

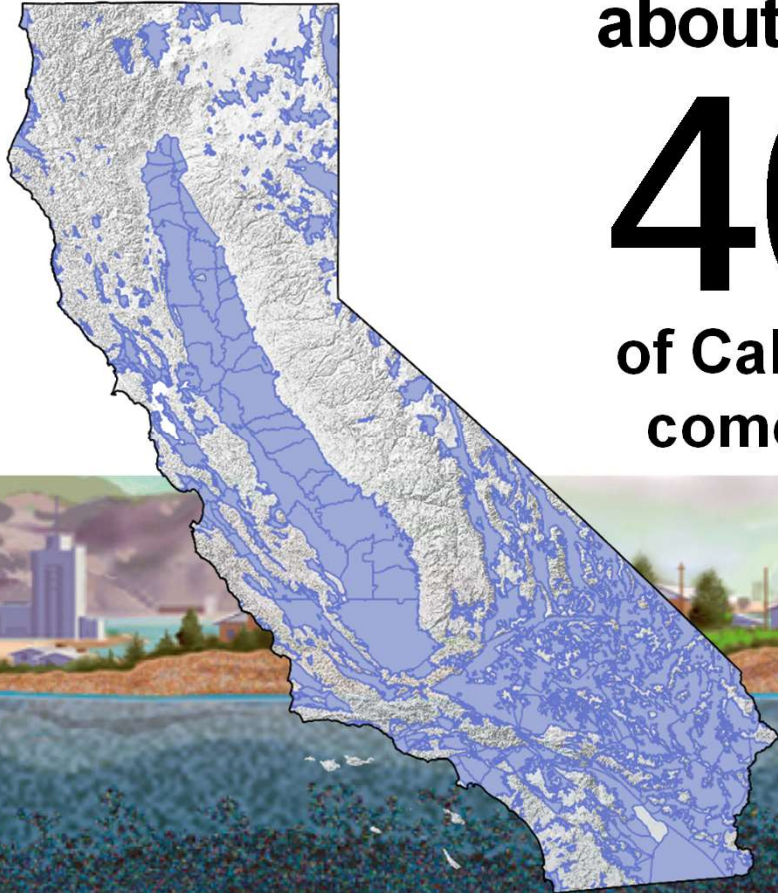
CALIFORNIA DEPARTMENT OF WATER RESOURCES

Update on DWR Land Subsidence and other Groundwater Data and Tools

March 10, 2022

California's Groundwater Overview

515 Basins



In an average year,
about

40%

**of California's water supply
comes from groundwater**

In dry years,
up to

60%

Over
80%
**of Californians
rely on groundwater**



Types of Subsidence Monitoring

Ground

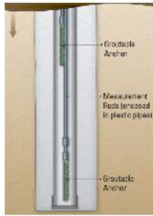
Spirit Leveling
10's of Points



GW
Monitoring



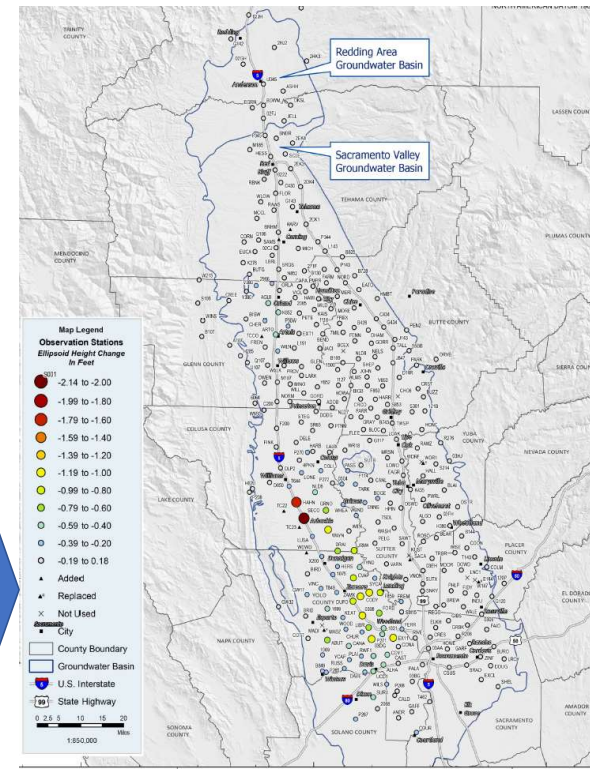
Extensometers
Few Points



GPS Surveying
10's of Points



Continuous GPS
10's of Points



1930's

2022

State of California
California Natural Resources Agency
DEPARTMENT OF WATER RESOURCES
Division of
Integrated Regional Water Management
Northern Region Office

**SACRAMENTO VALLEY
SUBSIDENCE NETWORK**
Ellipsoid Height Change In Feet
2008-2017

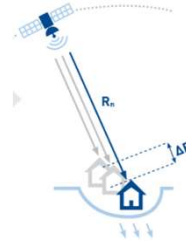
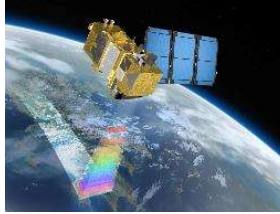


Types of Subsidence Monitoring

Air/Space

Ground

InSAR
10,000's of Points



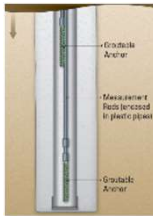
Spirit Leveling
10's of Points



GW
Monitoring



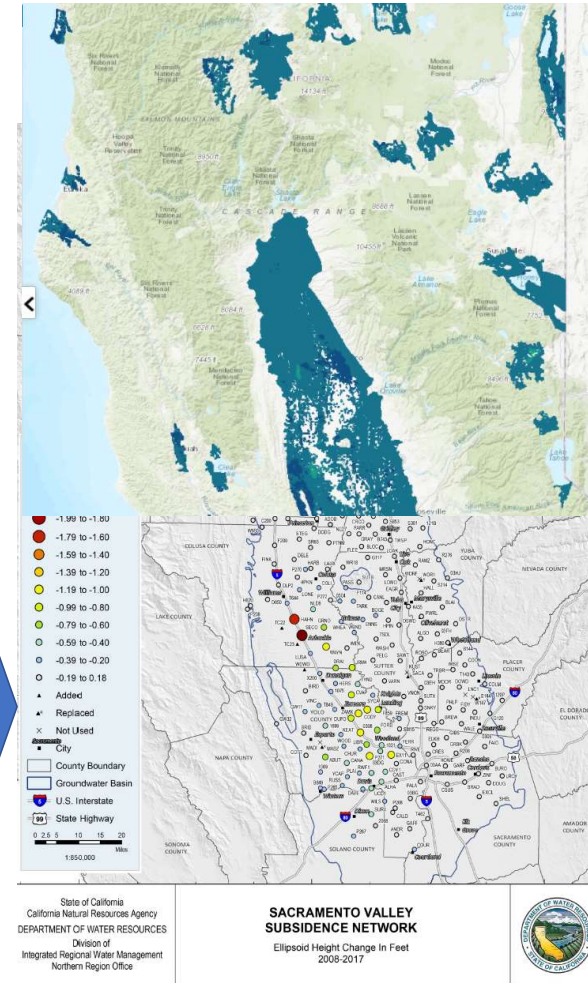
Extensometers
Few Points



GPS Surveying
10's of Points



Continuous GPS
10's of Points



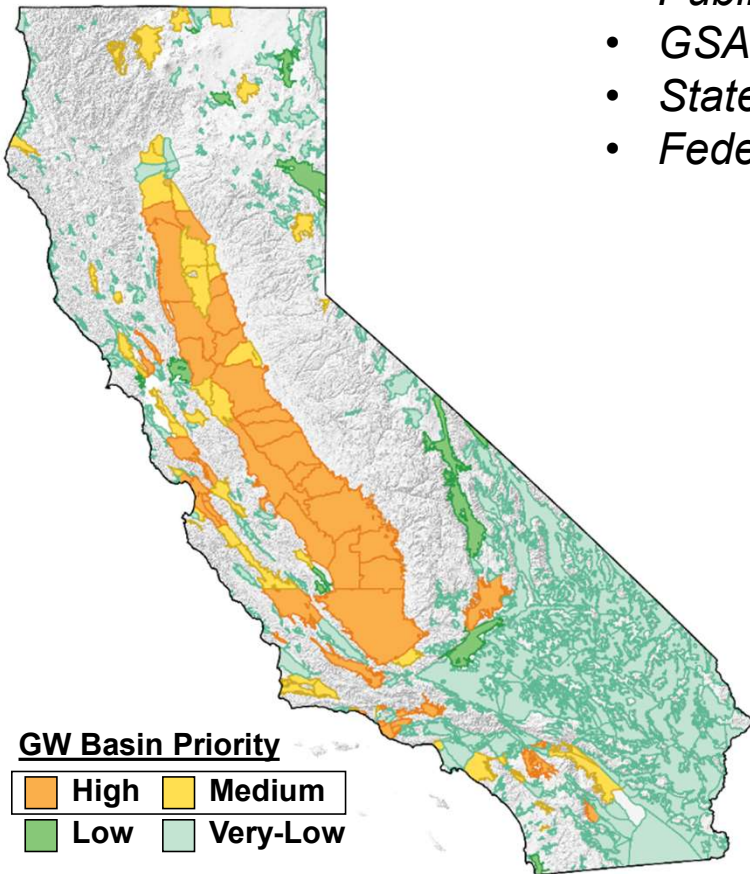
1930's

2022



California's Groundwater & Subsidence Monitoring

Focus Area SGMA Basins



Partners:

- Public
- GSAs/Local Agencies
- State Agencies
- Federal Agencies

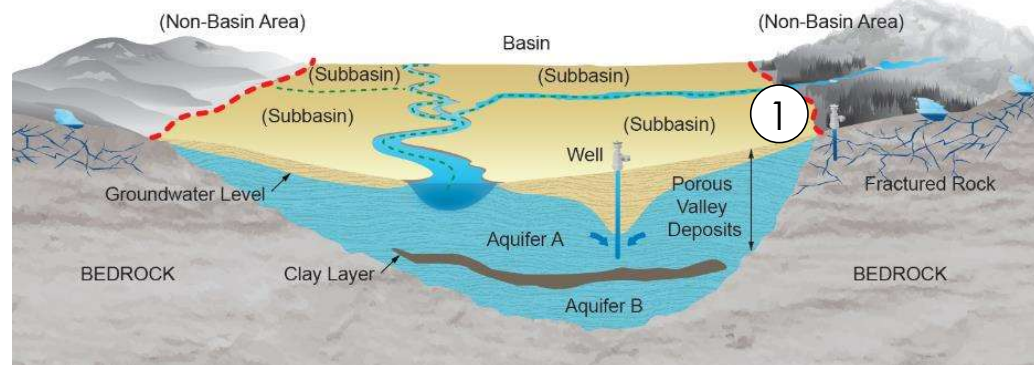
Monitoring Spotlight

Groundwater Level Monitoring

- ① Groundwater Monitoring Wells
 - Dry Domestic Well Reporting

Subsidence Monitoring

- ② Satellite (InSAR) Subsidence Data



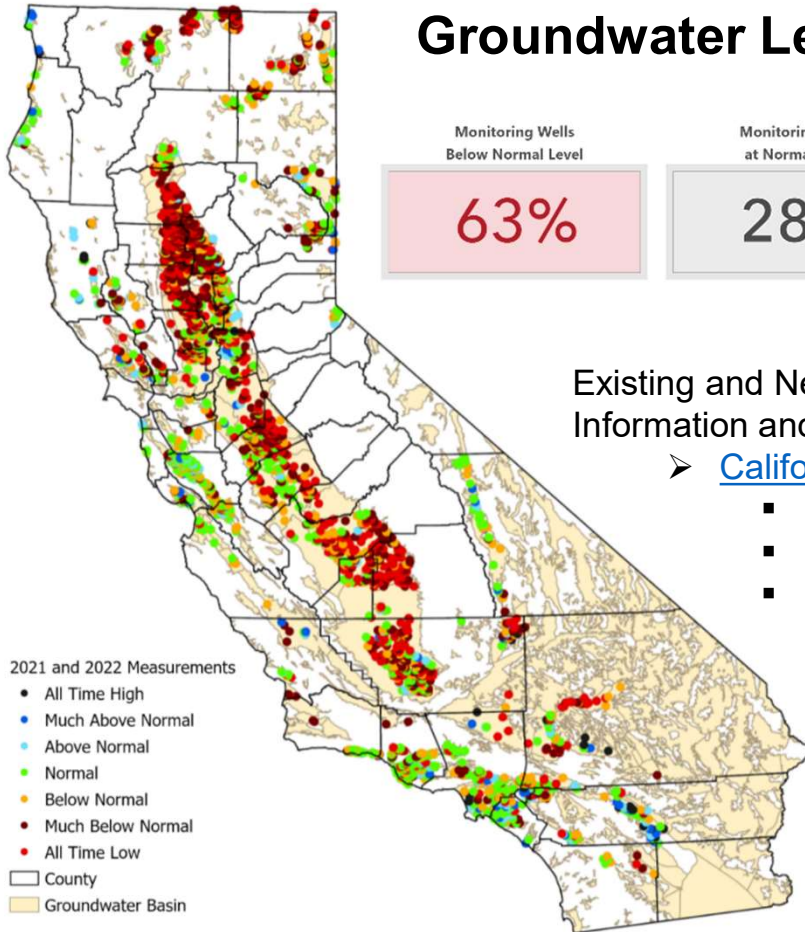
California's Groundwater Monitoring

Groundwater Level Conditions



Existing and New (SGMA) Groundwater Information and Tools Available

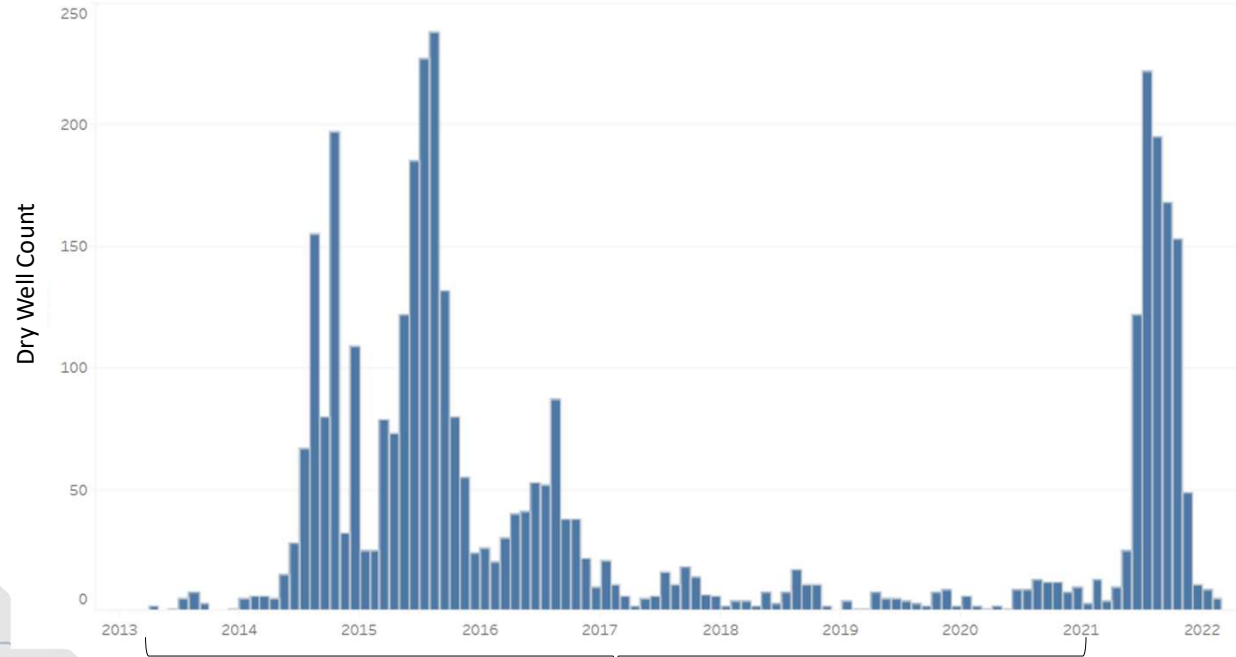
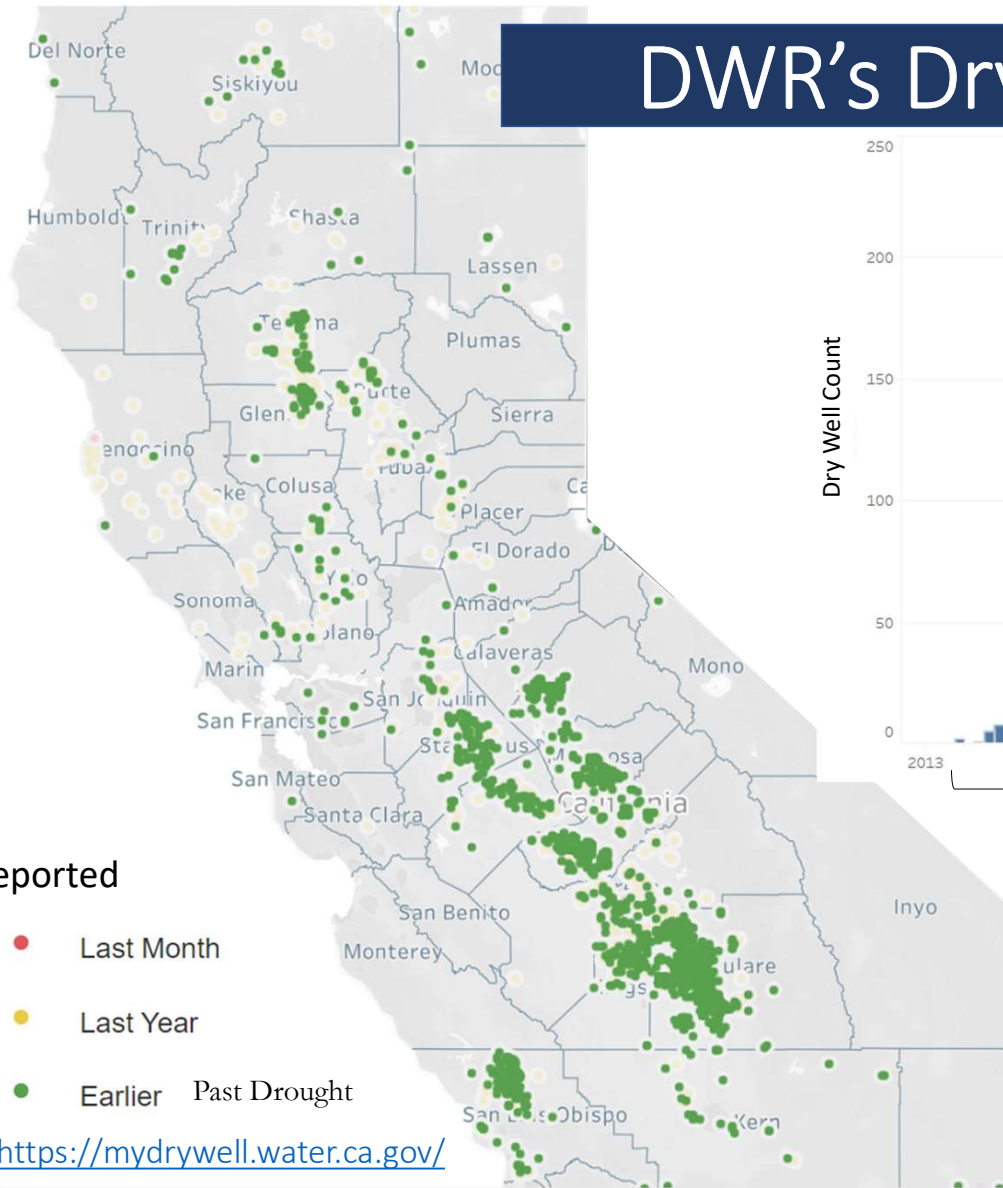
- [California's Groundwater Live](https://sgma.water.ca.gov/CalGWLive)
 - Groundwater Levels
 - Well Infrastructure
 - Land Subsidence



<https://sgma.water.ca.gov/CalGWLive>



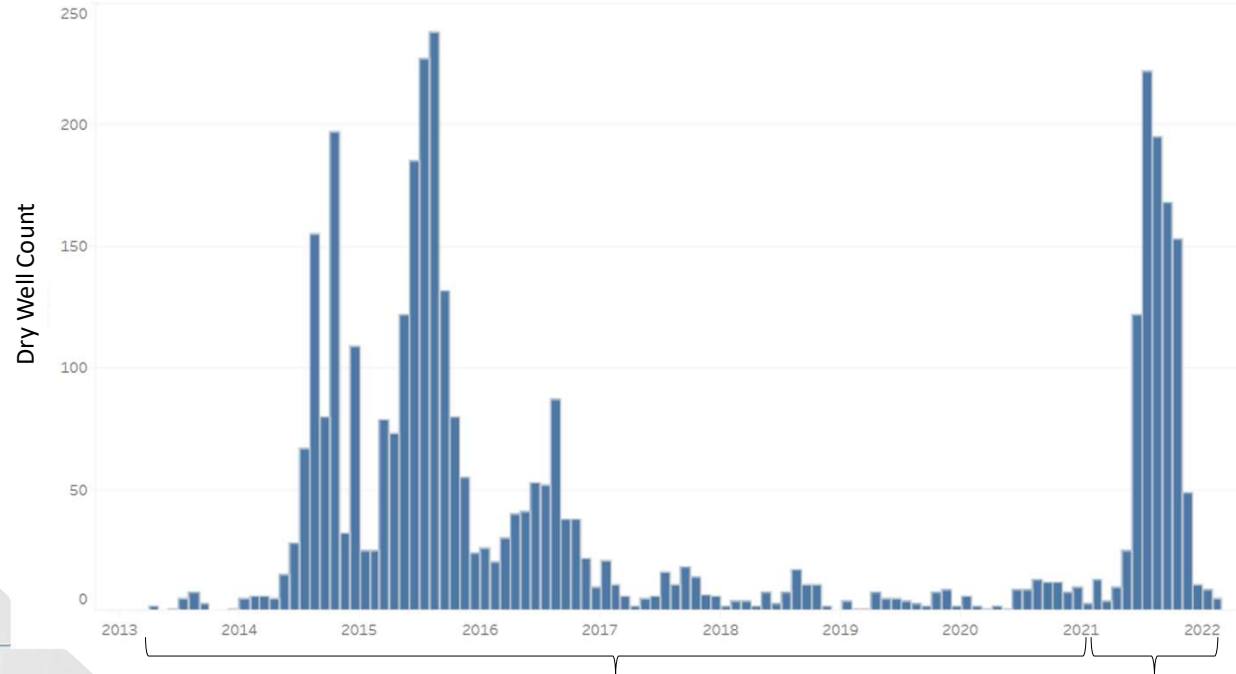
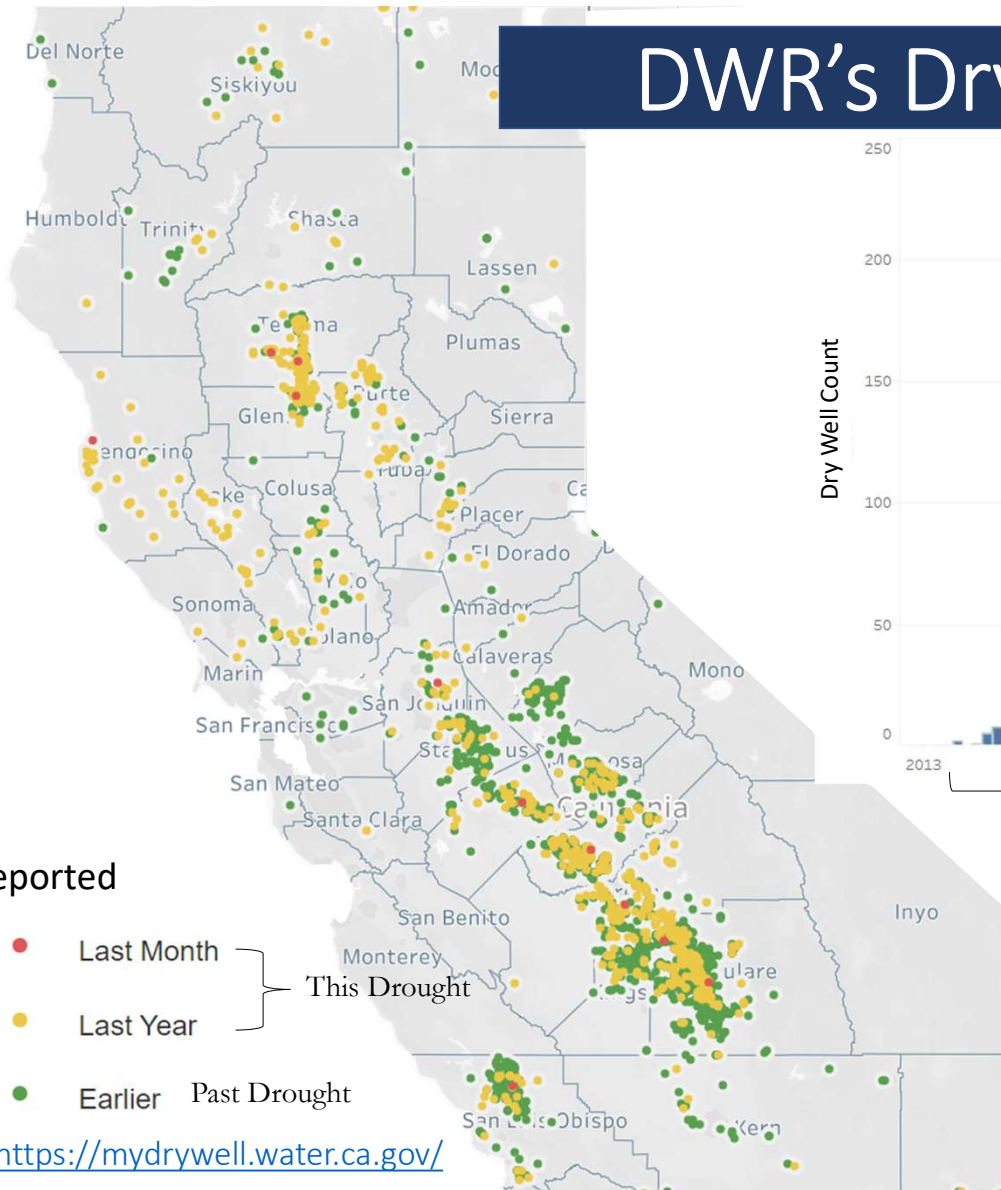
DWR's Dry Well Reporting System



Reported Dry Wells - Top 10 Counties

1. Tulare – 1390
2. Madera – 357
3. SLO – 261
4. Mariposa – 123
5. Kings – 88
6. Fresno – 87
7. Tuolumne – 84
8. Stanislaus – 80
9. Merced – 59
10. Tehama - 50

DWR's Dry Well Reporting System



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Top 10 Counties

1. Tulare – 139
2. Tehama – 138
3. Madera – 127
4. Fresno – 120
5. Glenn – 66
6. Merced – 40
7. Butte – 37
8. Mendocino – 32
9. Lake – 29
10. Mariposa – 26

California's Subsidence Monitoring

- Part of SGMA Technical Assistance and April 2021 Drought Proclamation, Action – Enhance Subsidence Data
- Monthly Subsidence Data covers >140 groundwater basins

- **New data: Water Year 2021 (10/2020 to 9/2021)**

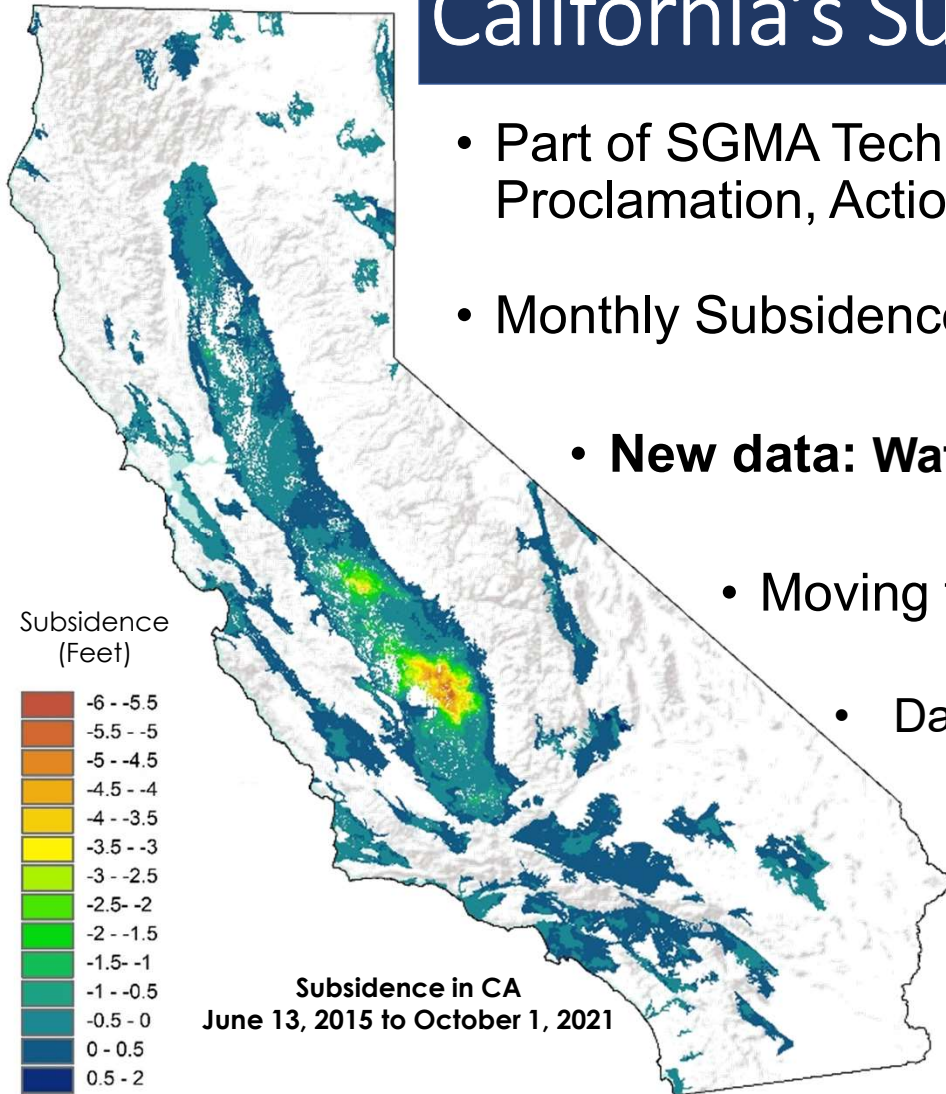
- Moving from annual to quarterly reporting in April/May

- Data access for public, local/State/Federal Agencies

1. [CNRA Open Data](#)

2. [SGMA Data Viewer](#)

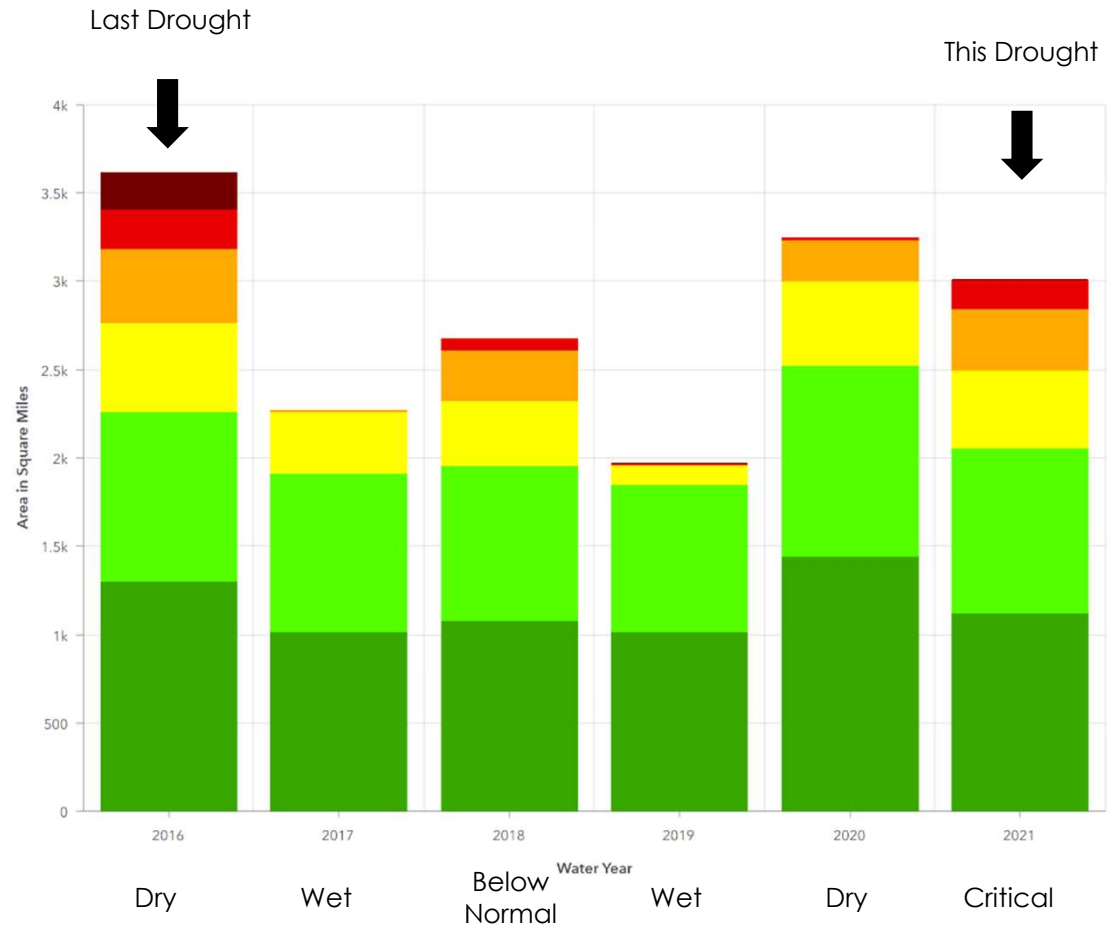
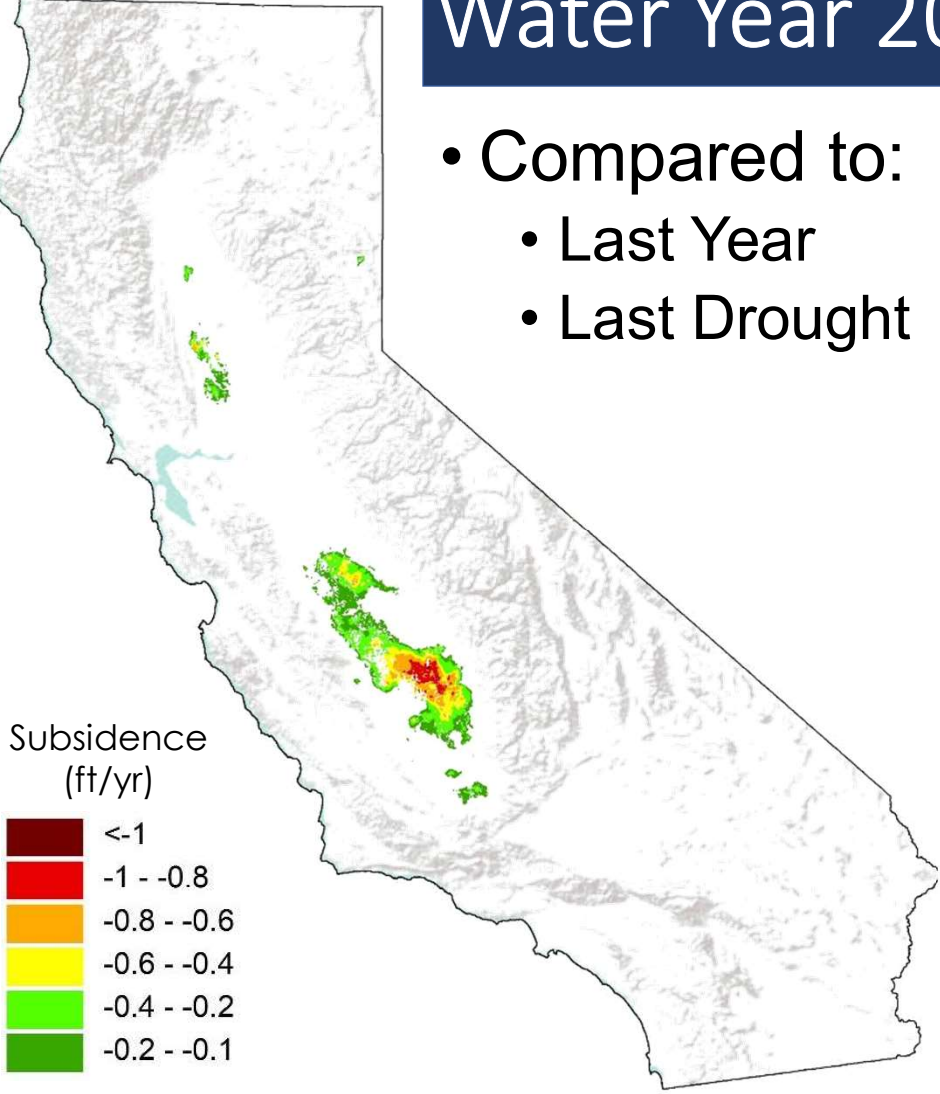
3. [California's Groundwater Live](#)



Water Year 2021
Oct 2020 to Sep 2021

Water Year 2021 Subsidence

- Compared to:
 - Last Year
 - Last Drought



<https://sgma.water.ca.gov/CalGWLive>



California's Groundwater Live

[Current Conditions](#) [Groundwater Levels](#) [Well Infrastructure](#) [Land Subsidence](#)

California's Groundwater Live

CALIFORNIA'S LATEST GROUNDWATER INFORMATION AND CONDITIONS



SECTIONS

[CURRENT CONDITIONS](#)

[GROUNDWATER LEVELS](#)

[WELL INFRASTRUCTURE](#)

[LAND SUBSIDENCE](#)

[About](#)

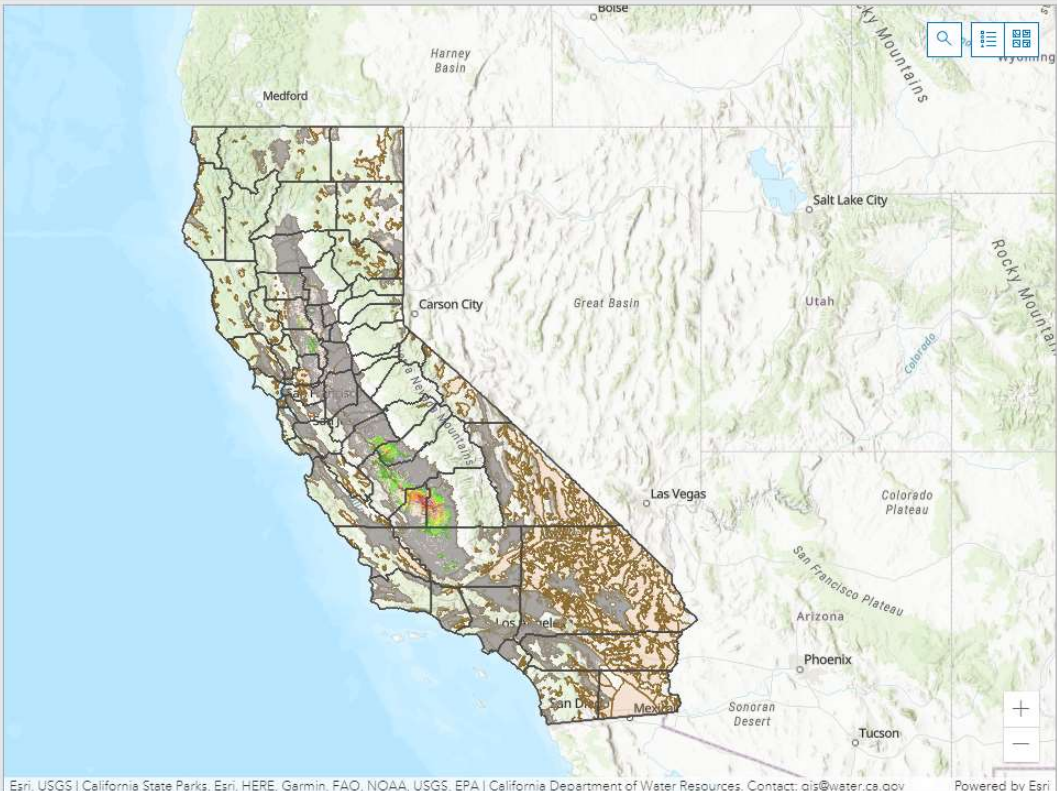
[How to access data](#)

[Questions/Feedback: calgw@water.ca.gov](mailto:calgw@water.ca.gov)

InSAR Land Subsidence

California's Groundwater Live

- Filter by County
All
- Filter by Groundwater Basin
All
- Select a Water Year
 - WY 2016 (10/1/15 to 10/1/16)
 - WY 2017 (10/1/16 to 10/1/17)
 - WY 2018 (10/1/17 to 10/1/18)
 - WY 2019 (10/1/18 to 10/1/19)
 - WY 2020 (10/1/19 to 10/1/20)
 - WY 2021 (10/1/20 to 10/1/21)**

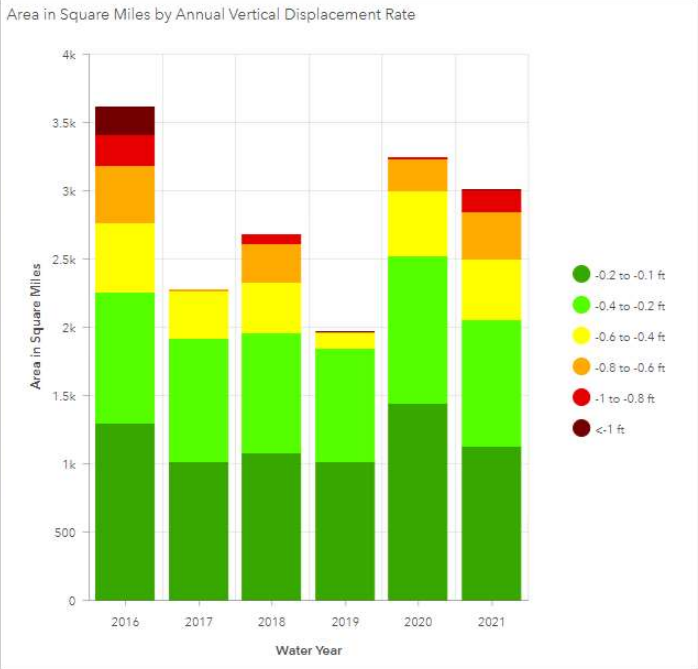


Esri, USGS | California State Parks, Esri, HERE, Garmin, FAO, NOAA, USGS, EPA | California Department of Water Resources. Contact: gis@water.ca.gov Powered by Esri

[Click here](#) to learn how to use this dashboard.
[Click here](#) to learn more about how this dashboard was created.

You may only apply a boundary filter by County or Groundwater Basin individually (not both at the same time). In the event of a data error, please make sure to reset all filters.

Please email us at calgw@water.ca.gov to connect with the California's Groundwater Live Project Team.



Area with measured annual subsidence rate >0.1 feet for selected Water Year

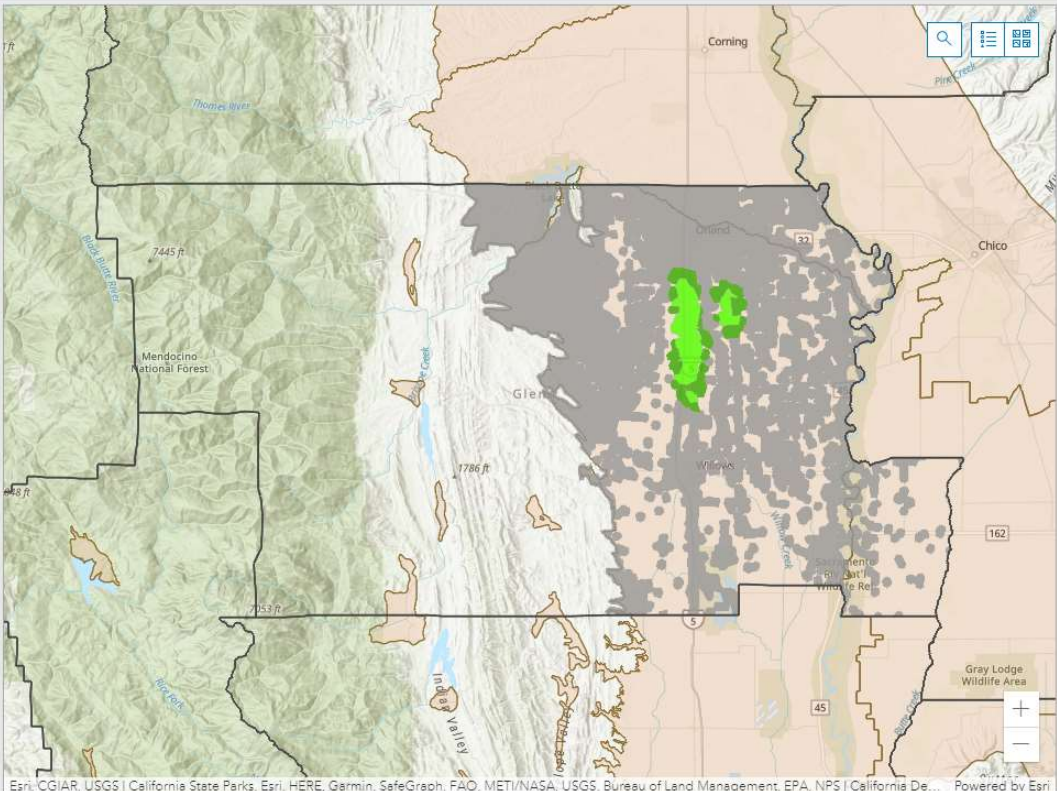
3k

Square Miles

InSAR Land Subsidence

California's Groundwater Live

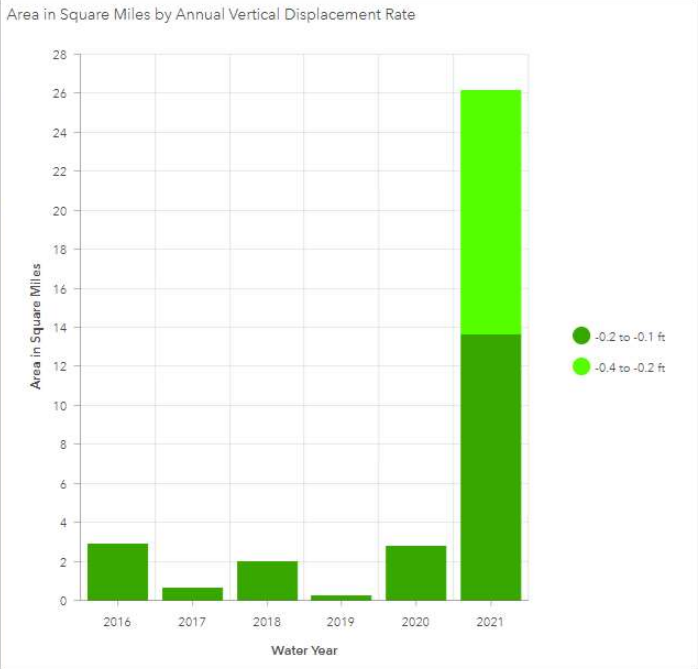
- Filter by County
Glenn
- Filter by Groundwater Basin
All
- Select a Water Year
 - WY 2016 (10/1/15 to 10/1/16)
 - WY 2017 (10/1/16 to 10/1/17)
 - WY 2018 (10/1/17 to 10/1/18)
 - WY 2019 (10/1/18 to 10/1/19)
 - WY 2020 (10/1/19 to 10/1/20)
 - WY 2021 (10/1/20 to 10/1/21)**



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Area with measured annual subsidence rate >0.1 feet for selected Water Year

26.2

Square Miles

InSAR Land Subsidence

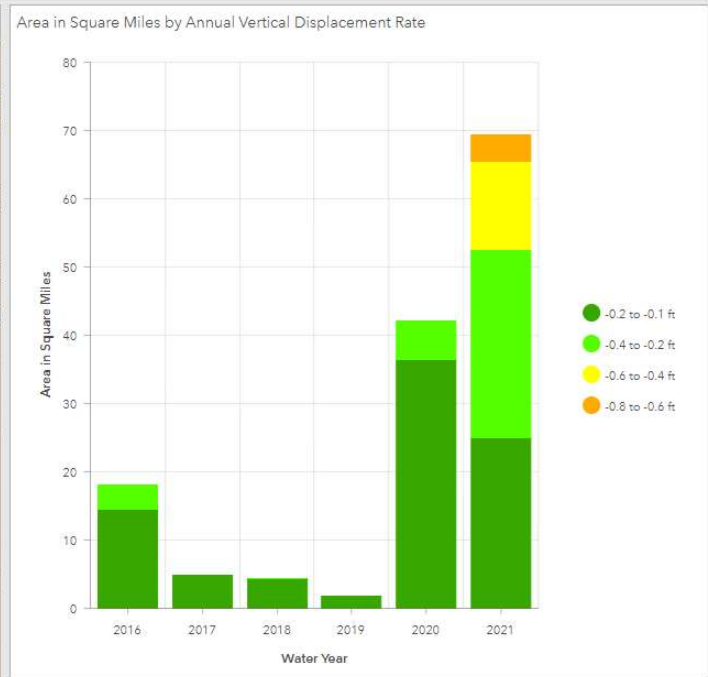
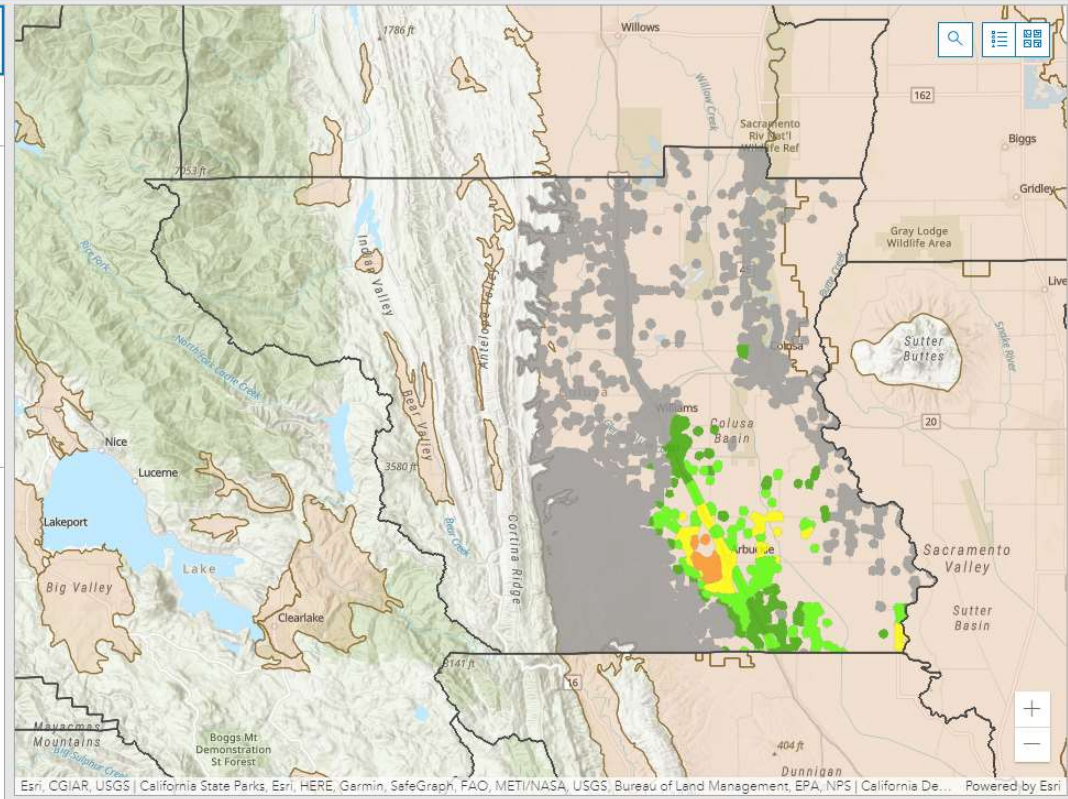
California's Groundwater Live

Filter by County
Colusa

Filter by Groundwater Basin
All

Select a Water Year

- WY 2016 (10/1/15 to 10/1/16)
- WY 2017 (10/1/16 to 10/1/17)
- WY 2018 (10/1/17 to 10/1/18)
- WY 2019 (10/1/18 to 10/1/19)
- WY 2020 (10/1/19 to 10/1/20)
- WY 2021 (10/1/20 to 10/1/21)**



Area with measured annual subsidence rate >0.1 feet for selected Water Year

69.4

Square Miles

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Groundwater & Drought Resources

- DWR is supporting GSAs across the state that are implementing SGMA by providing [planning](#), [technical](#) and [financial](#)
- DWR has developed a public awareness library with groundwater resources including a Groundwater 101 Video available in [English](#), [Spanish](#), [Punjabi](#), and [Hmong](#) as well as an interactive Storymap called: [Groundwater: Understanding and Managing this Vital Resource](#)
- [California's Groundwater Live](#) website is an interactive mapping tool with the latest groundwater information and conditions to help inform projects and actions.
- DWR has a long history of data collection, monitoring and reporting, and these resources can be found on DWR's [Data and Tools website](#).
- DWR launched the [MyDryWell Website](#) where private well owners can report water supply shortages and find resources for assistance and [Drought.Ca.Gov](#) for Statewide Drought Info.
- DWR, in coordination with the State Water Board, developed [Groundwater Management Principles and Strategies](#) that contain state actions to help proactively address drought impacts on drinking water wells.

Questions