

An aerial photograph of a large, winding reservoir in a dry, hilly landscape. The water is a deep blue, contrasting with the brown, scrub-covered hills. The reservoir has several sharp curves and is bordered by concrete or earthen walls. In the background, more hills and a distant city skyline are visible under a hazy sky.

# COEQWAL: A collaboratory for water equity and resilience in California

**California Water and Environmental Modeling Forum  
2026 Annual Meeting**

**Ted Grantham**

Dept. Environmental Science, Policy, and Management  
University of California, Berkeley

Folsom, California  
April 21, 2026

# CALIFORNIA'S WATER FUTURE?



# COEQWAL

COLLABORATORY FOR EQUITY IN WATER ALLOCATION

*collaboration + laboratory =  
collaboratory*

# California Climate Action Initiative

\$100M from California to UC for climate action research and innovation that meet needs of state

Support applied research on climate resilience, adaptation, and mitigation, with an emphasis on vulnerable communities

Produce actionable results within 2 years



# COEQWAL Project Goals

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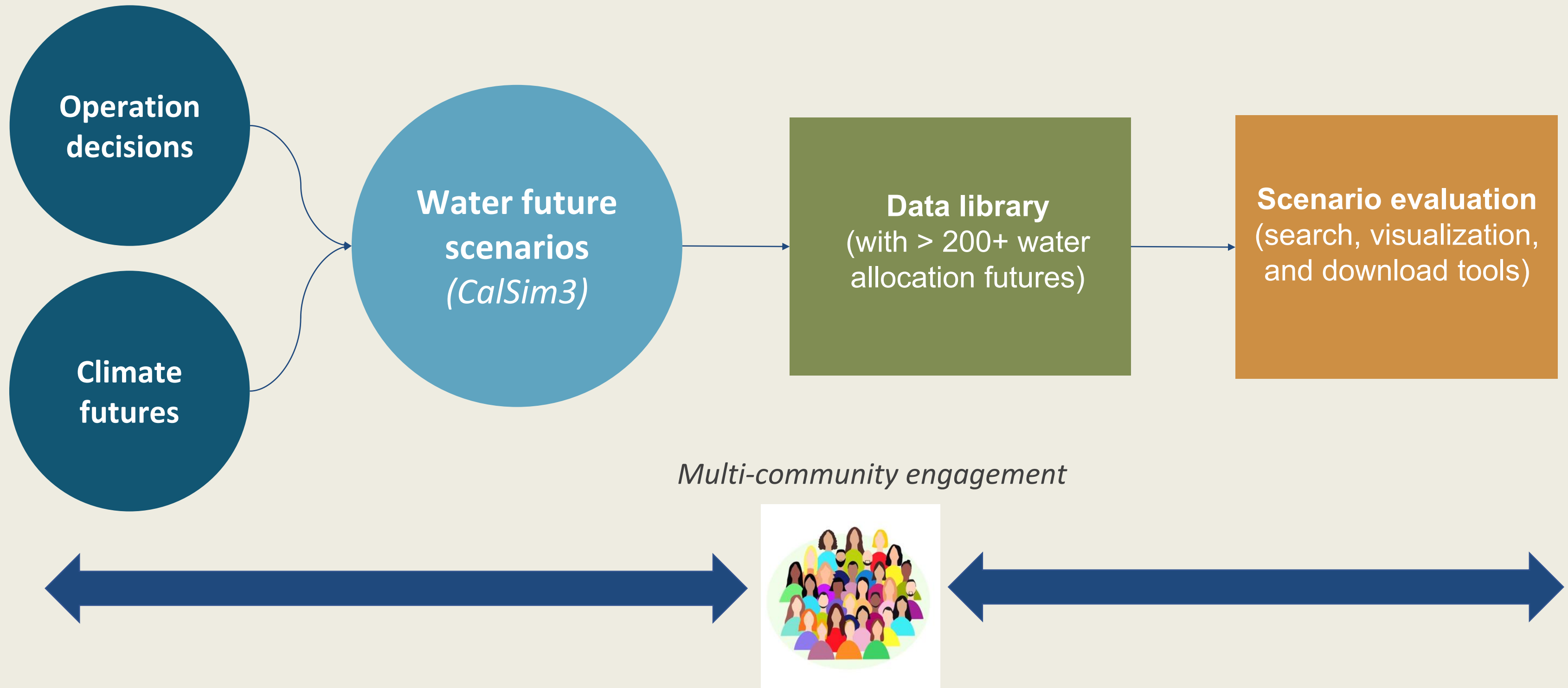
**DEMOCRATIZE CALIFORNIA'S WATER FUTURES** through an inclusive, participatory process that diversifies and enhances engagement in water planning

**UPLIFT PERSPECTIVES**, needs, and values of communities historically marginalized from water decision-making through intentional outreach and engagement

**ADVANCE EQUITY** by providing access to data and tools used by agencies and decision-makers

**FOSTER DIALOGUE** by encouraging collaborative exploration of California's water futures

# Participatory Scenario Planning Approach



# Project Partners

## Agency/Water Utility

NOAA  
Delta Stewardship Council  
Metropolitan Water District of California  
Department of Water Resources  
State Water Resources Control Board  
Interagency Ecological Program



## Academic

UC Berkeley (lead)  
UC Santa Cruz  
UC Davis  
UC San Diego  
UC Merced  
UC Los Angeles  
Sacramento State  
California Institute for Water Resources



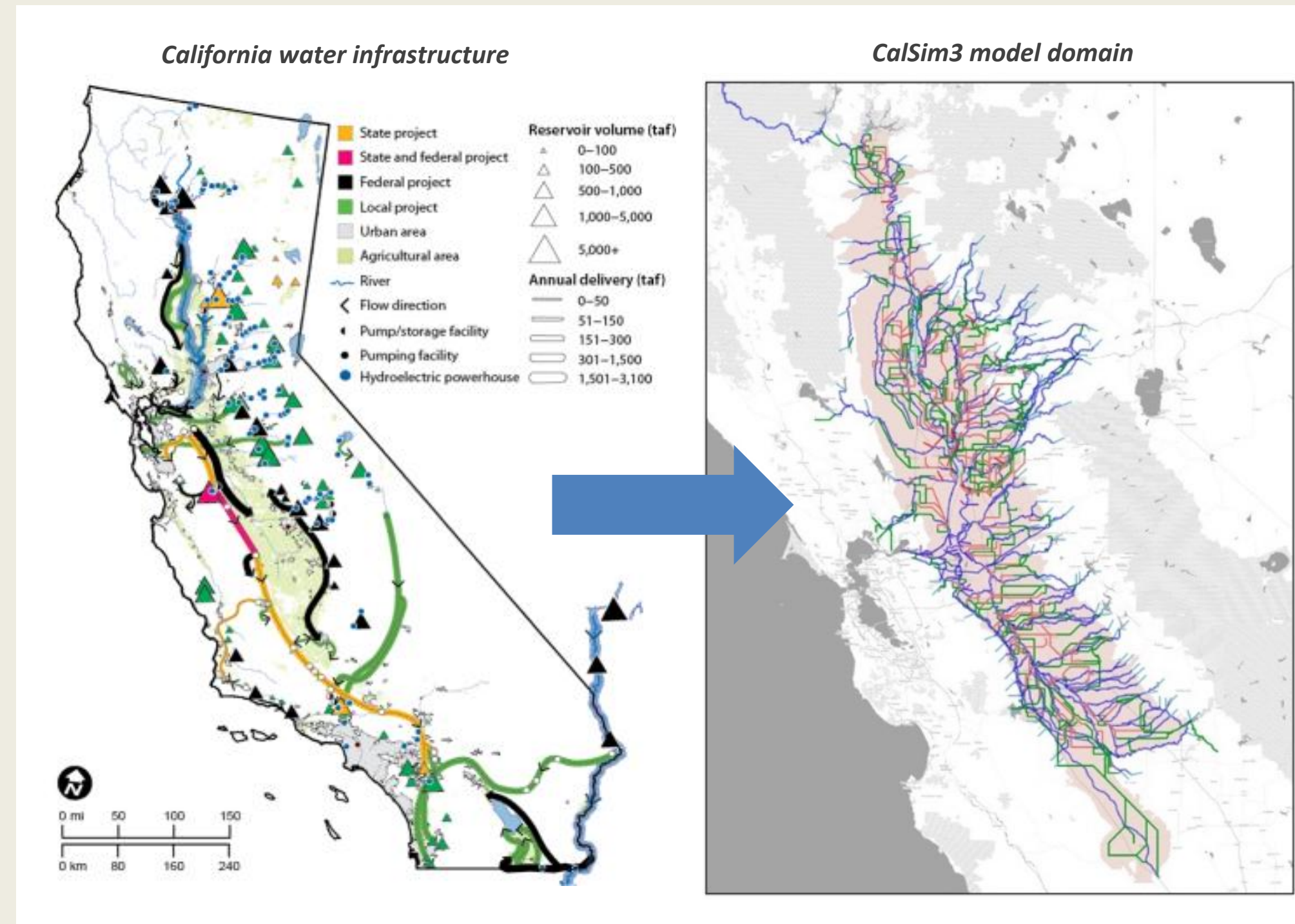
## Community

Shingle Springs Band of Miwok Indians  
Buena Vista Rancheria of Me-Wuk Indians  
Karuk Tribe  
The Nature Conservancy  
Restore the Delta  
Public Policy Institute of California  
Alliance for Global Water Adaptation

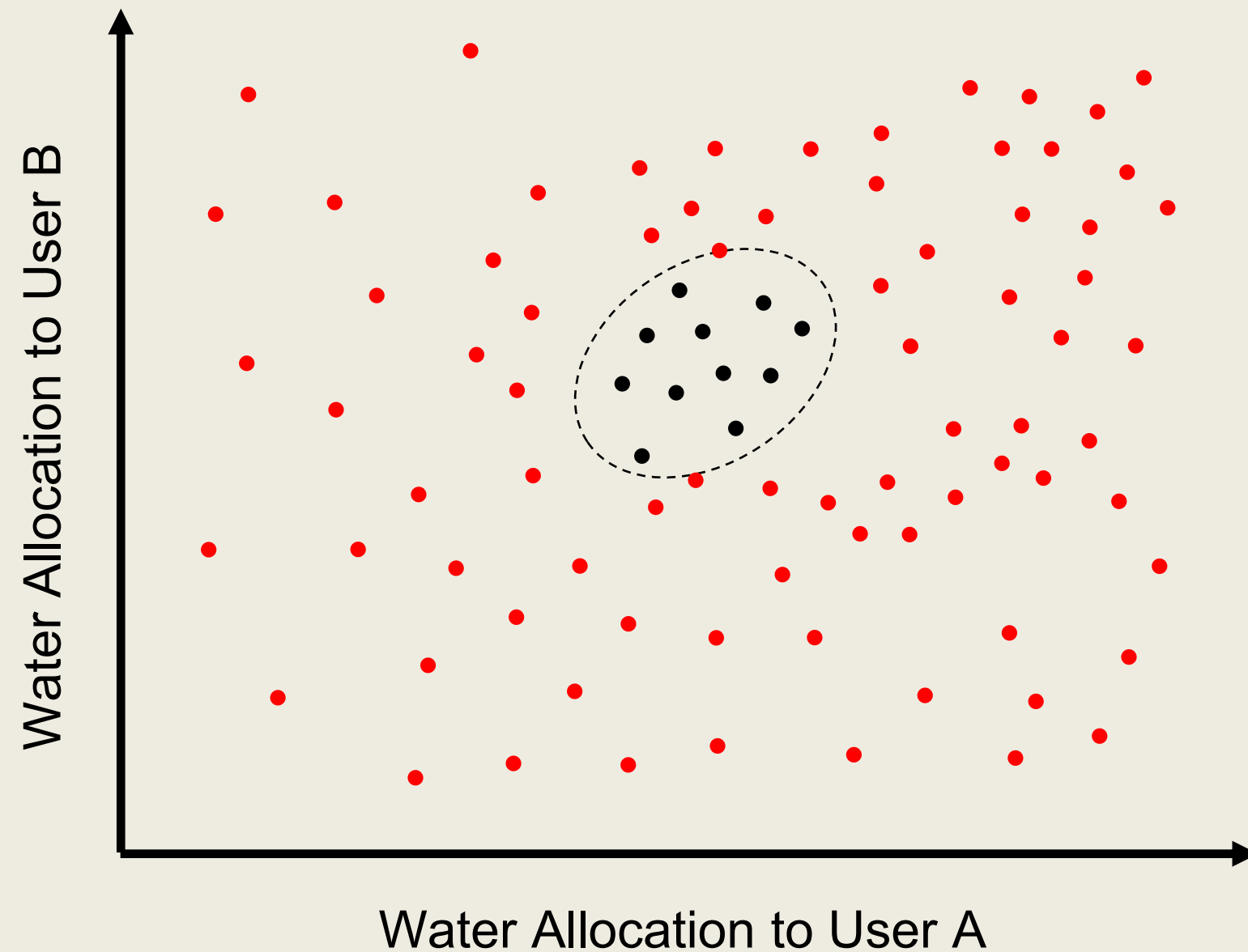
# Water Operations Models

**CalSim3** - water allocation and planning tool for the Central Valley and interconnected basins

Developed by the California Department of Water Resources and US Bureau of Reclamation



# Scenario Exploration

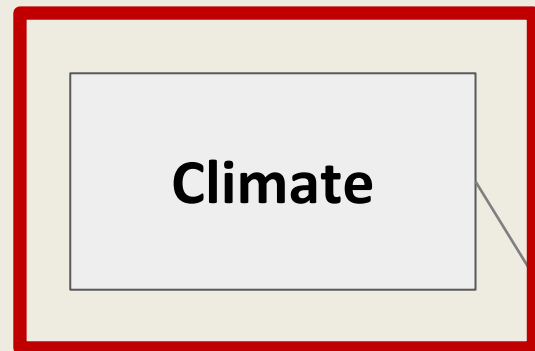


Typical assessments of water management alternatives explore limited range of variability

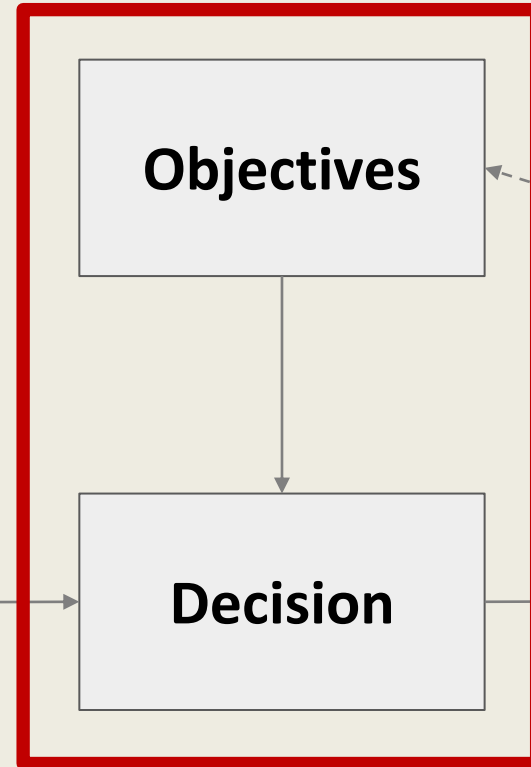
We intentionally **expand the scope of scenarios** analyzed to consider possible operational changes depart from “business as usual”

# Building a Scenario Library

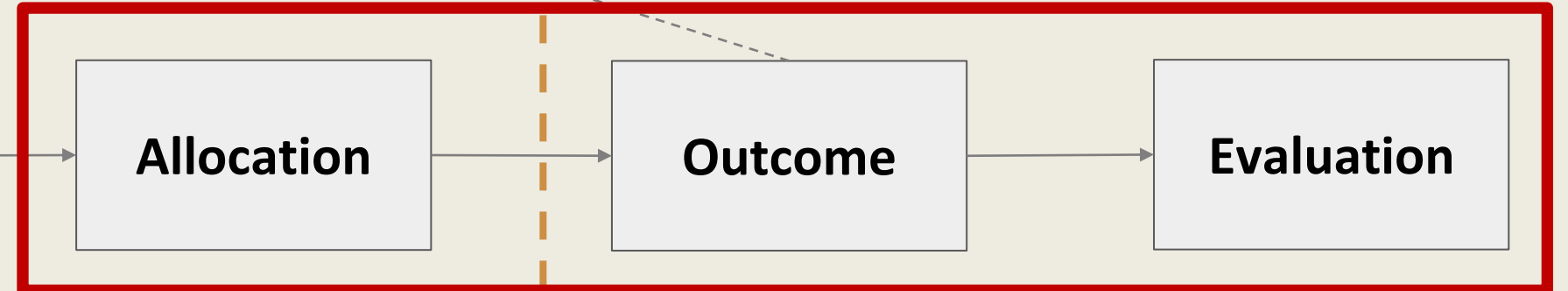
CalSim3



*Future Hydroclimates from  
Physical and Statistical  
Models – Levy*



*Exploring an Expanded Scope  
of Operational Alternatives for  
California - Gilbert*



*Interpreting Scenario Outcomes: Metrics,  
Thresholds, and Trade-offs – Medema/Grantham*

*Building a FAIR Collaboratory for Equity in Water  
Allocation – Thomas*

*How much water is available?*

*How is it allocated?*

*What are the consequences?*

# Scenario Themes



*Exploring an Expanded Scope of  
Operational Alternatives for  
California - Gilbert*

|               |   | Theme                                  | What this theme captures                                                                                             |
|---------------|---|----------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| Use Cases     | { | Community water systems                | Whether people and communities can reliably access safe, affordable drinking water.                                  |
|               |   | Farms and groundwater                  | Whether agricultural water deliveries can sustain food protection, while preventing overdraft of groundwater basins. |
|               |   | Rivers, salmon and the Delta ecosystem | Whether rivers, salmon, and the Delta estuary receive the flows they need to remain functional and resilient.        |
|               |   | The Delta as a living place            | Whether the Delta is a place where communities, farms, and ecosystems coexist and thrive.                            |
| Cross-cutting | { | Drought and climate risk               | How the water system performs under drought stress, climate variability, and extreme conditions.                     |
|               |   | Operations and impacts                 | How water management decisions affect trade-offs, equity and resilience.                                             |

# Hydroclimate Futures



Source: DWR



Source: DWR

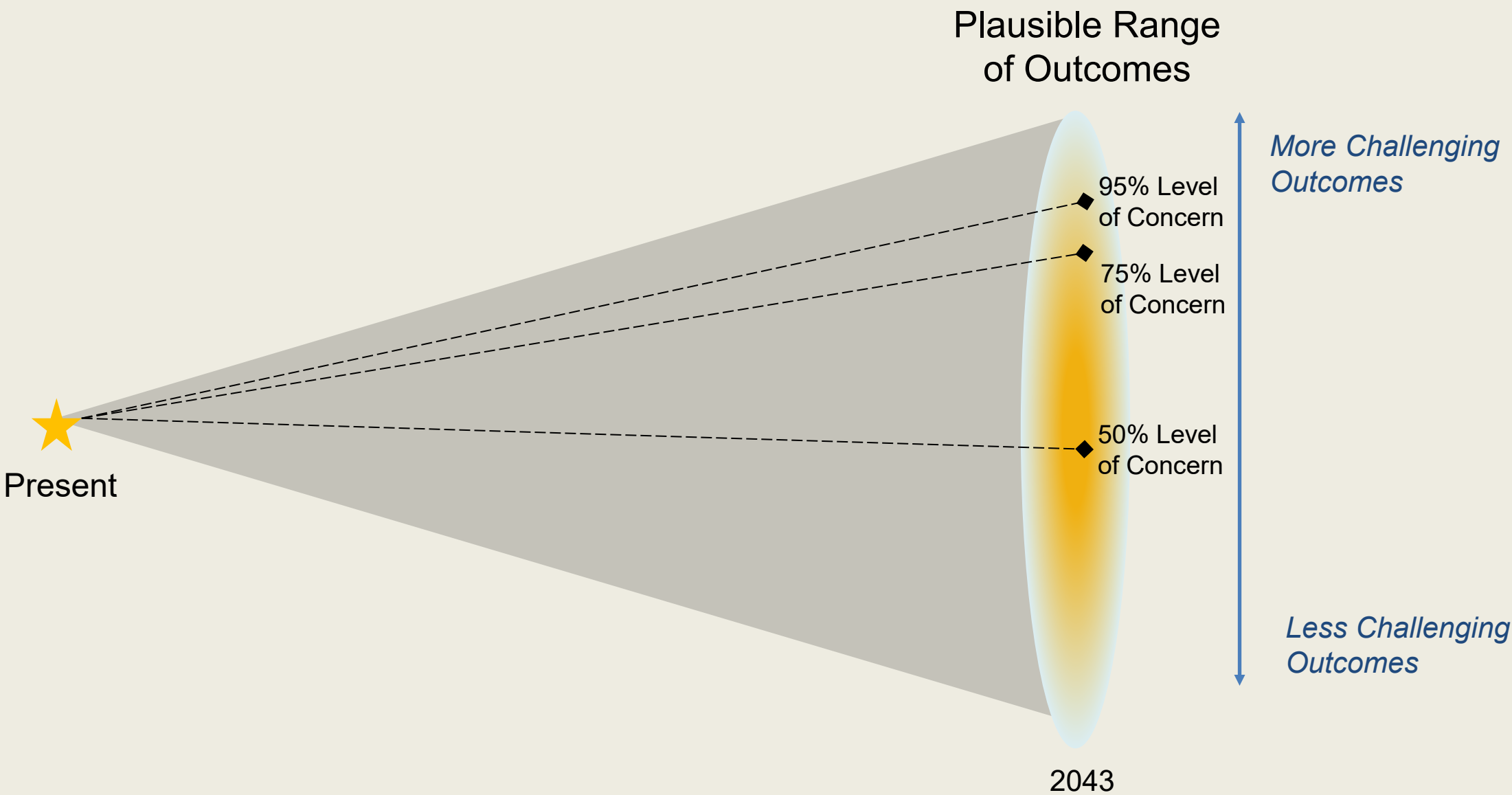
# Hydroclimate Futures



*Future Hydroclimates from  
Physical and Statistical Models –  
Levy*

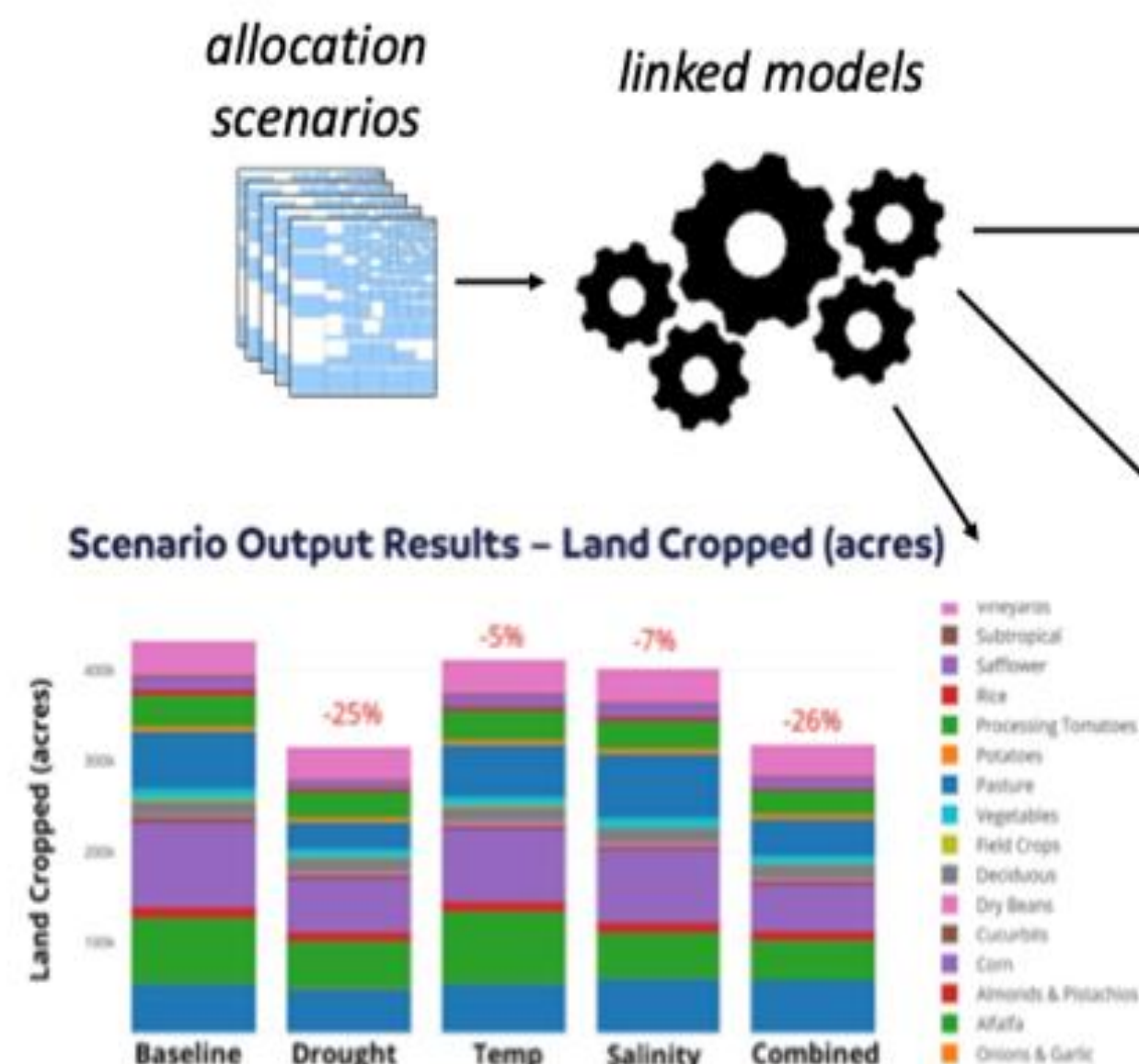
Future hydroclimates (temperature, precipitation, flow, and sea level rise) that represent different levels of risk

Aligned with approach used by State Water agency



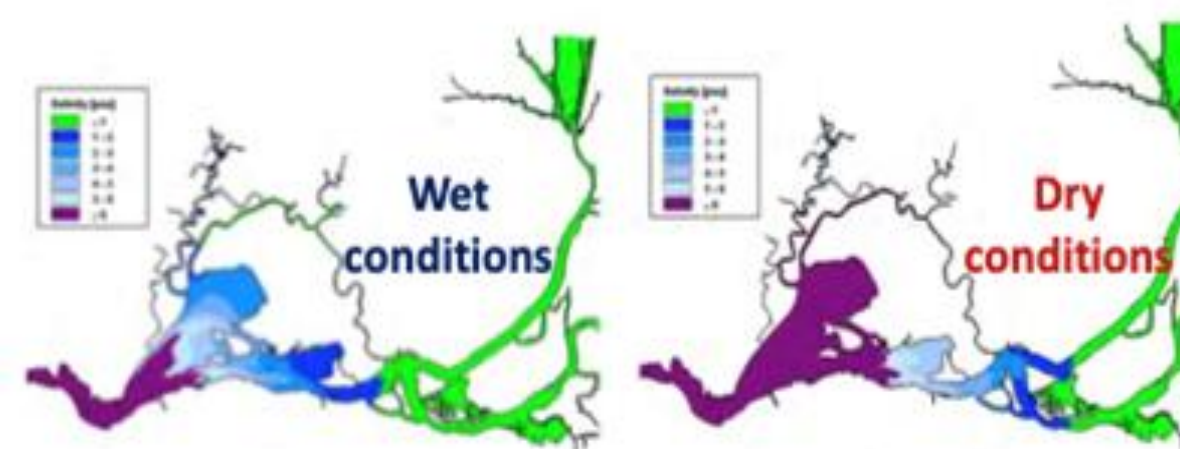
Credit: Anderw Schwarz (DWR)

# Evaluating Outcomes



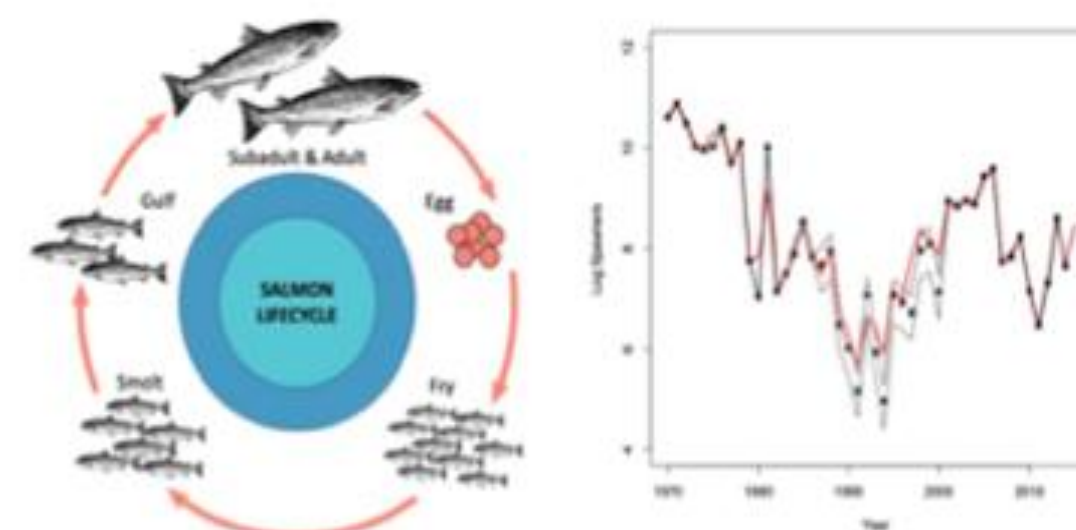
Agricultural-economic model (Open DAP)

Source: Medellin-Azuara



Salinity gradients in Bay-Delta Estuary (Schism)

Source: Herbold and Vendlinski, 2012.



Chinook salmon life cycle model (WRLCM)

Source: NOAA

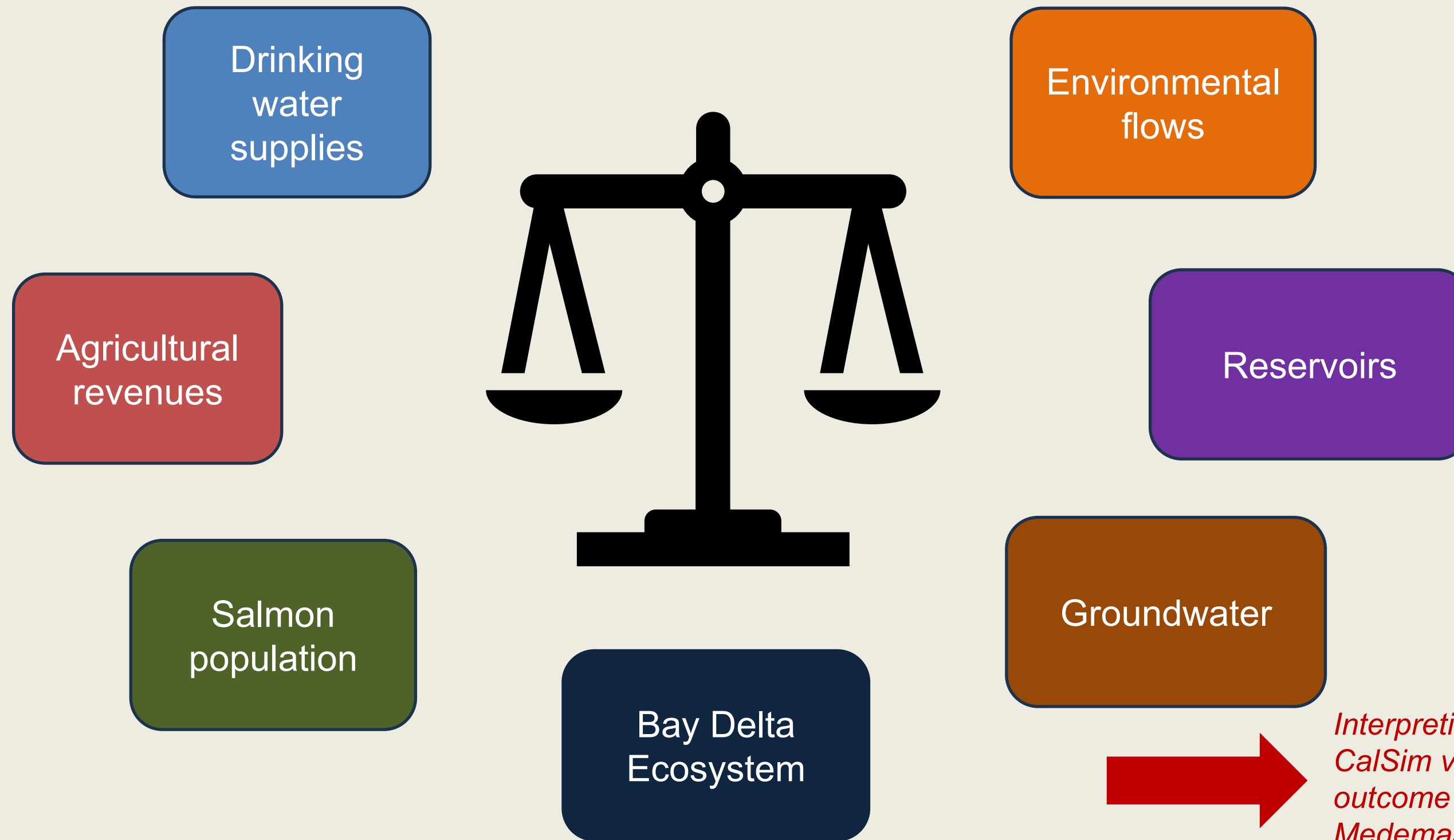
# Scenario Outcomes

Community/municipal water deliveries  
Agricultural deliveries and revenues  
Environmental river flows  
Salmon population status  
Delta outflow (ecosystem health)  
Delta exports (volume + salinity)  
Water quality for in-Delta uses (salinity)  
Reservoir storage  
Groundwater storage



Source: DWR

# Evaluating Outcomes on a Common Scale



Current operations



SGMA implementation in the Central Valley



# What is the future of **California's water?**

Water connects all Californians and is vital to our communities, farms, and the environment. Delivering water to meet all needs is not easy, especially as our climate changes.

On this site,  
**you can**

**Learn**

how water in California's Central Valley is managed

**Explore**

how water outcomes shift under different scenarios

**Share**

your insights about California's water future



*Building a FAIR Collaboratory for  
Equity in Water Allocation –  
Thomas*

On this site,  
**you can**

**COMING SOON!!!**  
**Public Launch Event in August**

Learn

how water in California's Central Valley is managed

Explore

how water outcomes shift under different scenarios

Share

your insights about California's water future

# What Does Project Success Look Like?

**A WEBSITE** that invites visitors from a wide range of backgrounds and interests...

- to understand how water is managed in the state,
- to explore California's water futures and
- to identify strategies or actions that address needs, while also promoting equity and climate-resilience

**A COMMUNITY** that sees their values and perspectives integrated in project activities and outcomes

**A CULTURE SHIFT** towards collaborative, equitable water governance



# Thank you!!!

## Acknowledgements

Wietske Medema, Eric Danner, James Gilbert, Morgan Levy, Brett Milligan, Alvar Escriva Bou, Josue Medellin-Azuara, Kwan Liu Ma, Jill Fantauzza, Nancy Thomas, Sarah Yarnell, Ann-Marie Osterback, Erik Porse, David Boughton, Sooyeon Yi, Sunny Singhal, Cheryl Schwab, Benji Malagueno, Yun-Hsin Kuo, Iftikhar Islam, Abhinav Sharma, Meli Jimenez Aryan, Kristin Dobbin, Dino Bellugi, Can Sabi Ruso, Armen Konialian, John Durand, Yuya Kawakami, Jennifer Natali, Lynette Williams, Bronwen Stanford, Dan Cayan, John Matthews, Andrew Schwarz, Elsie Platzer, John Stella, Miles Daniels, Steve Culberson, Jenny Rempel, Laurel Larsen, Liane Bauer