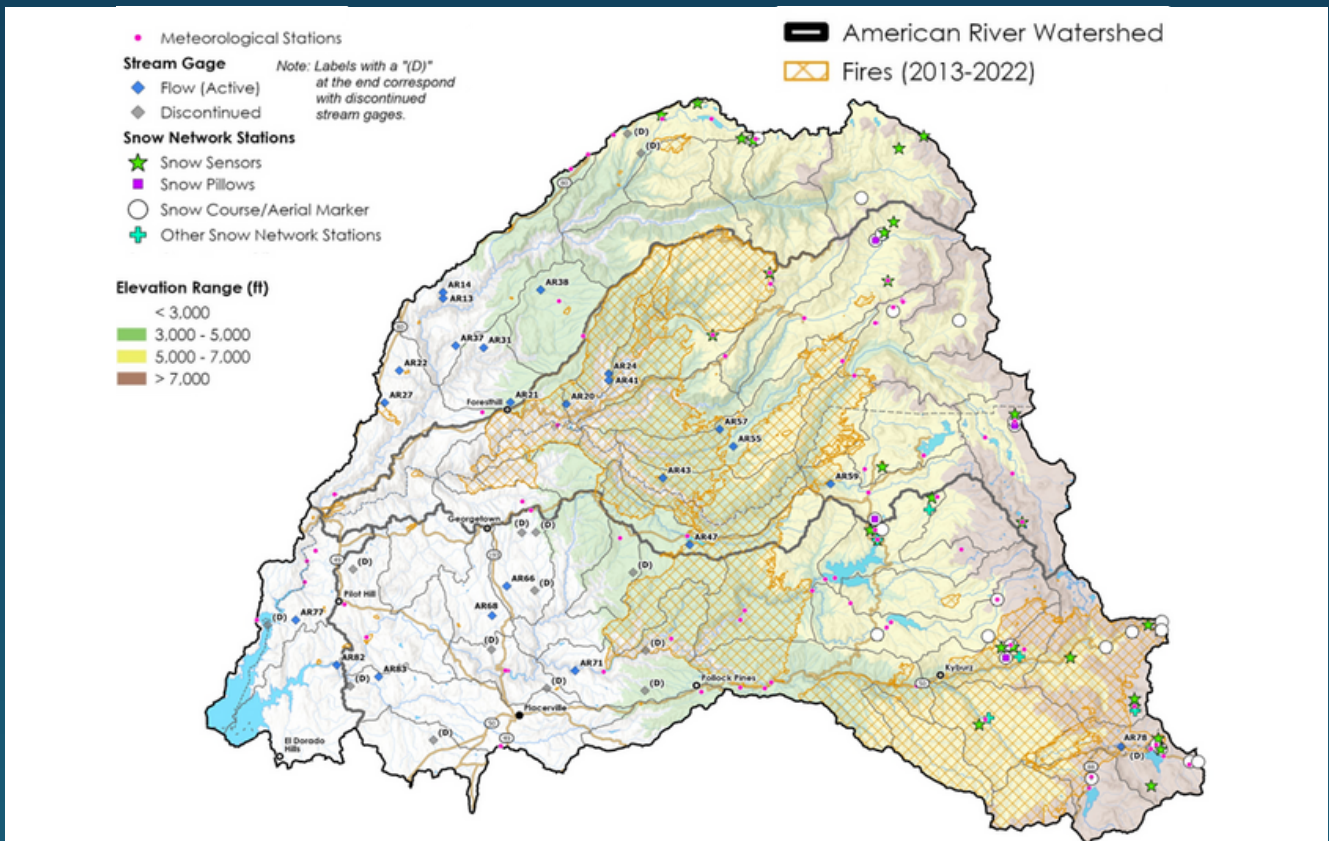


## American River Water Instrumentation Network

Increasing frequency and intensity of wildfires coupled with climate-related impacts to snowpack in the Sierra Nevada are creating significant changes in hydrologic patterns. These changes have created an urgent need to improve hydrologic monitoring and forecasting in the American River Basin. Real-time data is needed to address evolving challenges for water supply, forecasting, flood planning, and drought preparedness under a changing climate.

### Need for Project

- Approximately 2.2 million acre-feet of California's useable water supply originates from snowmelt runoff in the upper American River watershed.
- Catastrophic wildfires have burned hundreds of thousands of acres altering snowpack and runoff patterns due to loss of vegetation and changes to soil structures.
- Wildfire-induced changes will significantly increase flooding, erosion, and water quality issues for decades.
- Recurring variability in weather patterns and snowpack conditions have significant effects on reservoir storage and statewide water supply availability.



### Project Benefits

- Provide comprehensive review/assessment of multiple snowpack stations
- Avoid redundancy of collected data
- Reduce maintenance/replacement costs of existing hydrometeorological monitoring for all project partners
- Upgrade and replace archaic and labor-intensive snow pillow and other single point measurement technologies.

## Improved Hydrologic Monitoring and Forecasting Will Benefit Residents Throughout the State

### DATA TO UNDERSTAND CHANGING WATER FLOW AND SNOWPACK PATTERNS



Understand how changes in runoff patterns resulting from droughts and wildfires alter soil structures and upstream vegetation



Evaluate snowpack evolution and potential drainage into dry soils during snowmelt season



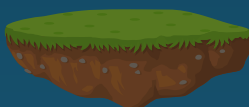
Analyze physical processes that modify runoff efficiency during heavy precipitation

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### ANALYTICS NEEDED TO PROTECT WATERSHED



Determine whether program goals and implementation are effective



Discern the variability of precipitation and soil moisture within the watershed



Understand the magnitude of increased flooding from burned watershed areas



Identify burned areas that will benefit the most from conservation activities

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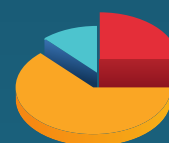
### USE OF REAL TIME DATA TO PROTECT RESIDENTS



Respond to emergencies, such as spills and floods



Serve as supplemental tool for flood control and water supply system operations, such as the Central Valley Project system



Improve availability and quality of data to increase accuracy of hydrologic modeling of streamflow

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### INFORMATION NEEDED TO PROTECT WATER QUALITY



Identify changes or trends in water quality over time including existing or emerging water quality problems

## Increased Collaboration Among Local, State, and Federal Partners



Snowpack & Flow Monitoring	Water Availability	Floodcast Forecast & Preparedness	Forecast-Informed Ops	Stormwater & Drainage	Burnt Forest Management
<b>Federal interests</b>					
U.S. Bureau of Reclamation	X	X	X		X
U.S. Environmental Protection Agency				X	
U.S. Department of Agriculture	X	X			X
U.S. Geological Survey		X		X	X
<b>State interests</b>					
State Water Resources Control Board	X	X	X	X	X
Department of Water Resources	X	X	X	X	X
<b>Regional interests</b>					
Sacramento/San Joaquin Delta interests	X	X	X	X	
Water Purveyors/Agencies	X	X	X		X
Flood Control Agencies		X	X	X	X
<b>Local interests</b>					
Community service agencies	X	X	X	X	X
Agricultural interests	X	X		X	X

## Comparison of the Upper American River Watershed at Horsetail Falls and Pyramid Creek Before and after the Caldor Fire





## Watershed Plan Identified Need for this Project

El Dorado Water Agency, with partnering agencies, recently completed the Upper American River Programmatic Watershed Plan which identified the need to improve data collection and data sharing. Specifically, the plan called for:

- Improving hydrological and meteorological data acquisition planning needs and improving forecasting
- Developing and maintaining a common platform that is publicly accessible for sharing water resource-related data and analytical tools to avoid duplicate investments and promote transparency

This project will strengthen coordination of different agencies responsible for monitoring water and snowpack conditions by optimizing data collection and reducing redundancies.

## Progress to Date

Previous investments laid the groundwork for this initiative to increase accuracy in data collection of snowpack, soil moisture, vegetation state, energy balance, and snowmelt across the watershed. Future work will build on previous investments that initiated testing and deployment of next-generation snowpack monitoring in the American River Basin:

- National Science Foundation research grant for \$2,000,000 (2011)
- U.S. Department of Interior, Bureau of Reclamation WaterSMART grant for \$300,000 (April 2022)
- Congressional Directed Spending of \$875,000 as part of the federal infrastructure package (December 2022)



## Contact

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