sites https://www.waterqualitydata.us/provider/51
/wade/sites/([-a-zA-Z0-9_/\+].)*\$	WaDE Sites https://westdataqa.westernstateswater.org/details/site/51
usgs/hydrologic-unit/21020002	hydrologic units in waterdata.usgs.gov
usgs/hydrologic-unit/21020001	hydrologic units in waterdata.usgs.gov
usgs/hydrologic-unit/210200	hydrologic units in waterdata.usgs.gov
usgs/hydrologic-unit/2102	hydrologic units in waterdata.usgs.gov
usgs/hydrologic-unit/21010006	hydrologic units in waterdata.usgs.gov
usgs/hydrologic-unit/21010005	hydrologic units in waterdata.usgs.gov
usgs/hydrologic-unit/21010004	hydrologic units in waterdata.usgs.gov
usgs/hydrologic-unit/21010003	hydrologic units in waterdata.usgs.gov
usgs/hydrologic-unit/21010002	hydrologic units in waterdata.usgs.gov
usgs/hydrologic-unit/210100	hydrologic units in waterdata.usgs.gov
usgs/hydrologic-unit/2101	hydrologic units in waterdata.usgs.gov
usgs/hydrologic-unit/21	hydrologic units in waterdata.usgs.gov
usgs/hydrologic-unit/20070000	hydrologic units in waterdata.usgs.gov

Search for in All fields - Order by Date

15 rows

Show links with more than clicks

Running on YOURLS v 1.9.2 & Slinky

<https://geoconnex.us/usgs/monitoring-locations/02096846>

https://waterdata.usgs.gov/nwis/inventory/?site_no=02096846

USGS
science for a changing world

National Water Information System: Web Interface
USGS Water Resources

Click to hide News Bulletins

- Explore the **NEW USGS National Water Dashboard** interactive map to access real-time water data from over 13,500 stations nationwide.
- Full News

USGS 02096846 CANE CREEK NEAR ORANGE GROVE, NC

Available data for this site [SUMMARY](#)

Stream Site

DESCRIPTION:

Latitude 35°59'14", Longitude 79°12'22" NAD83
Orange County, North Carolina, Hydrologic Unit 03030002
Drainage area: 7.54 square miles
Datum of gage: 507.69 feet above NAVD88.

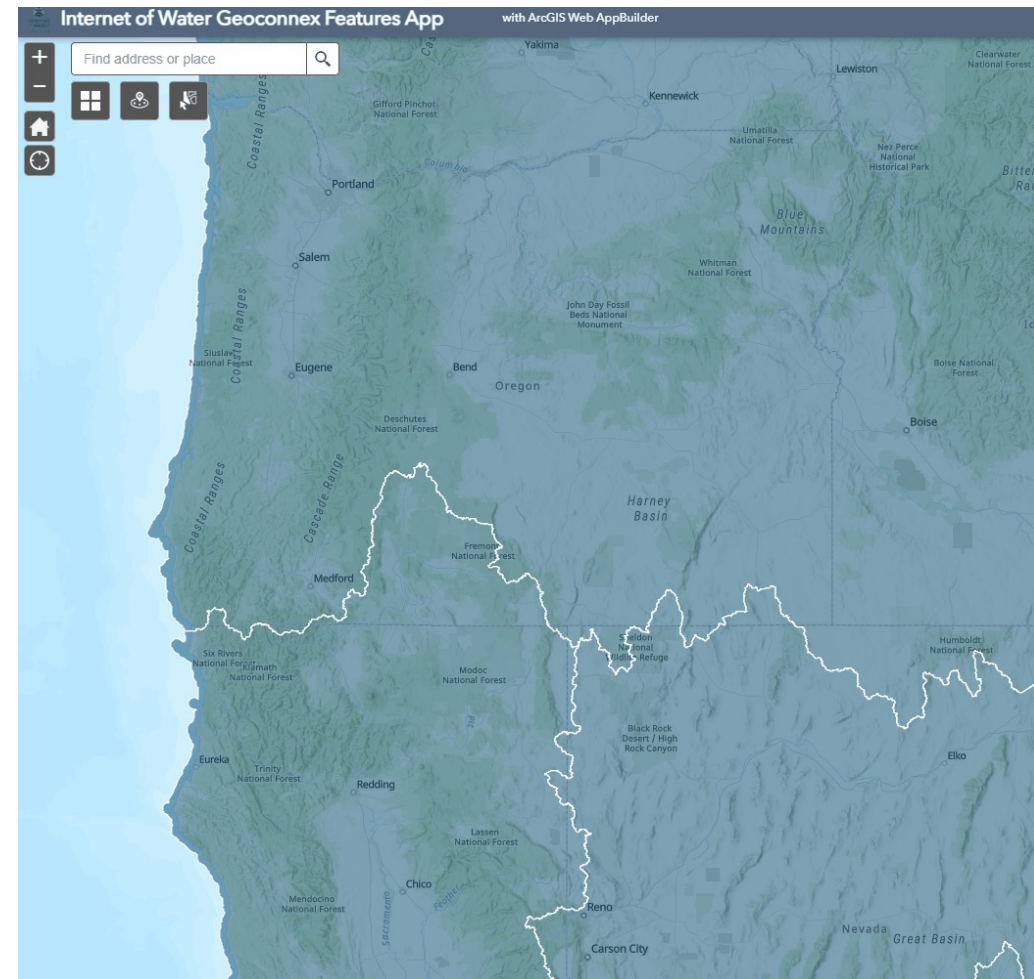
AVAILABLE DATA:

Data Type	Begin Date	End Date	Count
Current / Historical Observations (availability statement)	1988-11-05	2023-08-01	
Daily Data			
Discharge, cubic feet per second	1988-11-01	2023-07-31	23163
Gage height, feet	1988-11-05	2023-07-31	20622
Daily Statistics			
Discharge, cubic feet per second	1988-11-01	2023-05-25	12624
Gage height, feet	1988-11-05	2023-05-25	10097
Monthly Statistics			
Discharge, cubic feet per second	1988-11	2023-05	
Gage height, feet	1988-11	2023-05	
Annual Statistics			
Discharge, cubic feet per second	1989	2023	
Gage height, feet	1989	2023	

Software Reference Features

Real-world locations and areas across the United States, including common hydrologic and administrative boundaries.

- ✓ Hydrologic Regions; HUCS 2, 4, 6, 8, & 10
- ✓ Hydrogeologic system features; Principle and Secondary aquifers, Secondary hydrogeologic regions
- ✓ Stream gages
- ✓ Streams (mainstems)
- ✓ States
- ✓ Counties and jurisdictions
- ✓ Native American Lands; American Indian, Alaskan Native, and Hawaiian Home Lands (AIANHH)
- ✓ Census data; Core based statistical areas (CBAS), Urban areas, and Places
- ✓ Public water systems
- ✓ Dams
- ☐ PLSS
- ☐ Congressional Districts
- ☐ Atmospheric Deposition Stations



Software: pygeoapi

Out of the box, pygeoapi supports publishing structured data on a feature level – everything needed to publish structured data in the geoconnex.us ecosystem

The screenshot displays the pygeoapi web interface in a browser. The URL is <https://demo.pygeoapi.io/master/collections/obs/items/371>. The interface includes a navigation bar with links for Home, Collections, Observations, Items, and Item, along with a Contact link. Below the navigation bar, there is a map of a residential area with a blue location pin. To the right of the map is a table with the following data:

Property	Value
id	371
stn_id	35
datetime	2001-10-30T14:24:55Z
value	89.9
Links	The landing page of this server as JSON (application/json) The landing page of this server as HTML (text/html) This document as GeoJSON (application/geo+json) This document as RDF (JSON-LD) (application/ld+json) This document as HTML (text/html) Observations (application/json)

Below the table, there is a section for the JSON-LD context, which is a JSON object defining the schema and types for the data. The context is as follows:

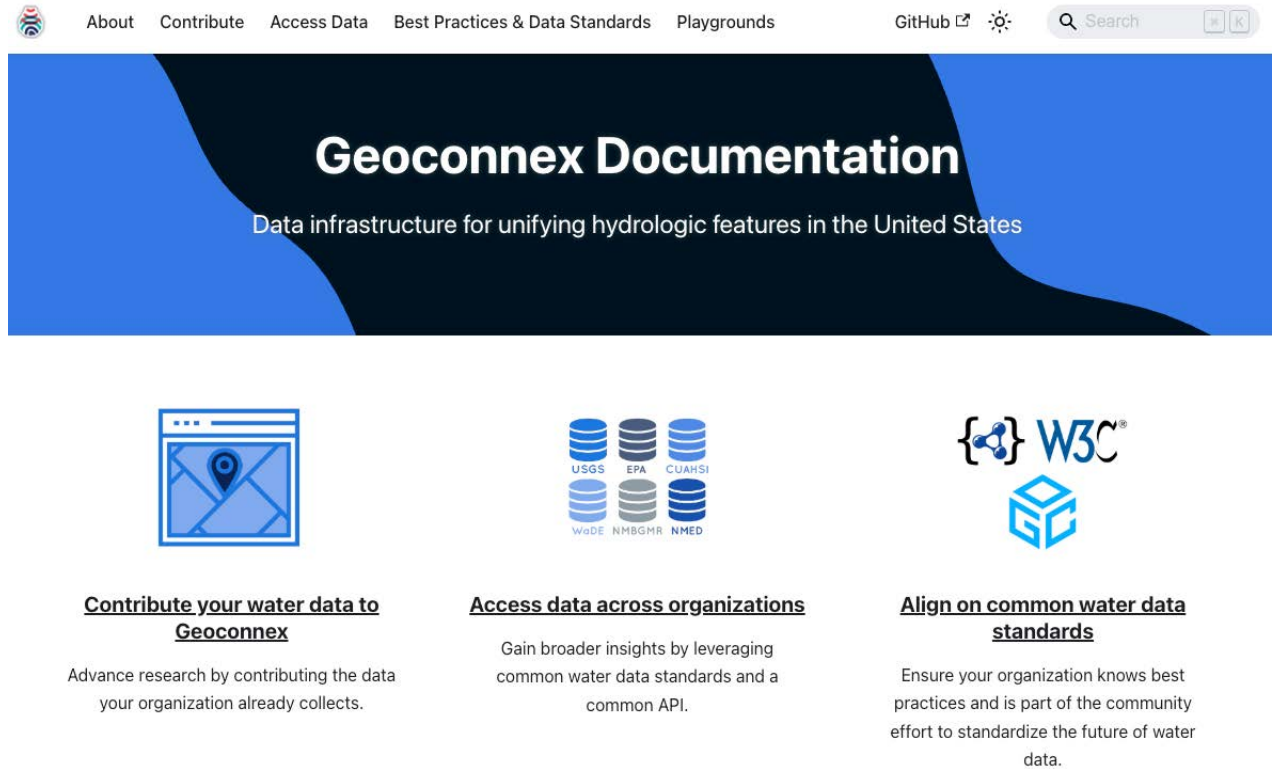
```
{
  "@context": {
    "schema": "https://schema.org/",
    "type": "@type",
    "gsp": "http://www.opengis.net/ont/geosparql#",
    "type": "schema:Place",
    "id": "371",
    "stn_id": "35",
    "datetime": "2001-10-30T14:24:55Z",
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    "geometry": {
      "type": "Point",
      "coordinates": [
        -75.0,
        45.0
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    },
    "gsp:hasGeometry": {
      "@type": "http://www.opengis.net/ont/sf#Point",
      "gsp:asWKT": {
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        "@value": "POINT (-75 45)"
      }
    },
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      "schema:longitude": "-75.0",
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    },
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    "links": {
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      "rel": "root",
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      "href": "https://demo.pygeoapi.io/master?f=json"
    },
    "type": "text/html",
    "rel": "root",
    "title": "The landing page of this server as HTML",
    "href": "https://demo.pygeoapi.io/master?f=html"
  },
  "rel": "alternate"
}
```


Documentation: <https://docs.geoconnex.us>

Best Practices

**Tutorials for data
publication**

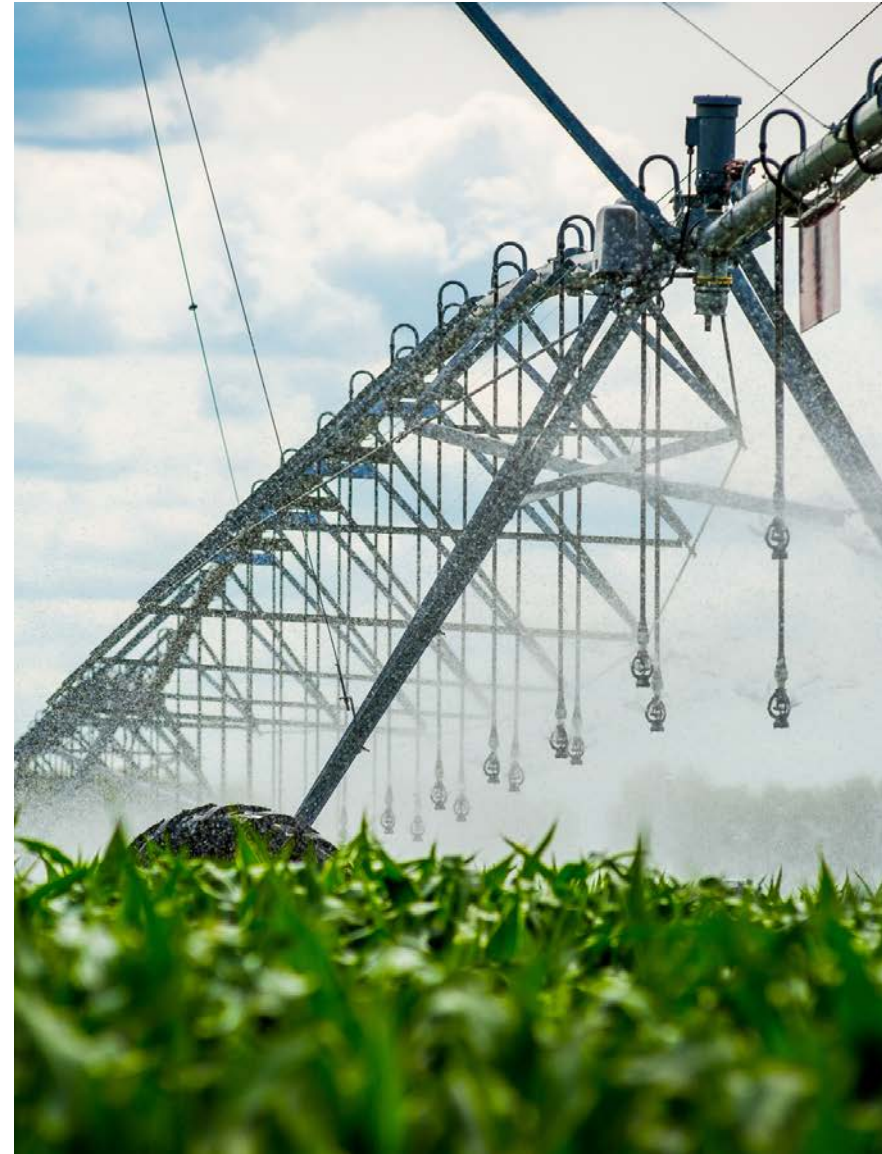
**Tutorials for data
access**



The screenshot shows the homepage of the Geoconnex Documentation website. The header includes navigation links: About, Contribute, Access Data, Best Practices & Data Standards, and Playgrounds. There is also a GitHub link, a search bar, and a dark mode toggle. The main banner features the title "Geoconnex Documentation" and the subtitle "Data infrastructure for unifying hydrologic features in the United States". Below the banner, there are three columns of content:

- Contribute your water data to Geoconnex**: Accompanied by an icon of a map with a location pin. The text states: "Advance research by contributing the data your organization already collects."
- Access data across organizations**: Accompanied by logos for USGS, EPA, CUAHSI, WaDE, NBSGMR, and NMED. The text states: "Gain broader insights by leveraging common water data standards and a common API."
- Align on common water data standards**: Accompanied by the W3C logo. The text states: "Ensure your organization knows best practices and is part of the community effort to standardize the future of water data."

Building an Internet of Water: Water Data Services



Engagement Services

- Stakeholder Engagement
- Human-Centered Design
- Communications and Data Governance



Technical Services

- Data Inventory, Assessment, and Recommendations
- Technical Advisory Services
- Geoconnex and Water Data Standards Implementation



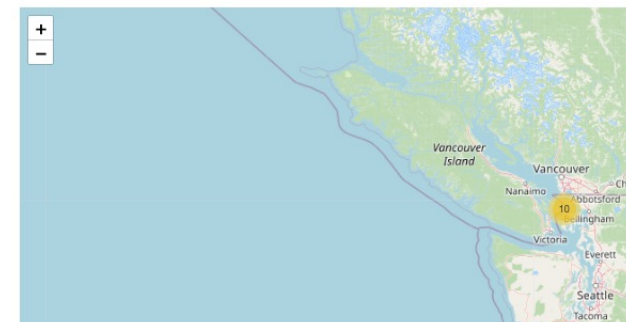
Open
Geospatial
Consortium®





Climate - Hourly Observations

Items in this collection.

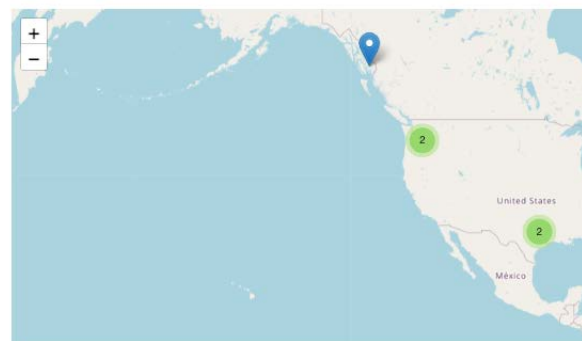


☐ Only show items by map view

Filter table content

id	STATION_NAME	CLIMATE_IDENTIF...	LOCAL_DATE
	Keyword	Keyword	Keyword
1017101.2024.9.14.19	"SATURNA ISLAND CS"	"1017101"	"2024-09-14 19:00:00"
1017101.2024.9.14.20	"SATURNA ISLAND CS"	"1017101"	"2024-09-14 20:00:00"

Daily values

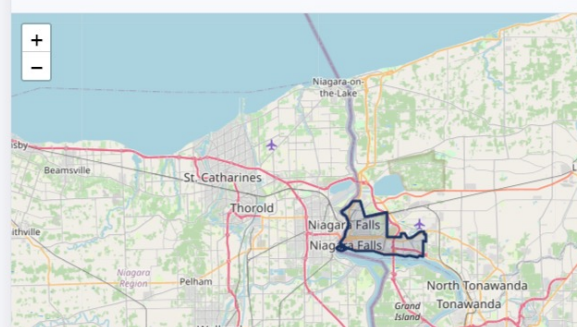


Limit: 10 (default)

id	time	unit_of_m
0000000a-...	2020-10-24	ft^3/s
0000000c-...	1949-11-03	ft^3/s

NIAGARA FALLS WATER BOARD

Map

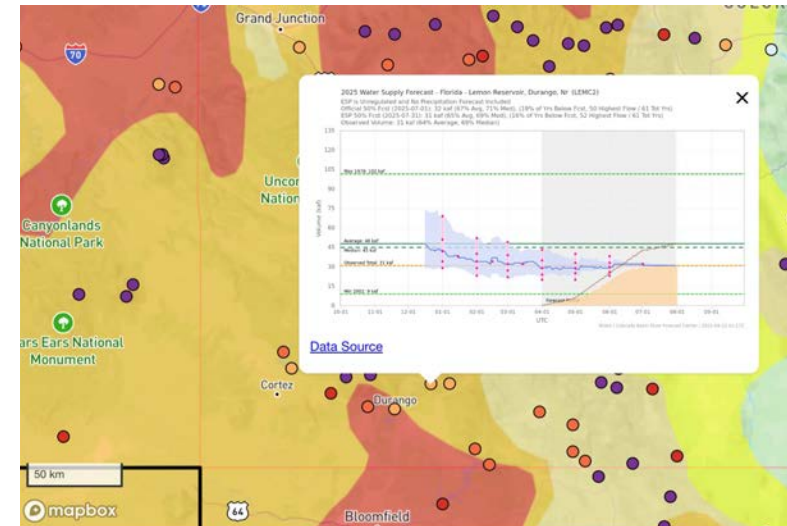


Item

Property	Value
id	NY3100568
boundary_type	Water Service Area - as specified in sol
centroid_lat	43.0928407
centroid_lon	-79.0147434
centroid_quality	CALCULATED FROM GEOMETRY
city_served	NIAGARA FALLS

Technical Services

- Data Hub and Dashboard Development
- Use Case-Based Tools and Applications
- Data Transfer Services



KLBE

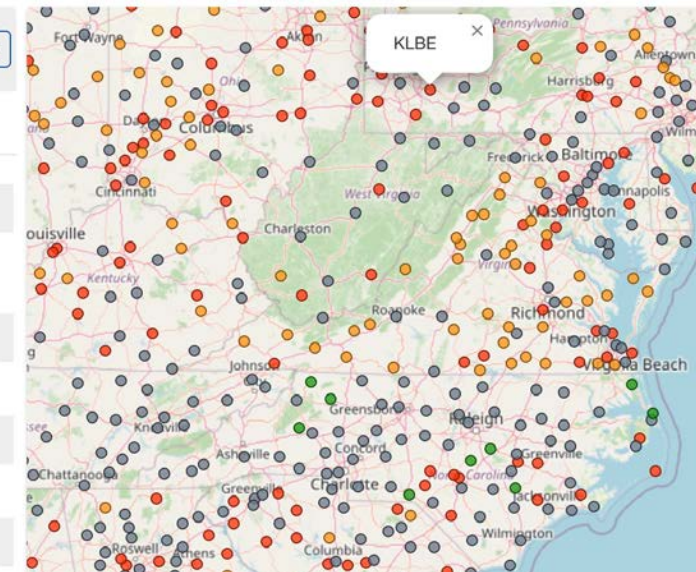
DATA

LATEST VALUES

HISTORY

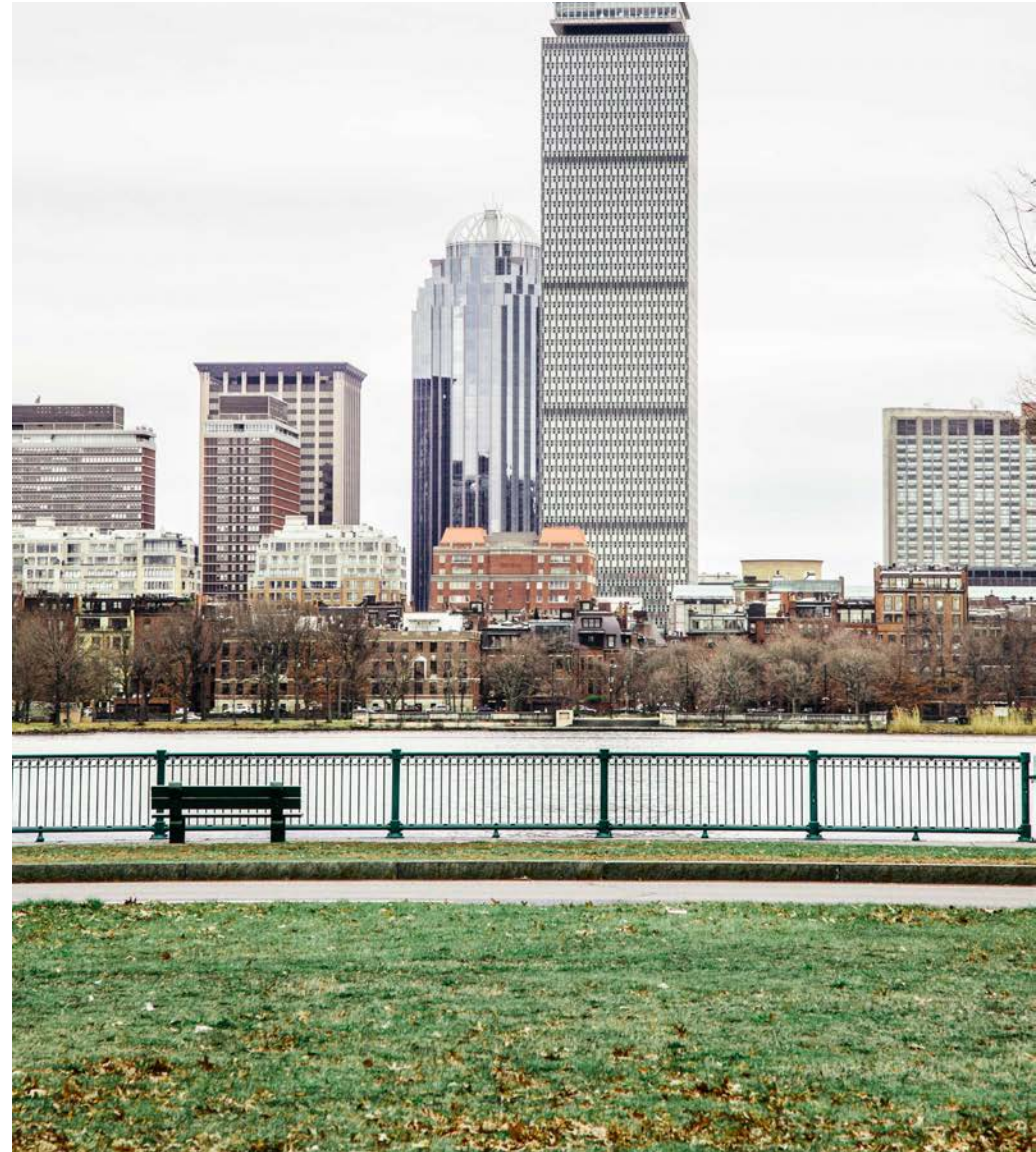
from 2025-09-22T23:47:00Z

Non coordinate pressure	972.3 hPa
Pressure reduced to mean sea level	1014 hPa
Air temperature	23 Celsius
Dewpoint temperature	17.99 Celsius
Relative humidity	74 %
Wind direction (2 min)	310 deg
Wind speed (2 min)	7.7 m/s



Use Cases

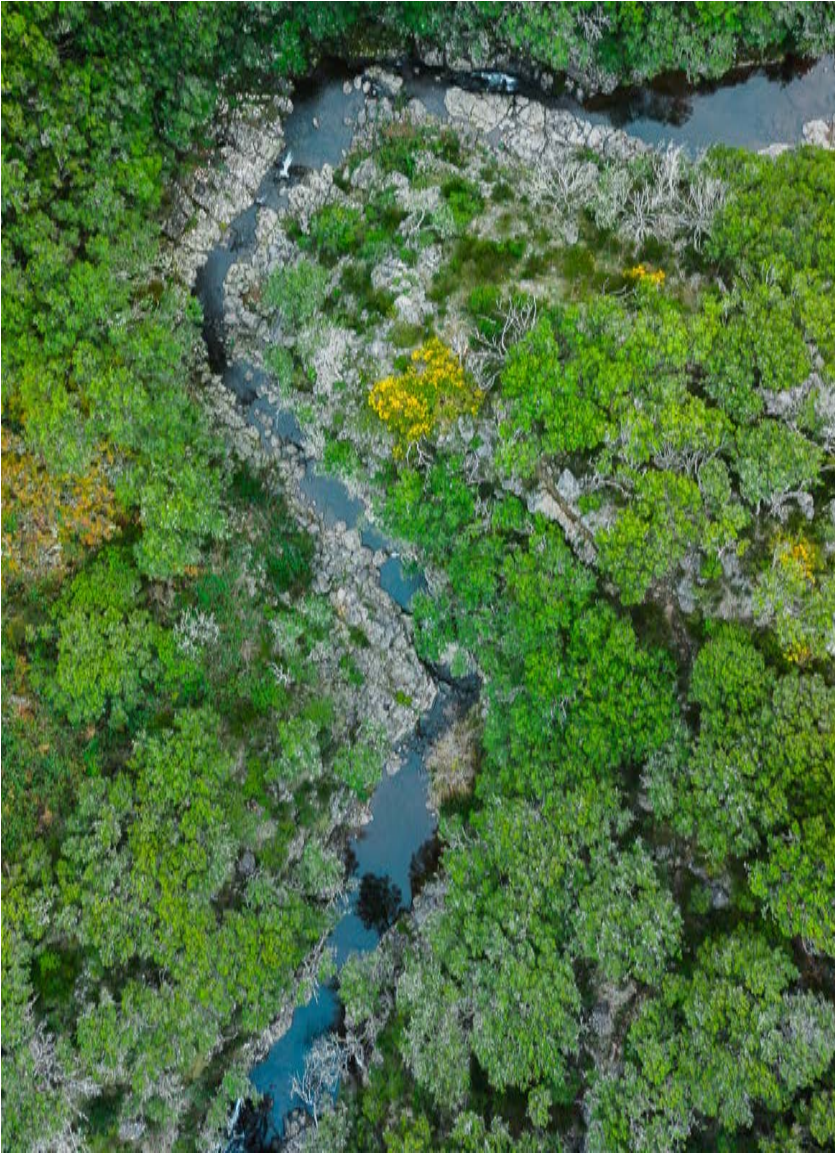
- Water rights shepharding
- Water quantity/quality modeling
- Facility siting
- Land use planning



Growing A Community of Practice

The **IoW Coalition** connects and mobilizes people and organizations passionate about water data and improving water data management through a variety of engagement channels.





IoW Coalition Sub-Groups

- **Advisory Group** – A group of organizations that work with CGS to identify data challenges that the Service Center can facilitate and provide feedback to the IoW Working Groups
- **Working Groups** – IoW Coalition-based groups that address a specific water data challenge or audience
- **IoW Network** – Individuals that engage with IoW Coalition content

Questions?

Geoconnex.us docs [WIP]: <https://docs.geoconnex.us>

Internet Of Water History & Principles:
<https://geoconnex.us/iow/principles>





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**GEOSPATIAL
SOLUTIONS**

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Internet
of Water

COALITION

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Contact our team at
internetofwater@lincolnst.edu