



National Integrated Drought Information System

Joel Lisonbee, PhD.

**Texas FIRO Meeting,
Thursday, 21 September 2023**

NATIONAL INTEGRATED DROUGHT INFORMATION SYSTEM (NIDIS)

Overview

- What is NIDIS?
- What is a Drought Early Warning Systems (DEWS)
- Why does NIDIS want to support the Texas FIRO initiative?



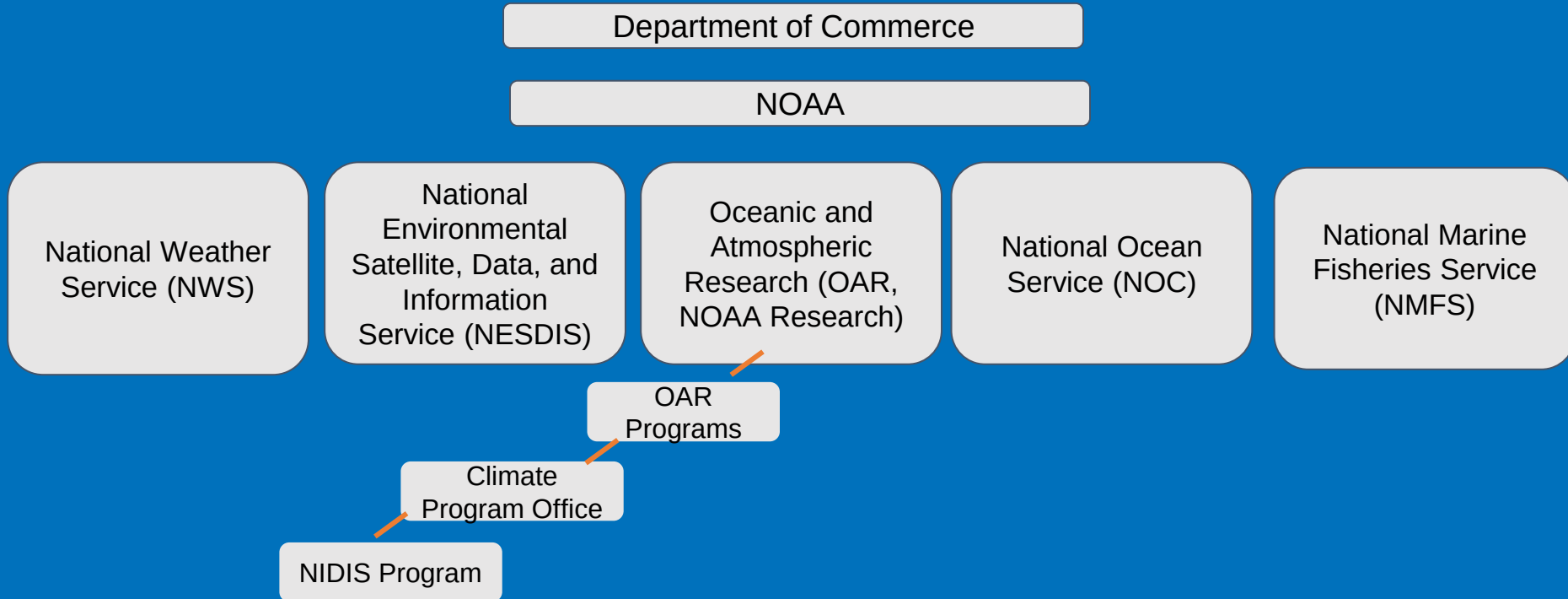


What Is NIDIS?

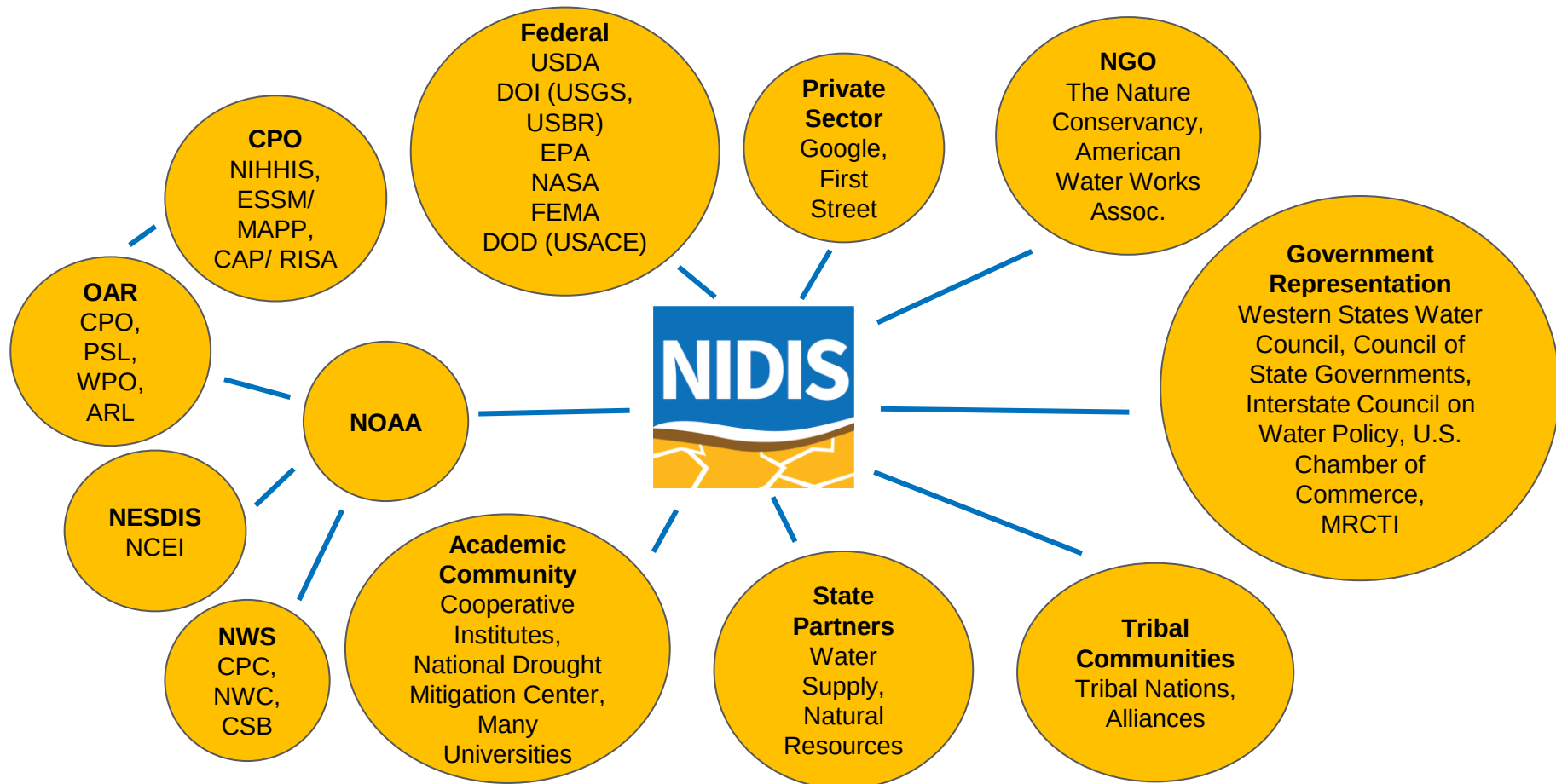
- First authorized by Congress in 2006; reauthorized in 2014 and 2018.
- Interagency mandate to develop and provide a **national drought early warning information system**
- Enable the Nation to move **from a reactive to a more proactive** approach to managing drought risks and impacts
- Authorizes NIDIS to **engage in partnerships** with federal, state, tribal, and local partners, as well as the private sector, academic institutions, and citizen scientists
- Up for re-authorisation at the end of this year.

Organizational Structure

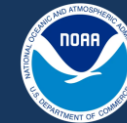
NIDIS sits under NOAA Research (OAR Line Office) but works intra- and inter-agency



NIDIS implements its mandate with a broad range of partners



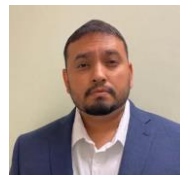
NIDIS Program Office Staff



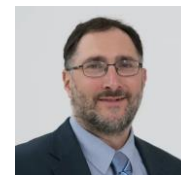
Veva Deheza
Executive Director



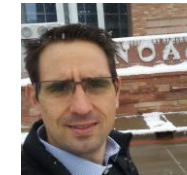
Gretel Follingstad
Intermountain
West DEWS



Christopher Gaona
Financial Management
Analyst



Adam Lang
Communications
Coordinator



Joel Lisonbee
Southern Plains
DEWS



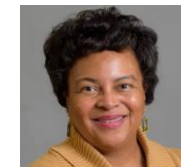
Meredith Muth
Program Coordinator
and Southeast DEWS



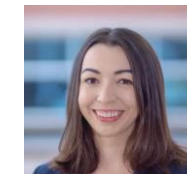
Elizabeth Ossowski
Program Coordinator



Britt Parker
Pacific Northwest
DEWS



Sylvia Reeves
Northeast DEWS



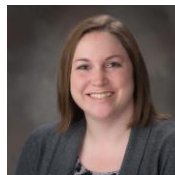
Kelsey Satalino
Digital Communications
Coordinator



Amanda Sheffield
California-Nevada DEWS



Marina Skumanich
Soil Moisture Program
Specialist



Crystal Stiles
Tribal Engagement
Coordinator



Molly Woloszyn
Midwest and Missouri
River Basin DEWS

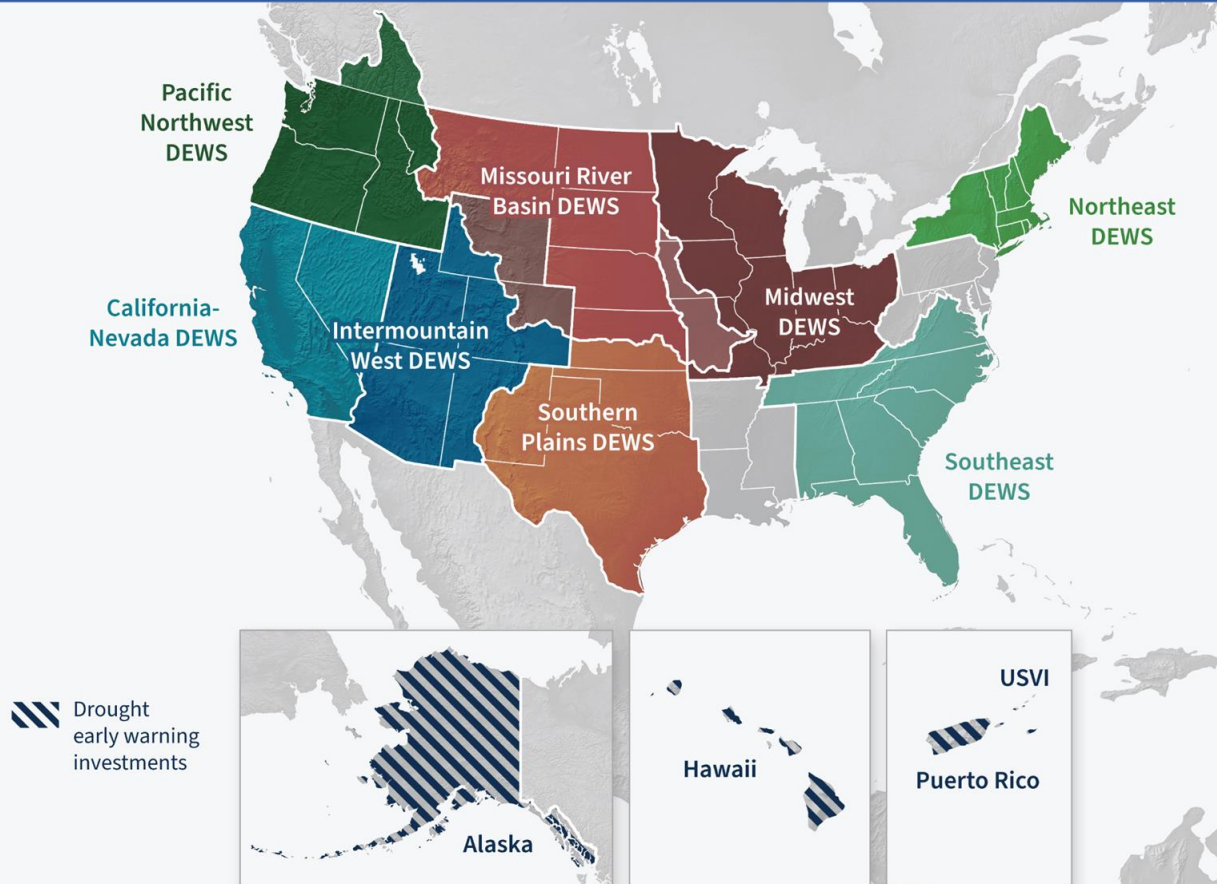


Eleanor Hesenberg
Communications
Specialist

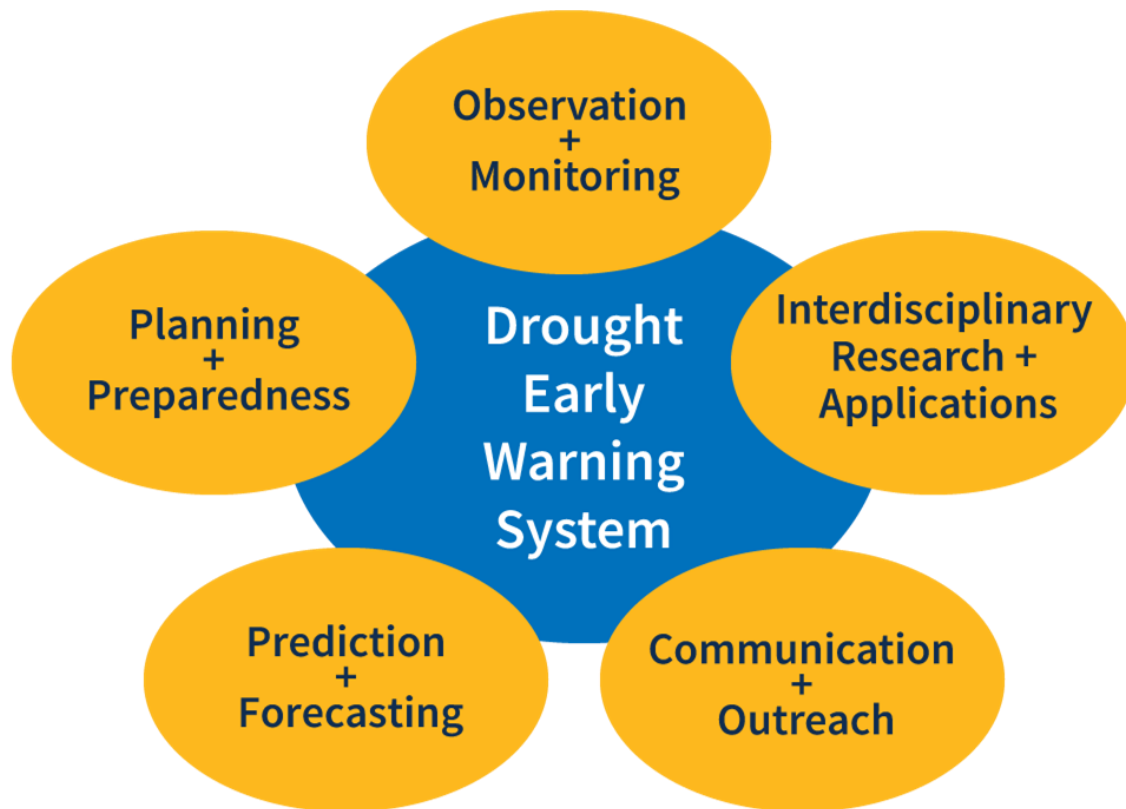
NIDIS Drought Early Warning Systems



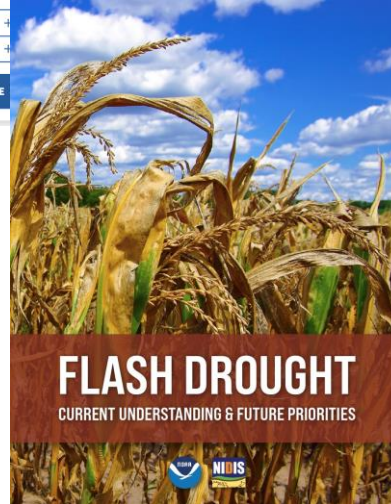
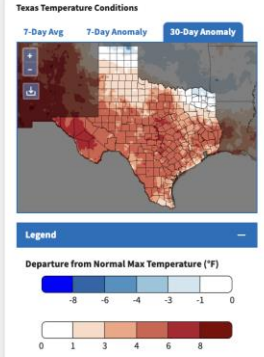
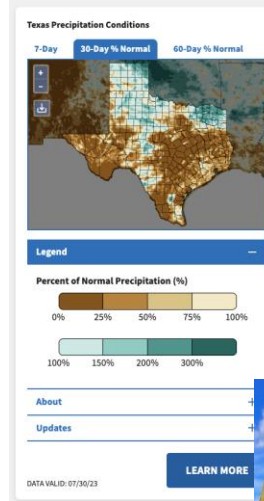
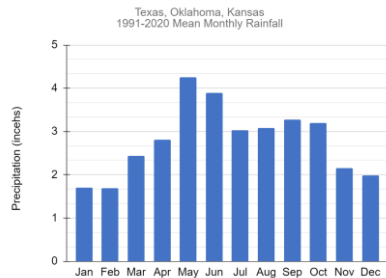
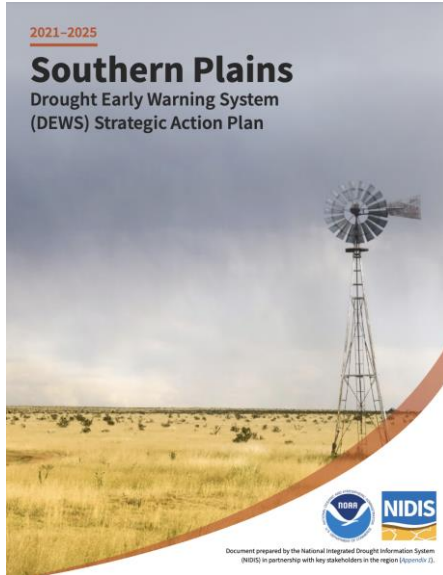
A **Drought Early Warning System** (DEWS) is a network of regional and national partners that share information and coordinate actions to help communities in the region cope with drought.



NIDIS Drought Early Warning Systems



DEWS in Action



NOAA NIDIS Drought.gov National Integrated Drought Information System

Search

Data and Maps By Sector By Location Research and Learn About News and Events

DROUGHT STATUS UPDATE August 18, 2023

Southern Plains Drought Status Update

DEWS Regions: Southern Plains

States: Kansas, New Mexico, Oklahoma, Texas

Update Status: NIDIS and its partners will issue further drought status updates as conditions evolve.

Share This Update

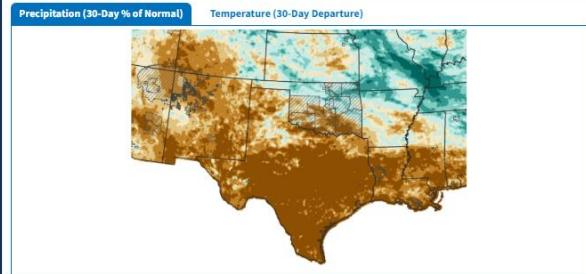
Extreme Heat Intensifies Drought Across Texas



Key Points

- A record-setting heatwave continues across most of Texas and Louisiana, intensifying drought and increasing wildfire activity.
- Austin, Texas enters stage 2 of its Drought Contingency Plan, extending further water restrictions to residents.
- Kansas and Oklahoma see drought conditions improve, but remain.
- New Mexico has the hottest July on record.

30-Day Precipitation and Temperature Conditions: Southern Plains



This map shows precipitation for the past 30 days as a percentage of the historical average (1991-2020) for the same time period.

Source: Drought.gov, National Integrated Drought Information System

Southern Plains Drought Early Warning System

Strategic Action Plan 2021–2025

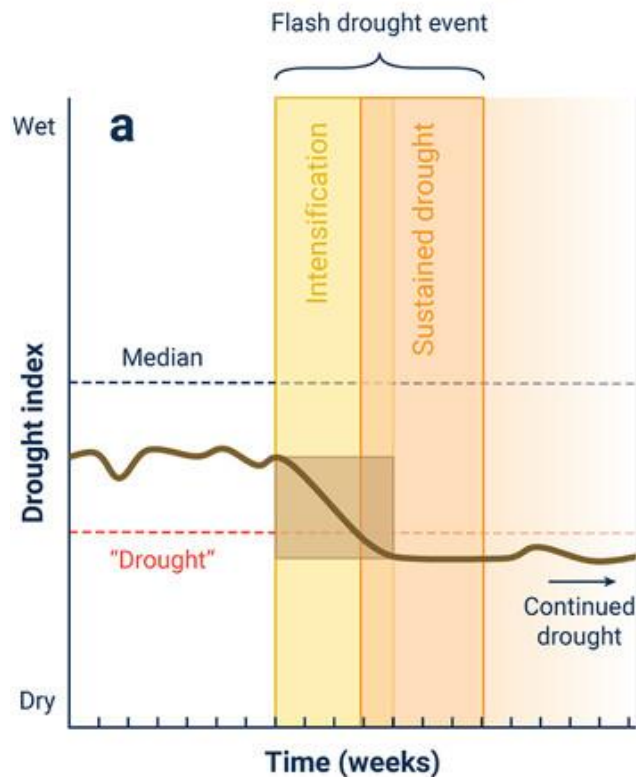
NIDIS and Texas FIRO

Outcome 6.4: Data, products, and services are improved and/or expanded to better serve the region.

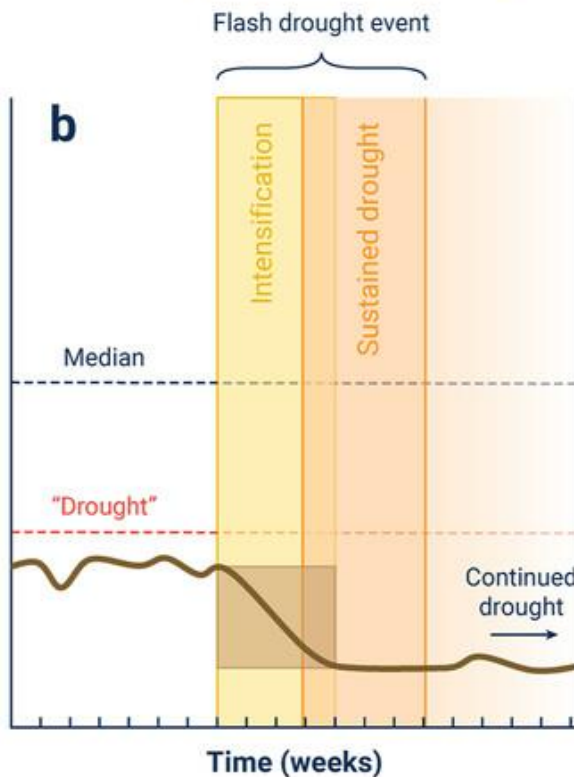
Activity 6.5a In coordination with local partners, such as the Interagency Flood Risk Management, investigate the possibility of expanding the FIRO project to cover Texas. Or, look at other research that can help predict inflow into reservoirs.



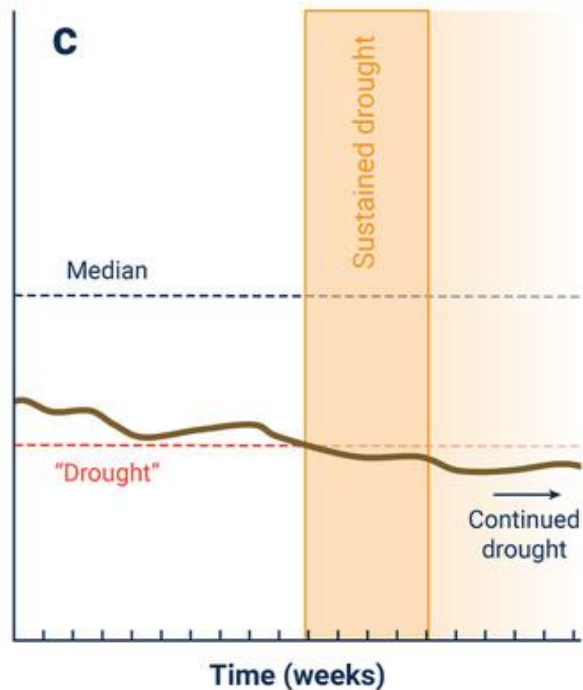
Flash drought from no drought



Flash drought within existing drought

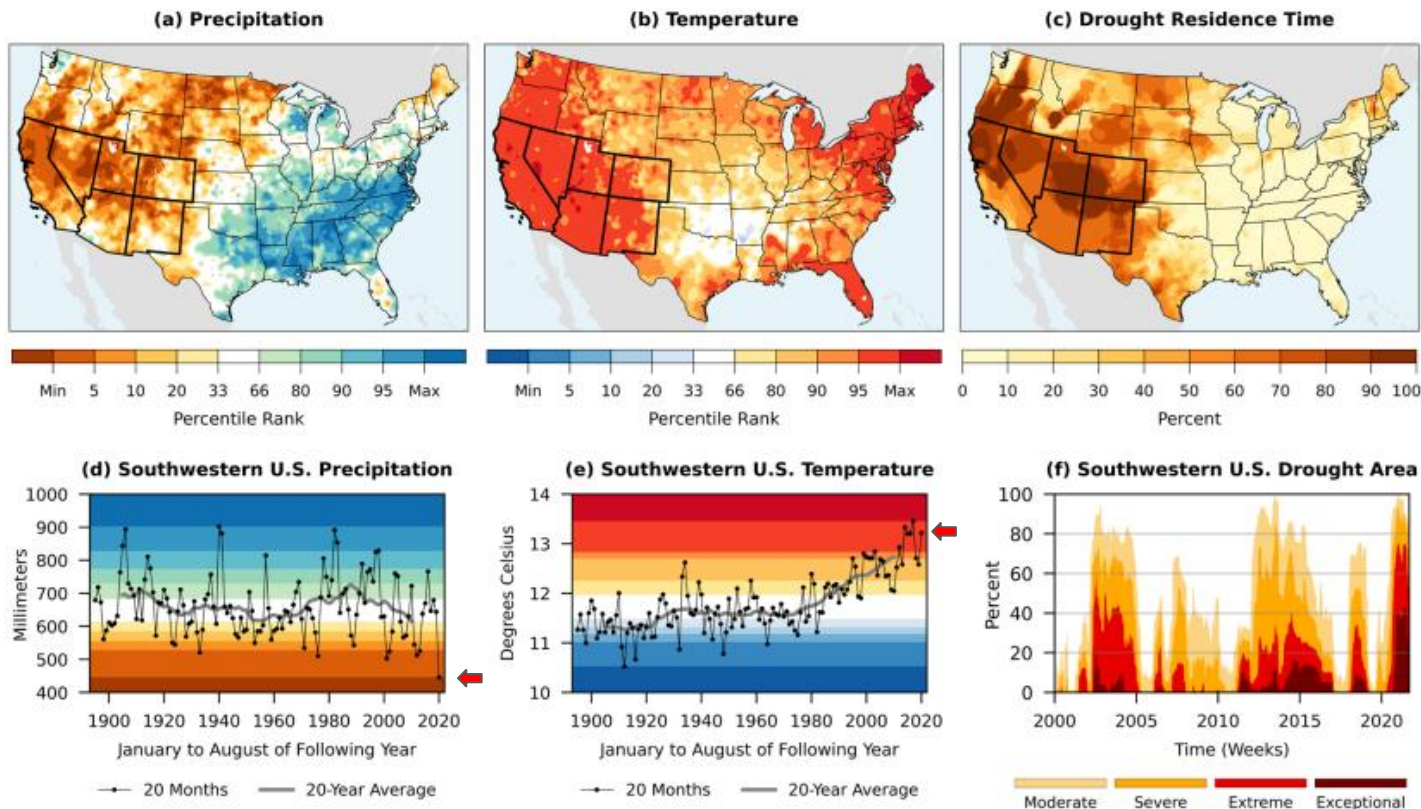


Drought but not flash drought (no rapid intensification)

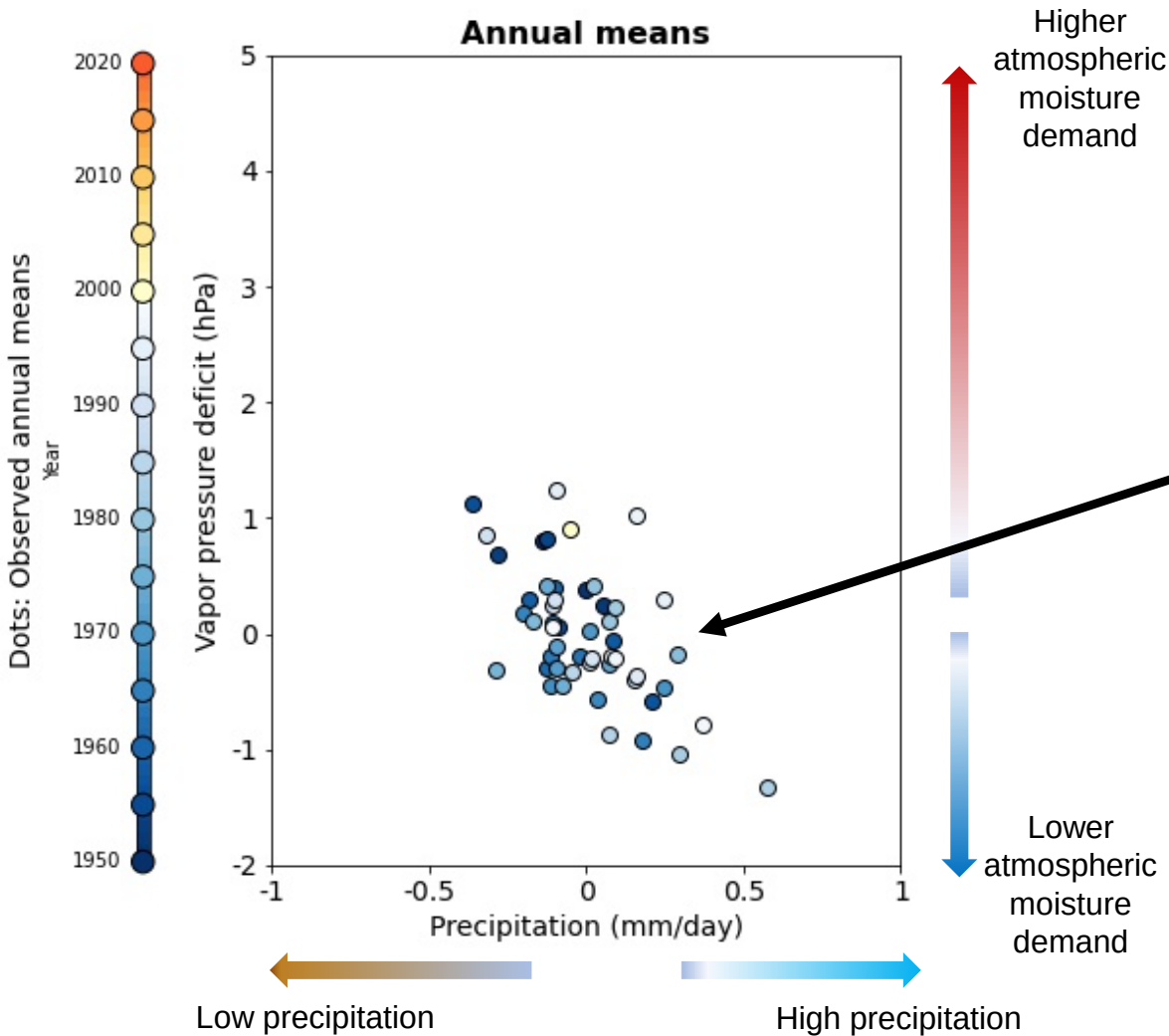


January 2020 – August 2021 was the Driest 20-Month Stretch

January 2020 to August 2021



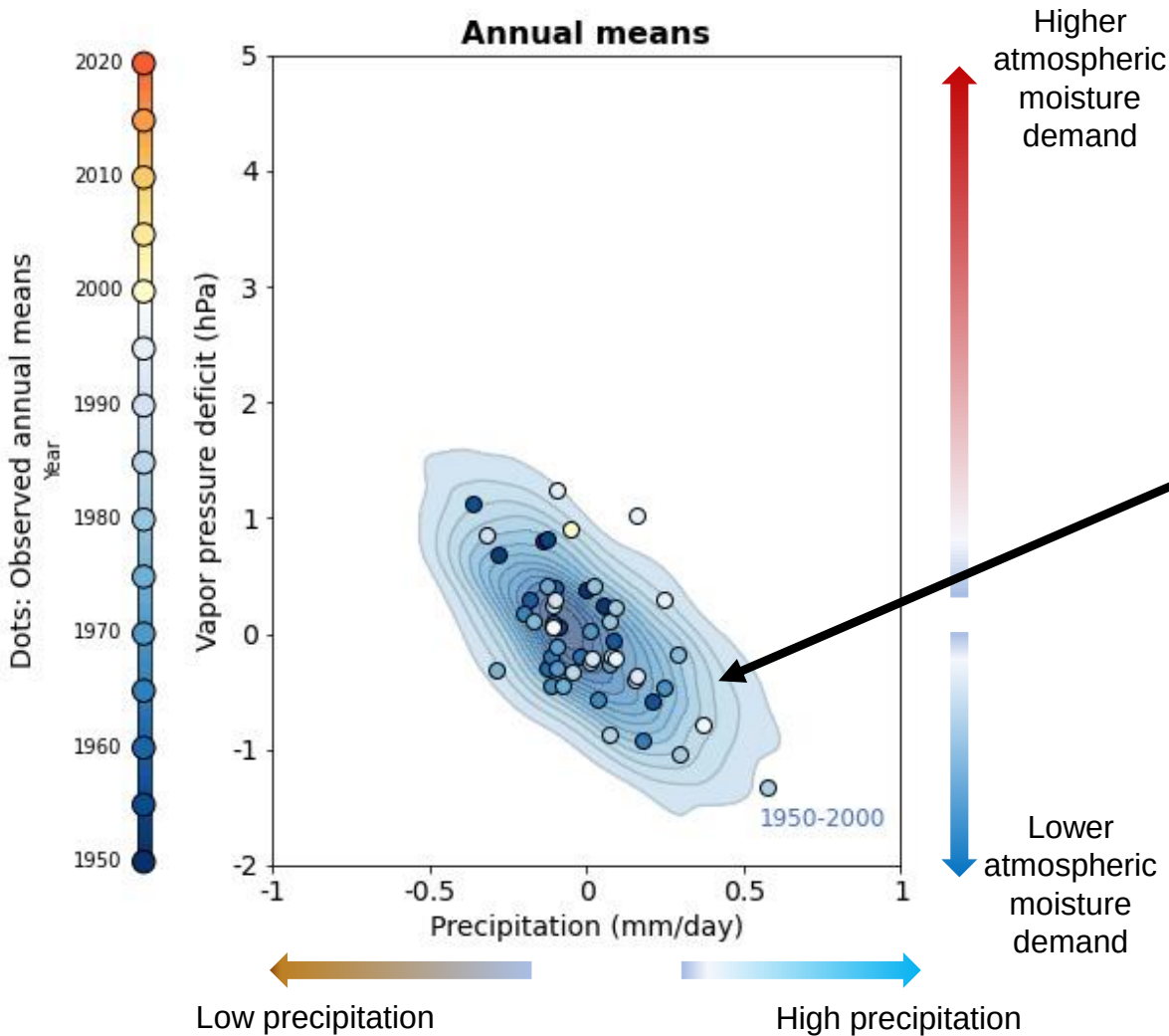
2020-2021
was the
hottest
drought
period on
record



Observed data from 1950 to 2000
Anomalies from the 1950 to 2000 average
Using ERA5 for VPD and NCEI for precip

Acknowledgement: Isla Simpson, NCAR
in Mankin et. al (2021)
Data Sources: NOAA/National Centers
for Environmental Information





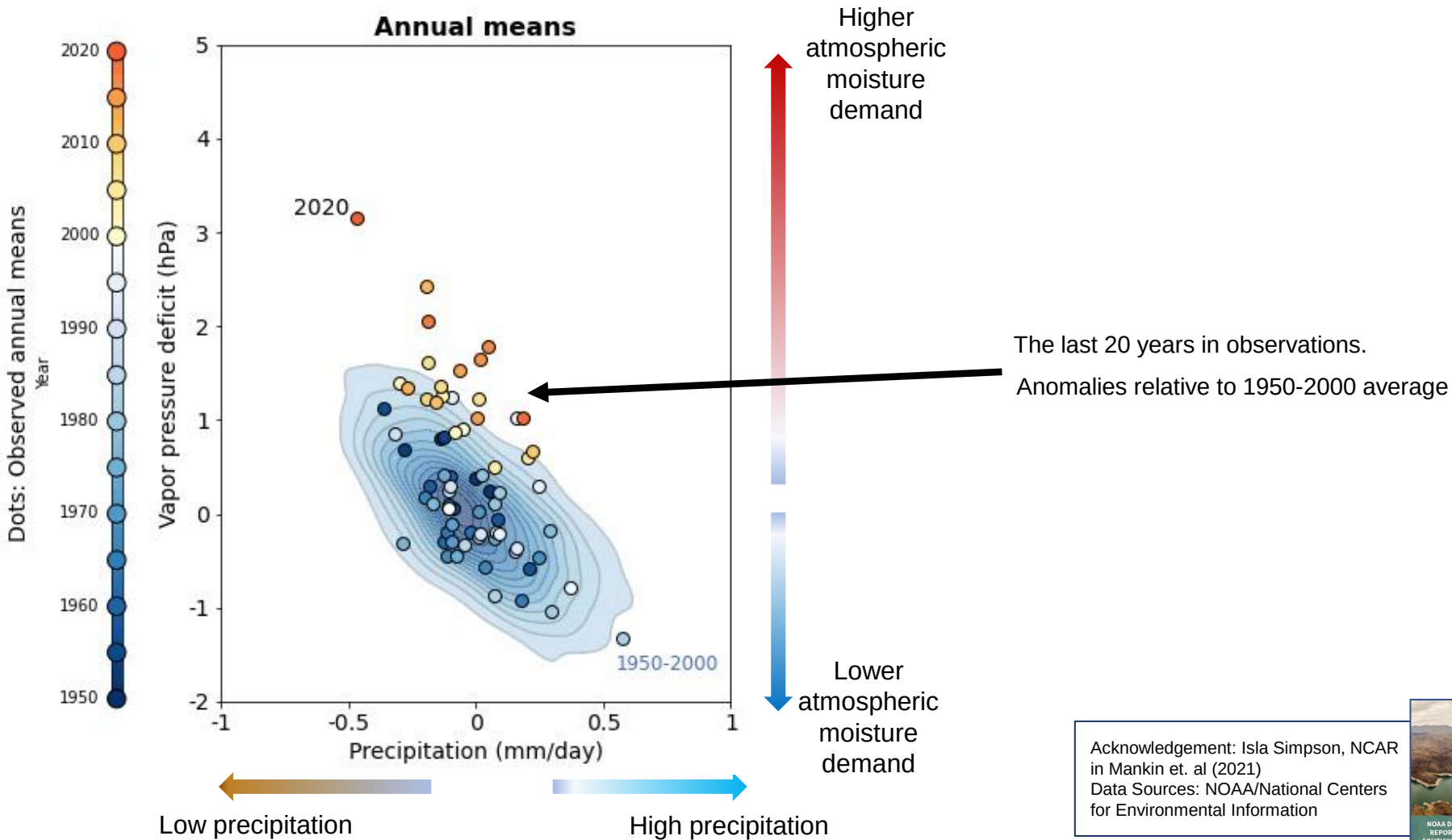
Model based probability.

Darker colors ☐ more likely that a year will have that value of precipitation and VPD

Data from 33 different Earth System Models forced with historical forcings (1683 years of simulation contributing)

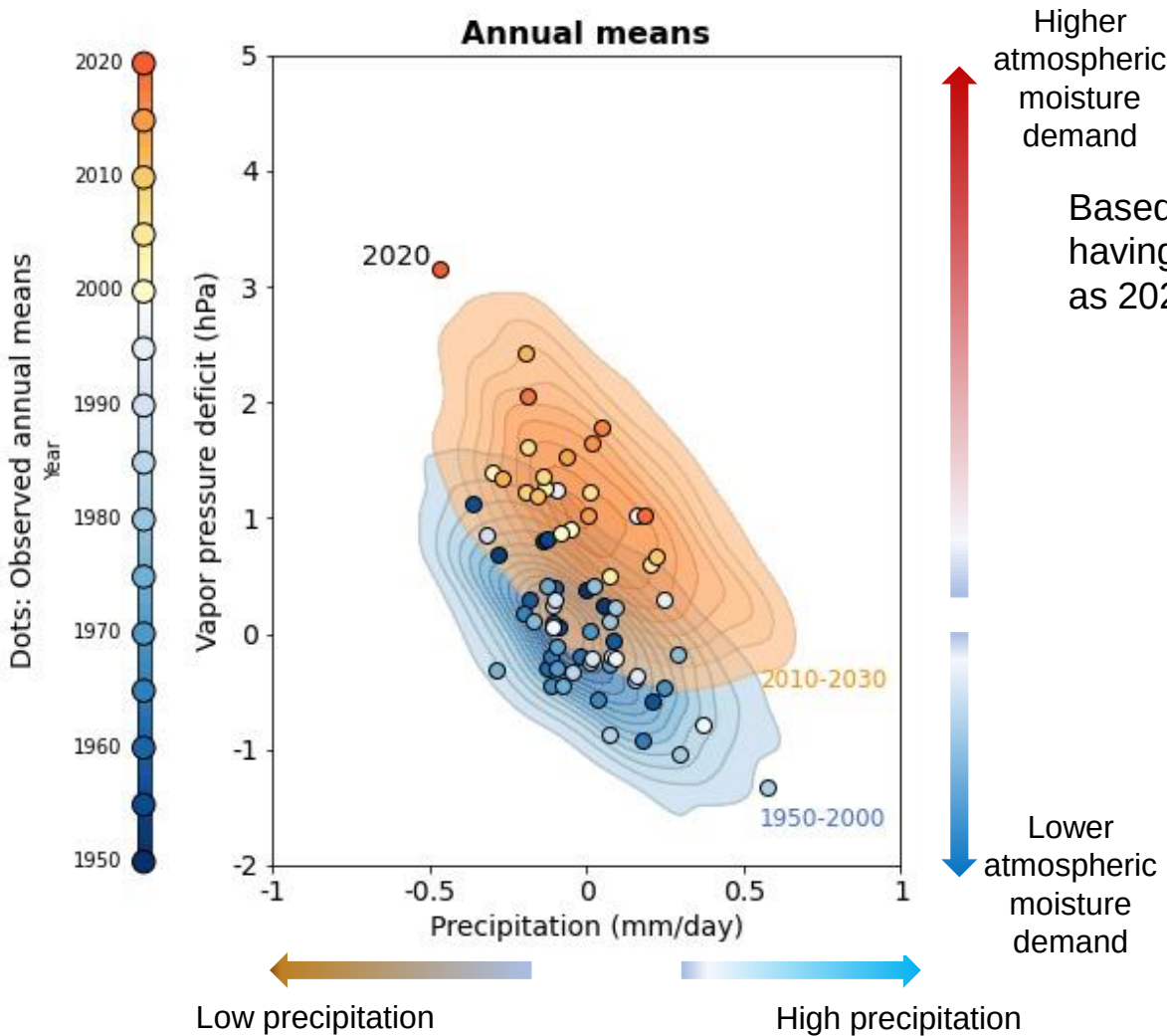
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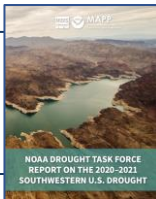
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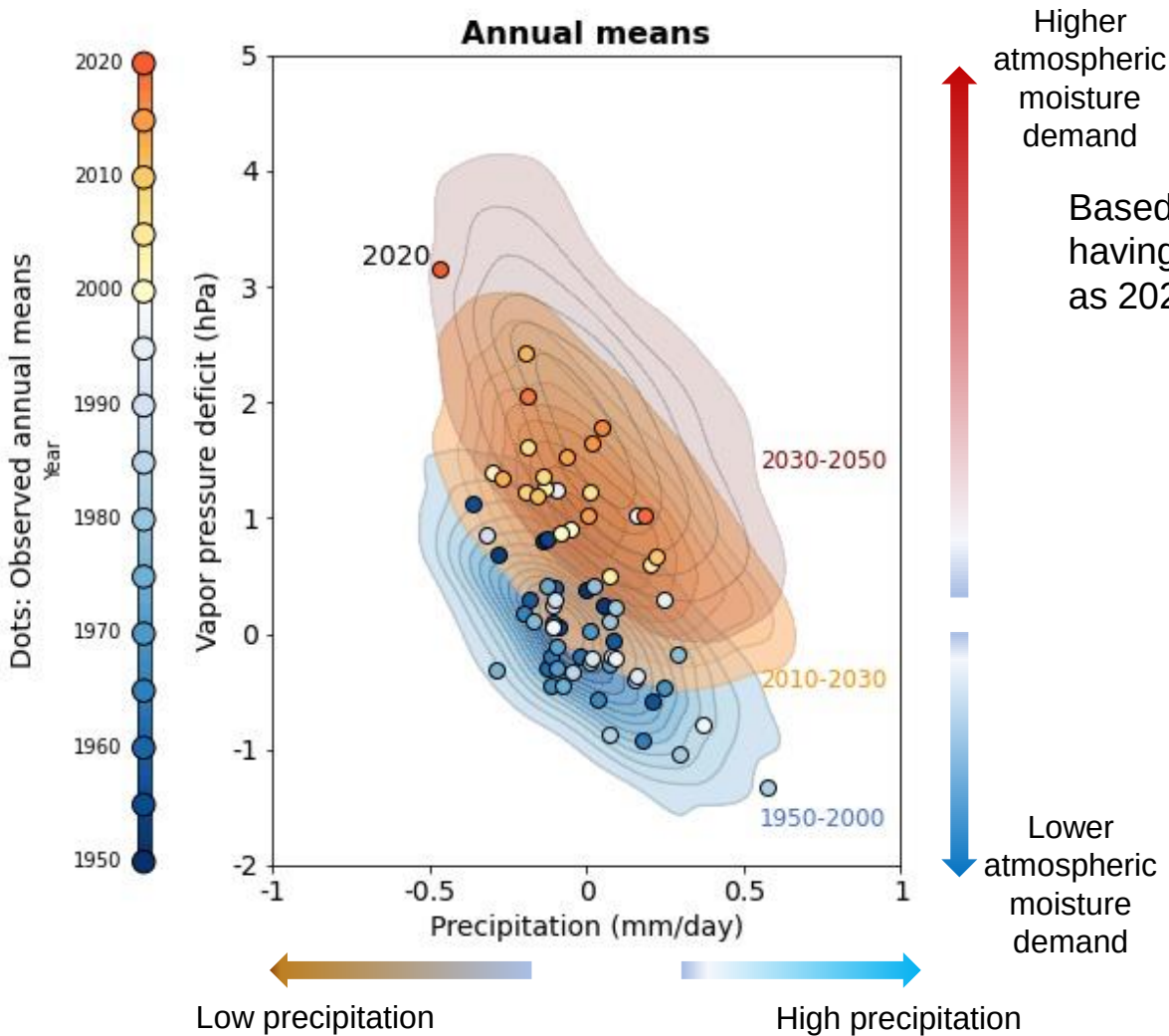




Based on the models, what are the chances of having a year with precip as low or VPD as high as 2020, if we were in the climate of 2010-2030?

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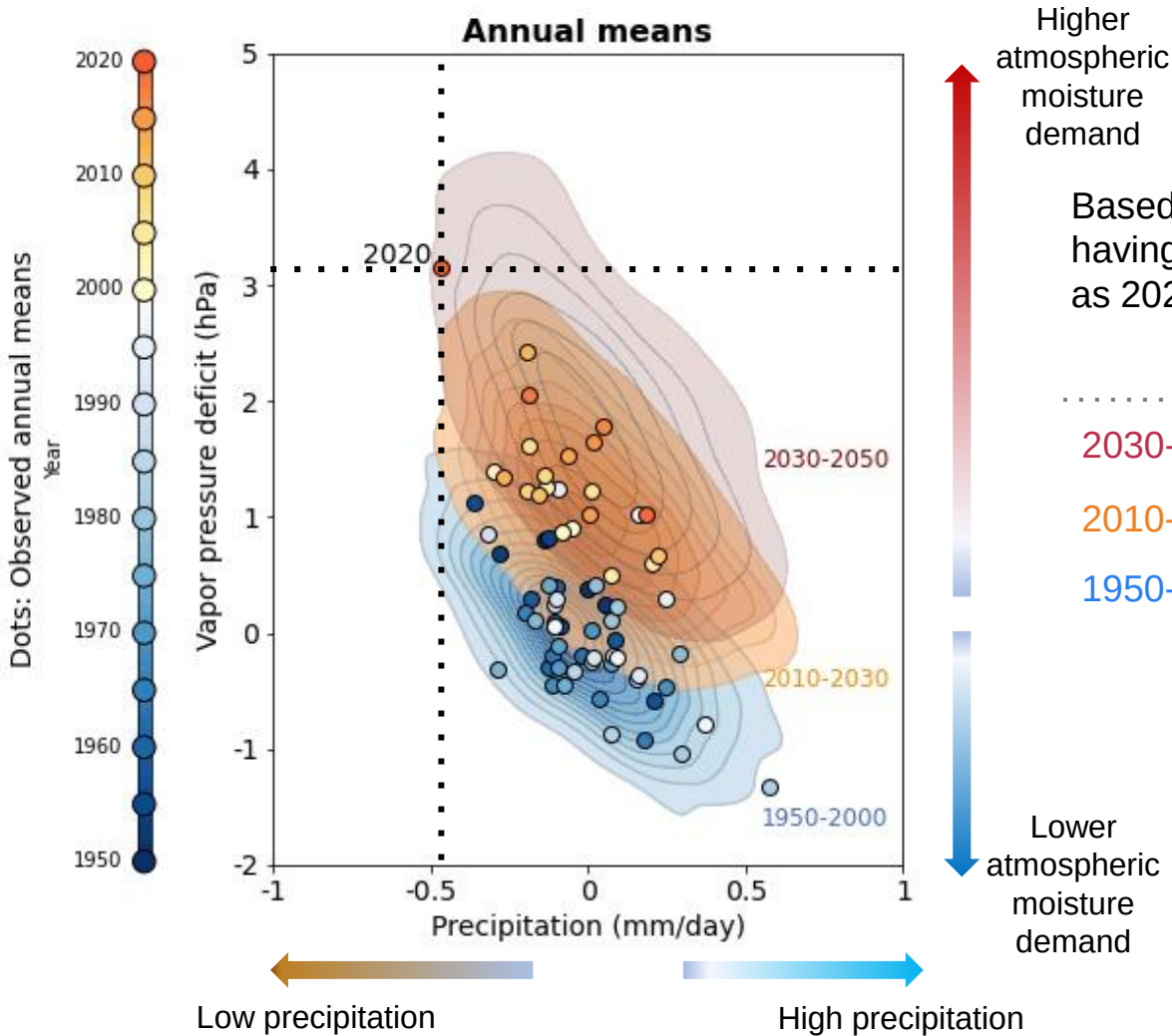




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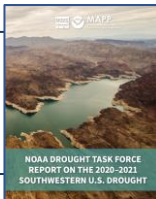




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	Precipitation	VPD
2030-2050	2.7%	12.6%
2010-2030	1.7%	0.6%
1950-2000	1.8%	Doesn't happen

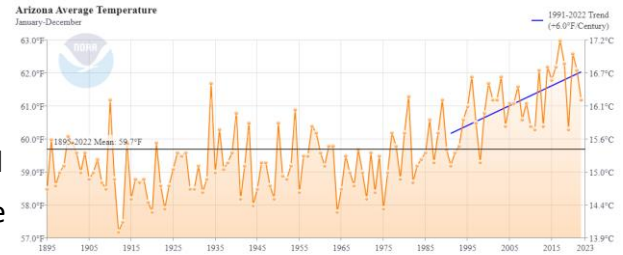
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Question:

How should drought be assessed in a changing climate?

Should drought be defined using **all available data**, knowing that there are strong trends in the data and the past is not representative of the present?



Should drought be defined using a **shorter modern reference period**, knowing that there have been extreme events in the past that should not be ignored (e.g. the dust bowl)?



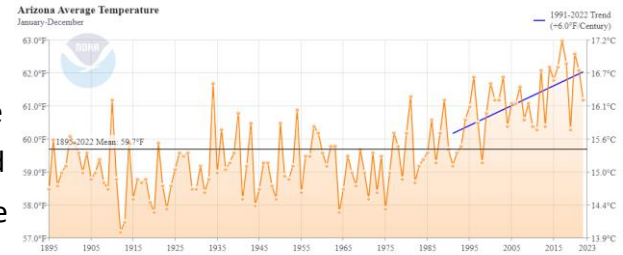
Should drought in the paleoclimate record be considered?



Question:

How should drought be assessed in a changing climate?

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When should drought be defined using a **shorter modern reference period**, knowing that there have been extreme events in the past that should not be ignored (e.g. the dust bowl)?



When should drought in the paleoclimate record be considered?



Question:

How should drought be assessed in a changing climate?



- Feb 28 – Mar 1, 2023 in Boulder, CO
- Co-hosts: NIDIS & USDA Climate Hubs
- Steering Committee 15 members from 6 federal, 5 state/academic and 1 tribal agencies/institutions
- ~110 participants
- Exploring this question from 4 perspectives

Thank You

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