Is California Ready for Drought?

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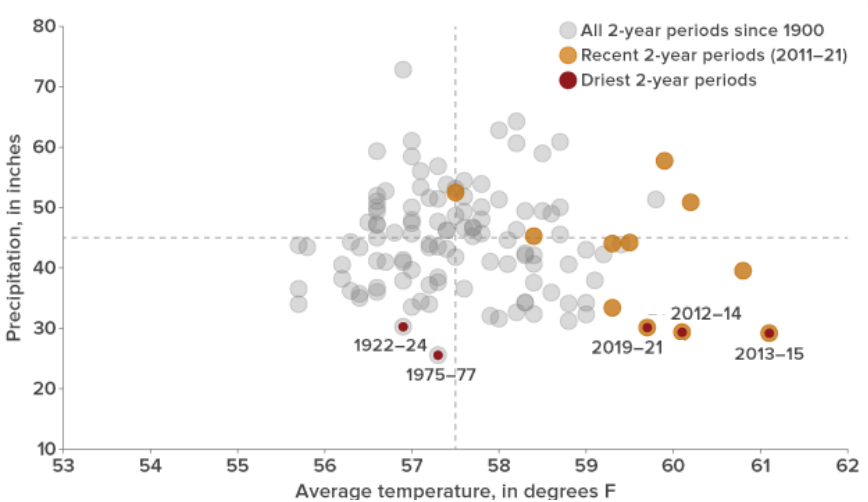
California is in drought again

- The 2012-16 drought highlighted key vulnerabilities
- Knowing what's different, what's similar to last time can help us better prepare
  - Water supply conditions
  - Sector vulnerabilities

Lake Oroville is the main feed for the State Water Project. Shown in April 2021. Photo: DWR

Past 2 years as dry and nearly as hot as worst years of 2012–16 drought

- April 2019 to March 2021 was the 4th driest period on record
- Also among the warmest
- Warm droughts are especially challenging
  - Increased water use
  - Greater risks for temperature-sensitive fish
  - Higher fire risks



Source: Author estimates using data from NOOA National Center for Environmental Information, Climate at a Glance

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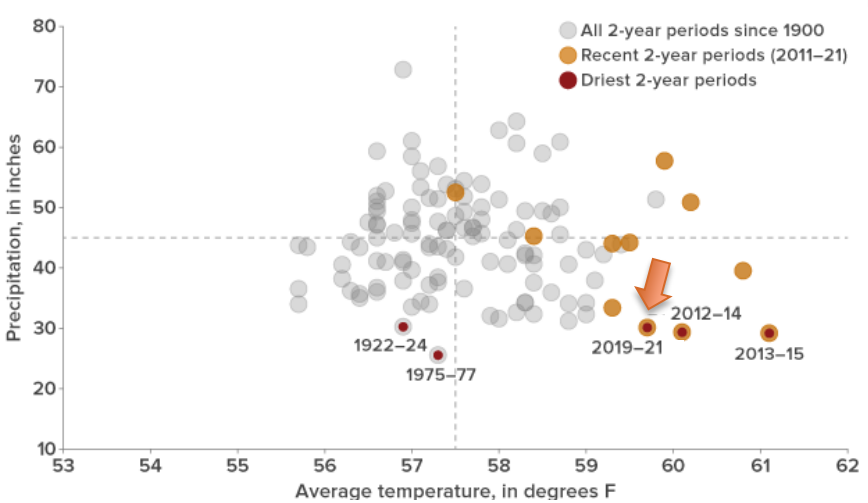

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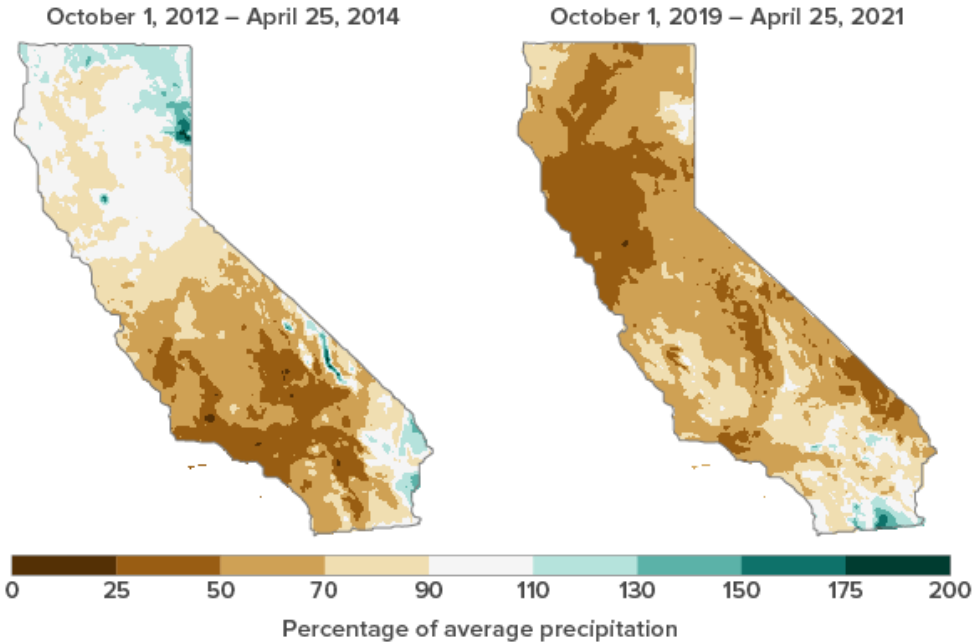
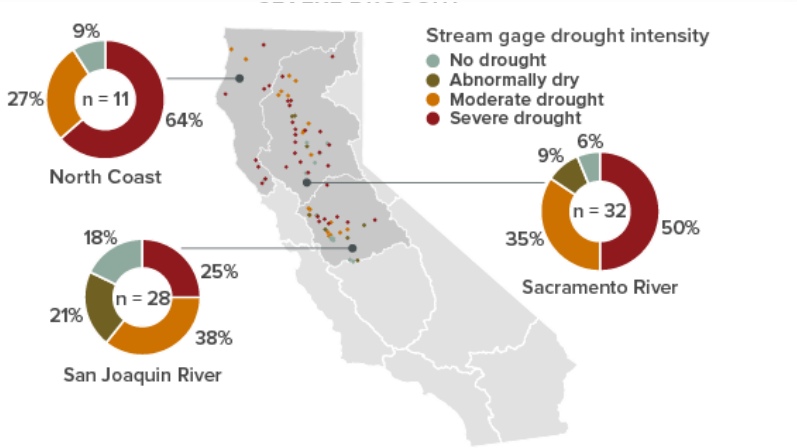
This drought has hit normally water-rich regions especially hard



Source: Author estimates using precipitation data gridMET, obtained from Climate Engine

Most North Coast rivers and streams are in severe drought

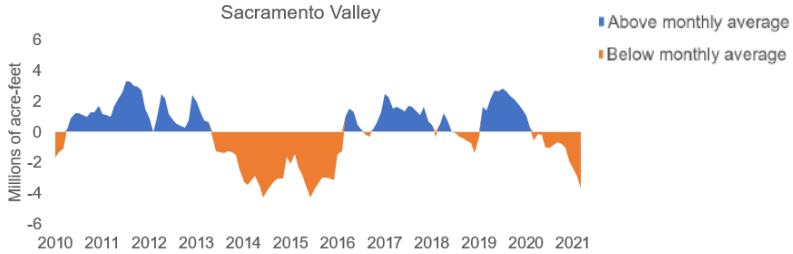
- 2/3 of streamflow gages in North Coast show severe drought
- Flows at most gages also low last year, making 2 consecutive years of stressful conditions
- Drought intensity is severe for most Sacramento River gages (but last year helped by reservoir releases)



Source: Author estimates using data from California Data Exchange Center (CDEC)

Water stored in reservoirs varies considerably across key regions

- Sacramento Valley's lack of precipitation in past 2 years emptied reservoirs fast



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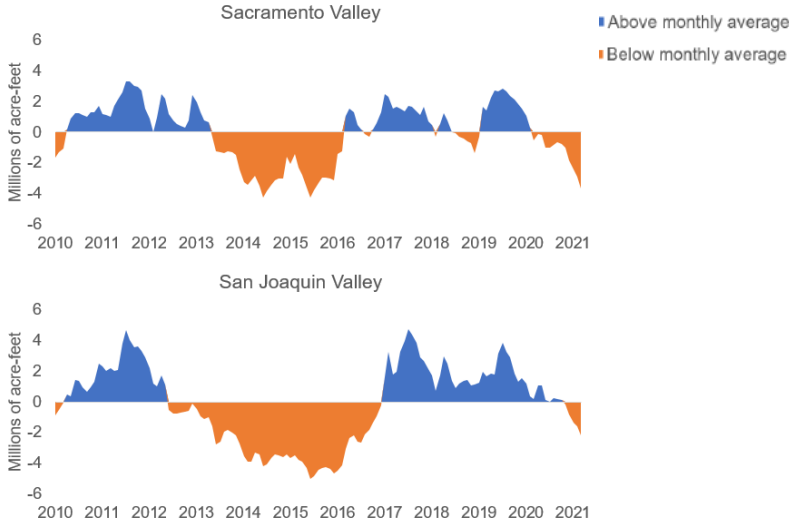

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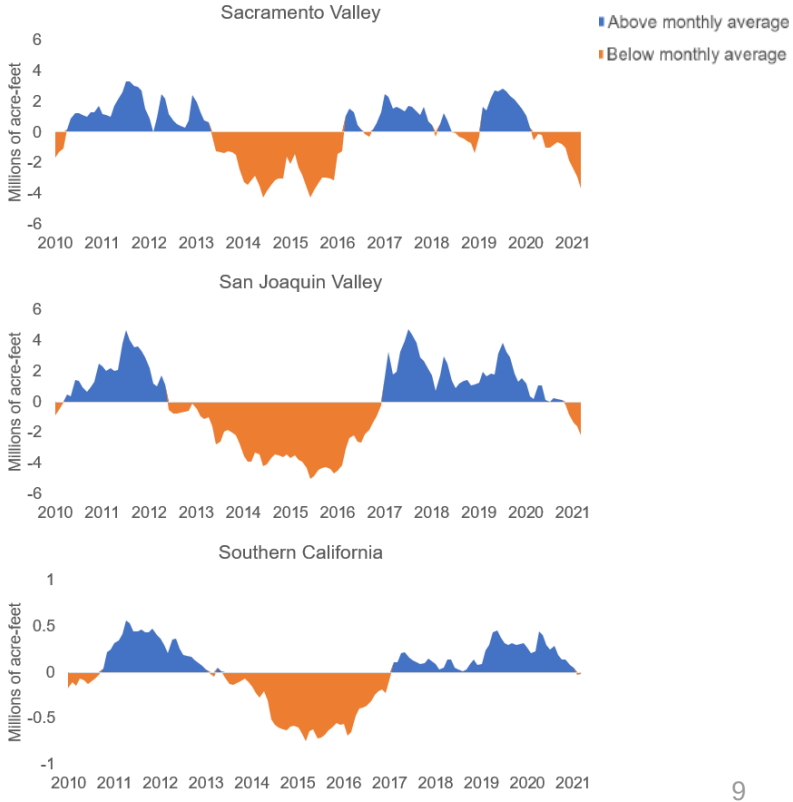
- In contrast, reservoir status in SoCal still relatively good



Many things have changed since the last drought, so what should we expect this time?

- 2012-16 drought showed some sectors more vulnerable:
  - Cities and farms had significant capacity to adapt
  - Small communities and freshwater ecosystems very vulnerable
- Significant changes since then:
  - SGMA now mandates better groundwater management
  - Data, information have improved

A reservoir in Northern California. Photo: Getty Images

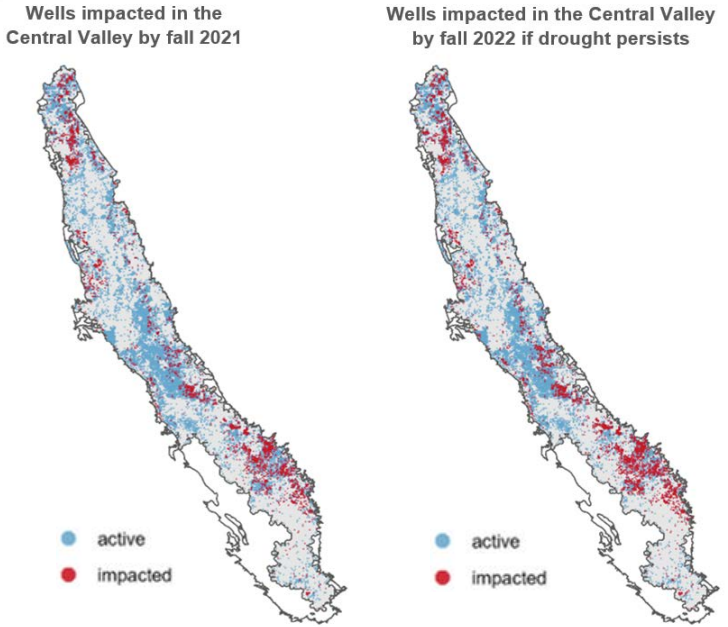
Most cities well-positioned this year, but next year worrisome if drought persists

- Investments to improve supply reliability, reduce demand paid off
- Demand is generally lower than before last drought
- Some agencies in North Coast, Bay Area calling for conservation
- New drought planning and reporting requirements will increase info on local conditions

During 1976-77 drought, Marin County had to build a pipeline across the San Rafael-Richmond Bridge

Small communities still vulnerable, although we are in a better position to respond

- Most rely solely on shallow groundwater wells
- Increased pumping dried ~3000 drinking wells last time. This year 2,400 wells could go dry; +900 next year if drought persists
- Proactive strategies, funding needed to ensure unbroken access to drinking water



Source: Developed by Richard Pauloo and Alvar Escriva-Bou using data from DWR

Agriculture's drought strategies will be changing

- Large reduction in surface deliveries, water contracts already underway
- Trading can help again: State, federal, local agencies working to facilitate this
- Pumping extra groundwater may be more challenging, given SGMA
  - Must address risks to drinking water, infrastructure, ecosystems
  - Solutions include deeper drinking water wells, incentives to pump less in sensitive areas

Drip irrigation in a farm in the Central Valley farm. Photo: DWR

Ecosystems fared poorly in last drought, face major challenges this time too

- Dry-warm conditions pose challenges to protected temperature-sensitive species
- Growing trade-offs likely between urban, ag, environmental uses
- Key agencies must take action early, communicate clearly

Fish release. Photo: DWR

Act now and plan for a dry future

- During last drought, California was slow to respond
- Significant investments and new mandates should help this time
- Early responses, cooperative approaches, creative partnerships can help mitigate worst impacts

Lake Mendocino, Russian River watershed. Shown in April 2021.
Photo: DWR

Thanks so much!

These slides were created to accompany a presentation. They do not include full documentation of sources, data samples, methods, and interpretations. To avoid misinterpretations, please contact:

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Thank you for your interest in this work.