



Connecting through
crowdsourcing data-
the Stream Tracker Project

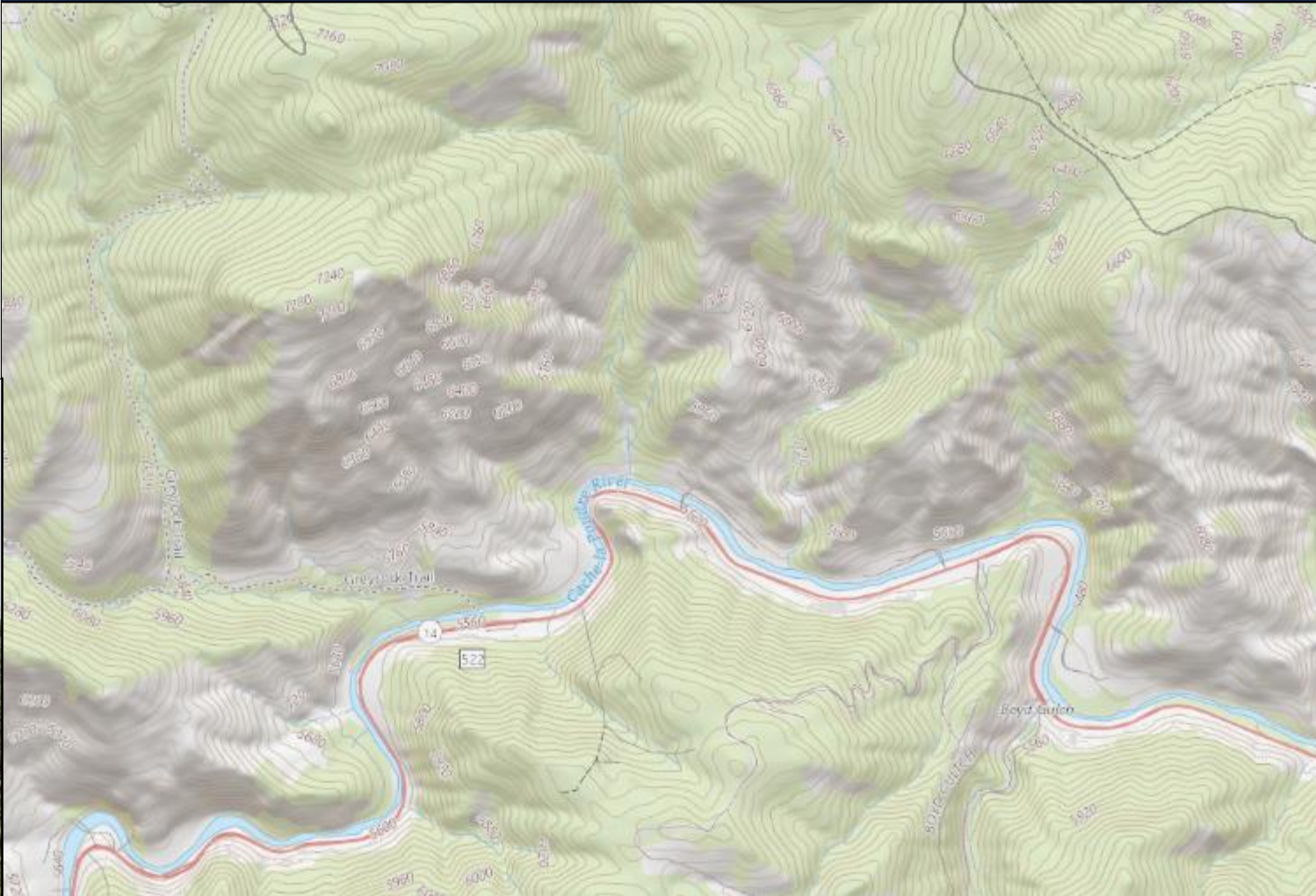
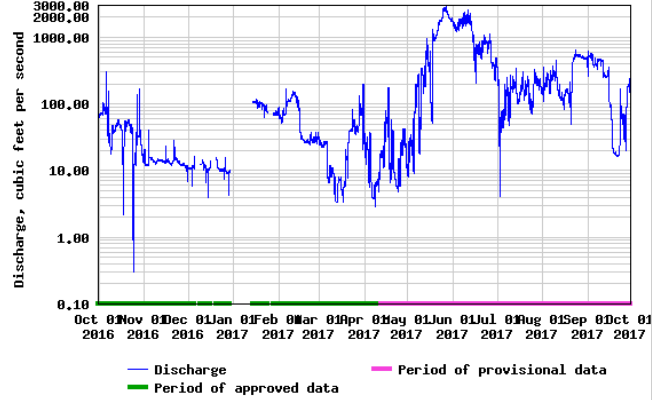
Kira Puntteney-Desmond

info@streamtracker.org

www.streamtracker.org

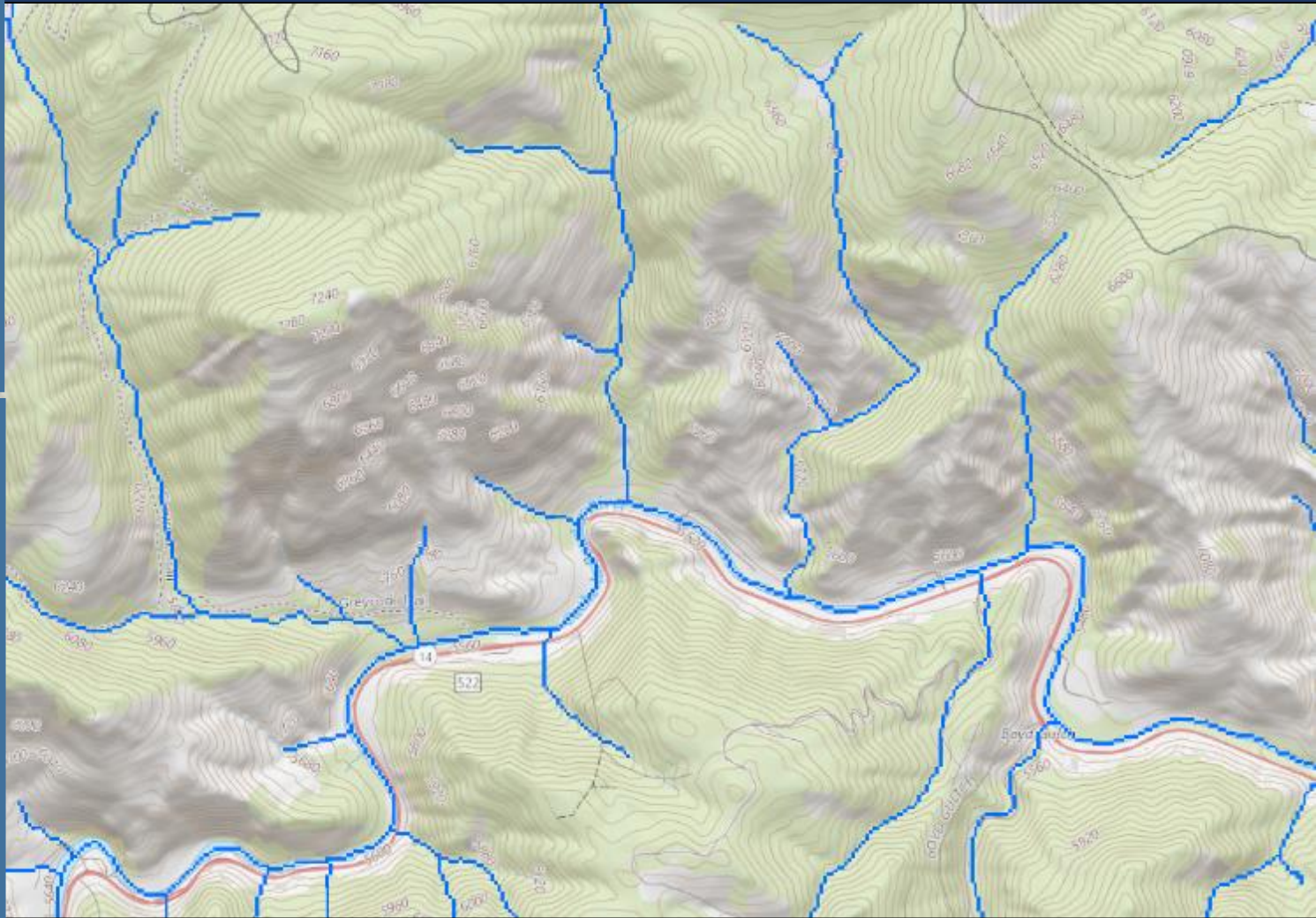
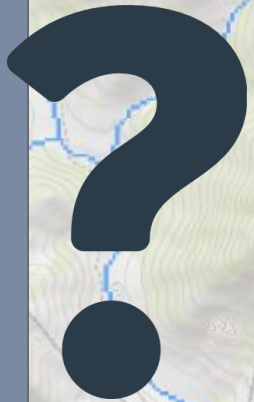
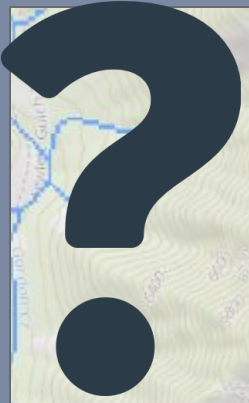


USGS 06752260 CACHE LA POUDE RIVER AT FORT COLLINS, CO



PERENNIAL

Flows year round



INTERMITTENT

Flows seasonally or only part of the year

CROWDSOURCING



STREAMFLOW PRESENCE/ABSENCE
OBSERVATIONS



STREAMTRACKER

Community Powered Stream Monitoring



Improve the **mapping and monitoring** of flow condition of smaller, **intermittent streams** through **crowdsourced observations** of **streamflow presence and absence**



NATION-WIDE



700+ VOLUNTEERS



8000+
OBSERVATIONS

THE BASICS





anecdata

anecdata

Stream Tracker

2531 observations 214 members

+ New Observation

About this project

Observations 2531

Project photos 2121

Members 214

Discussion forum 2

Data analysis

More...

Stream Tracker

Colorado State University | Rivers and streams where they intersect roads or trails

Anyone can join! Project started 2019

scistarter affiliate

+ New Observation

About this project

Stream Tracker is a community-powered stream monitoring project to improve the mapping and monitoring of smaller, intermittent streams through crowdsourced observations of streamflow presence and absence.

<http://streamtracker.org>

Project goal

What participants do:

Related projects

Flood Tracker

Mobile? get the app!

Anecdata.org

iOS

Android

CitSci.org

CitSci

Stream Tracker

Download the NEW Mobile Apps for Android and iOS! Learn about the latest release

560 members

5944 observations

962 locations

10377 measurements

Welcome to Stream Tracker

About: Stream Tracker is a community powered stream monitoring project to improve the mapping and monitoring of smaller, intermittent streams through crowd sourced on-the-ground observations of streamflow presence and absence.

Project Owner

Kira Puntenney

Contact Manager

CITIZEN SCIENCE SUPPORT PLATFORMS



CITIZEN SCIENCE SUPPORT PLATFORMS

anecdata 



- Project home page
- Customizable datasheets
- Volunteer management tools
- Mobile application
- Data visualization
- Downloadable database
- Citizen science network and community
- FREE
- Support



ROADS



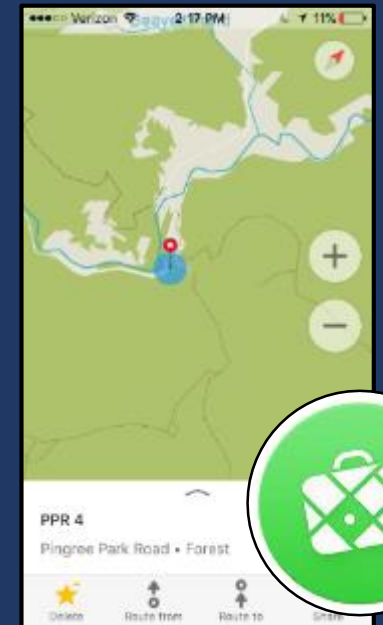
TRAILS



NEW SITES

ESTABLISHED
SITES
(hotspots)

IN or OUT OF
CELL RANGE





FLOW



NO FLOW

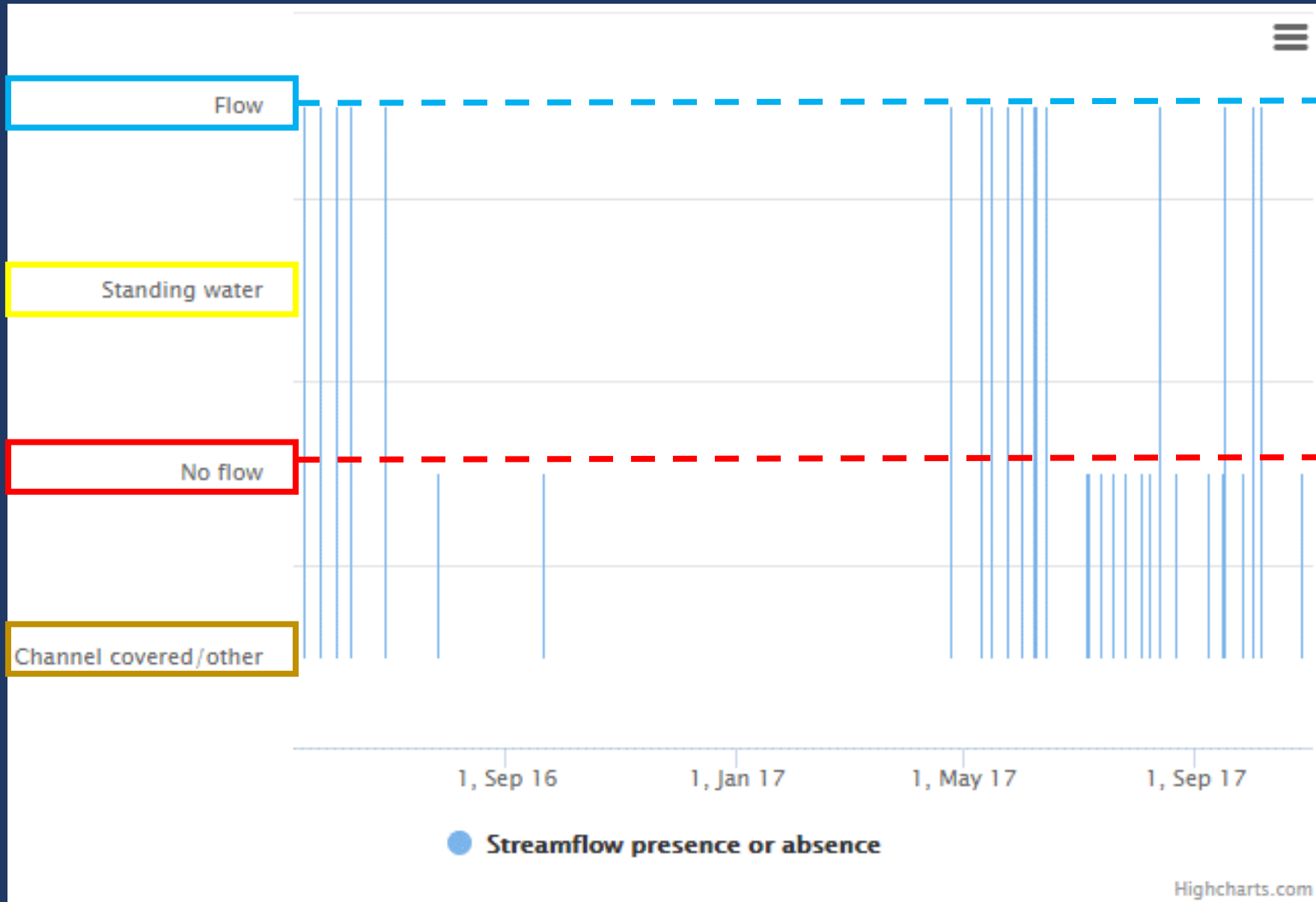


STANDING
WATER



CHANNEL
COVERED/
OTHER

POWER OF THE CROWD = DATA



WHO PARTICIPATES

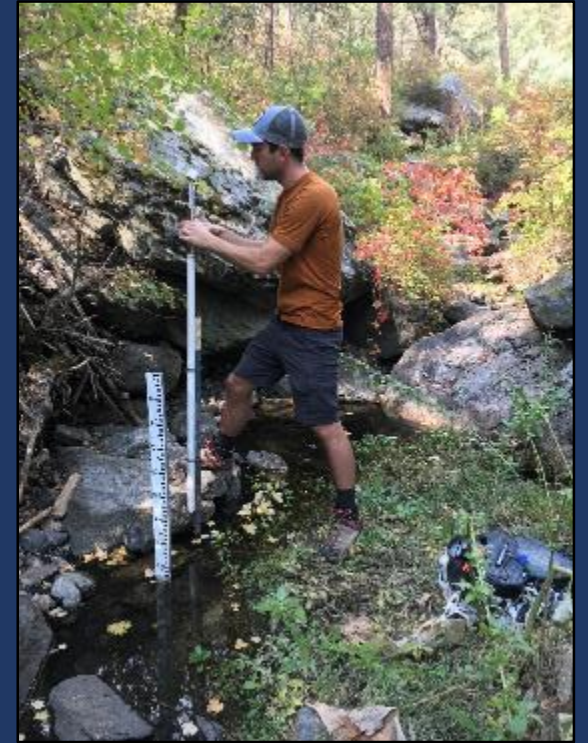
ANYONE!



Recreators
School groups



Homeowners

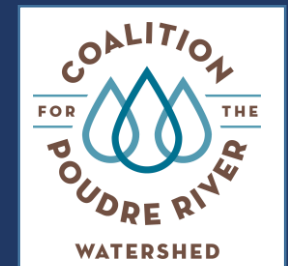


Experts
Students

Volunteers and Organizations

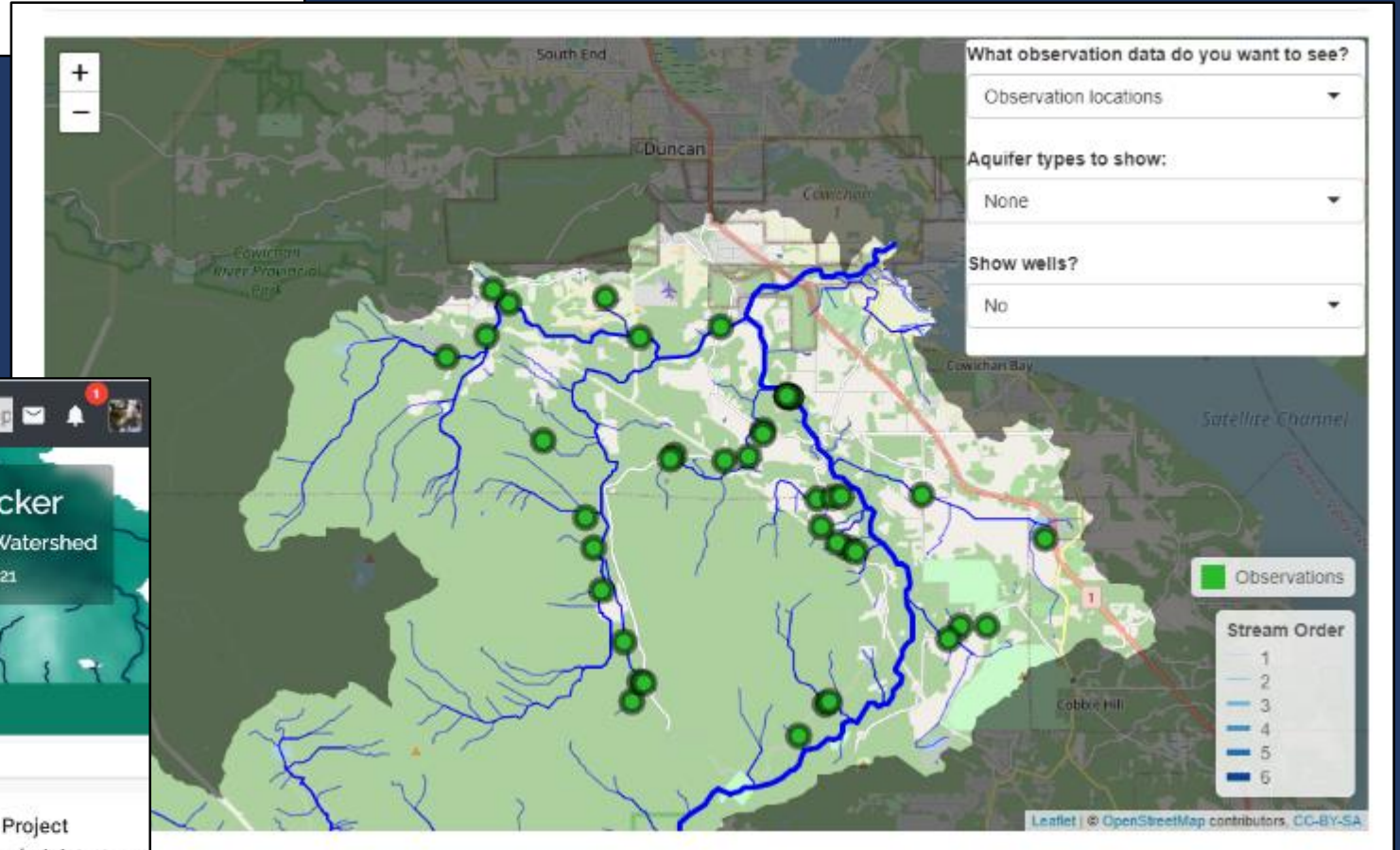


Poudre Wilderness Volunteers
Caring For Northern Colorado Wilderness



KOKSILAH CONNECTIONS

Low flow monitoring to understand groundwater-surface water connections while building human connections



A screenshot of the Koksilah Stream Tracker project page on the anecdata platform. The page features a navigation bar with 'Home', 'Projects', 'Explore', 'Donate', and 'About'. The main content area includes a project title 'Koksilah Stream Tracker' with 539 observations and 20 members. A 'Join project' button is visible. The page also displays 'About this project' information, a 'New Observation' button, and a list of project administrators.

anecdata

Home Projects Explore Donate About Search for people

Koksilah Stream Tracker
539 observations 20 members

Join project

About this project
Observations 539
Project photos 611
Members 20
Discussion forum 0
More...

Koksilah Stream Tracker
University of Victoria | Koksilah Watershed
Anyone can join! Project started 2021

About Licensing Information

+ New Observation

About this project
In the Koksilah watershed the groundwater system has become stressed and there may not be enough water flowing in the summer to maintain critical flow levels. Participating in this monitoring project will help identify where groundwater and streamflow are connected and therefore understand how best to care not just for the Koksilah River but the watershed as a whole.

Project administrators
Kris... @kdl...
Kris... @dis...

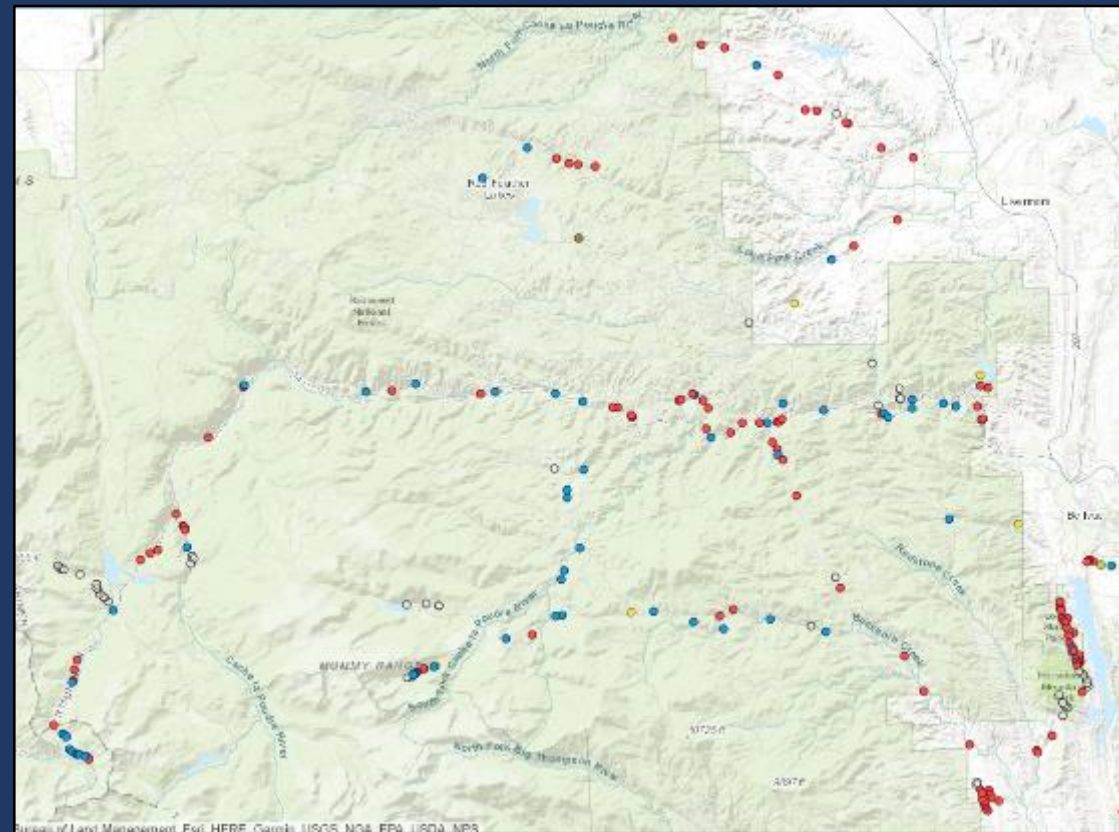
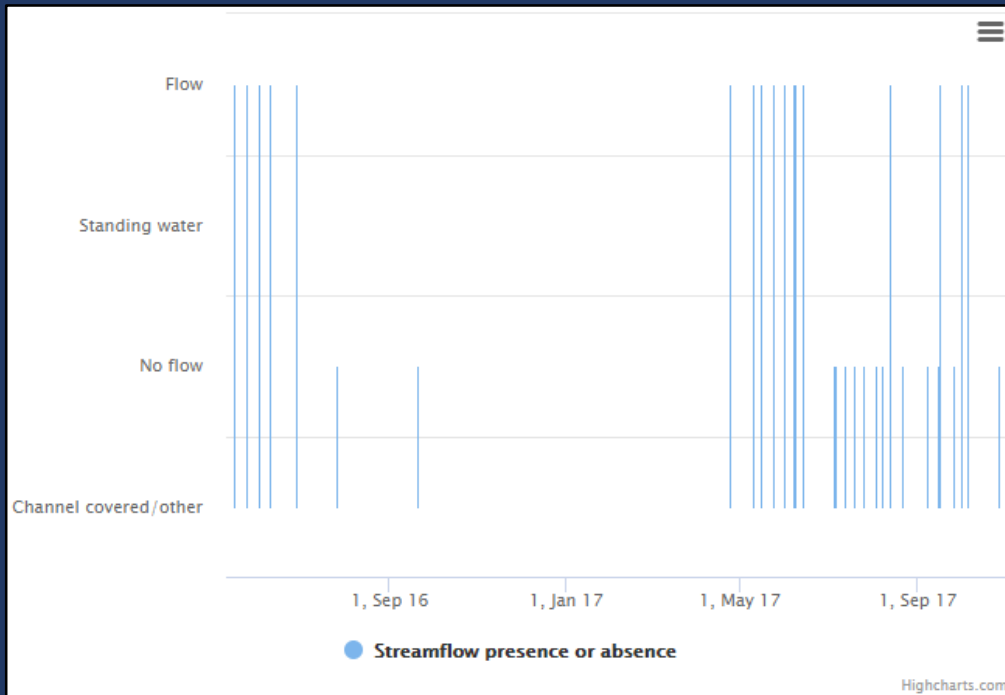
<https://koksilahconnections.weebly.com/>



Intermittent streams are variable in both

SPACE

TIME



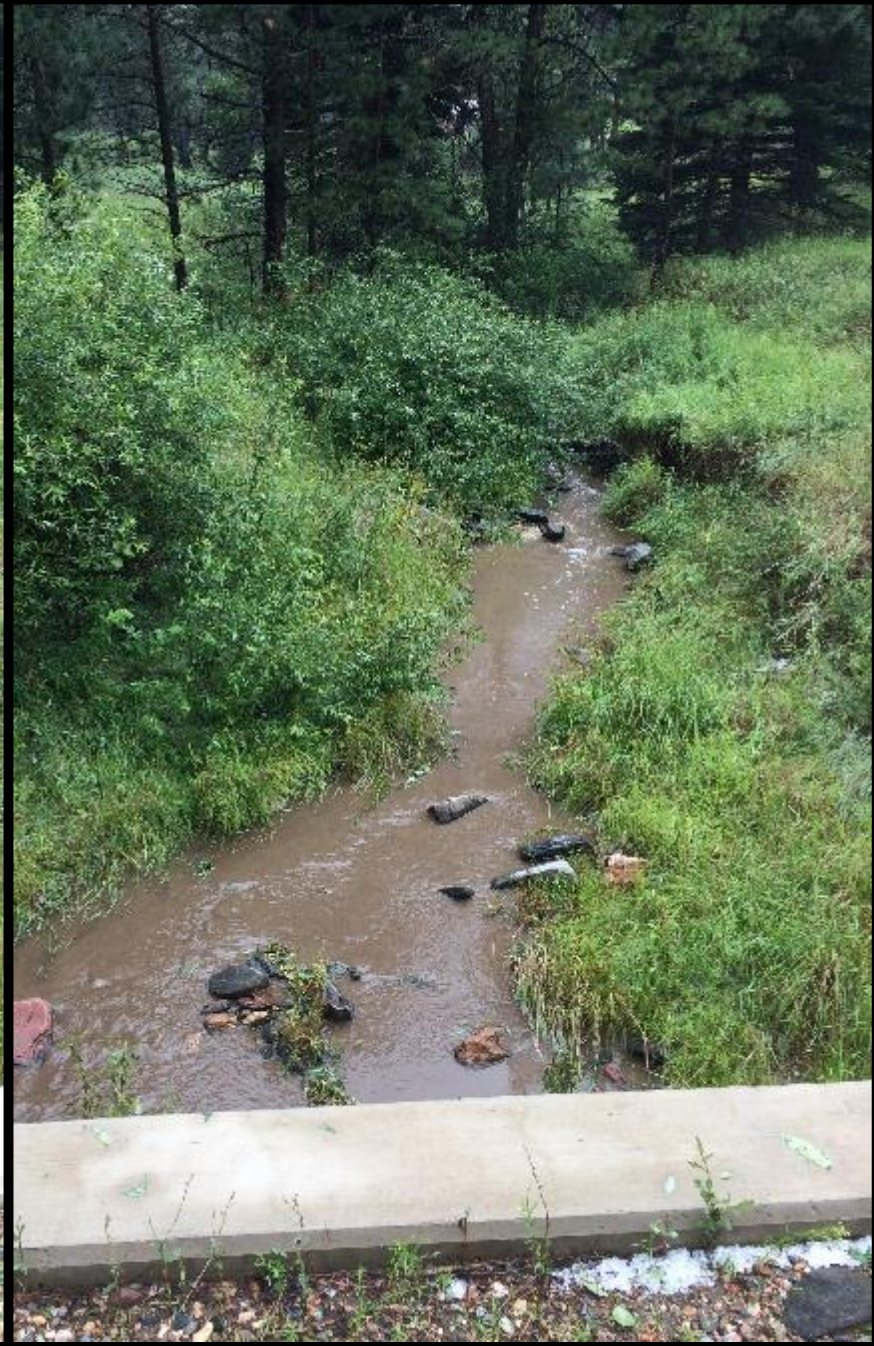
September Stream Track-a-thon

- Flow
- No flow
- Standing water
- Other

SEASONAL CONDITIONS



STORMS



MAJOR EVENTS



POST-FIRE



POST-FIRE



May 6



June 28



July 26



September 2

2021 following Cameron Peak fire

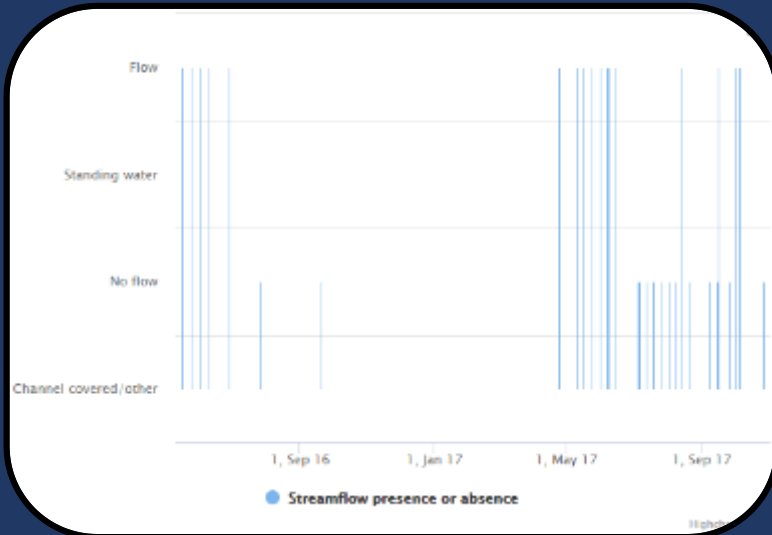
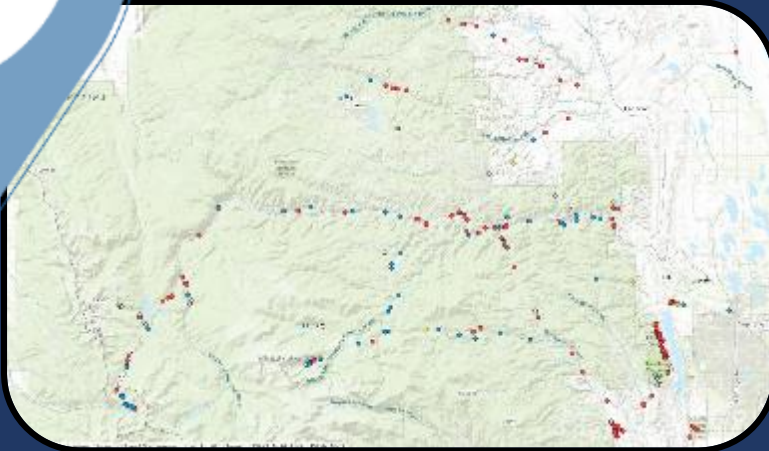
DRY/WET CYCLES



STREAM TRACKER OBSERVATIONS

→ MAP OF STREAM TYPES

ANALYZE



1. Predict flow or no flow on a day with many observations
2. Convert observations to channel type

If no flow observed AND some observations were in wet time of year → **Ephemeral** / rare flow

If only flow observed AND some observations were in dry time of year → **Perennial**

BOTH flow and no flow → **Intermittent**

Encompasses mostly dry to mostly wet

PREDICT FLOW DURATION FROM SENSORS

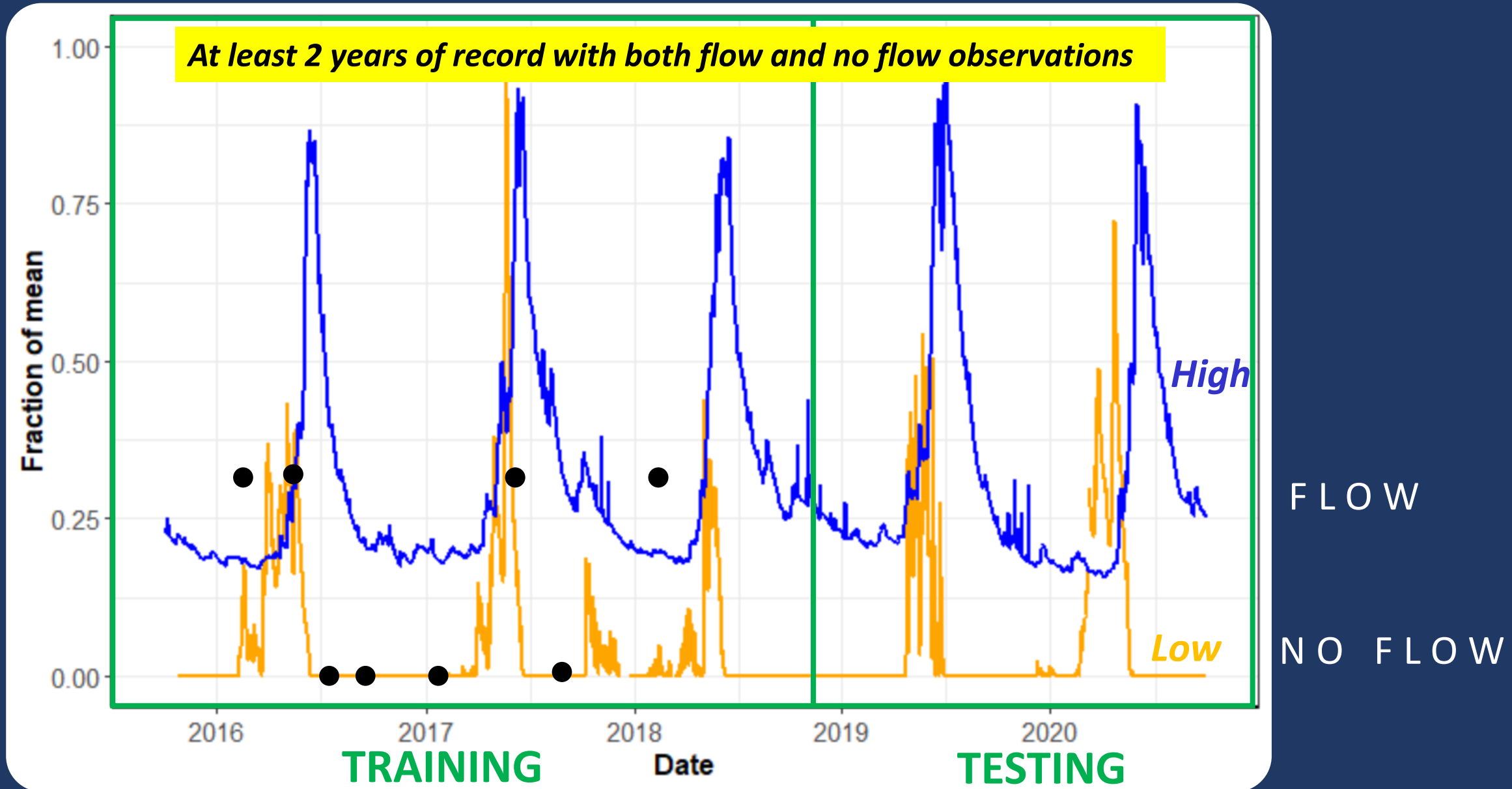


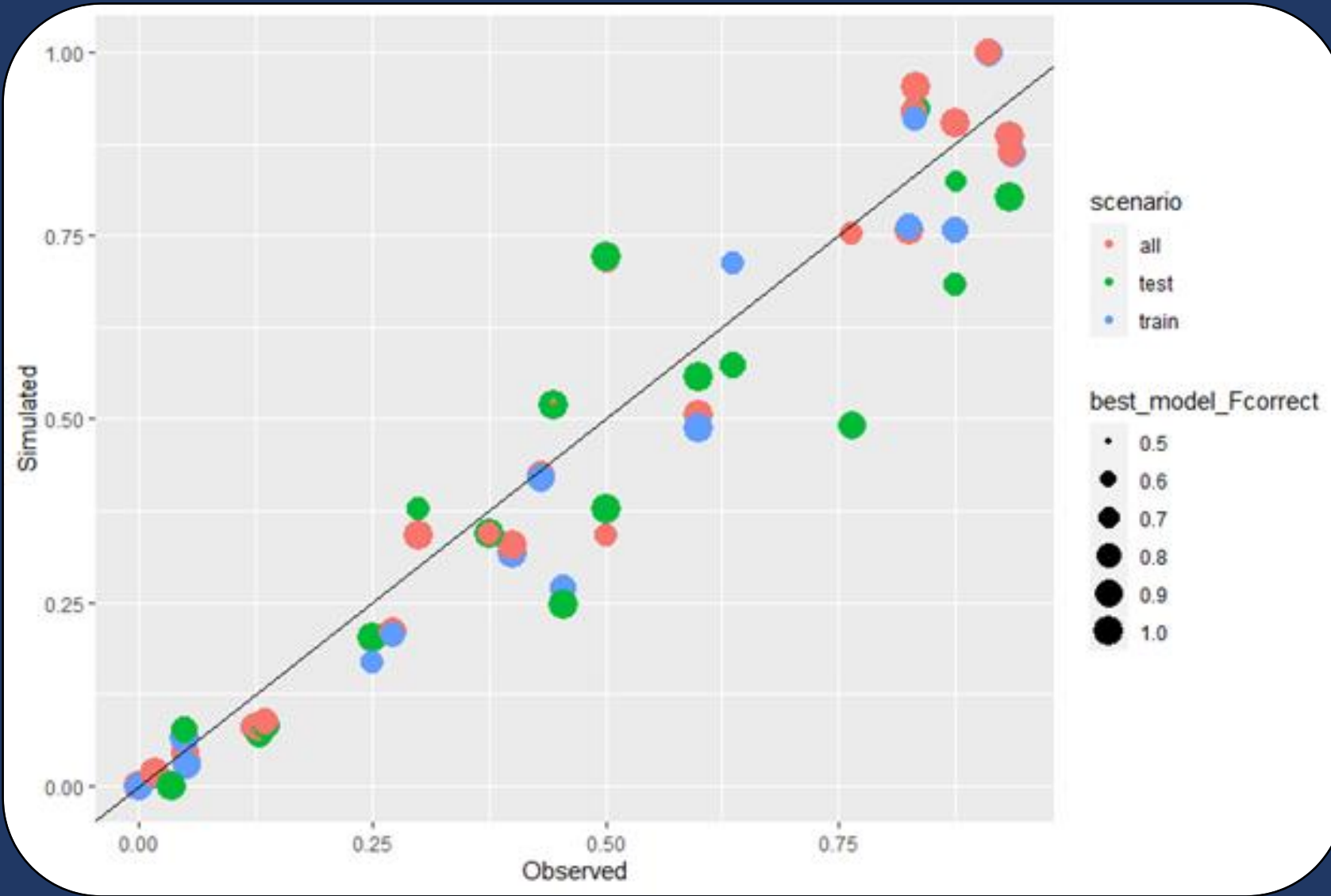
Variable predicted = April-September fraction of time with flow

Predictors = day of year, normalized stream stage from sensors

Method = flexible discriminant analysis

DATA NEEDS FOR FLOW DURATION PREDICTION

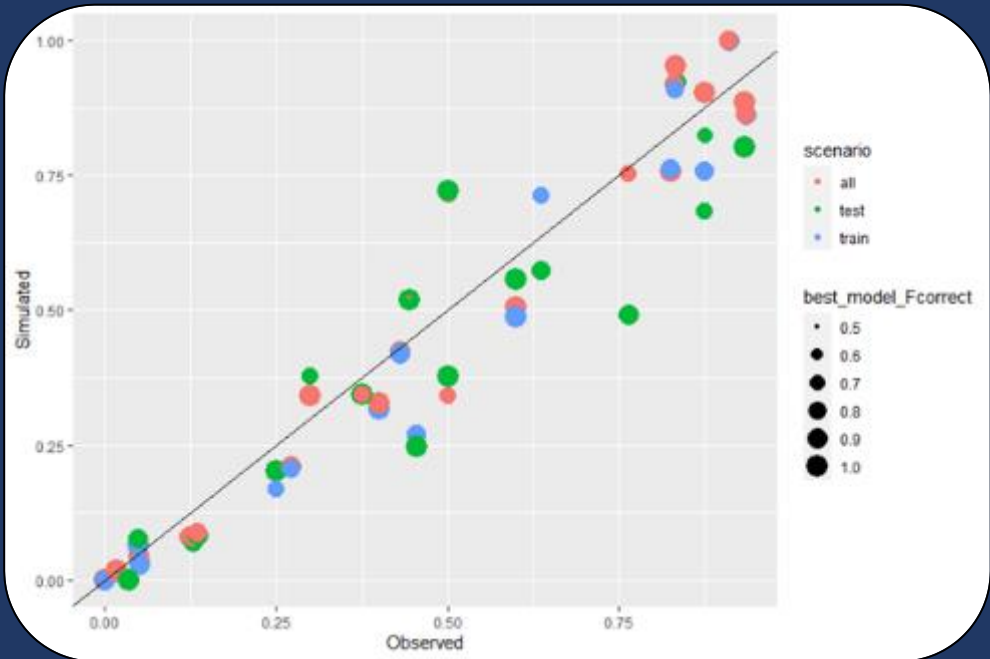
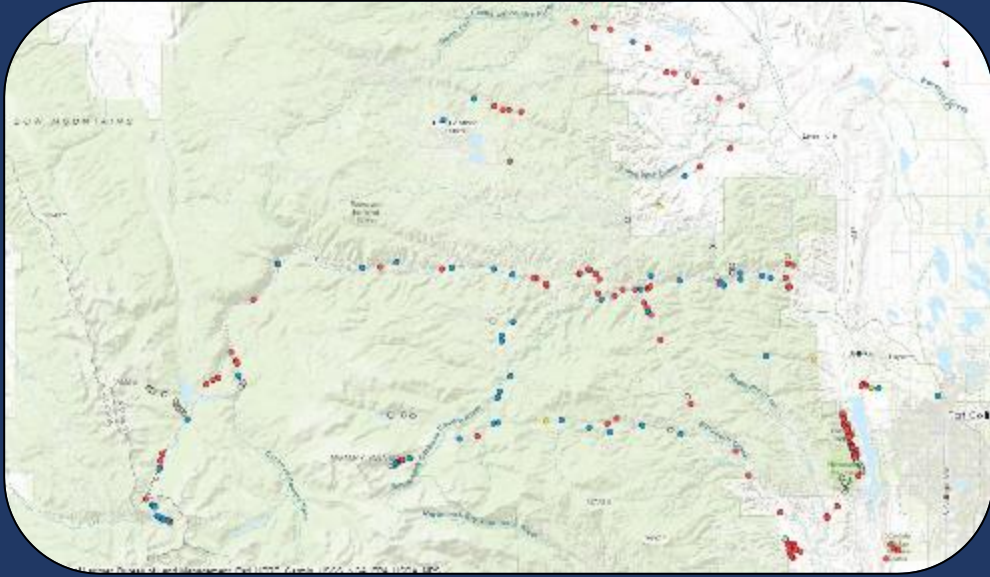




Observed = fraction of time with flow, Stream Tracker only

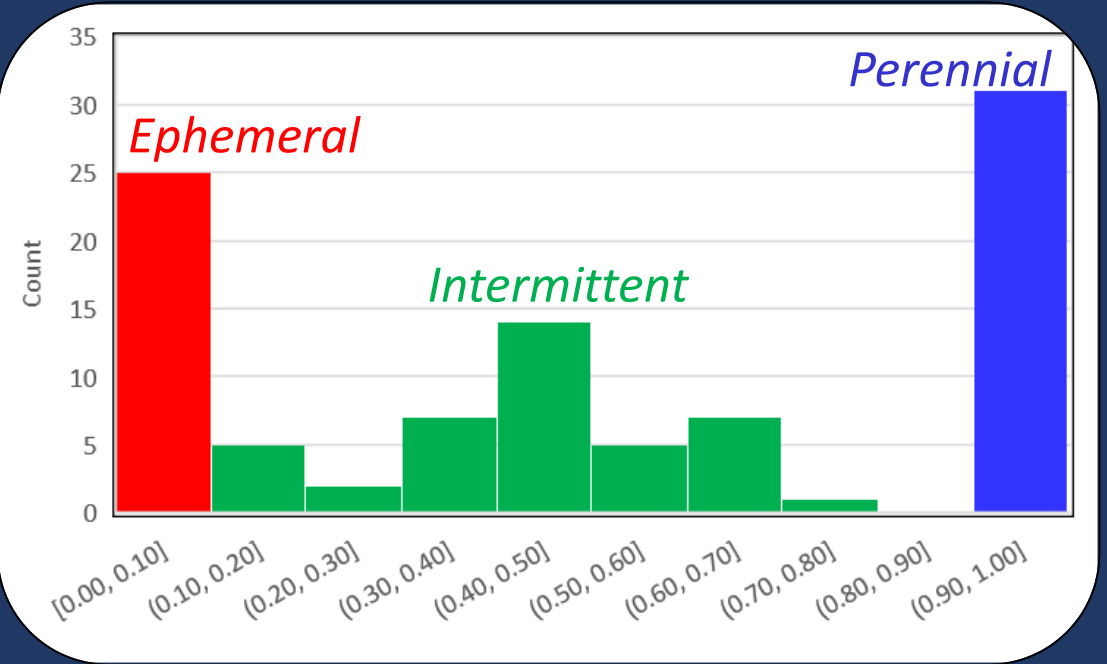
Simulated = modeled fraction of time with flow

SNAPSHOT IN TIME



CATEGORICAL

ephemeral, intermittent, perennial



Fraction of time with flow

CONTINUOUS

fraction of time with flow, varies by year

THE VALUE OF THE NETWORK COMMUNITY



THE VALUE OF THE NETWORK

AWARENESS



THE VALUE OF THE NETWORK



ADAPTABILITY



THE VALUE OF THE NETWORK



SCIENCE



THE VALUE OF THE NETWORK



YOU CAN JOIN
STREAM TRACKER!

FUN!



STREAMTRACKER

Community Powered Stream Monitoring

Visit www.streamtracker.org to
get started!

Thank you to Stephanie Kampf, NASA Citizen Science for Earth Systems Program, USFS Citizen Science Fund, Matt Fairchild & Arapaho & Roosevelt National Forests, the many other wonderful people who have helped develop Stream Tracker, and of course all of the Stream Trackers who have contributed observations