



# California's True Gold: Water

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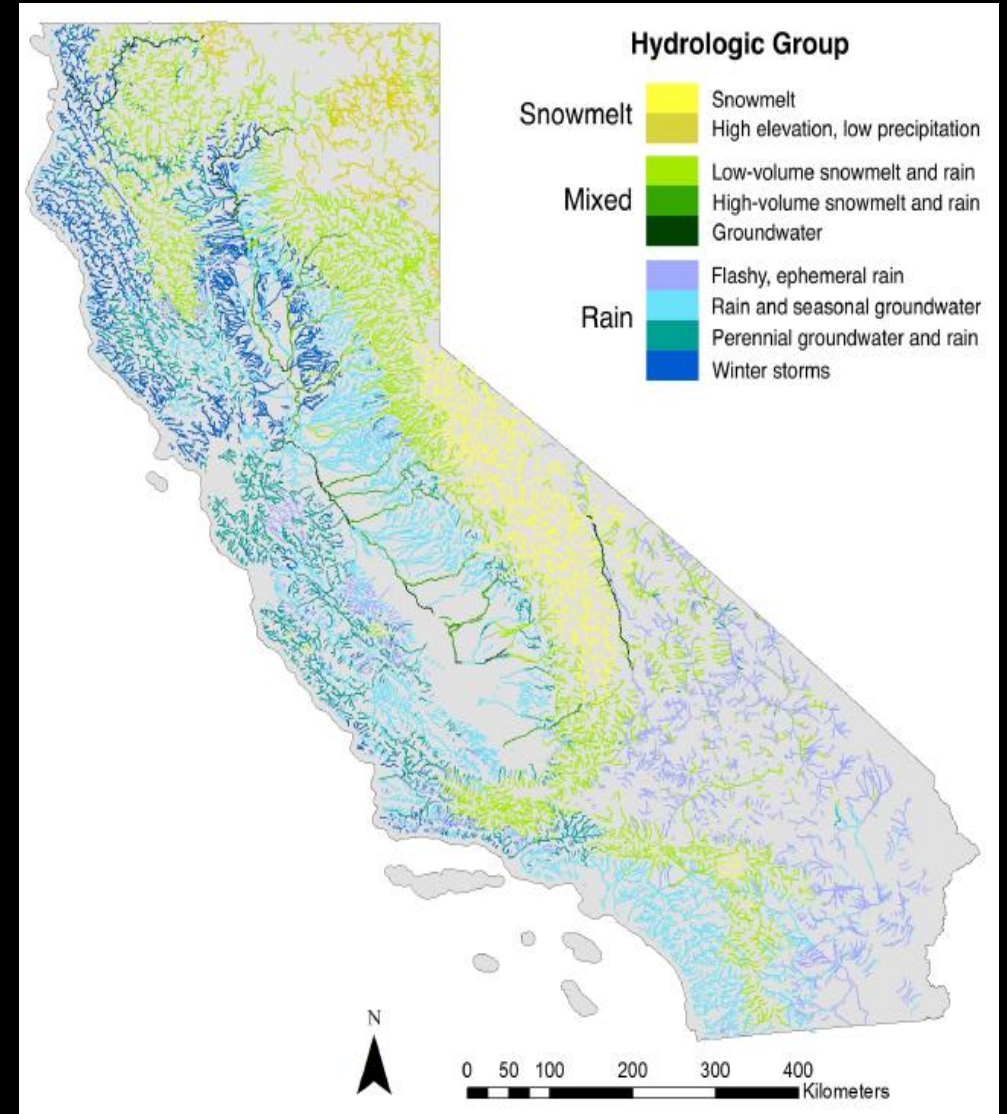
UNIVERSITY OF CALIFORNIA  
Agriculture and Natural Resources

California Institute for Water Resources



# Outline

- Water in California 101
- Co-designed examples
  - Water Wizards
  - California Naturalist
  - Preventing Pesticide Contaminations



# Pre European Colonization Water History

- Natural resources vision and management
  - Food and natural resources available
  - Active managers of land and water
  - Cultural fires associated with storm events
  - Purge invasive species and enabled other species association
  - Navigation system based on river location
- 1850 Act for the government and Protection of Indians:
  - prevented them to acquire land and water
  - Enable violence toward indigenous people
  - Outlawed fire
- 1851 & 1852 a series of failed treaties

“Some times people were forced onto these parcels, forced out of their home areas, out of their villages and communities, onto these areas set aside for Indian people, for what would be homeless Californian Indians, **homeless within their own homeland**” Dr. Beth Rose Middleton Manning





# Pre European Colonization Water History

*“With these lands we have an opportunity to begin righting a great wrong. We may be frightened of outcomes we are unsure of but **we should be even more frightened of living in a world where the foundation of injustice is honorable and the perpetuation of that injustice acceptable. ... We cannot change the past but neither can we ignore it.** The present and the future are our provenience ... we must make a world in which we can live well. **We must make a future of justice. In that way, living in that manner, our past will, inevitably, become good too.**”*

Farrell Cunningham, Maidu Summit Coordinator, Maidu Summit Consortium Land Management Plan



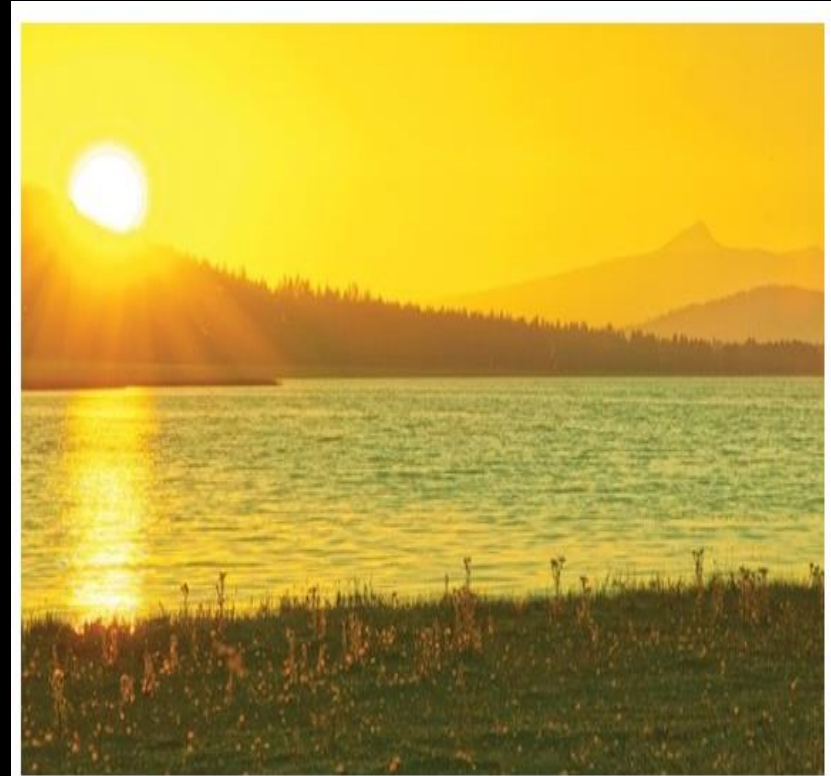
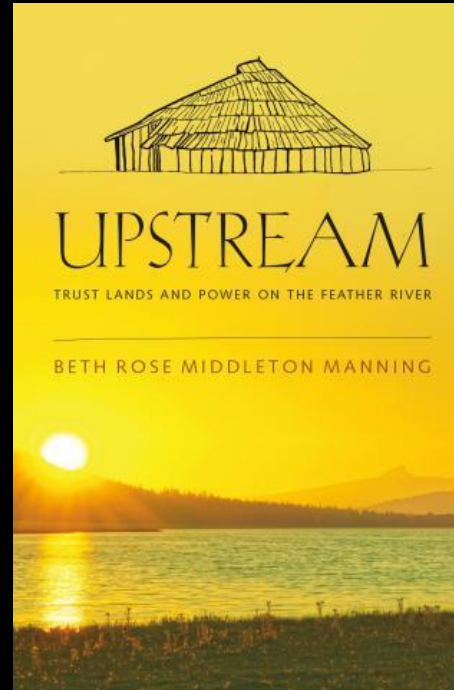
# Native California Water History

## Water Talk Podcast



[watertalkpodcast.com](http://watertalkpodcast.com)

## Episode 34: Dr. Beth Rose Middleton Manning



SEASON 3

### Episode 34: CA Native Water Rights, Stewardship, & Protection

A conversation with Dr. Beth Rose Middleton Manning (UC Davis) about water rights, hydroelectric infrastructure, easements, and conservation in California. Released April 1, 2022.

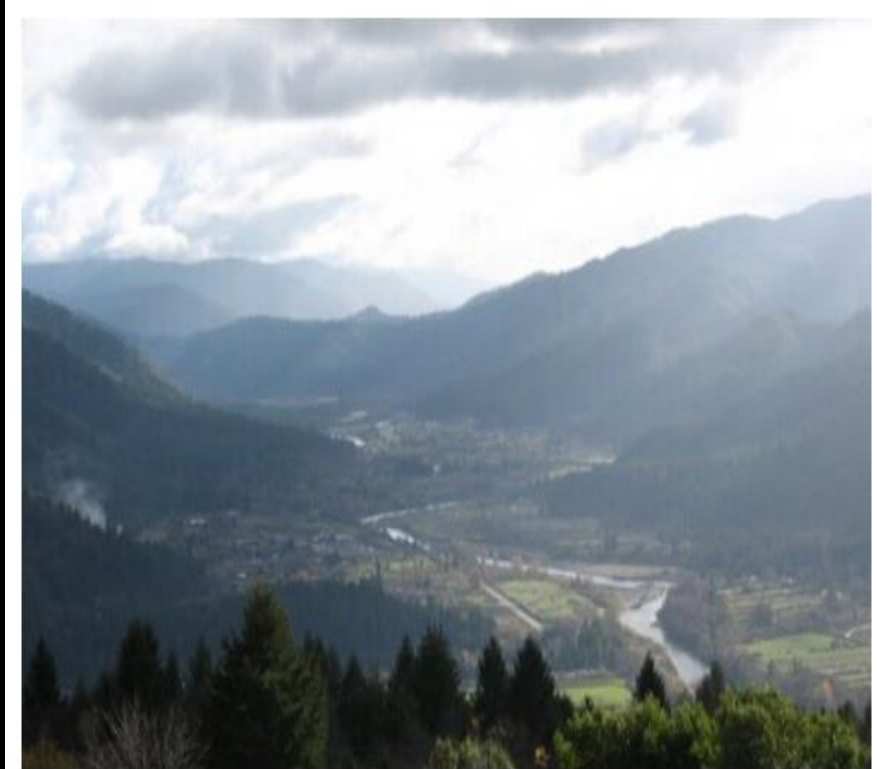
# Native California Water History

## Water Talk Podcast



[watertalkpodcast.com](http://watertalkpodcast.com)

Episode 19 & 20: Dr. Cutch Risling Baldy



SEASON 2

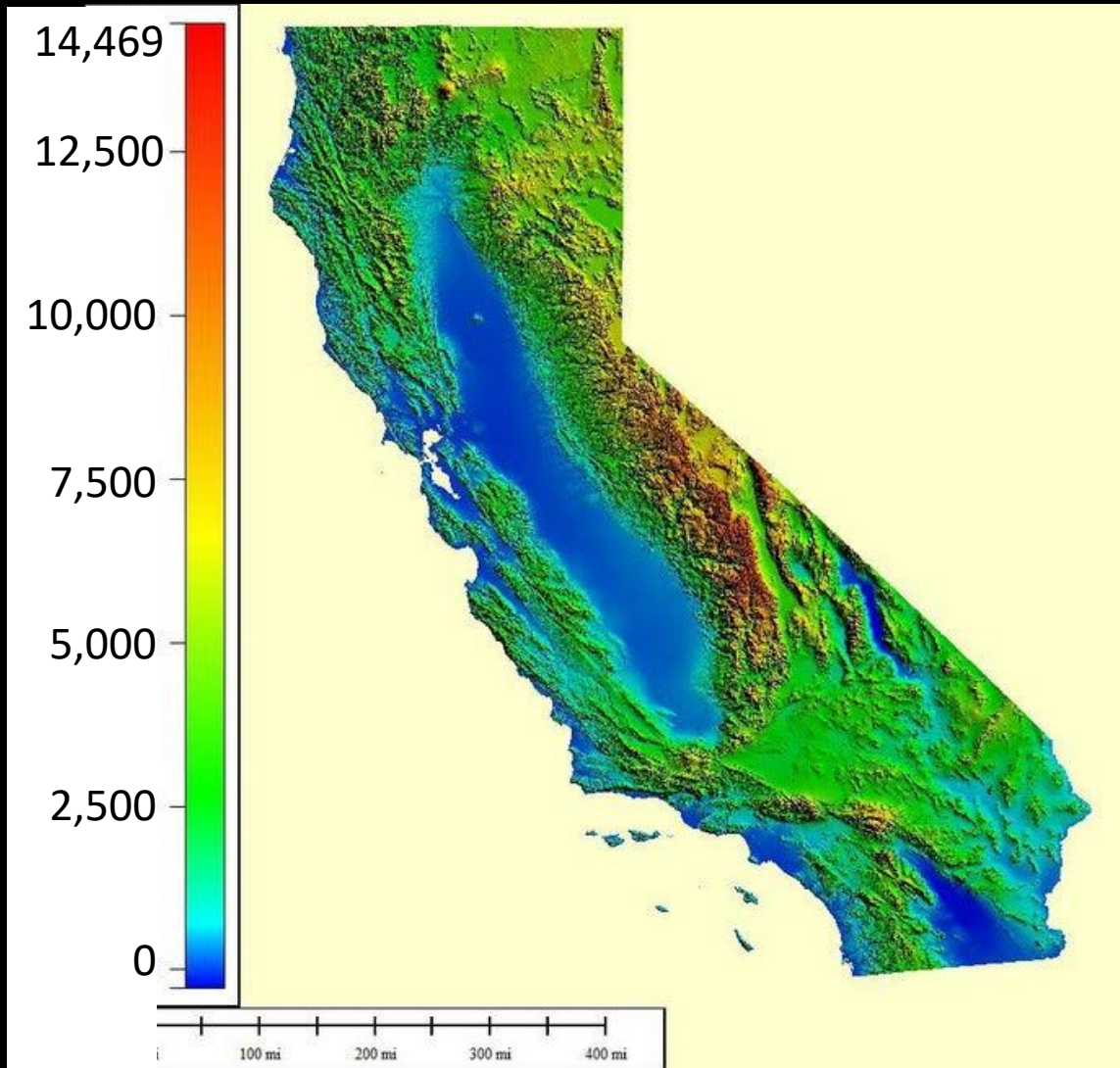
### Episode 19: Decolonizing Water Part 1

A conversation with Dr. Cutcha Risling Baldy (Humboldt State University) about land and water use futures, decolonization, and communities in California (Part 1/2). Released May 7, 2021.



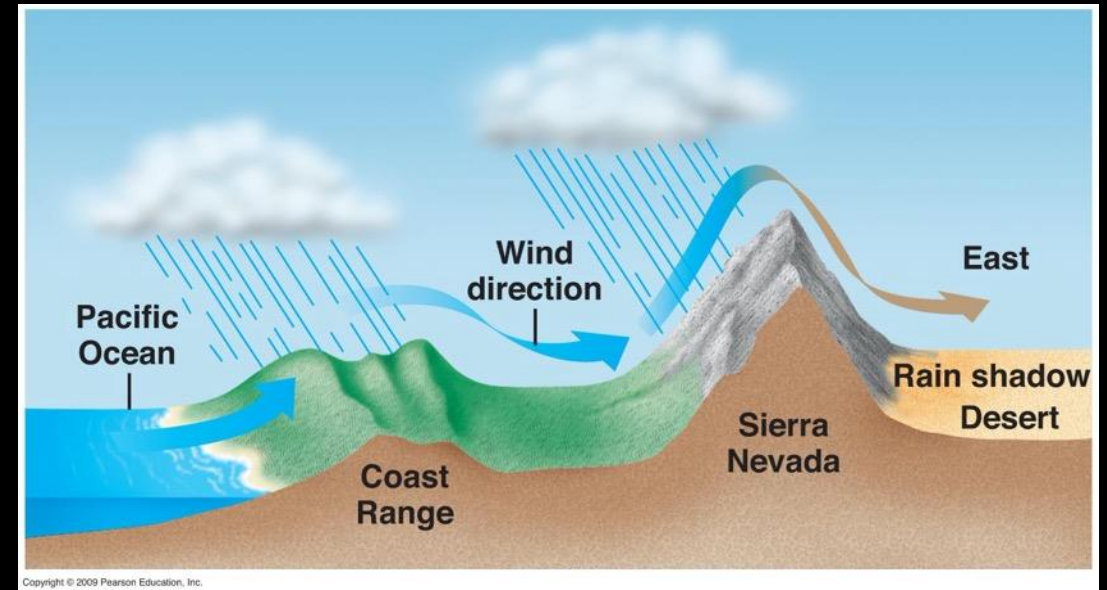
# California's Climate

## Elevation

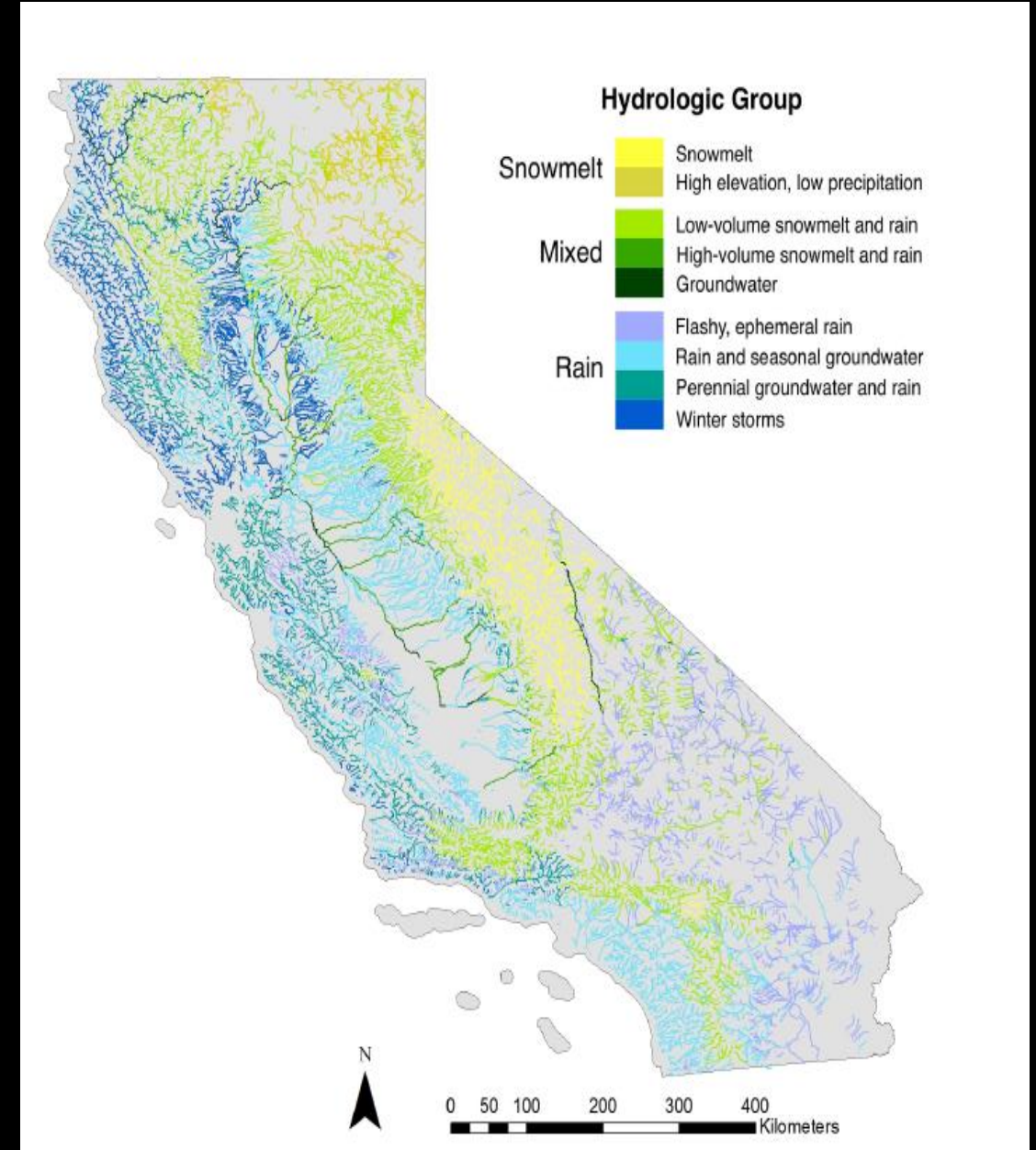
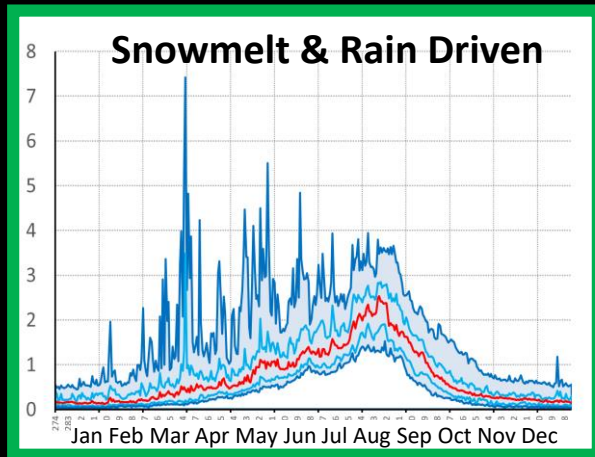
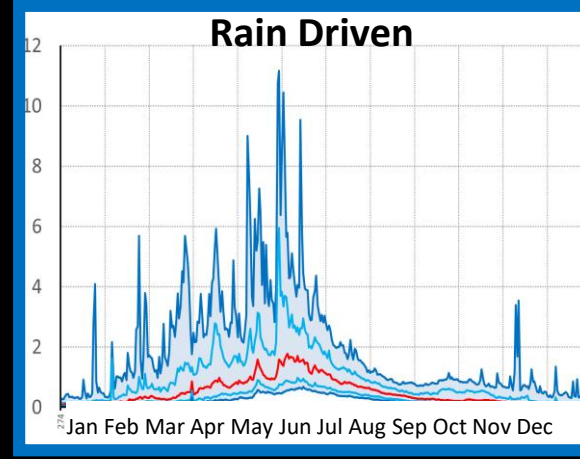
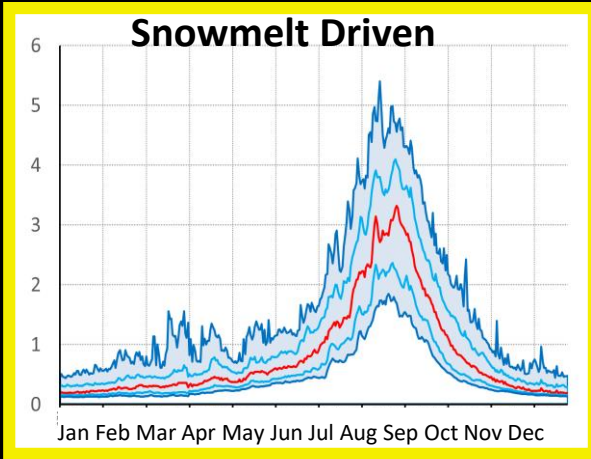


## Mediterranean Climate

- Dry Summers
- Wet Winters



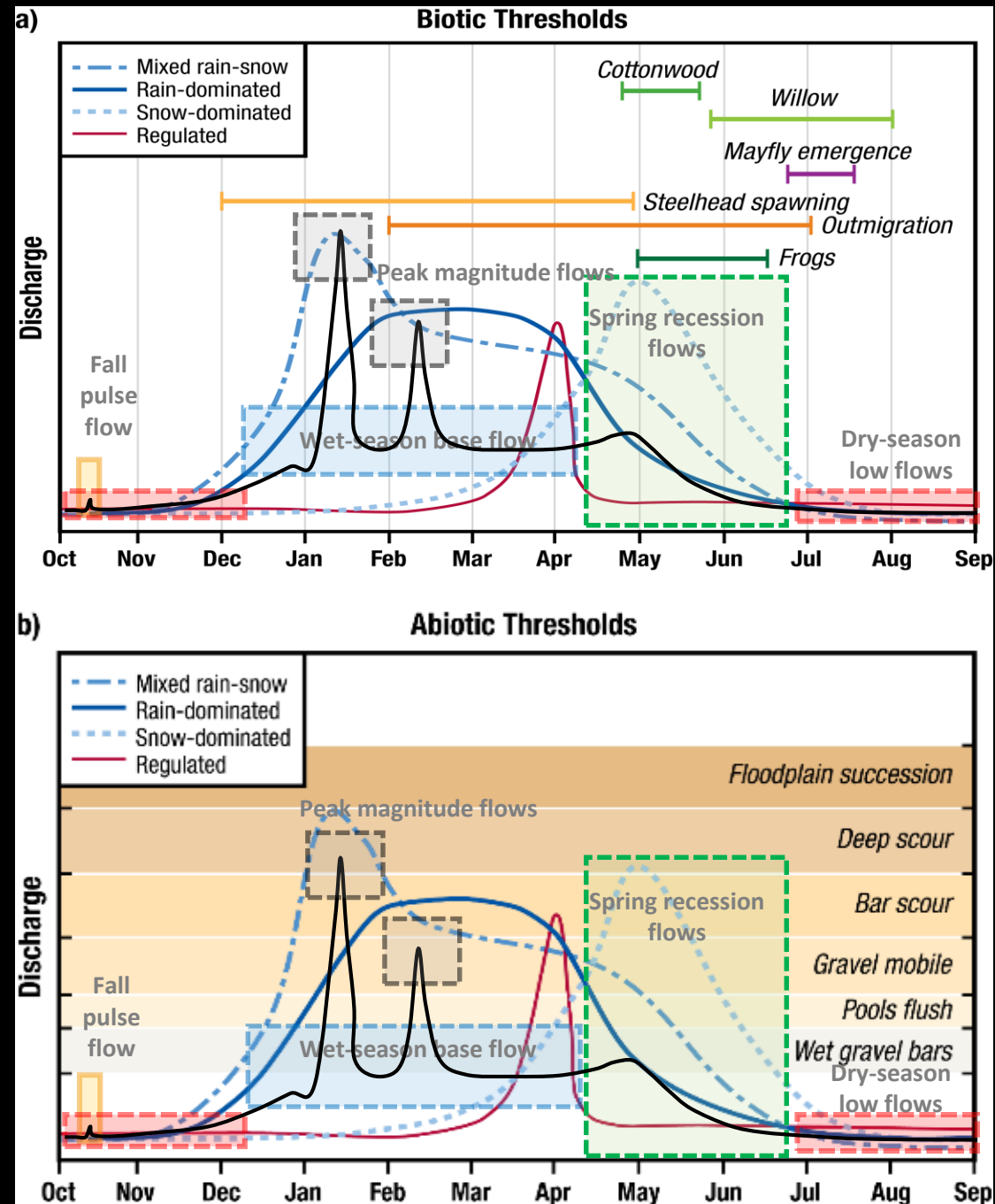
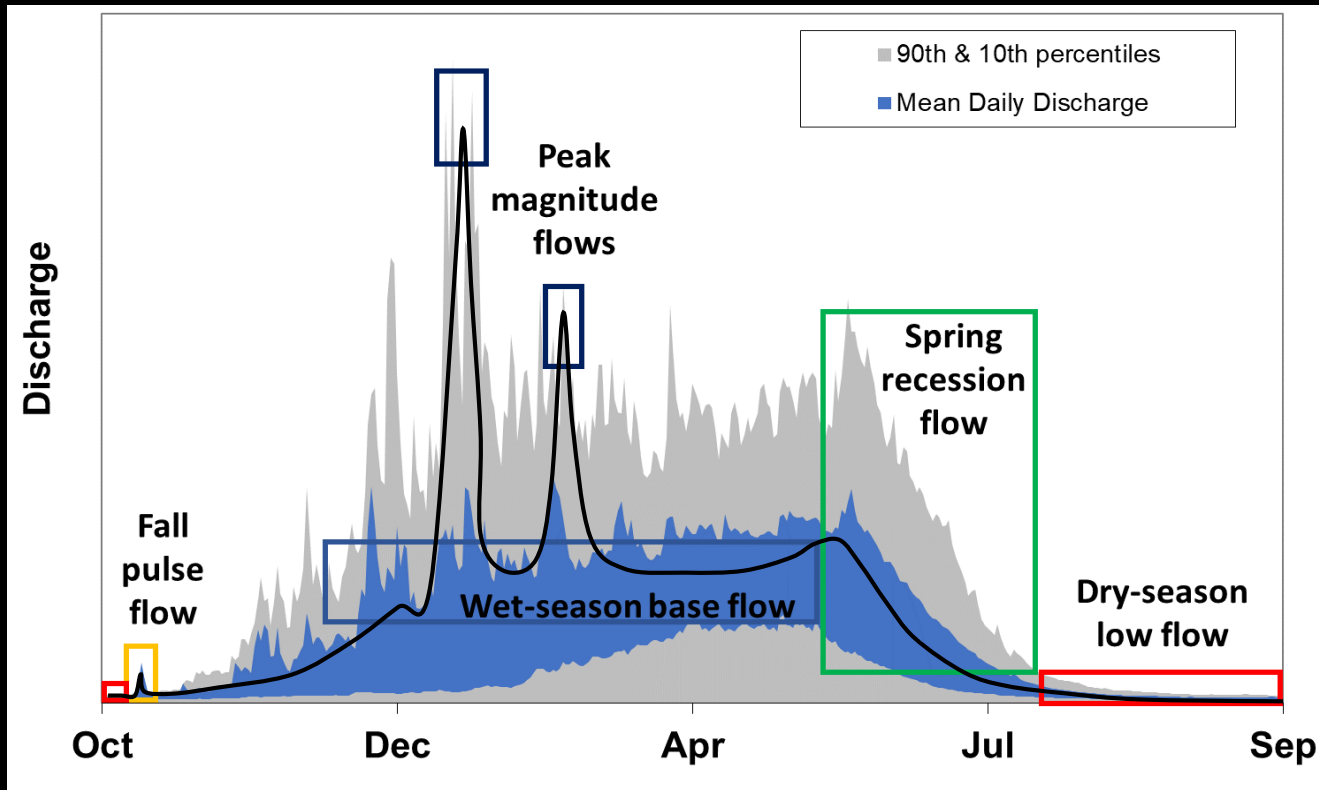
# Natural Streamflow Classes



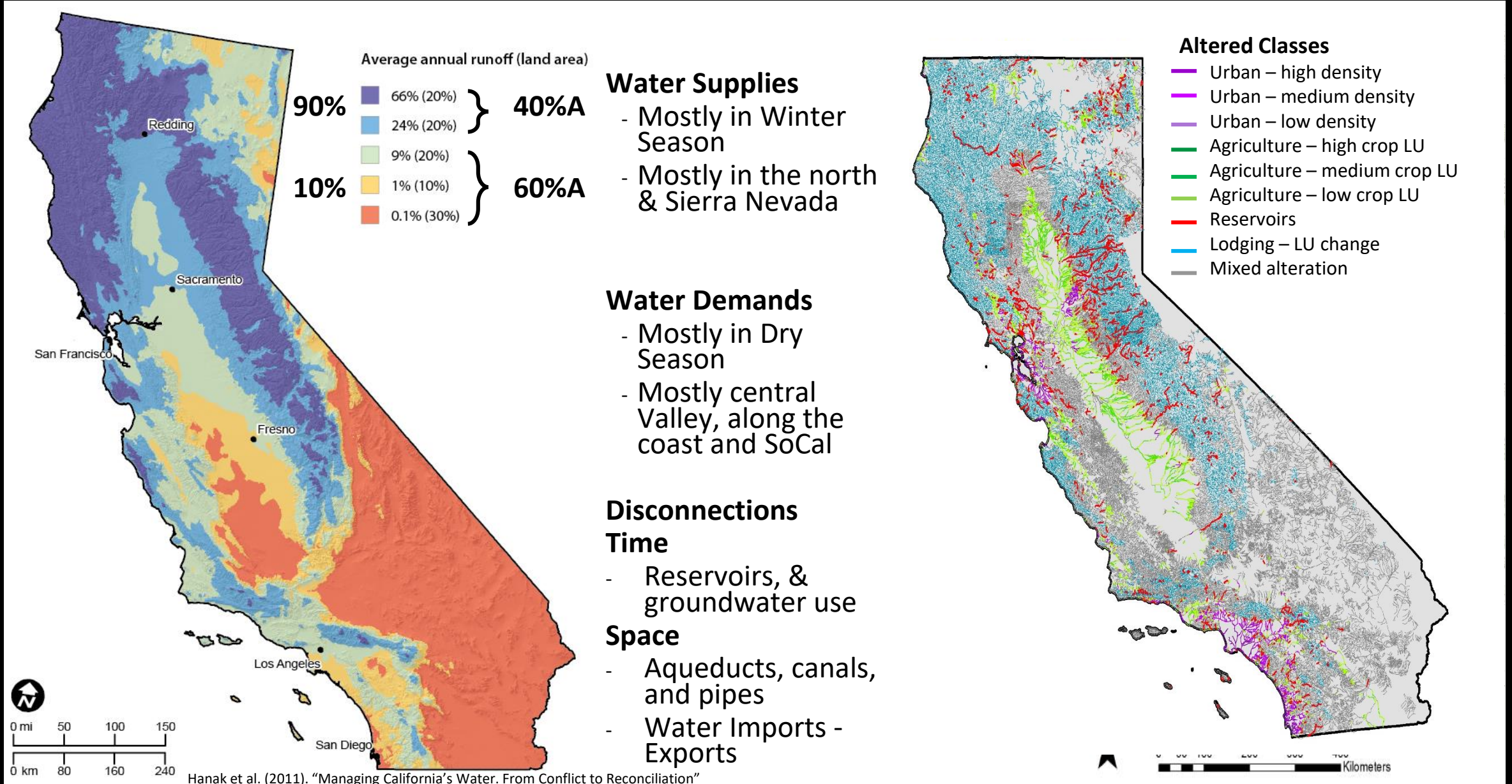
Interactive tool: <https://eflows.ucdavis.edu/hydrology>  
YouTube Video: Natural Streamflow classes of California  
<https://youtu.be/MG1UTveZnz4>



# Ecological relevance of Natural Flows

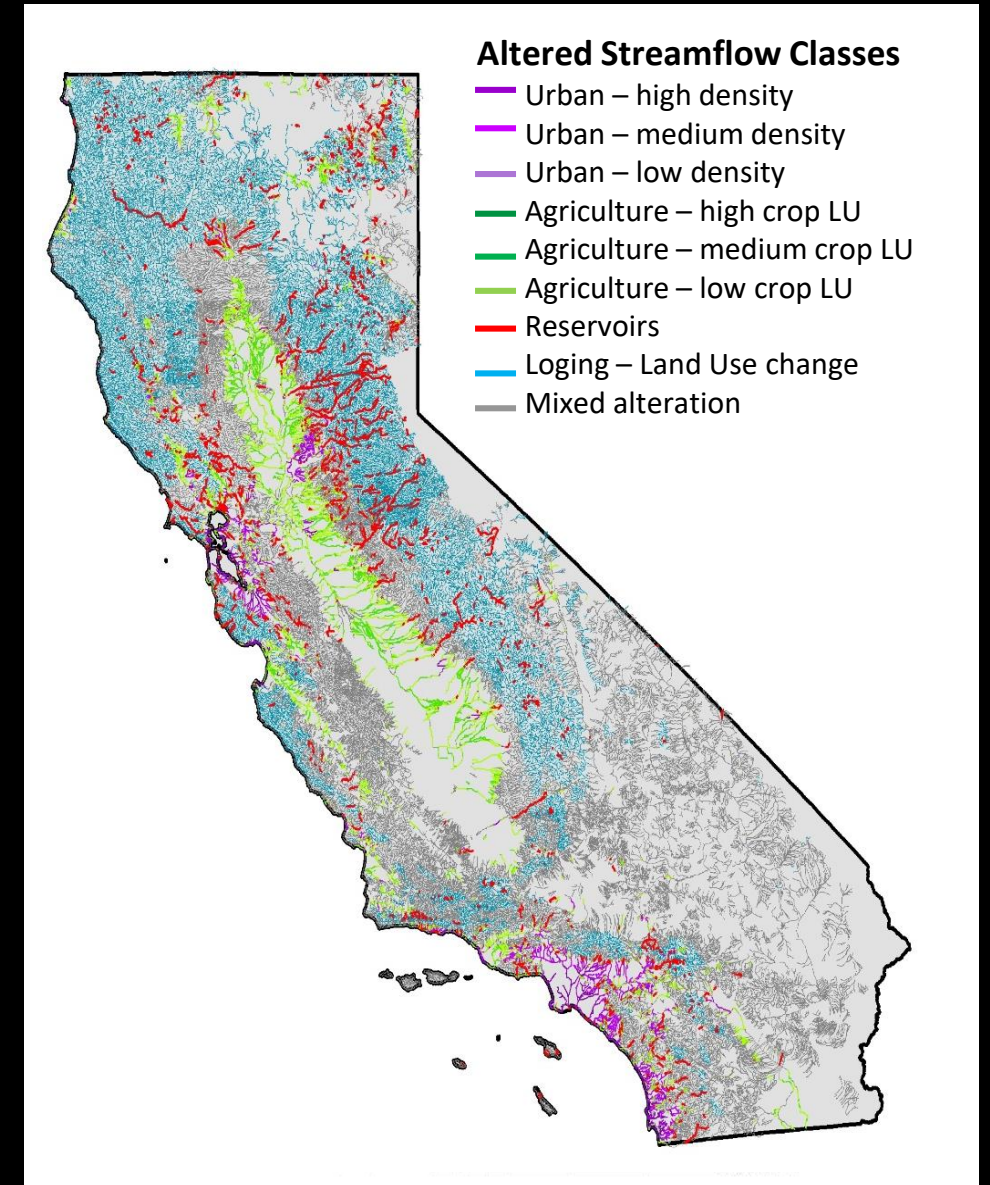
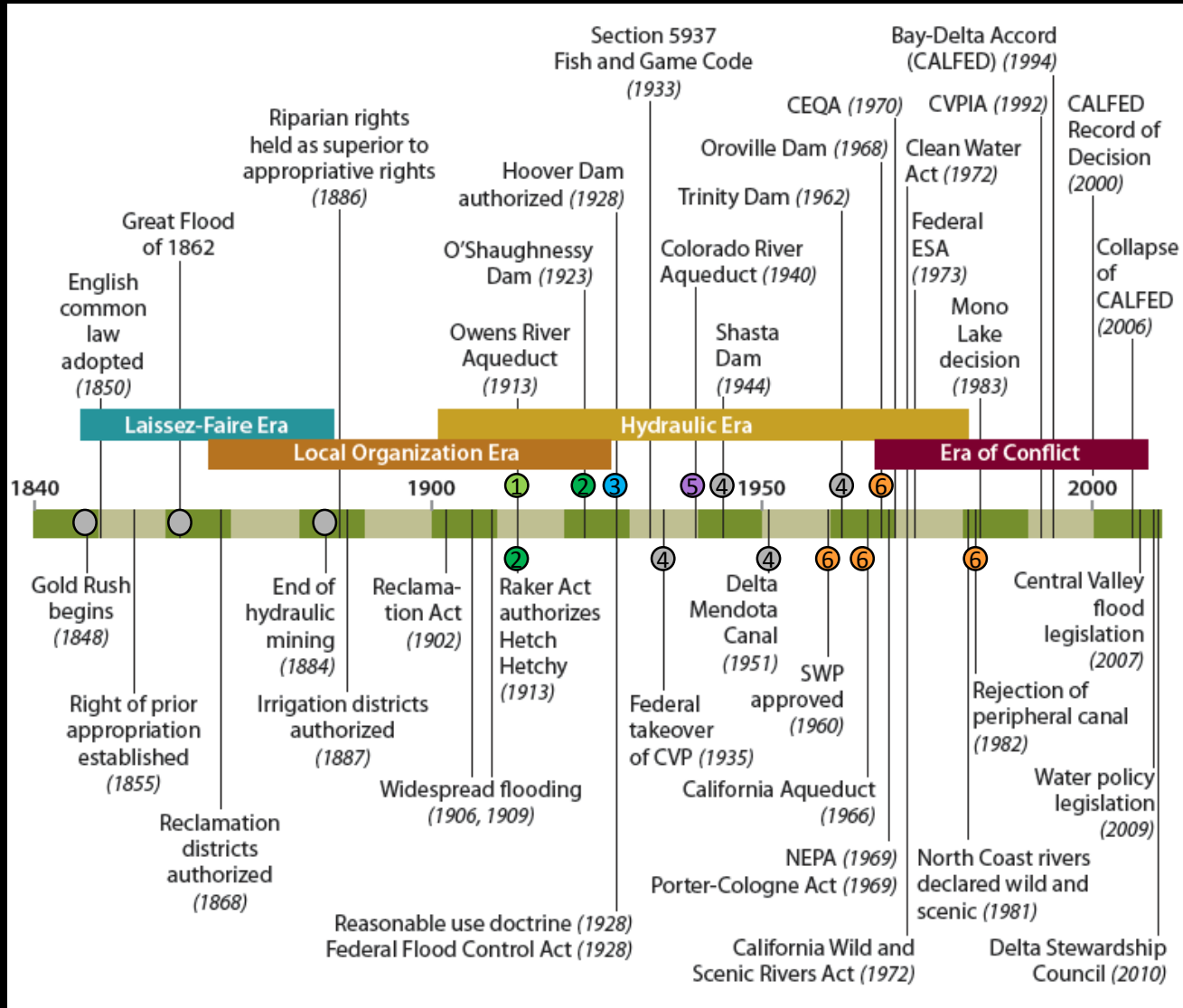


# The wrong path: engineering our way out





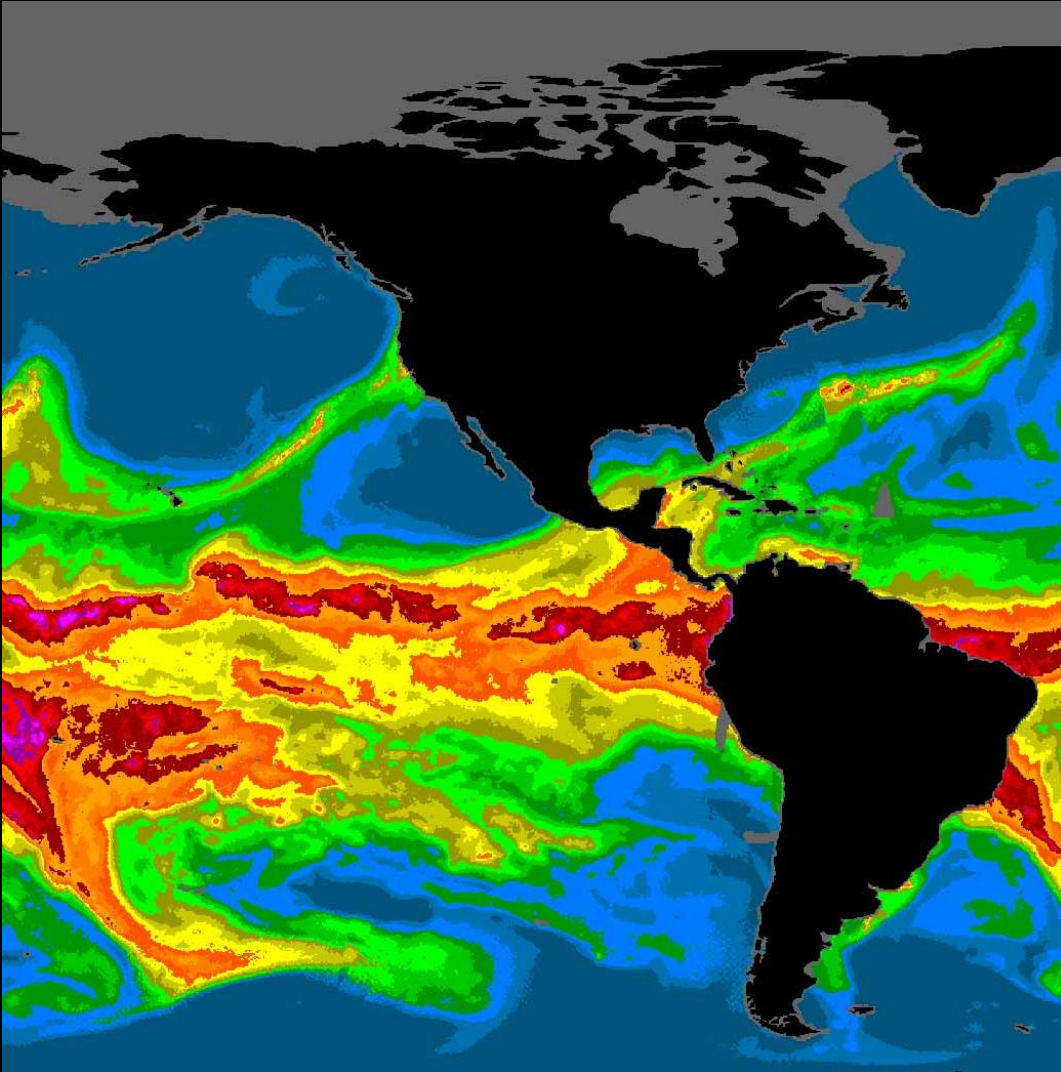
# Colonial Water History





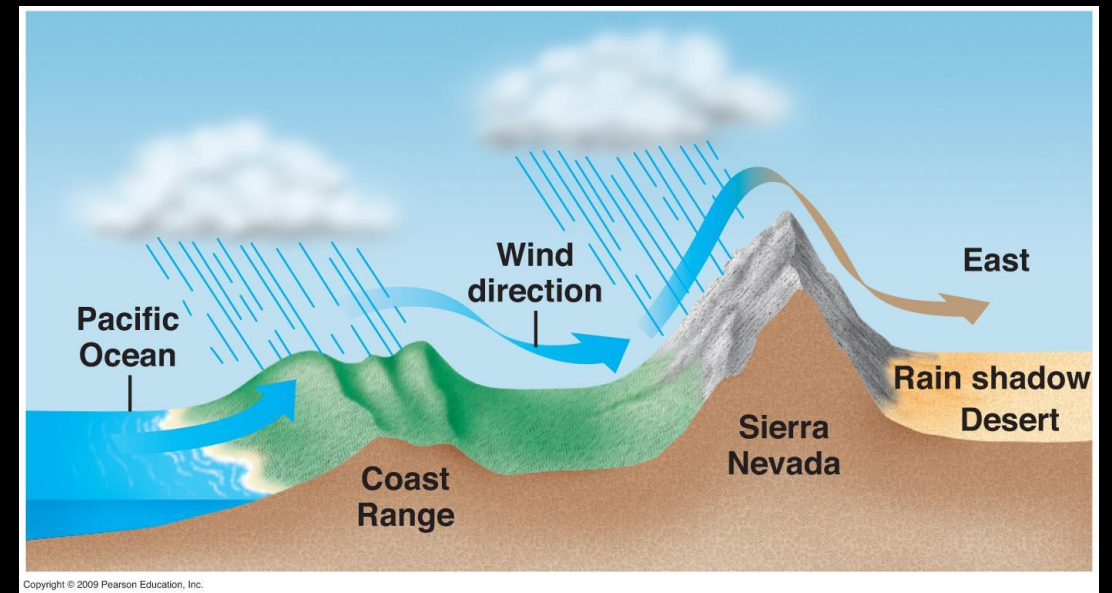
# Climate

## Atmospheric Rivers

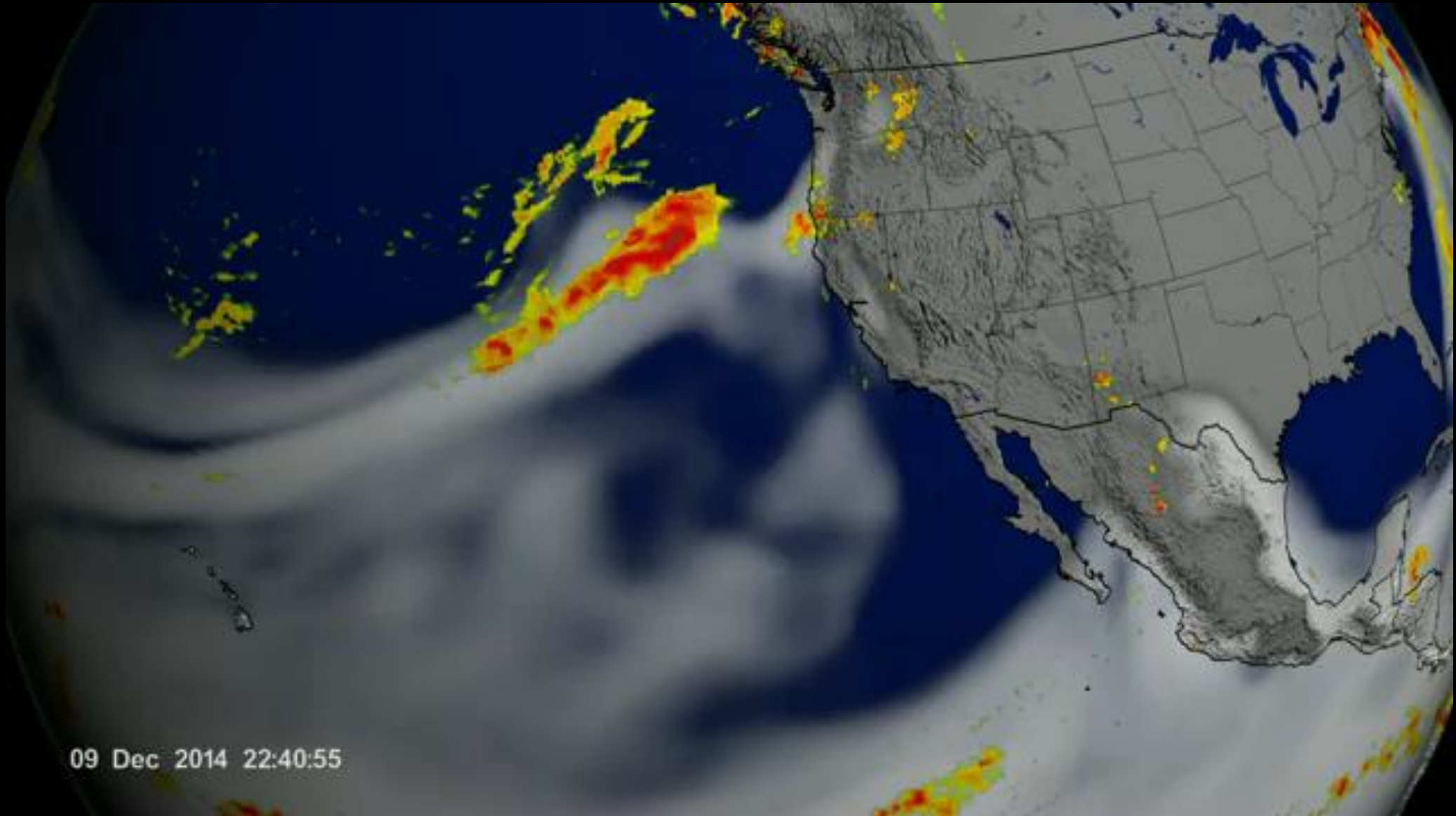


## Mediterranean Climate

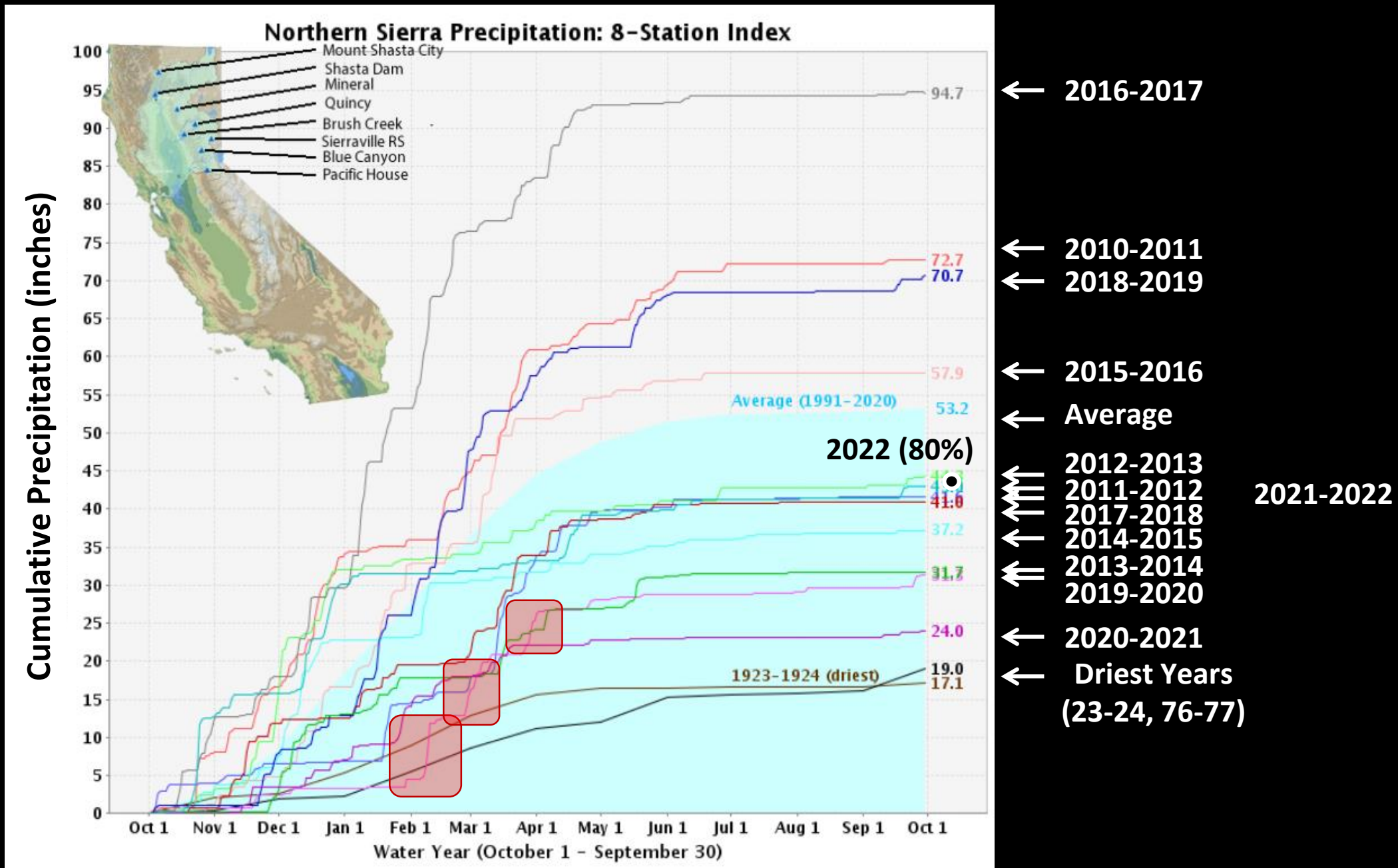
- Dry Summers
- Wet Winters



# Atmospheric River









# Snowpack

APRIL: 2011

Drought

2012

2013

2014

2015

2016

Wettest 2017

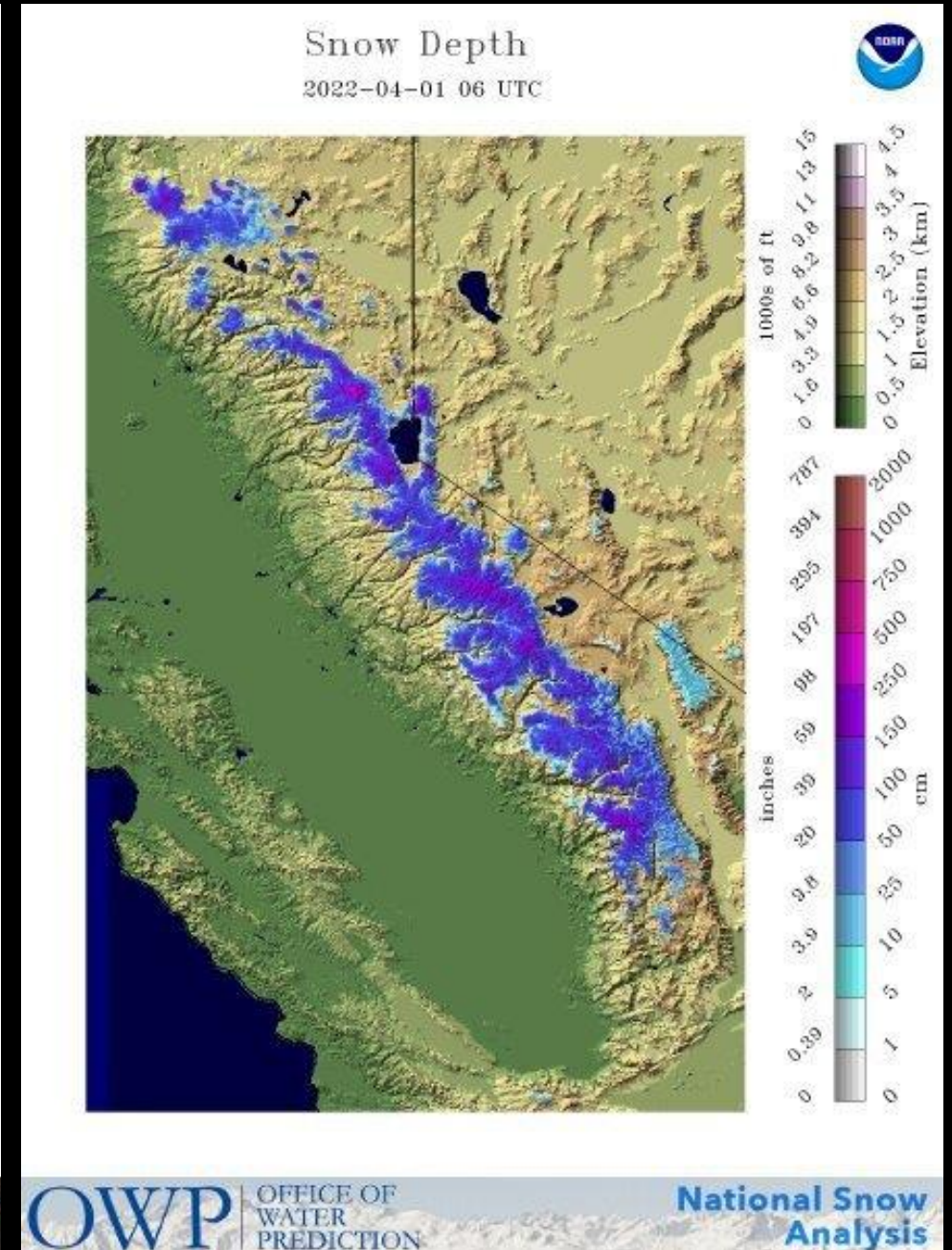
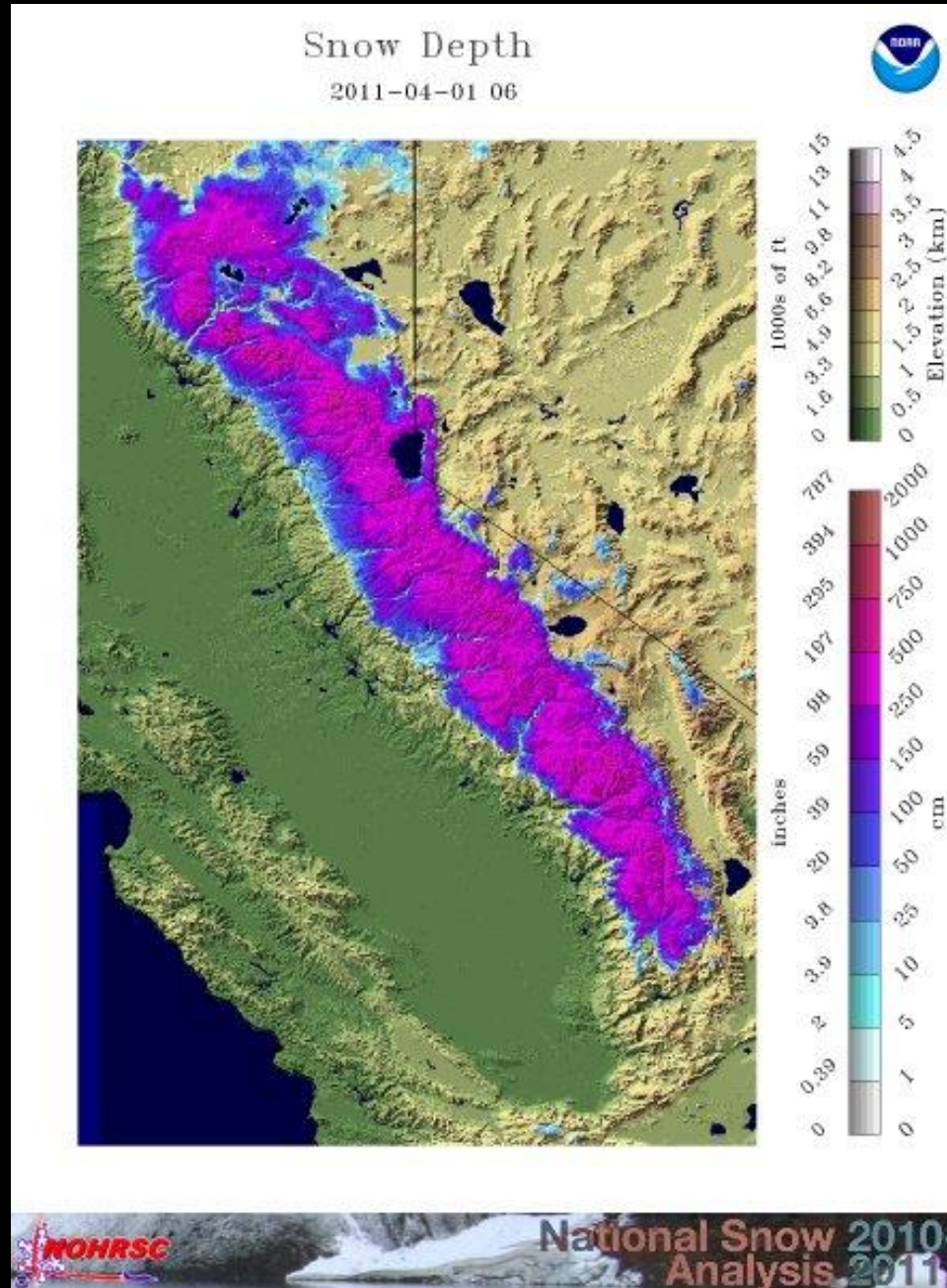
Dry 2018

Wet 2019

Dry 2020

Dry 2021

Dry 2022



# Program co-design: Co-production

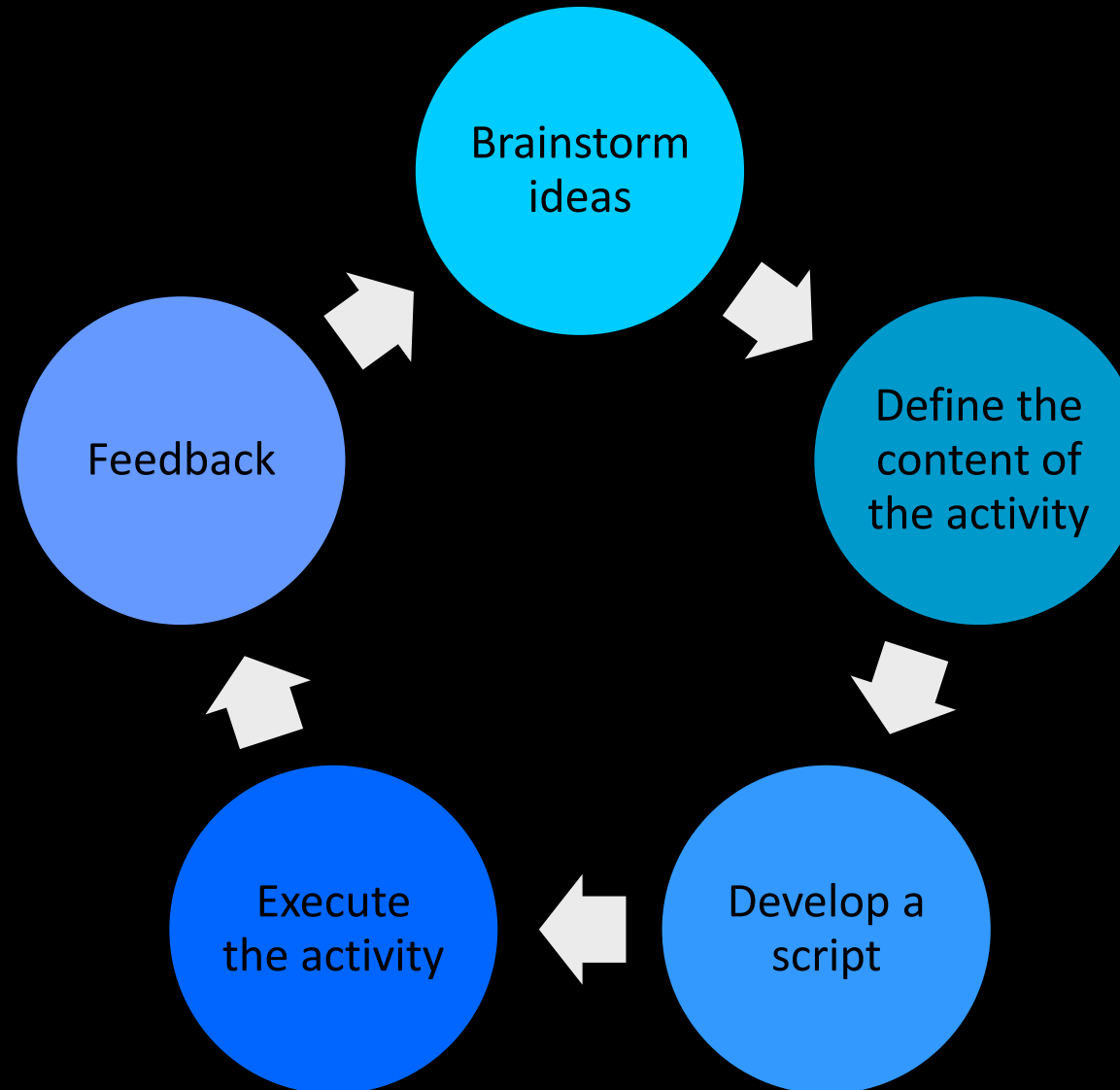
## Co-production

### *People*

- topic knowledgeable
- member of the target audience
- activity partner
- youth member, women & BPOC

### *Abilities and skills:*

- Complementary abilities
- Someone passionate about the activity



## Step 1: Objective

(a) Topic, (b) problem or (c) system

## Step 2: Target Audience

age, gender, profession, community of practice

### Who is not included?

Women, communities of color, youths, seniors, families

## Step 3: Type of activity

(a) descriptive, (b) hands on, (c) vocational



# Program co-design: Water in California

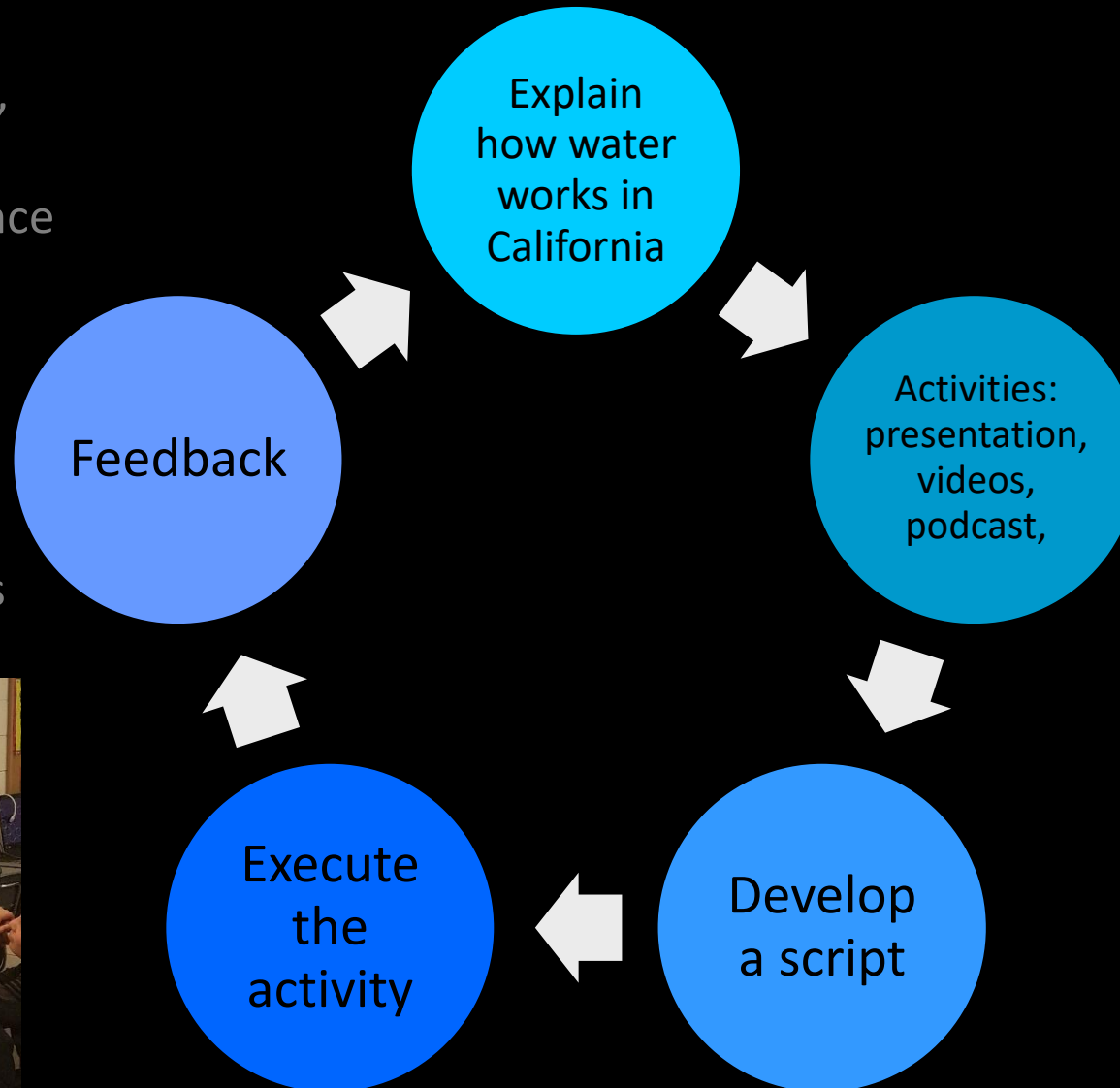
## Co-production

### People

- Diverse group of people
- Different project partners: 4H, IPM, California Naturalist
- Members of the target audience

### Lessons learned

- Active listening
- Get to know your audience
- Jump into the pool
- Ask for feedback (survey)
- Activities are work in progress
- Keep calm!



## Step 1: Objective

Demonstrate basic concepts of water in California

## Step 2: Target Audience

General to specific audiences

### Who is not included?

Depends on the event

## Step 3: Type of activity

Descriptive, hands on, and guided



# Program co-design: Water Wizards

## After school program

### Step 1: Objective

- Topic driven, e.g. water
- Problem driven, e.g. prevent water contamination
- System driven, e.g. Water in California and policy

### Step 2: Target Audience

- Ancestors locations of origin, e.g. Latin America
- Age, e.g. K1 to K6
- Gender, e.g. women in water
- Profession: e.g. Pesticides applicators
- Community of practice, e.g. Elected officials
- Who is not included?
  - Women, communities of color, youths, seniors, families

### Step 3: Type of activity

- Descriptive (AKA “FYI”)
- Hands on (AKA experiential)
- Vocational (AKA guided)



# Program co-design: BMP to prevent pesticide contamination in Water

## Step 1: Objective

- Topic driven, e.g. water
- Problem driven, e.g. prevent water contamination
- System driven, e.g. Water in California and policy

## Step 2: Target Audience

- Ancestors locations of origin, e.g. Latin America
- Age, e.g. K1 to K6
- Gender, e.g. women in water
- Profession: e.g. Pesticides applicators
- Community of practice, e.g. Elected officials
- Who is not included?
  - Women, communities of color, youths, seniors, families

## Step 3: Type of activity

- Descriptive (AKA “FYI”)
- Hands on (AKA experiential)
- Vocational (AKA guided)





# Program co-design: Water Education for Latino Leaders (WELL)

## Step 1: Objective

- Topic driven, e.g. water
- Problem driven, e.g. prevent water contamination
- System driven, e.g. Water in California and policy

## Step 2: Target Audience

- Ancestors locations of origin, e.g. Latin America
- Age, e.g. K1 to K6
- Gender, e.g. women in water
- Profession: e.g. Pesticides applicators
- Community of practice, e.g. Elected officials
- Who is not included?
  - Women, communities of color, youths, seniors, families

## Step 3: Type of activity

- Descriptive (AKA “FYI”)
- Hands on (AKA experiential)
- Vocational (AKA guided)





# Program co-design: California Naturalist

## Step 1: Objective

- Topic driven, e.g. California waterscape: natural and altered
- Problem driven, e.g. prevent water contamination
- System driven, e.g. Water in California and policy

## Step 2: Target Audience

- Ancestors locations of origin, e.g. Latin America
- Age, e.g. K1 to K6
- Gender, e.g. women in water
- Profession: e.g. Pesticides applicators
- Community of practice, e.g. Naturalist
- Who is not included?
  - Women, communities of color, youths, seniors, families

## Step 3: Type of activity

- Descriptive (AKA “FYI”)
- Hands on (AKA experiential)
- Vocational (AKA guided)



Field Notebook		
<b>Time:</b> <b>Date:</b>	<b>Weather:</b> - Rainy season (Oct-Mar) ( ) - Dry Season (Apr – Sep) ( )	<b>Max. Elevation</b> (snowline: 5,000 ft): <b>Route Traveled:</b>
Closest/Main water body:		Hydrologic Region and Main Basin:
<b>Location in the watershed</b> - Headwaters (close to the ridge) ( ) - Foothills (permanent flow) ( )	- Tributary ( ) - Valley ( )	- Estuary ( ) - Bay/open ocean ( ) - Intertidal zone ( )
<b>River/Creek ( )</b> - Ephemeral (intermittent flow) ( ) - Perennial (permanent flow) ( ) - Snowmelt ( ) Rain ( ) Mixed ( )	<b>Wetland ( )</b> - Estuary ( ) - Marsh ( ) - Vernal pool ( )	<b>Lake/Lagoon ( )</b> - Natural ( ) - Manmade ( )
<b>Ecosystem observed:</b> - Marine or Estuarine (salty) ( ) - Freshwater (in the rivers and lakes) ( ) - Riparian (along the rivers) ( ) - Terrestrial (lives around the rivers) ( )	<b>Biological Inputs:</b> - Leaf litter ( ) - Wood debris ( ) - Migrating organism ( )	<b>Physical inputs:</b> - Land slides ( ) - Large boulders ( ) - Suspended sediment transport ( ) - Bedload movement ( )
<b>Water Quantity:</b> - <u>Natural</u> seasonal & interannual variability, no large diversion or dams ( ) - Human alteration due to a dam, weirs, canals, wells, or pumps ( )	<b>Water Quality:</b> - Bio-indicators: amphibians, fish, beavers, cottonwoods, horsetails, clean bubbles, transparent pools ( ) - Water smell, foam bubbles, eutrophication, cyanobacteria ( )	<b>Habitat:</b> - Channels with pools & constrictions, waterfalls, or meanders, multithreaded ( ) - River incision, channelization (canals), dikes, levees, rip-rap ( )
<b>Likely Human Impact</b> - Urban development ( ) - Agriculture development ( )	- Reservoirs ( ) - Lodging/deforestation ( )	- Lack of Land use maintenance / high intensity fires ( ) - Land Use Change ( )



# Resources



**Email: [samsandoval@ucdavis.edu](mailto:samsandoval@ucdavis.edu)**

**website: [watermanagement.ucdavis.edu](http://watermanagement.ucdavis.edu)**

## **Water Talk Podcast**

<https://www.watertalkpodcast.com/>

## **Drought Tips**

[http://ciwr.ucanr.edu/california\\_drought\\_expertise/droughttips/](http://ciwr.ucanr.edu/california_drought_expertise/droughttips/)

## **Water and Drought Online Seminars**

[http://ciwr.ucanr.edu/California\\_Drought\\_Expertise/Insights\\_Water\\_and\\_Drought\\_Online\\_Seminar\\_Series/](http://ciwr.ucanr.edu/California_Drought_Expertise/Insights_Water_and_Drought_Online_Seminar_Series/)

## **Rangeland Management**

<http://rangelands.ucdavis.edu/drought/>

## **USDA – California Climate Hub. Drought and Forest**

<https://caclimatehub.ucdavis.edu/drought-fact-sheets/>

*Most importantly ...*

*"People don't care how much you know ...  
people wanna know how much you care"*



[samsandoval@ucdavis.edu](mailto:samsandoval@ucdavis.edu) [watermanagement.ucdavis.edu](http://watermanagement.ucdavis.edu)



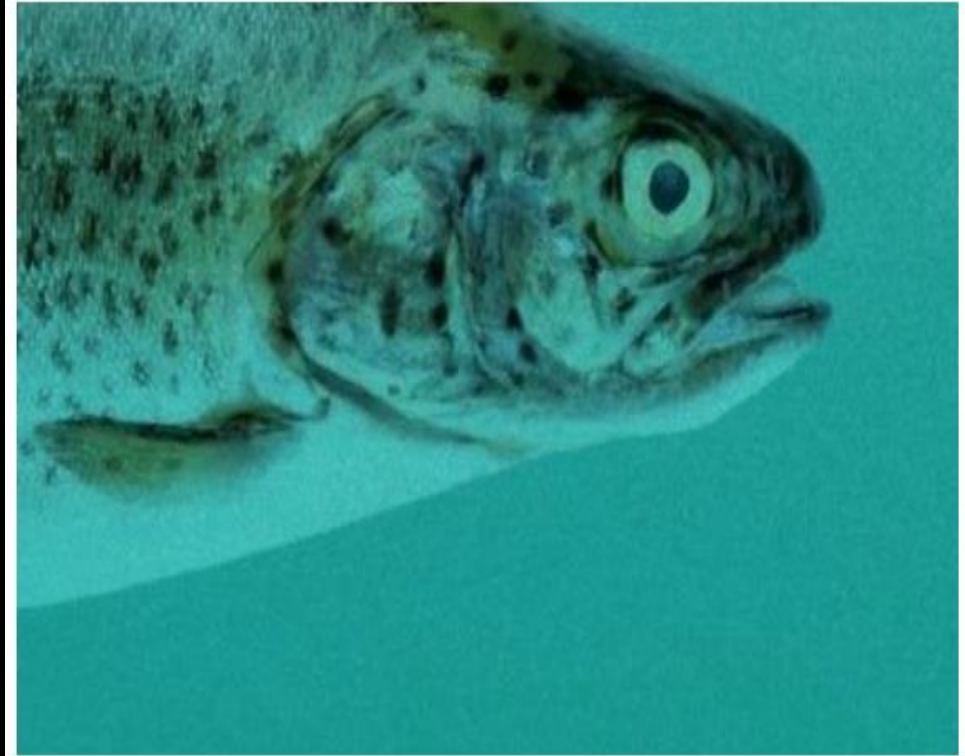
# Water Talk Podcast

“we are not asking what water wants, we are trying to control water and we are not giving water space to do its thing.”

“Water is its own entity, has agency, has relationships with soil and rock, and microbes, and beavers, and humans. And when we ignore all of those interactions with the system, that's when we created a lot of unintended consequences for ourselves. ”

“The extent to which we can help restore natural hydrology ... it can be really helpful to so many of the ways in which we manage water and the problems that we are having with water”

[watertalkpodcast.com](https://watertalkpodcast.com)  
Episode 39: Erica Geis



SEASON 3

## Episode 39: Slow Water Movements

A conversation with Erica Geis (Author, Reporter, National Geographic Explorer) about water detectives, slowing down the movement of water, controlling water, and giving water space. Released May 6, 2022.



*Thank you*  
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