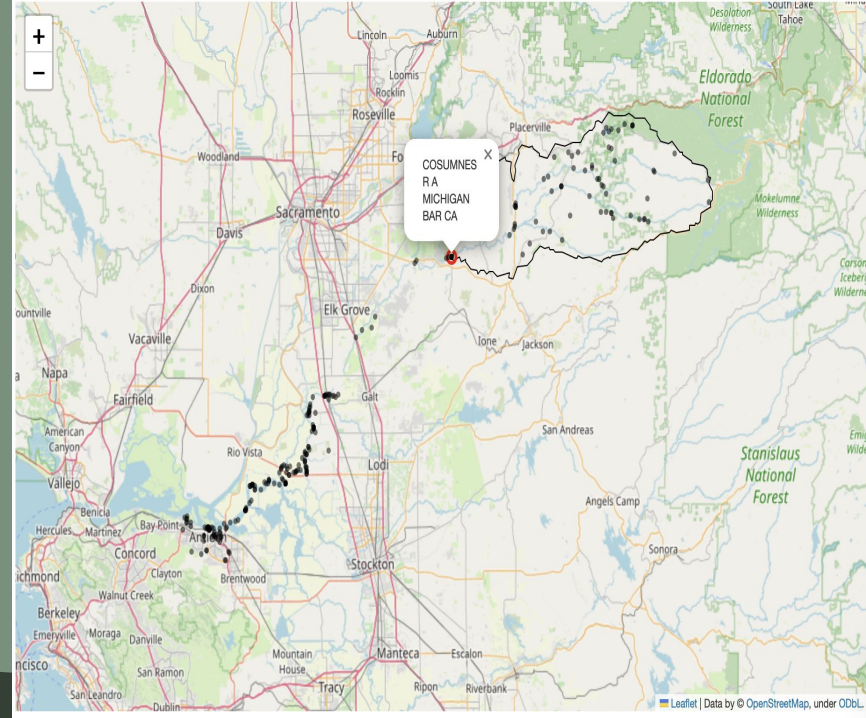


# Stream Flow Simulation

Name: Heroda Abera



# Stream flow simulation method

## Goals and Method:

- Data analysis of stream flow and temperature with seasonal variations to understand hydrological relations
- Retrieved a historical stream flow and temperature datas using NWIS API provided by USGS water Quality portal
- Visualizing/animating daily streamflow and temperature fluctuations over time for a site at Cosumnes River at Michigan Bar, CA
  - Site number = 11335000
  - Parameter code:
    - discharge/streamflow = 00060
    - Temperature = 00010
- Created an interactive map showing the sampling sites and names for california

### AVAILABLE DATA:

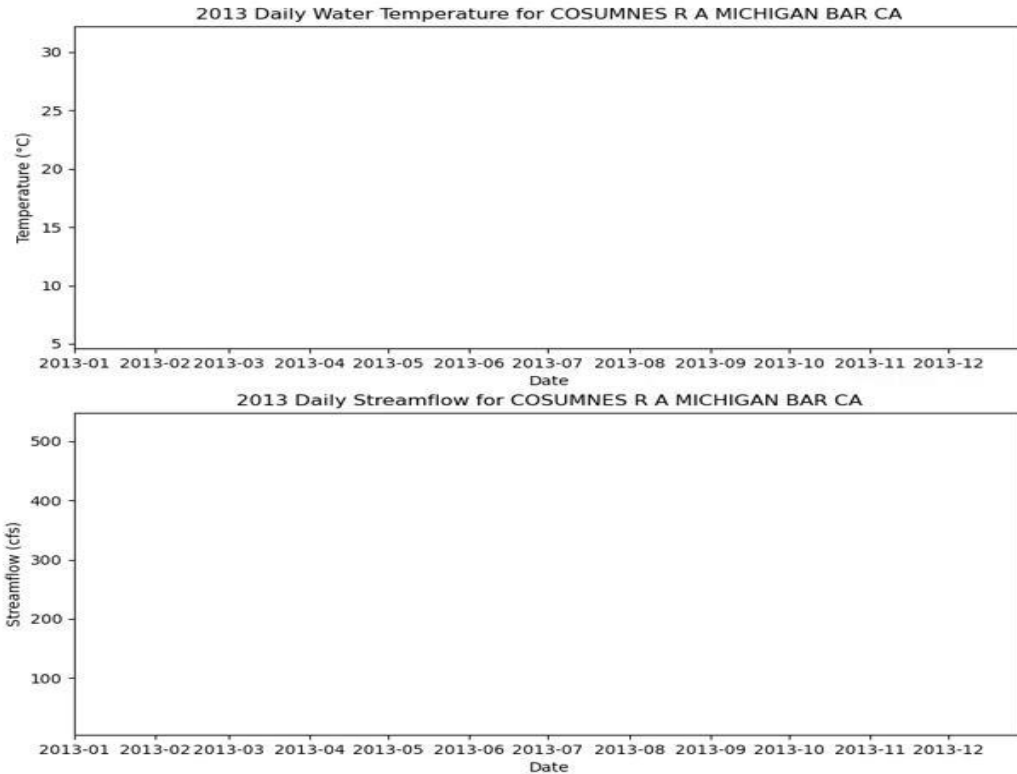
Data Type	Begin Date	End Date	Count
<b>Current / Historical Observations</b> (availability statement)	1983-03-11	2023-11-27	
<b>Daily Data</b>			
Temperature, water, degrees Celsius	1965-10-01	2016-03-02	13281
Discharge, cubic feet per second	1907-10-01	2023-11-26	42425
Specific conductance, water, unfiltered, microsiemens per centimeter at 25 degrees Celsius	2001-12-28	2003-09-29	1214
pH, water, unfiltered, field, standard units	2001-12-28	2002-11-25	632
Suspended sediment concentration, milligrams per liter	1962-10-01	1970-09-29	2445
Suspended sediment discharge, short tons per day	1962-10-01	1970-09-29	2921
<b>Daily Statistics</b>			
Discharge, cubic feet per second	1907-10-01	2022-10-17	42021
Suspended sediment concentration, milligrams per liter	1962-10-01	1970-09-29	2445
Suspended sediment discharge, short tons per day	1962-10-01	1970-09-29	2921
<b>Monthly Statistics</b>			
Discharge, cubic feet per second	1907-10	2022-10	
Suspended sediment concentration, milligrams per liter	1962-10	1970-09	
Suspended sediment discharge, short tons per day	1962-10	1970-09	
<b>Annual Statistics</b>			
Discharge, cubic feet per second	1908	2023	
Suspended sediment concentration, milligrams per liter	1963	1970	
Suspended sediment discharge, short tons per day	1963	1970	
<b>Peak streamflow</b>	1907-03-19	2021-10-25	116
<b>Field measurements</b>	1936-02-24	2023-10-12	377
<b>Field/Lab water-quality samples</b>	1952-10-23	2015-07-10	398
<b>Water-Year Summary</b>	2005	2022	18

### OPERATION:

Record for this site is maintained by the USGS California Water Science Center

Email questions about this site to [California Water Science Center Water-Data Inquiries](#)

# Animation and Plots

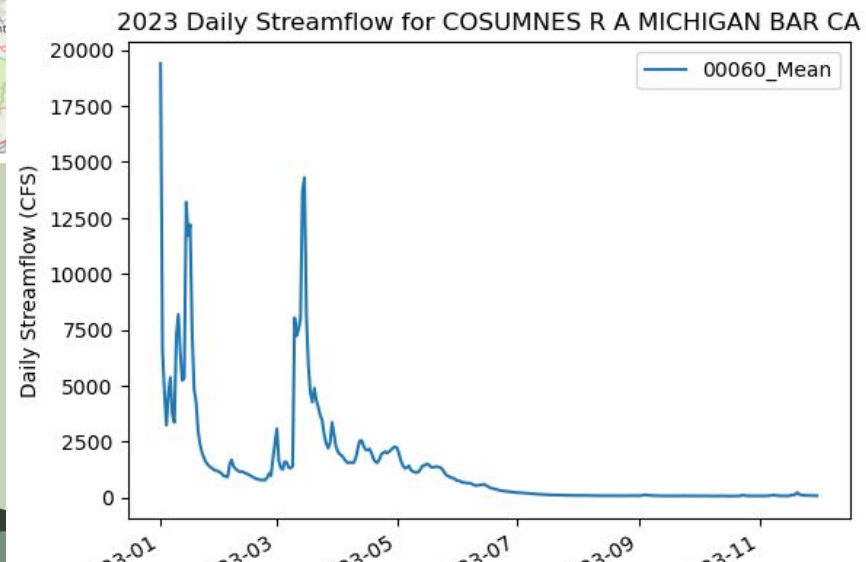
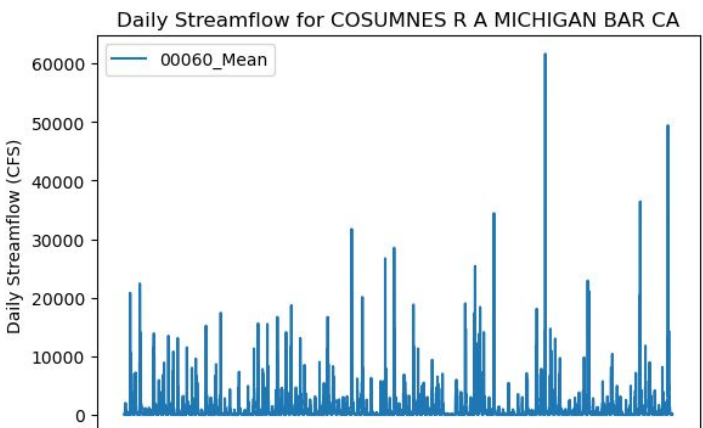
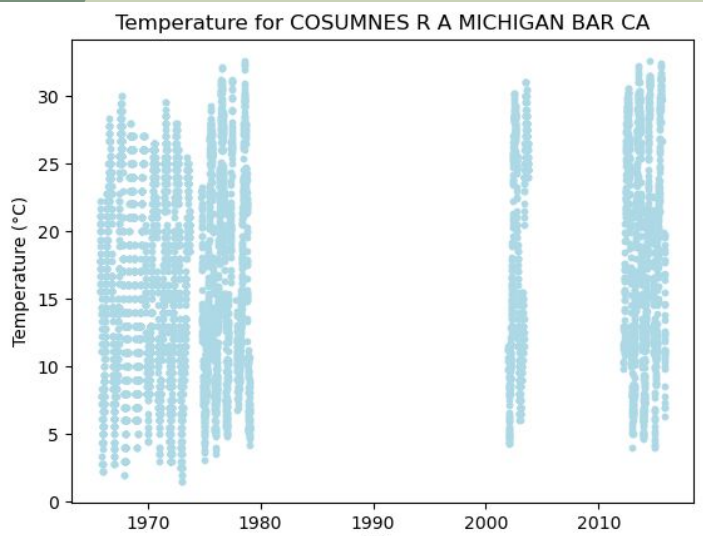
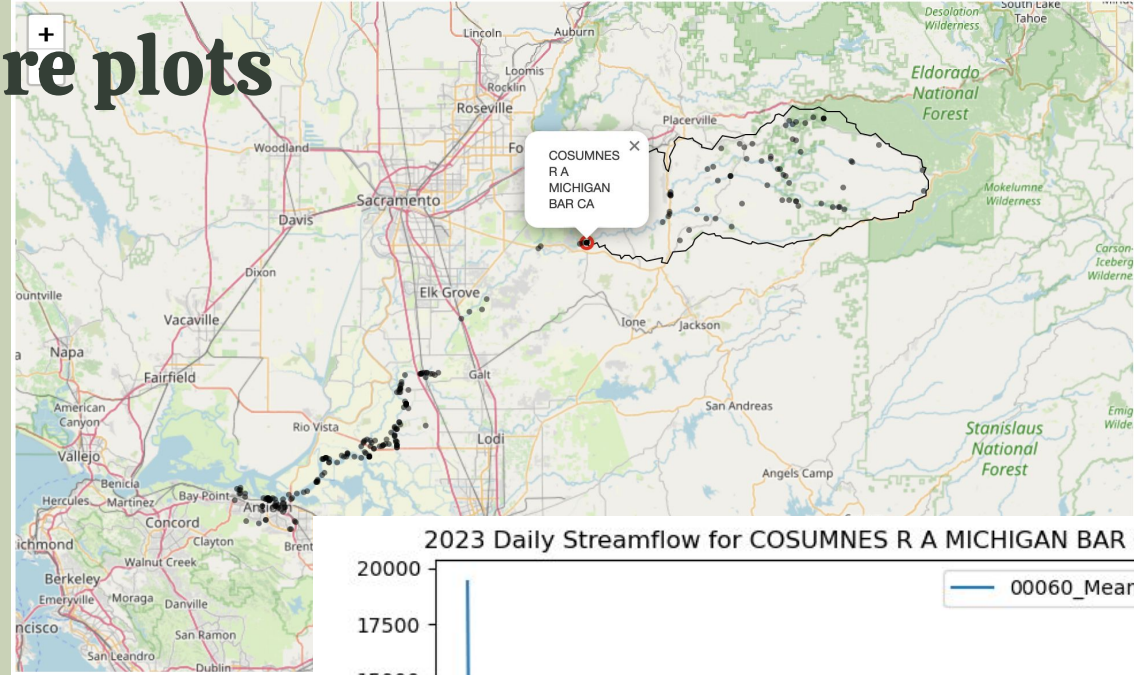


## Findings:

In general, higher streamflow rates or discharge may be associated with low water temperatures during winter seasons, possibly due to increased precipitation. However, spring seasons may also contribute to increased stream flow due to snowmelt.

Stream flow may be expected to be low during summer seasons due to increased temperatures causing evaporation. However, there is not a direct relationship between streamflow and water temperatures because many other environmental effects, such as vegetation cover, infiltration, rainfall/precipitation patterns, and snowmelt, can influence this dynamic relationship.

# Interactive map/more plots



## Work citation

**Blodgett, David. “The Hydro Network-Linked Data Index.” *Water Data For The Nation Blog*, 20 Nov. 2020, [waterdata.usgs.gov/blog/nldi-intro/](https://waterdata.usgs.gov/blog/nldi-intro/).**

**“USGS 11335000 COSUMNES R A MICHIGAN BAR CA.” *USGS 11335000 Cosumnes R A Michigan Bar Ca*, [waterdata.usgs.gov/nwis/inventory/?site\\_no=11335000&agency\\_cd=USGS](https://waterdata.usgs.gov/nwis/inventory/?site_no=11335000&agency_cd=USGS). Accessed 28 Nov. 2023.**

**“Welcome.” *Welcome - Dataretrieval 0.1.Dev1+g185ebe4 Documentation*, [doi-usgs.github.io/dataretrieval-python/index.html#](https://doi-usgs.github.io/dataretrieval-python/index.html#). Accessed 28 Nov. 2023.**