Alaska Stream Temperature Community:
Data Storage, Dissemination and Analysis

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USGS Alaska Science Center

Multi-stakeholder stream temperature data

Discovery

Digitization

Sustainable Preservation

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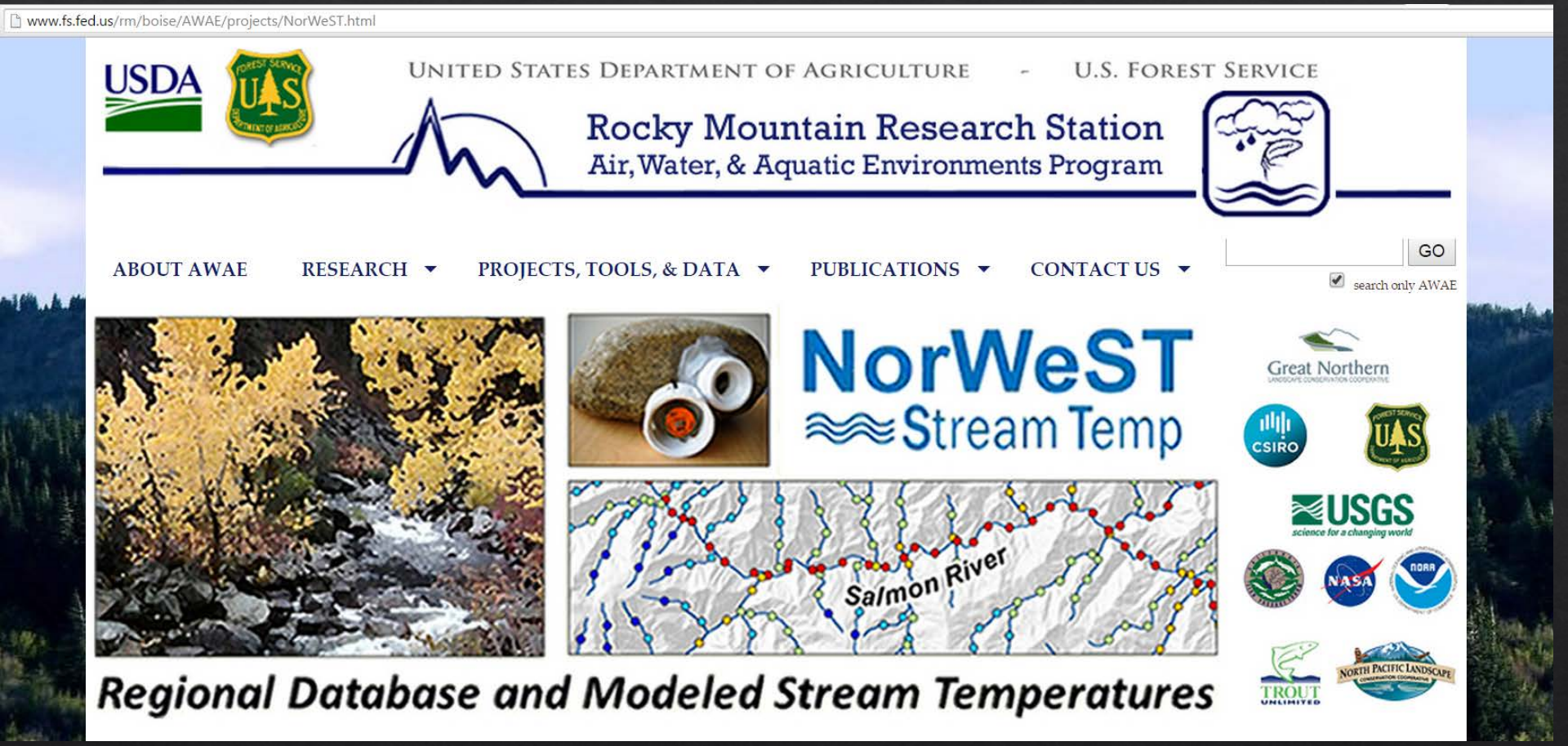

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Issaks et al. 2015

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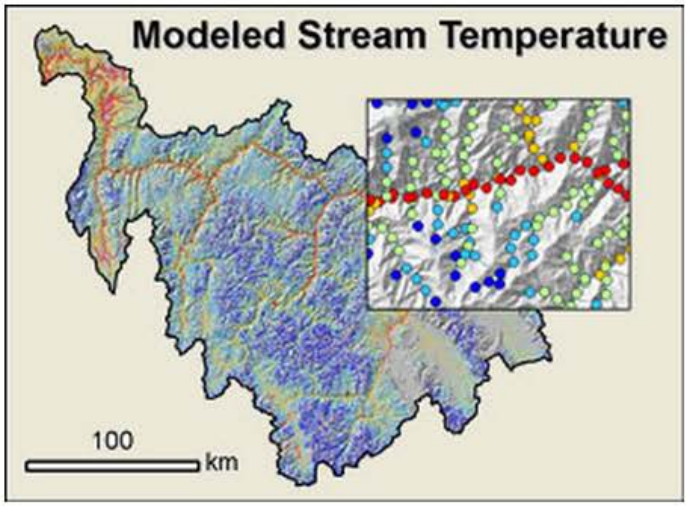
Download Products

Stream Temperature Data Summaries

GIS Shapefiles, recorded temperature data, & PDF Maps



Modeled Stream Temperature Scenario Maps

GIS shapefiles, PDF maps, & Model Accuracy

NE CSC Northeast Climate Science Center

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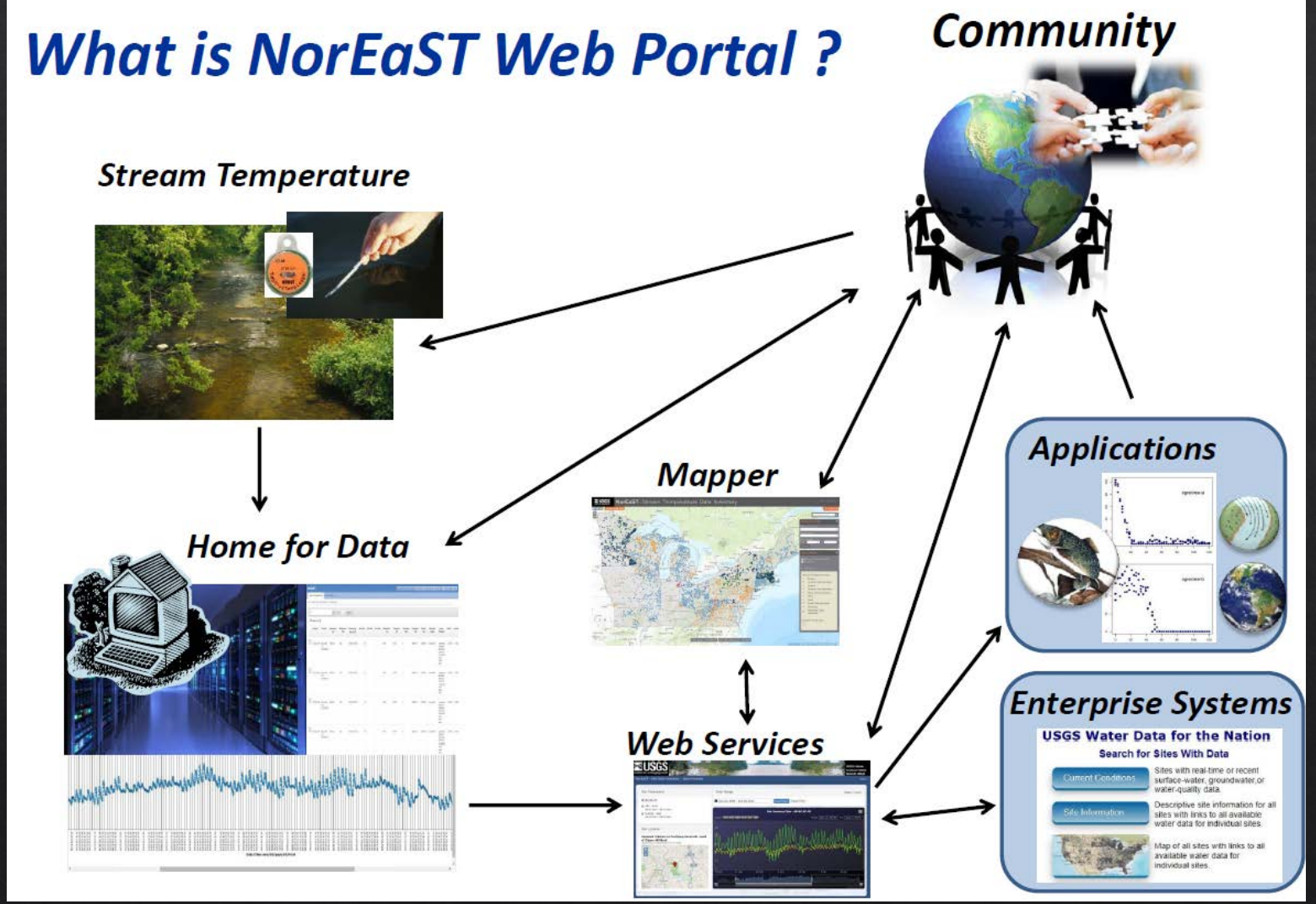
What is NorEaST Web Portal ?



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Stewart et al. 2014

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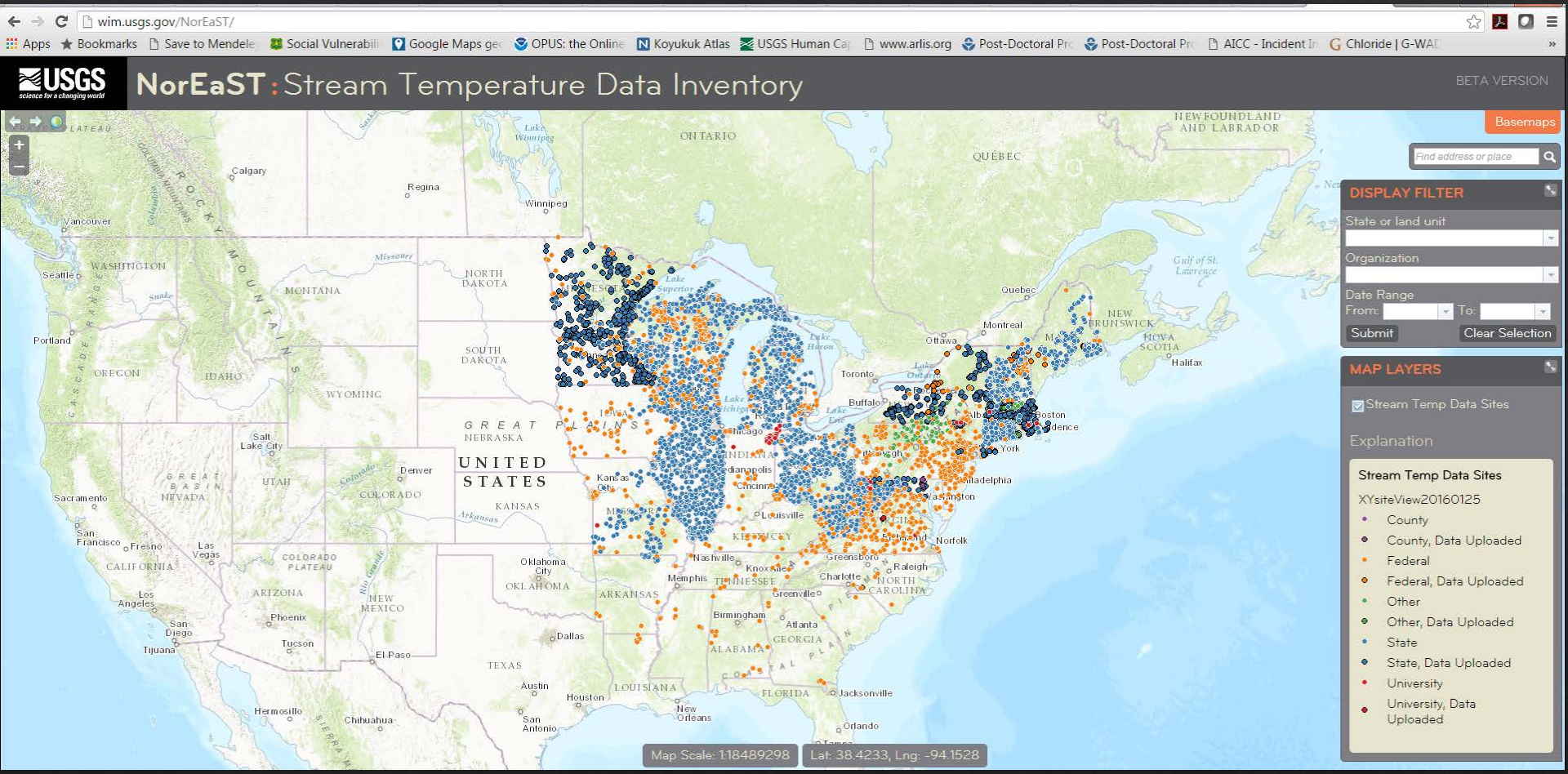

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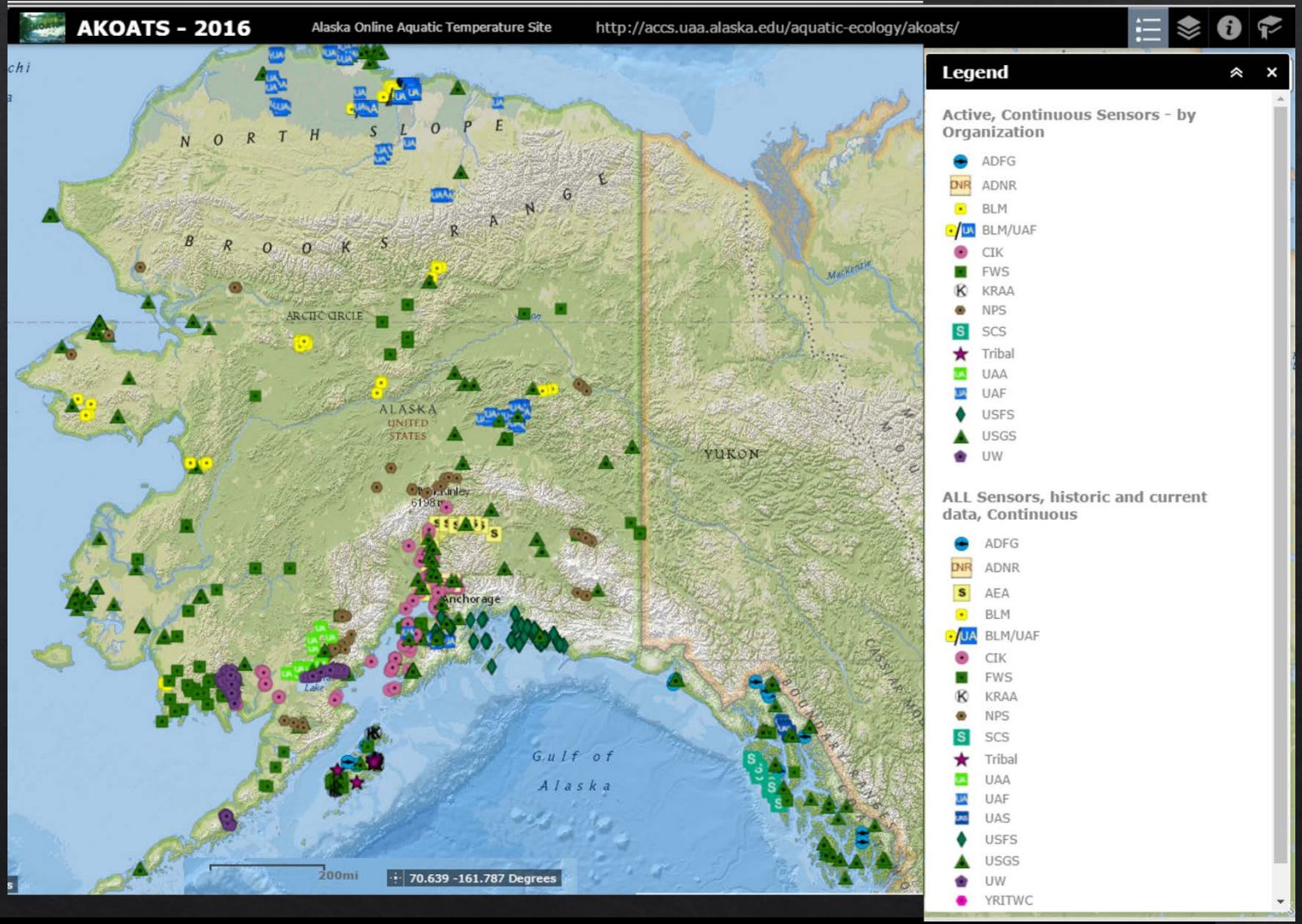
Alaska Stream Temperature Community

A community of stream temperature monitoring groups have developed several key parts of a state wide stream temperature monitoring network:

- Stream Temperature Action Plan (Mauger et al., 2012)
- Stream Temperature Data Collection Standards and Protocol for Alaska: Minimum Standards to Generate Data Useful for Regional-scale Analyses (Mauger et al., 2014)
- Guidelines for the Collection of Continuous Stream Water-Temperature Data in Alaska (Toohey, Neal and Solin, 2014)
- Alaska Online Aquatic Temperature Site (AKOATS)(Geist et al., 2014) statewide site and metadata inventory

Current and Historical Monitoring Stations



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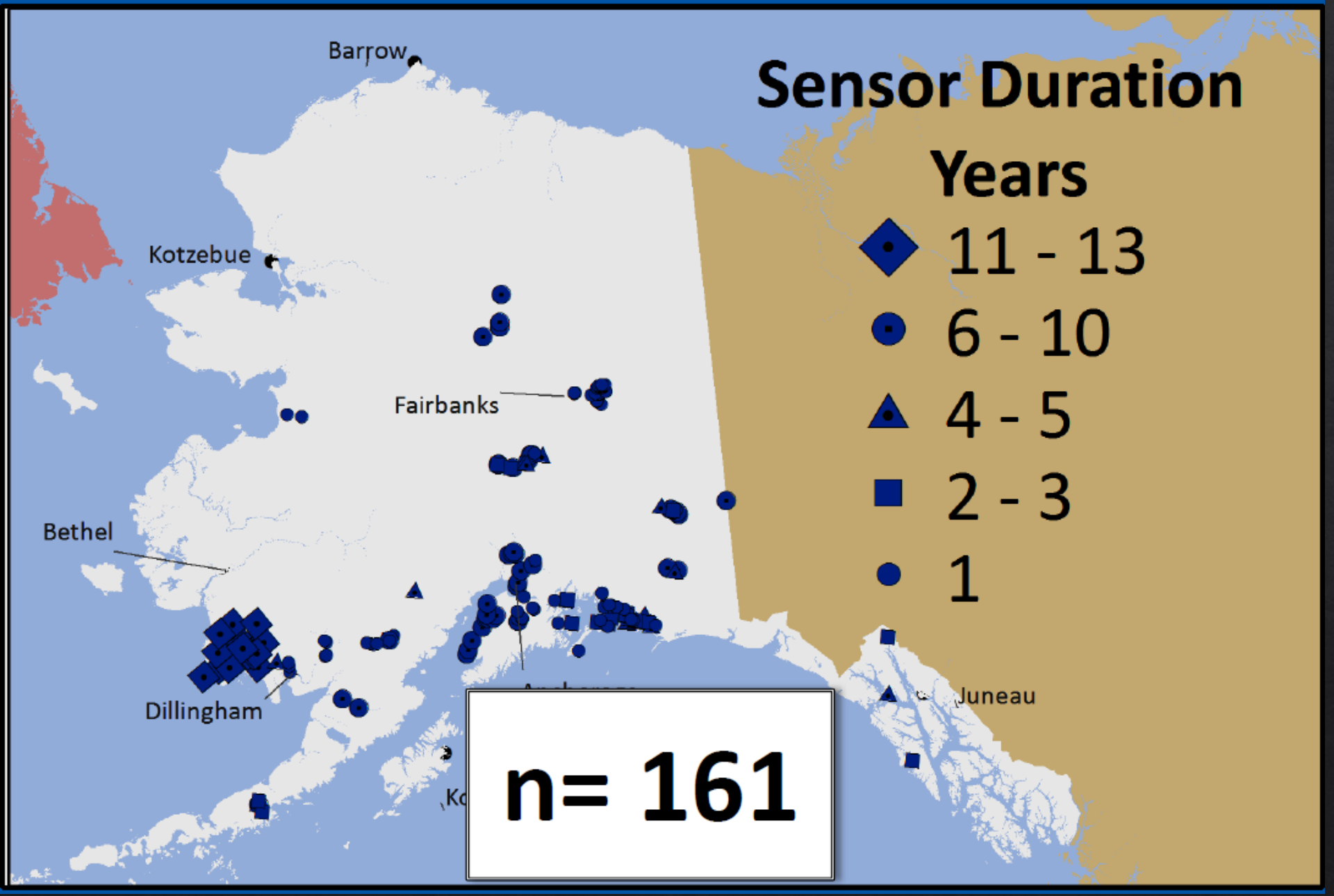
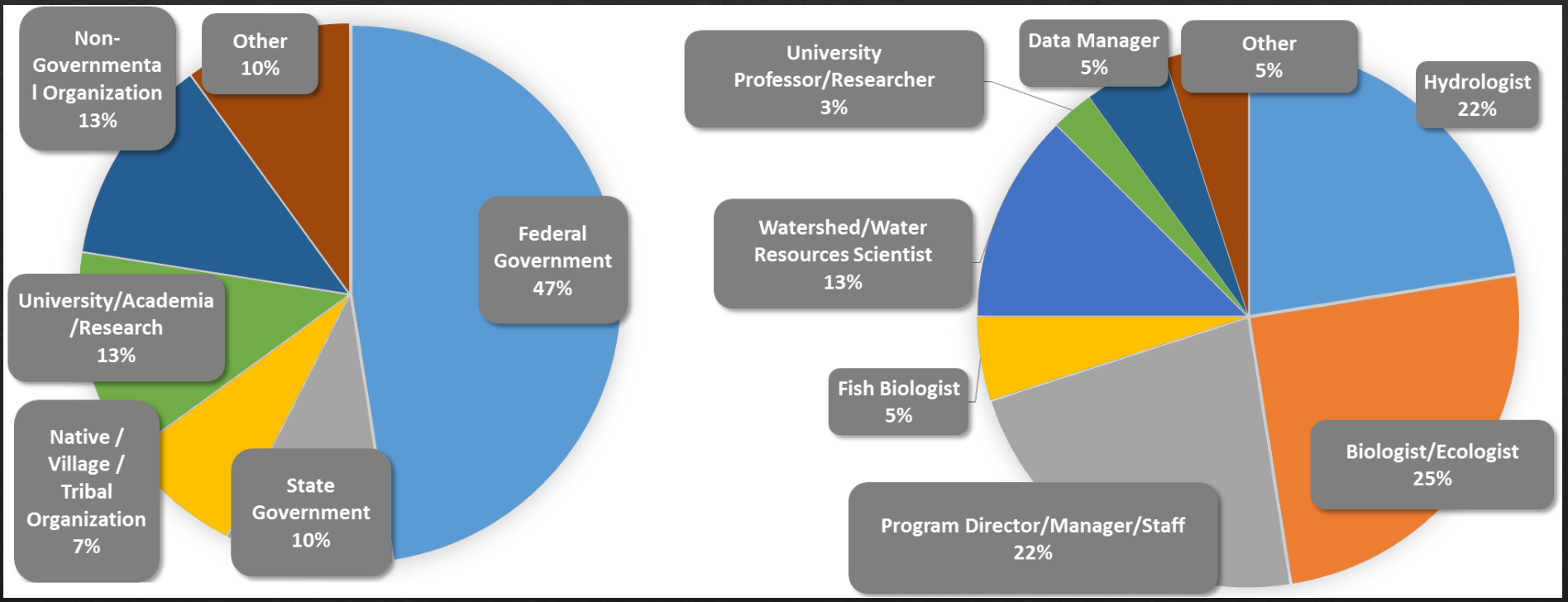

Barrow
Kotzebue
Fairbanks
Bethel
Dillingham
Juneau
Sensor Duration
Years
11 - 13
6 - 10
4 - 5
2 - 3
1
n= 161

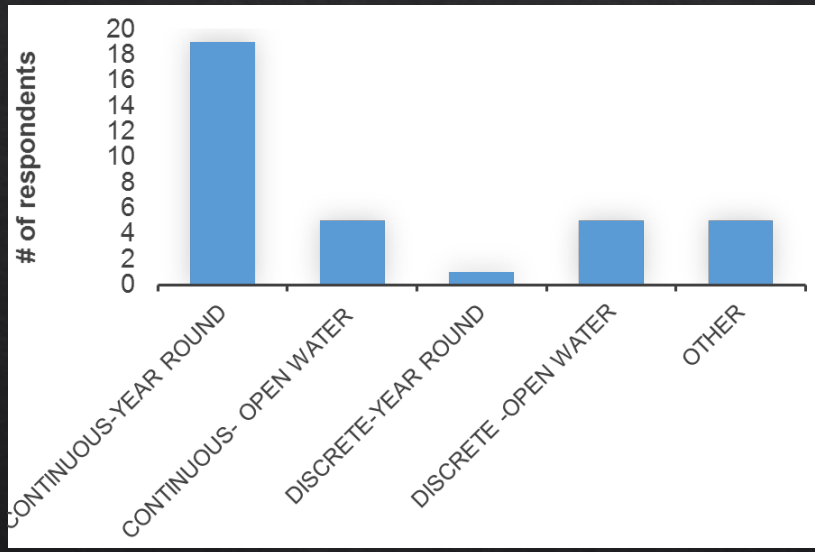
Geist 2015

Survey Participants (n=41)

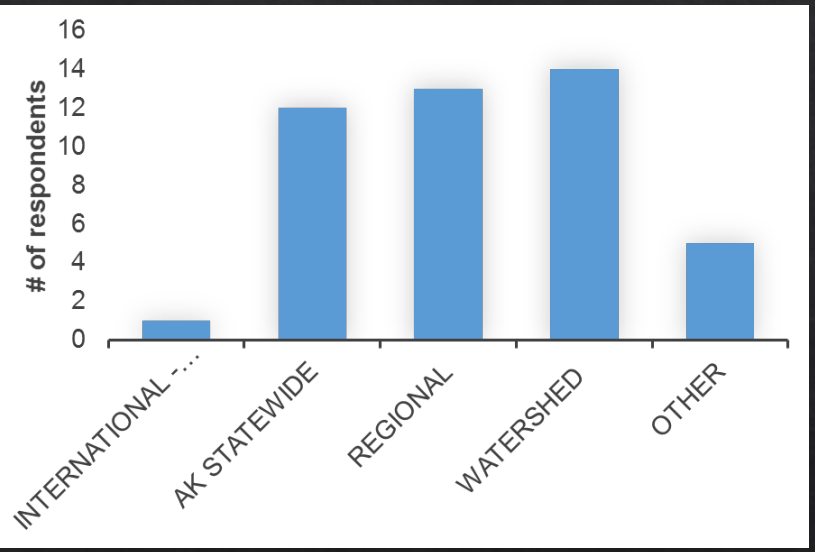


Survey Participants (n=41)

How do you collect your data?



Where do you collect your data?



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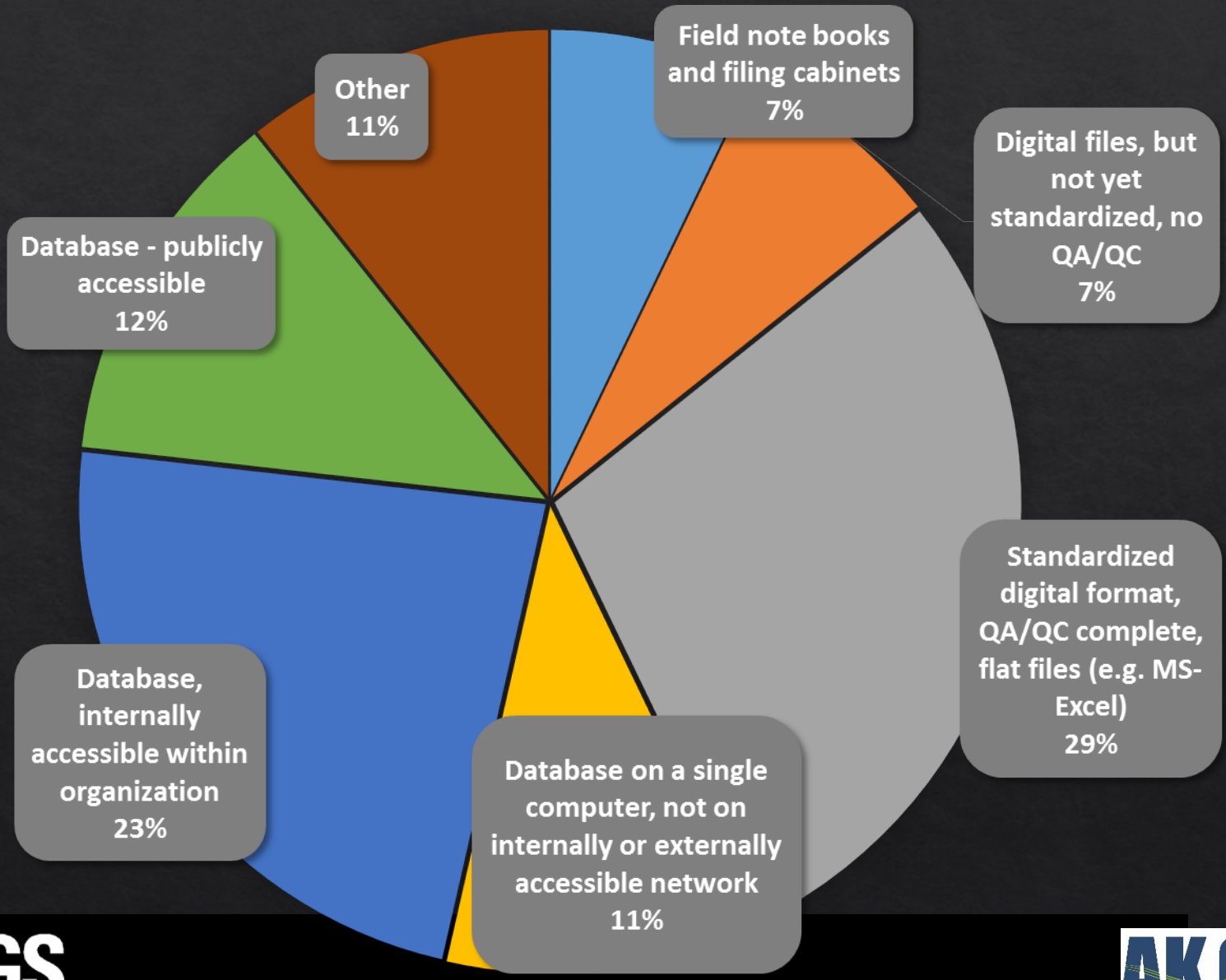
How do you currently store your data?



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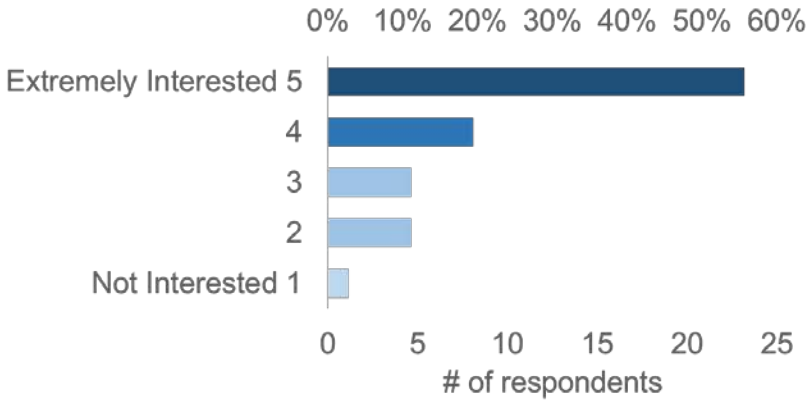
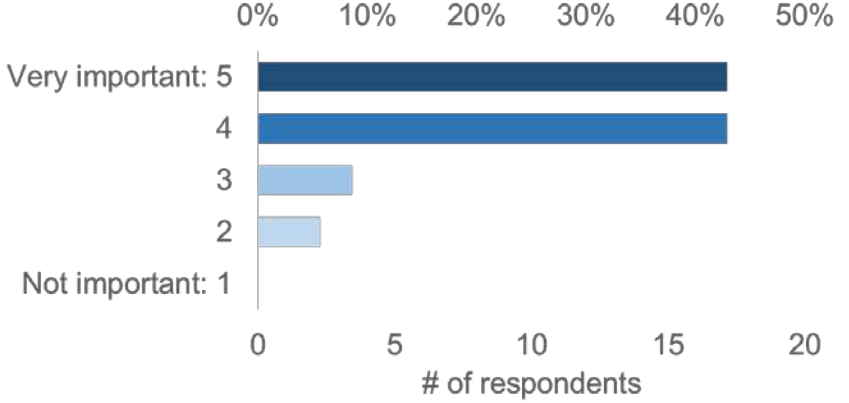
Alaska Stream Temperature Community

Is your organization interested in stream temperature data storage and distribution site for public use?



Store and retrieve data AND metadata from site?



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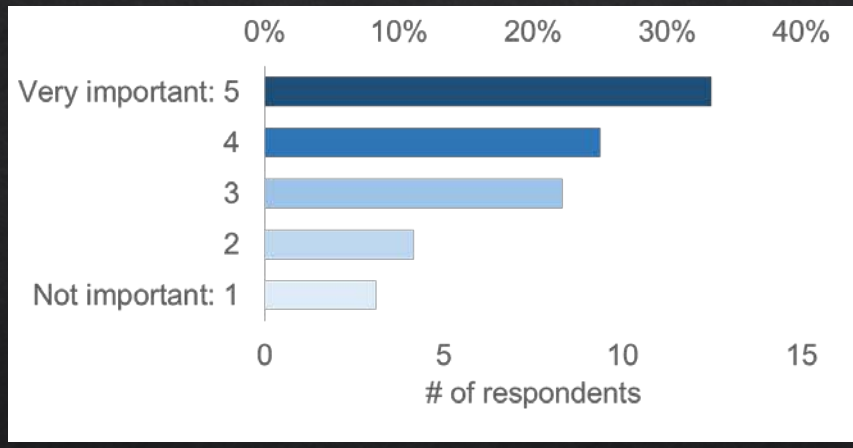
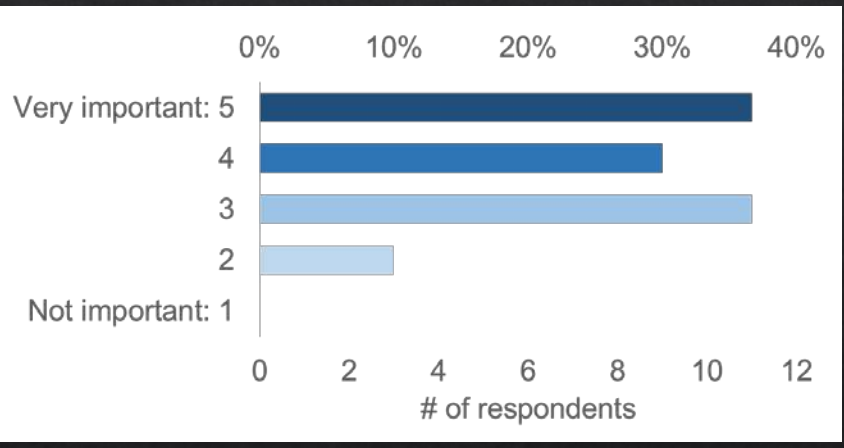
Visualize measurement data?



Add other data layers for visualization?



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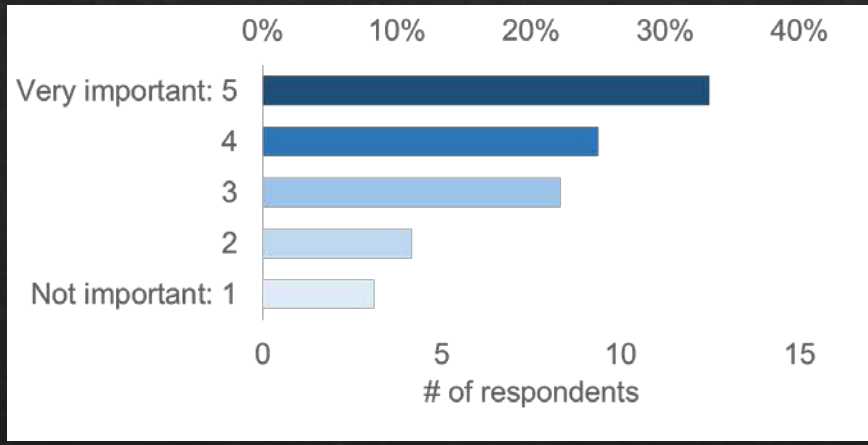
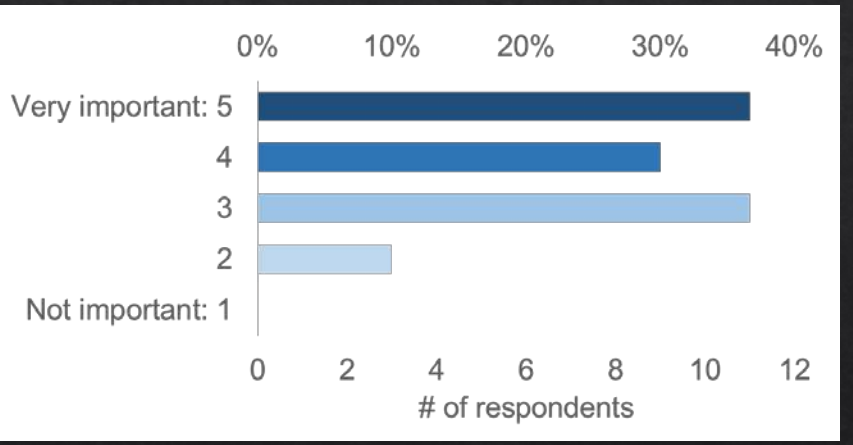
Alaska Stream Temperature Community

Restrict/manage data download and usage?



Viewable in other portals via Web Mapping Service?



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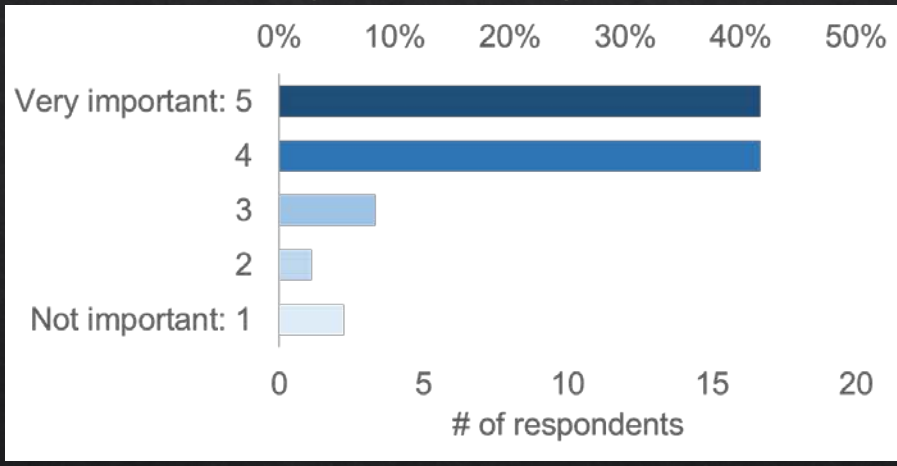
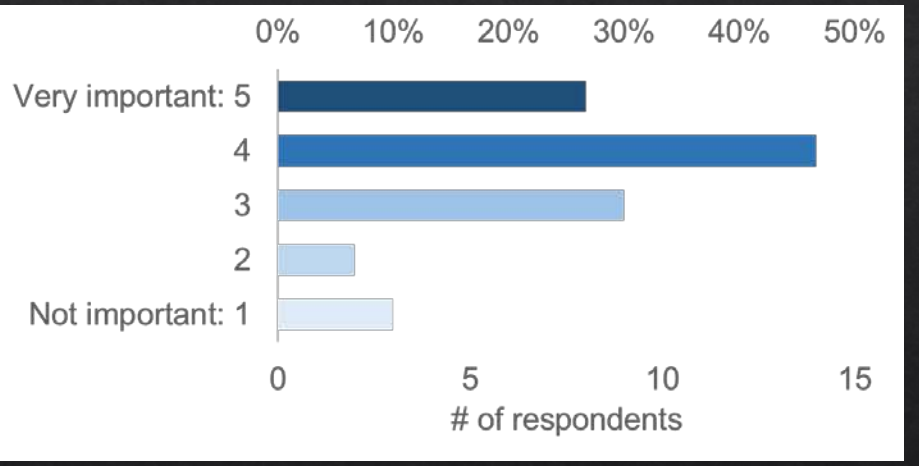
Alaska Stream Temperature Community

Spatial Query?



Text Query?



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Workshop Participants (n=54)

No suggestions to revise data and metadata minimum standards.

Would like ability to store raw and/or corrected data depending on organization/agency.

- Machine readable data would allow for other portals to harvest data.
- Existing infrastructure that may support a data site include ScienceBase, SHARE, CHORUS (institutional repositories), Dataone.org, etc.

Alaska Stream Temperature Community

Lots of great examples for services site that include IMIQ, IOOS, AKOATS, IARC, EPA, CUAHSI,Data Basin, etc.

- Would like support tools to assist with data management and qa/qc of data.
- Existing tools such as NOREAST, Geonetwork, metacat, metadata editors, etc.
- Social networking may help to increase network and qa/qc.

Alaska Stream Temperature Community

Additional purpose of site would be to encourage regional data analysis

Alaska has its own challenges (i.e., remote locations, sparse data, etc.) and research questions that provide different opportunities than some of the larger stream temperature networks in the lower 48.

Discussion

- There is a large interest in developing a publicly accessible site that would allow for storing, retrieving and visualizing stream temperature data.

- There is an immediate need for a data storage site.

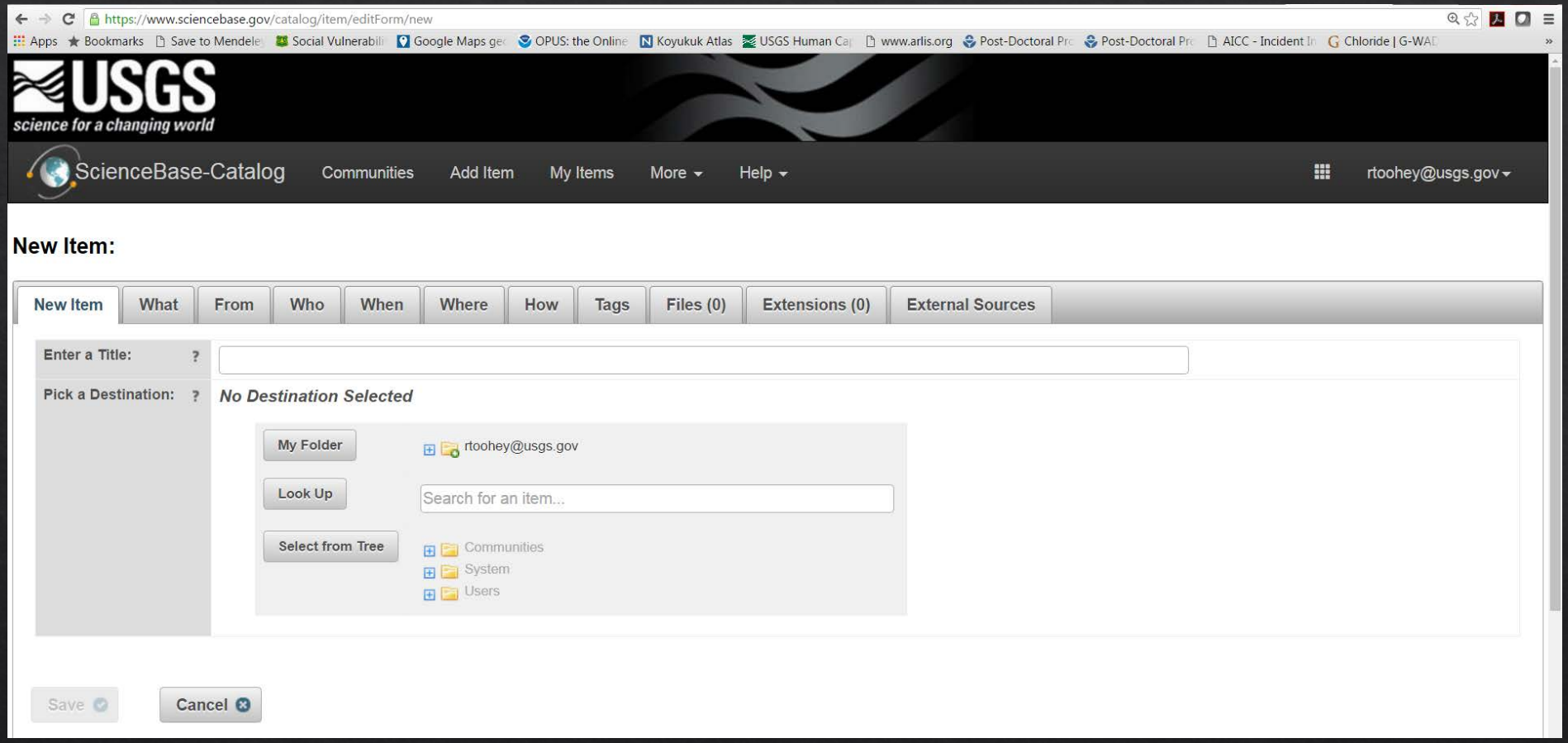
- Most stakeholders indicating they would like to share their data as long as certain access/permissions were required.

Discussion

To focus on data archive sustainability there would be a ‘data site’ and a user friendly ‘service’ site.

At least one point person or staff within an agency or organization would be needed to serve as network data steward to facilitate network’s needs.

	Attribute	Description	Type (T, N) Text, Number	Domain (pick list)
WHO	ID	Unique identifier assigned by this project	T	no
	Agency_ID	Existing identifier from data source agency/organization, unique identification distinguishing each monitoring site	T	no
	SourceName	Data Source agency or organization using ADIwg list of organizations with some additions (Cook Inletkeeper, etc.)	T	yes
	Contact_person	Name of key contact person for data source agency	T	no
	Contact_email	Email for key contact person at data source agency	T	no
	Contact_telephone	Telephone number for key contact person at data source agency	T	no
WHERE	Latitude	Latitude of monitoring station , decimal degrees	N	no
	Longitude	Longitude of monitoring station , decimal degrees	N	no
	Coordinate_Datum	to which Horizontal Datum are the coordinates referenced (NAD83, WGS84)	T	yes
	Location_Method	GPS, interpolated from a map,	T	yes
	Sensor_Placement	Main channel, side channel, slough, streambed (hyporheic zone),	T	yes
	Location_Description	text to describe relative sensor location, details regarding sensor 's position (e.g. "on downstream side of large boulder","on gaging standpipe", or "cabled to tree with placard")	T	no
	Waterbody_name	Name of stream, river, or lake being monitored; use the Geographic Names Information System (GNIS), from USGS	T	no
WHAT	Waterbody_type	Waterbody type being monitored: stream or river; pond or lake (S, L)	T	yes
	Temp_unit	Fahrenheit or Celsius	T	yes
	Other_Parameters	Any other parameters monitored at this site? (water chemistry, physical water quality, flow, depth, fish counts, etc). (1= YES, 0=NO)	N	yes
	Other_Air	Other Parameters monitored at or near the sensor site: Air Temperature (1= YES, 0=NO)	N	yes
	Other_Bio	Other Parameters monitored at or near the sensor site: Biological data: fish, aquatic ecology, plants (1= YES, 0=NO)	N	yes
	Other_Flow	Other Parameters monitored at or near the sensor site: Flow and or gage height or lake level (1= YES, 0=NO)	N	yes
	Other_WQC	Other Parameters monitored at or near the sensor site: Water Quality - Chemical parameters (1= YES, 0=NO)	N	yes
	Other_WQP	Other Parameters monitored at or near the sensor site: Water Quality Physical parameters: pH, conductivity, dissolved oxygen (1= YES, 0=NO)	N	yes
	Other_text	Other Parameters monitored at or near the sensor site: other data	T	no


https://www.sciencebase.gov/catalog/item/editForm/new
Apps
Bookmarks
Save to Mendeley
Social Vulnerabili
Google Maps ge
OPUS: the Online
Koyukuk Atlas
USGS Human Ca
www.arlis.org
Post-Doctoral Pro
Post-Doctoral Pro
AICC - Incident In
Chloride | G-WAD
USGS
science for a changing world
ScienceBase-Catalog
Communities
Add Item
My Items
More
Help
rtoohey@usgs.gov
New Item:
New Item
What
From
Who
When
Where
How
Tags
Files (0)
Extensions (0)
External Sources
Enter a Title:
Pick a Destination:
No Destination Selected
My Folder
rtoohey@usgs.gov
Look Up
Search for an item...
Select from Tree
Communities
System
Users
Save
Cancel

Federal Community of Crowdsourcing and Citizen Science

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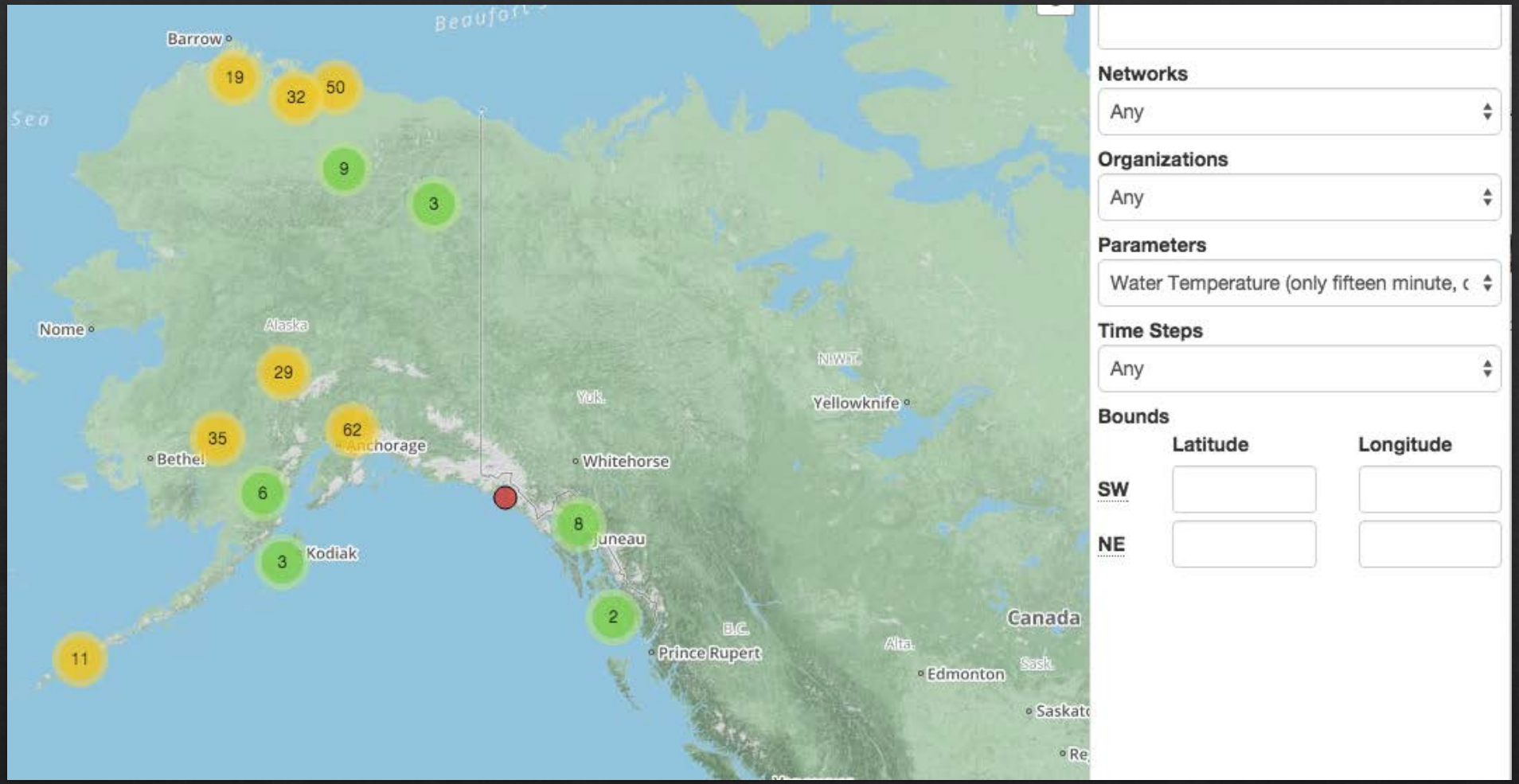

Water Temperature Data

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IMIQ 2015

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Research Workspace: Scientific Collaboration and Data Management Platform

- Researchers organize themselves into teams for projects and larger scale research campaigns
- Data, sampling designs, contextual information, analytical workflows and results can be securely shared and transformed among team members
- Users can generate scientific metadata for information resources (ISO 19115-1/2)
- Users can then elect their project and selected data files to be published to publicly accessible portals.

Alaska Stream Temperature Community

Step 1: Gather Data and metadata

Step 2: Upload to existing data storage site

Step 3: Work to make data machine readable

Step 4: Develop services site with visualization, qa/qc tools, resources, etc.

Step 5: Attempt regional analyses

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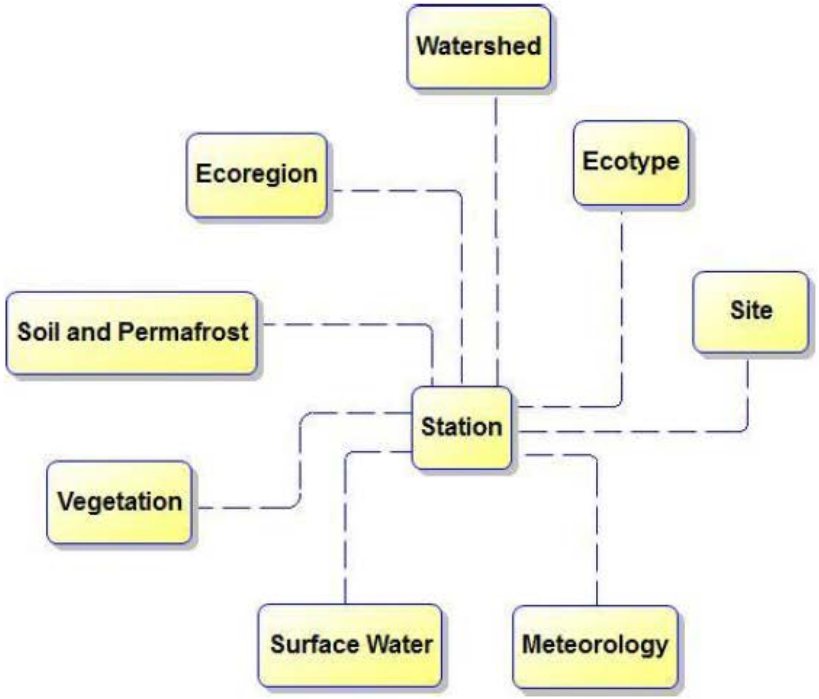
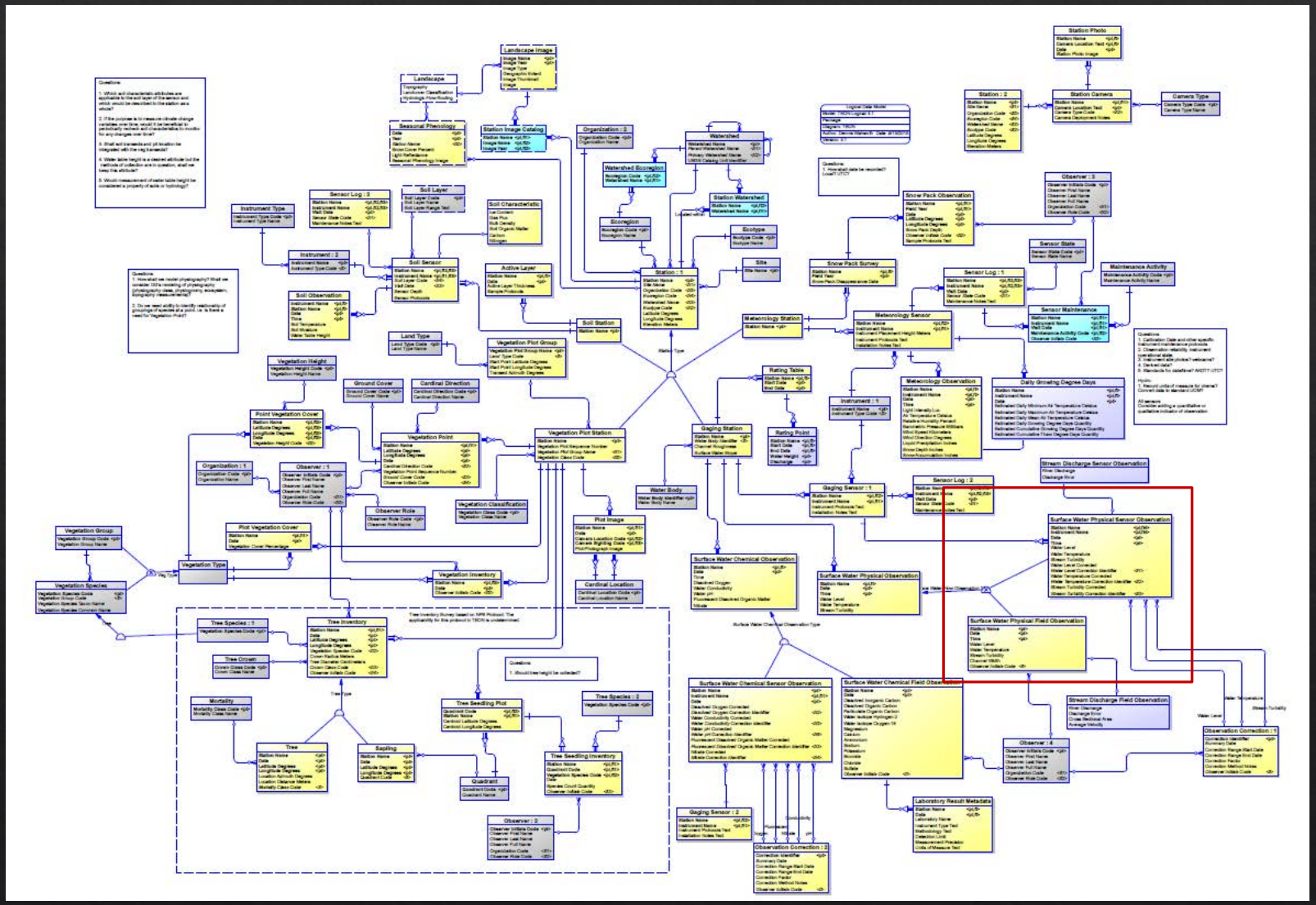
TEON Conceptual model



TEON Data Model



Walworth 2015

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Questions?

Thank you to Alaska Science Center for providing support and locations services for the workshop. Geist, Trammell and Toohey designed the online survey. The AK Climate Science Center and the Western Alaska Landscape Conservation Cooperative provide direction and support for the workshop design and execution. Many thanks to all participants for providing information on the stream temperature communities data needs and possibilities!

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