

Spring
2010



The Future of California Water

LWVC 2021 Convention

8 June 2021

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Spring
2015



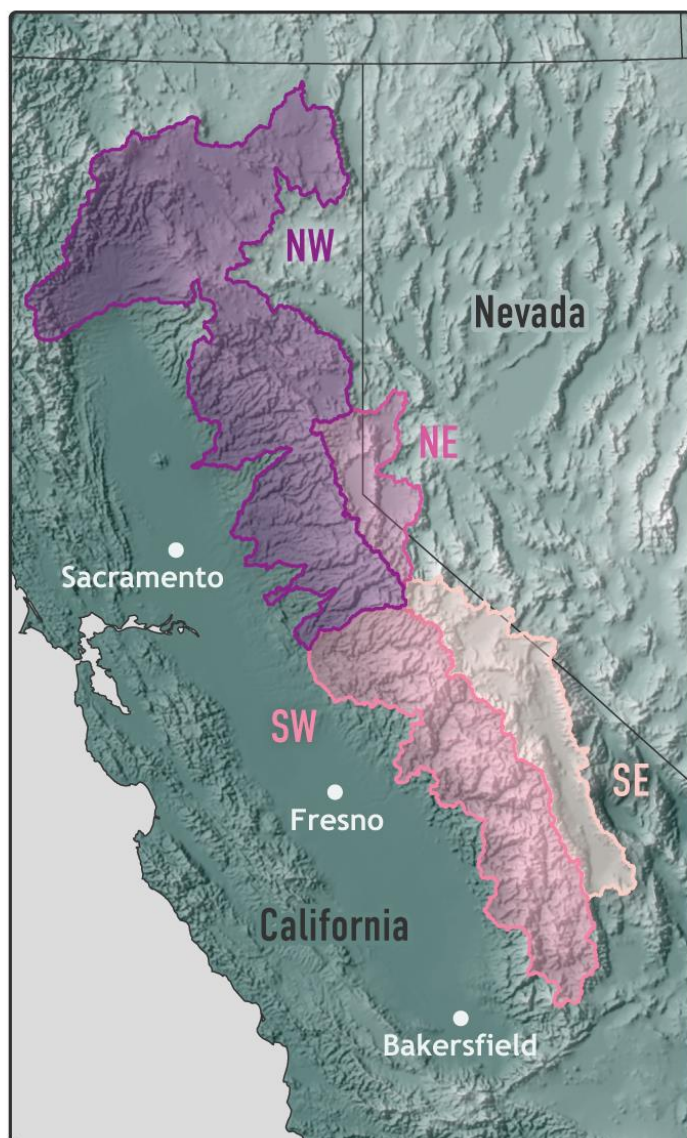
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Dwindling snowpacks in the Sierra Nevada



Snowpacks sustain key natural resources, including salmon runs, the Giant Sequoias, and the winter sports industry.

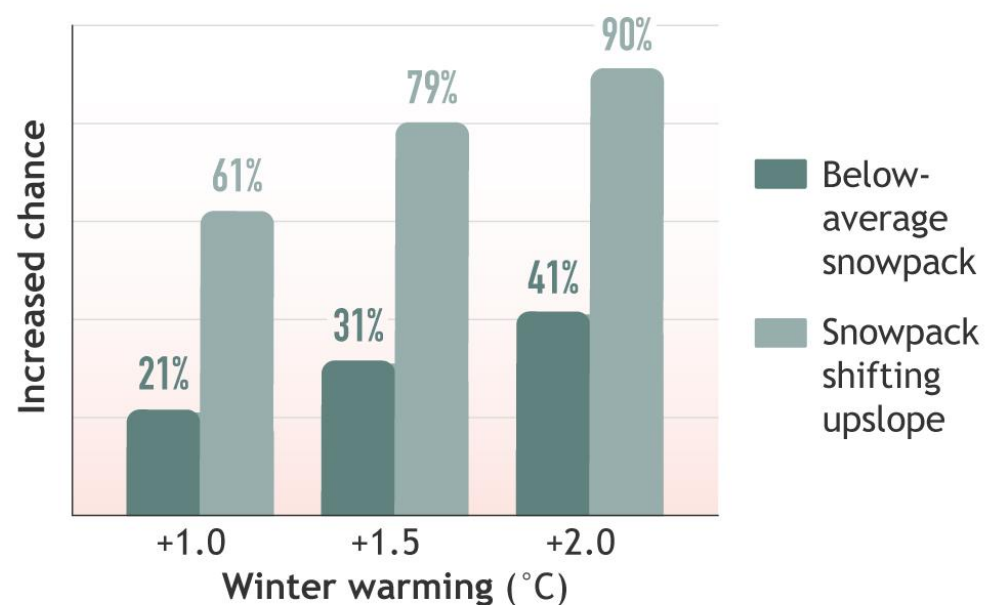


Sierra snowmelt provides 60% of southern California's water resources, and 75% of the state's agricultural water.



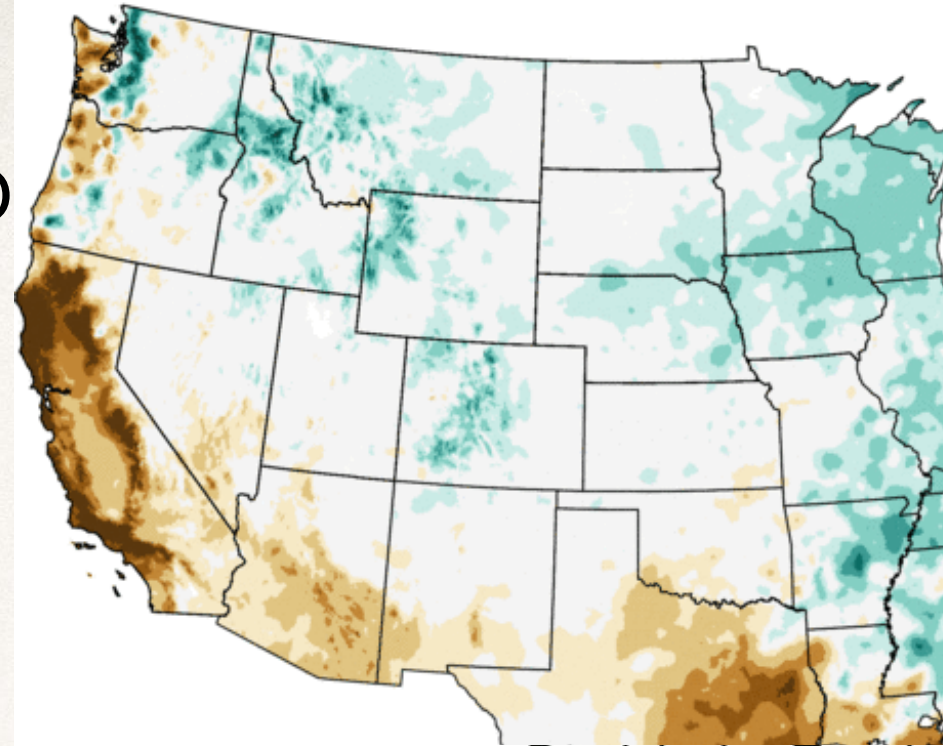
Reduced snowpacks raise wildfire risk, especially in the Northern Sierra.

Sierra-wide risks

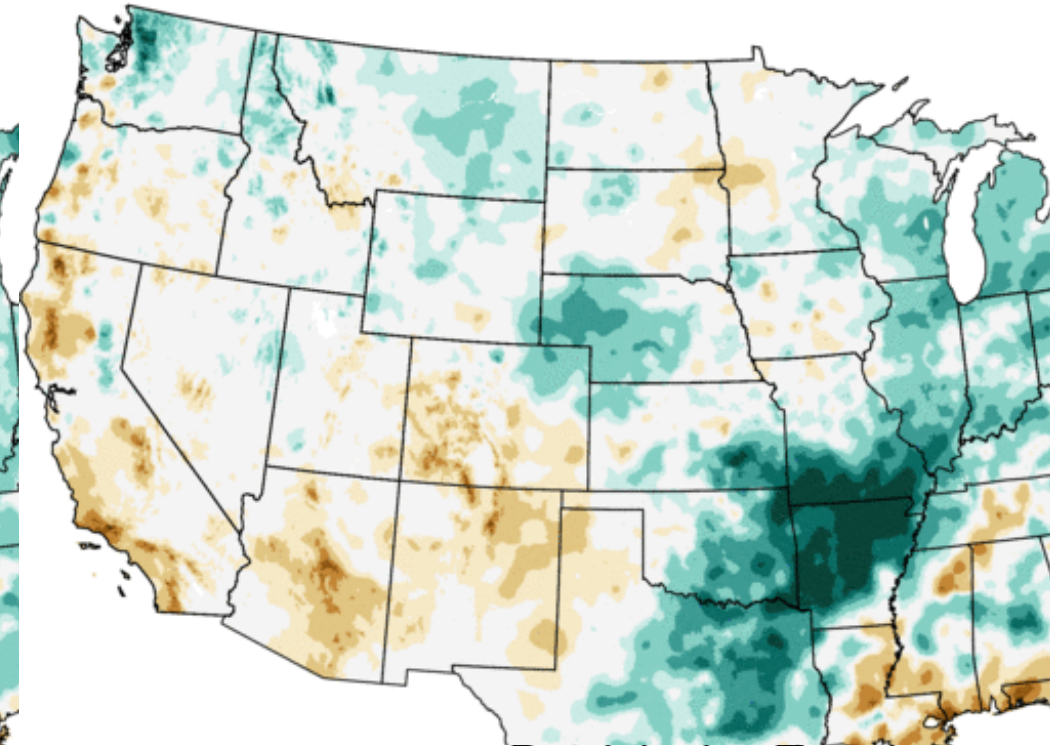


- ❖ 1 C warming, air holds 7% more H₂O
- ❖ Plants use more
- ❖ Soil soaks up more
- ❖ Less frequent rain
- ❖ More intense rain
- ❖ Less river flow
- ❖ Wildlife needs more

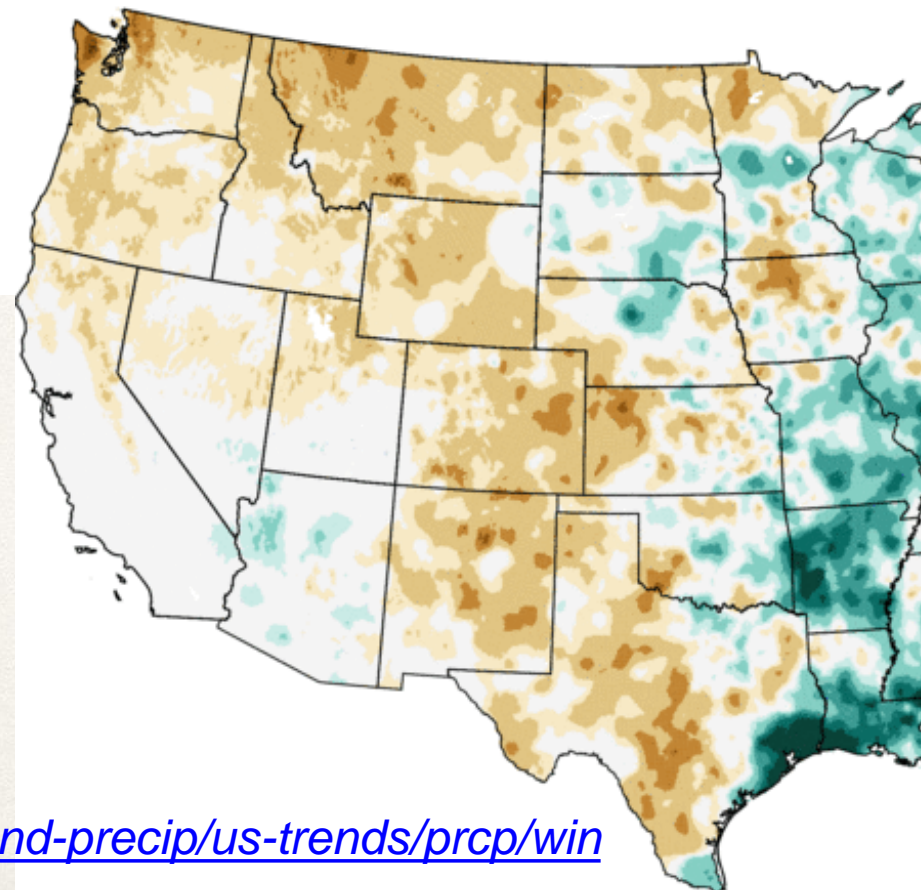
Precipitation Trends
Winter 1991–2020 (30 years)



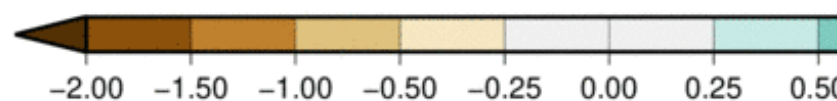
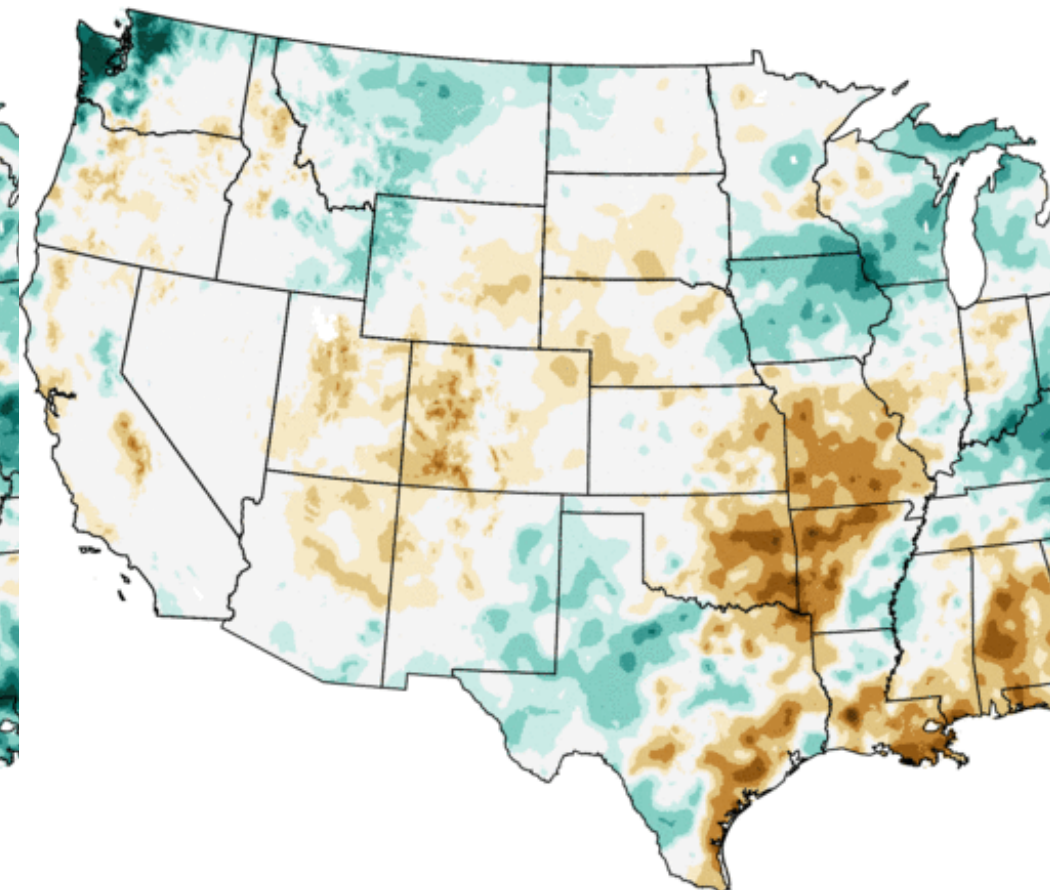
Precipitation Trends
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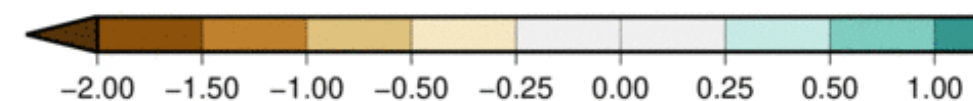
Precipitation Trends
Summer 1991–2020 (30 years)



Precipitation Trends
Autumn 1991–2020 (30 years)

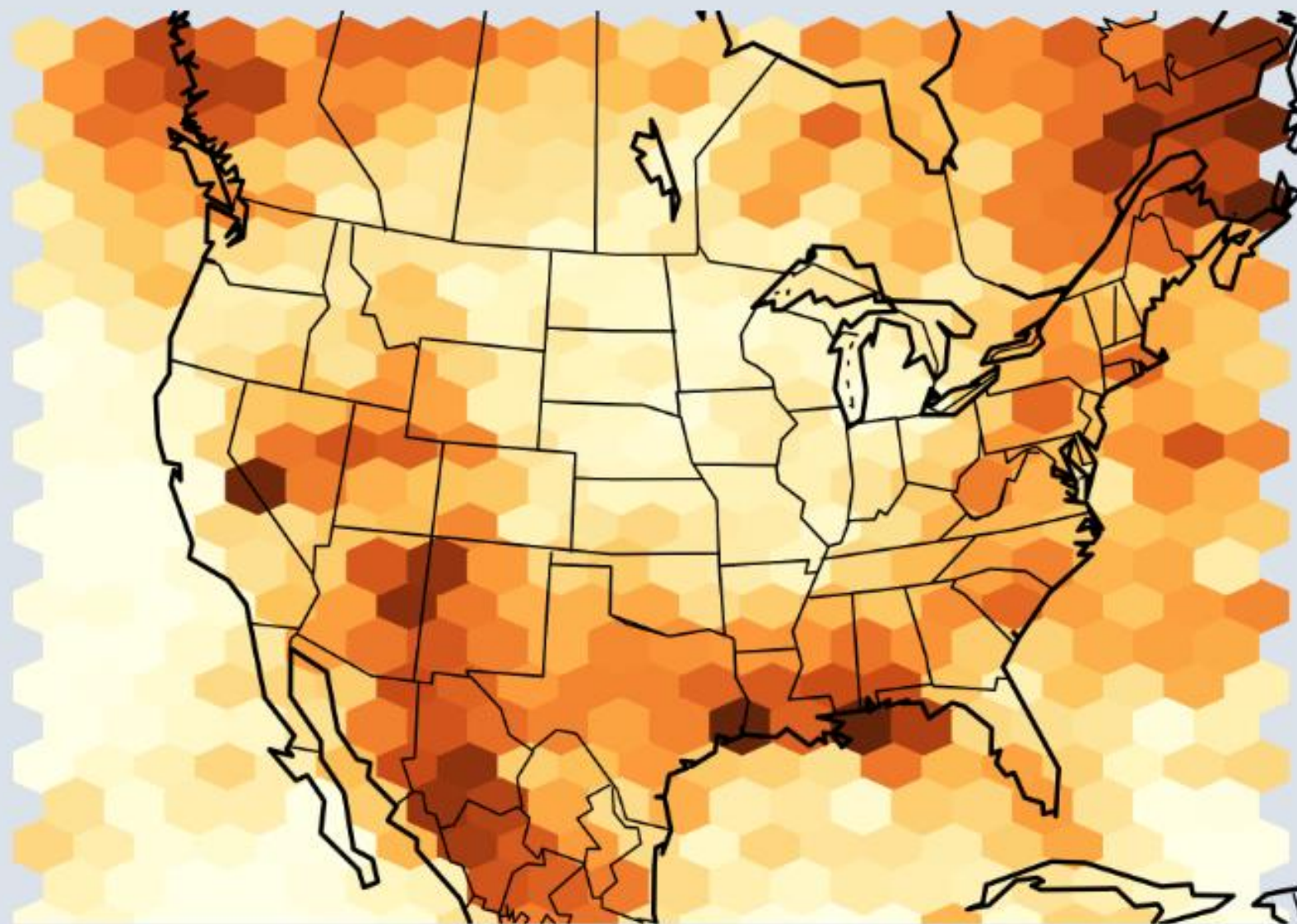


Inches per Decade



Inches per Decade

<https://www.ncdc.noaa.gov/temp-and-precip/us-trends/prcp/win>

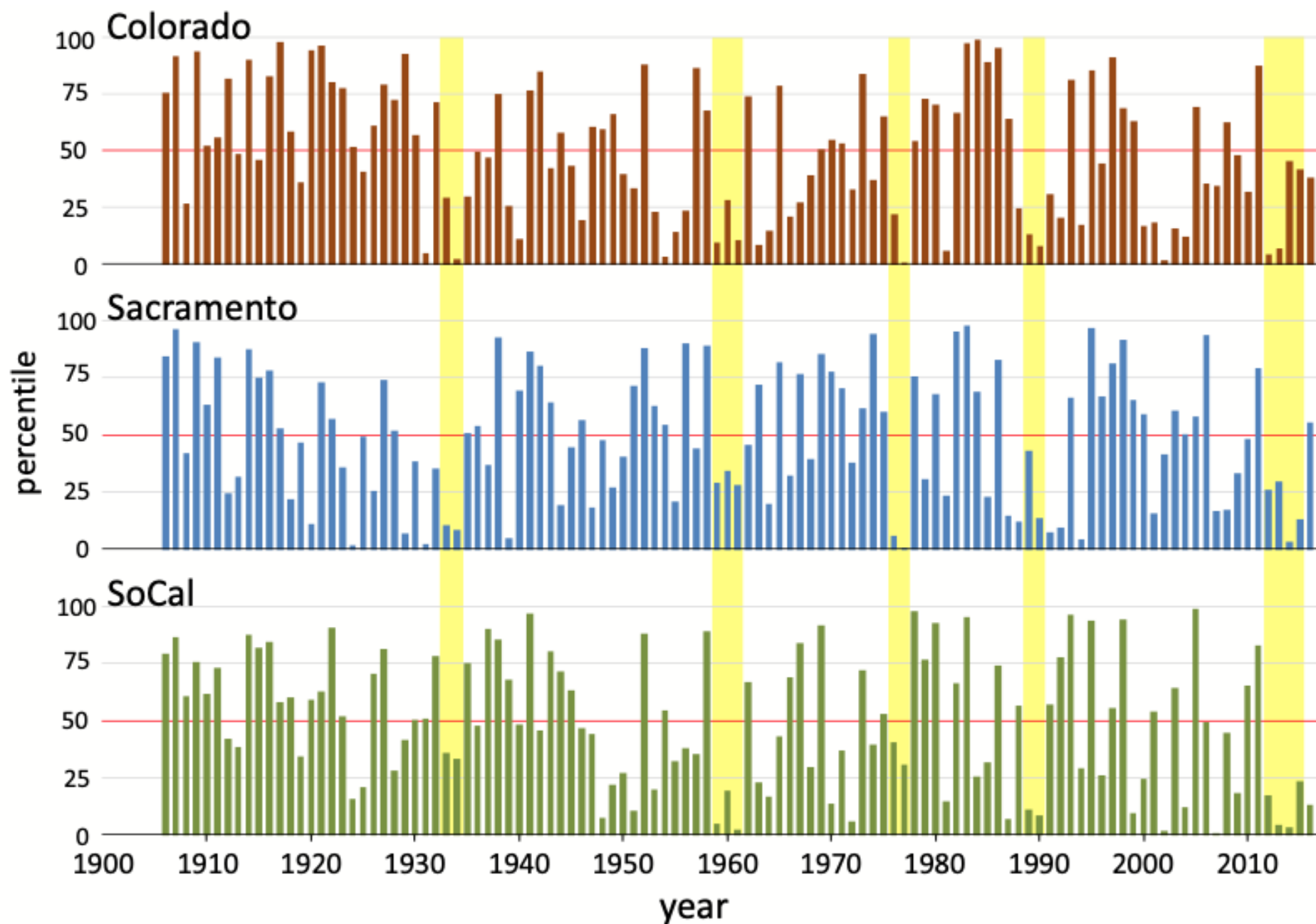


Change in frequency of extreme precipitation events [%]

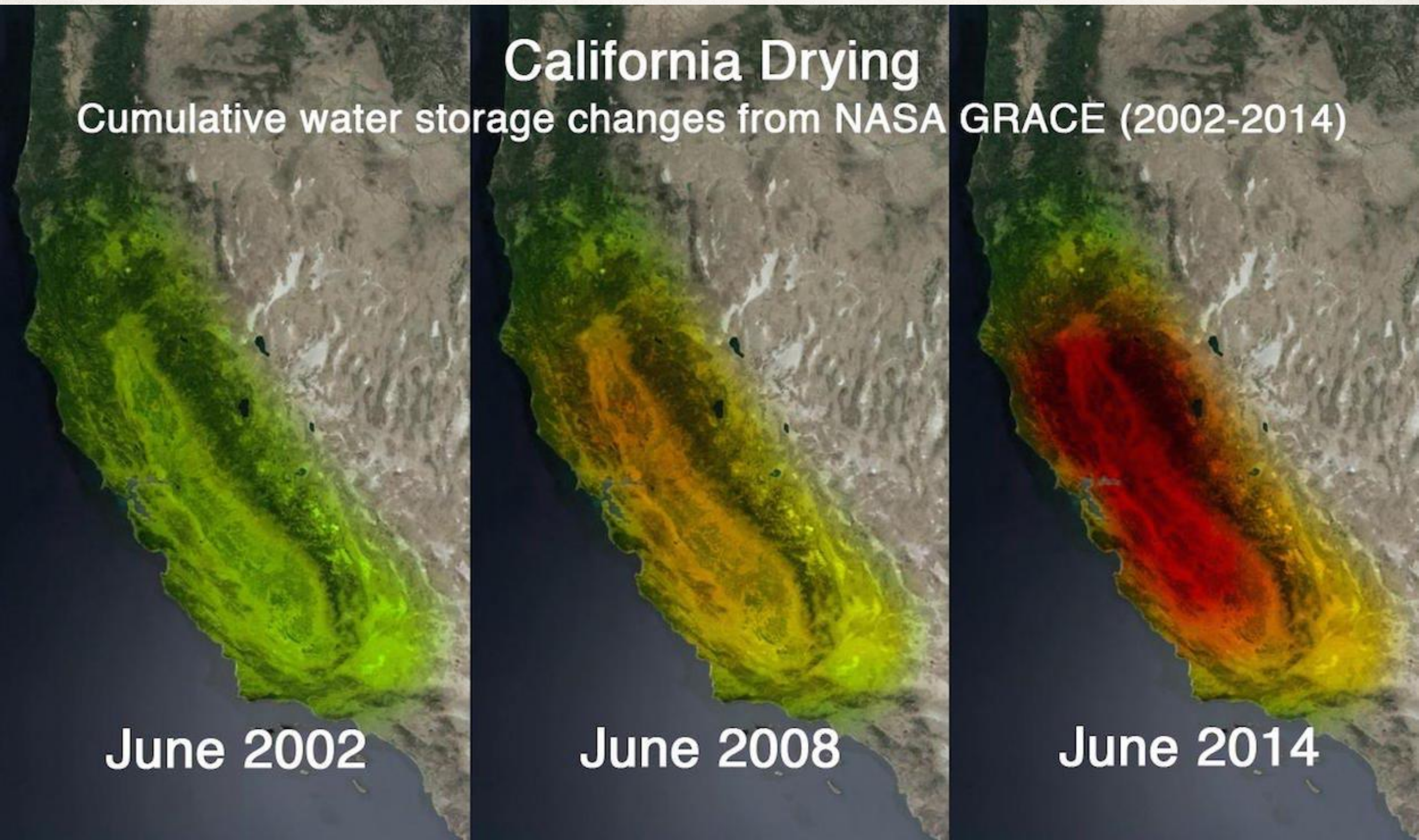


The figure shows the expected increase in the number of summertime storms that produce extreme precipitation at century's end compared to the period 2000 - 2013. (©UCAR. Courtesy Andreas Prein, NCAR. This image is freely available for [media & nonprofit use](#).)

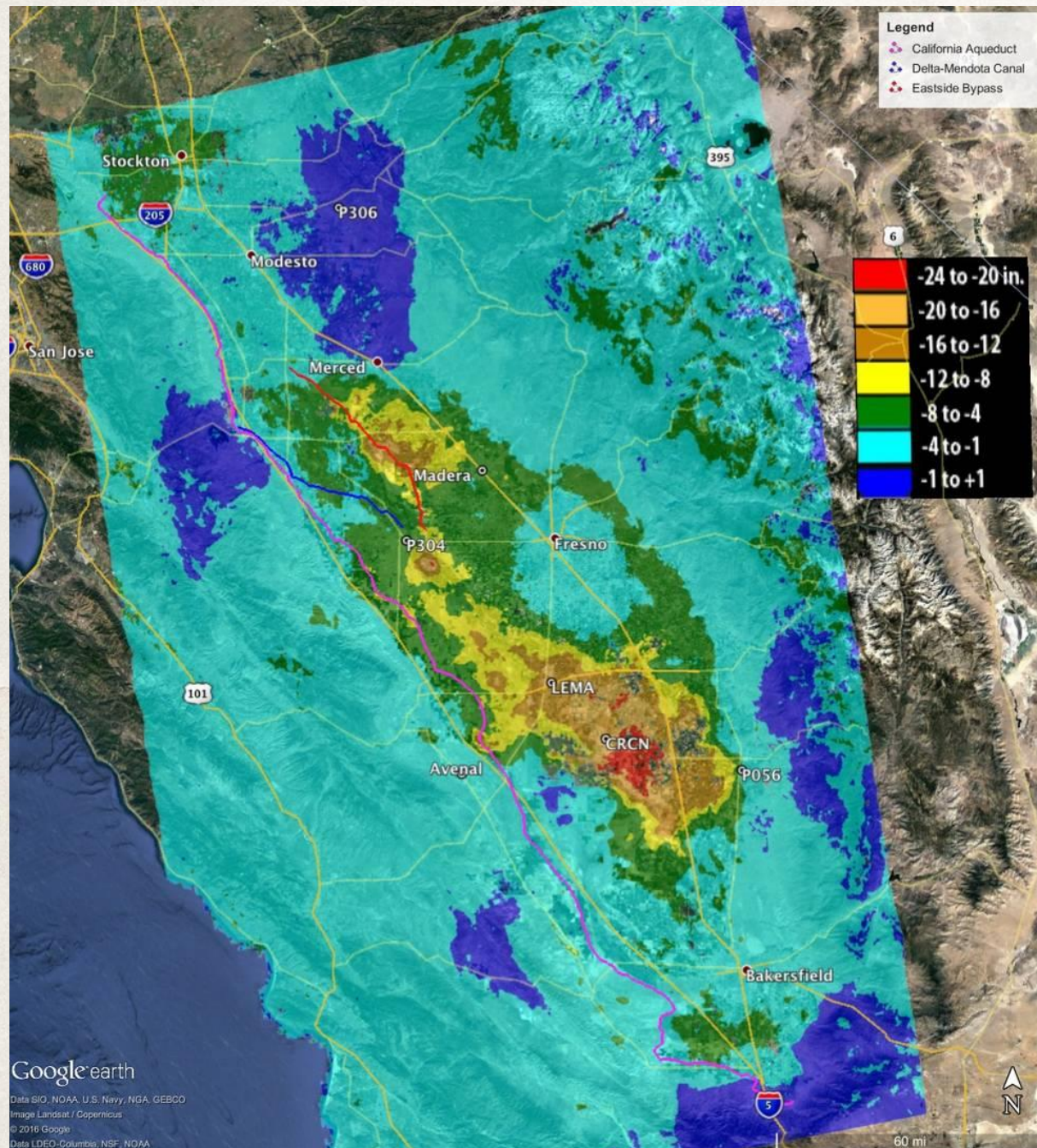
Perfect Drought



Missing Mass: Groundwater



Central Valley Subsidence from Groundwater Overdraft



Farmers pocket \$
Taxpayers pay Billions
Broken aqueducts, roads, bridges
High Speed Rail



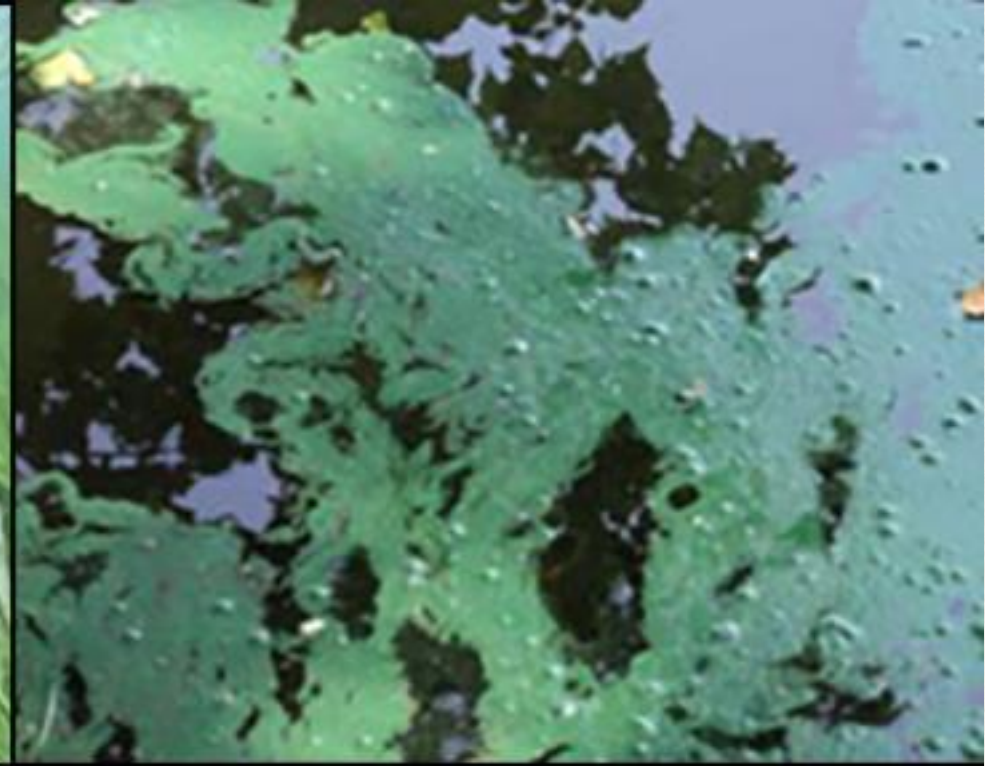
SGMA

- ❖ Sustainable Groundwater Management Act (2014)
- ❖ Local Agencies form Groundwater Sustainability Agencies (GSAs)
- ❖ Critical overdraft basins must reach sustainability by 2040
 - ❖ Central Valley, Central Coast
- ❖ Medium priority basins by 2042
- ❖ SoCal coastal basins have already stabilized, rebounded

Ecosystem Collapse from Decades of Unsustainable Water Diversion



Harmful Algal Blooms (HAB)



California Water Today

- ❖ 80% of developed water in CA goes to Agriculture
 - ❖ Higher than global average of 75% because CA's urban areas are very efficient
- ❖ CA is the US leader in water recycling/reuse and conservation, but lag behind a handful of countries.
- ❖ ~50% of surface water overall went to environmental uses in the past, but very little in dry years. This has to change
- ❖ Oil, Gas, Power industries have reduced water use & increased recycling. Shift to renewable energy will reduce their water use

The Future of California Water

- ❖ **Less water will be available to everyone**
- ❖ To stave off extinction, conservation uses have to be put first, especially in dry years
- ❖ Honor treaties with First Nations
- ❖ Larger urban areas can adapt: water recycling/reuse, Desal
 - ❖ may be unaffordable for rural areas
- ❖ Agricultural lands need to be retired

Less of This



More of This



Circularity

- ❖ Wastewater is the new water source
- ❖ Urban sewage recycled (90% yield) for landscape, aquifer replenishment, potable reuse
- ❖ Fracking water recycled for crop irrigation
- ❖ Refinery & power plant cooling water recycled (50% yield) on site

Desalination



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 - ❖ may be unaffordable for rural areas
- ❖ **Agricultural lands need to be retired**