



NEBRASKA STATE
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Nebraska's Changing Climate: Implications and Perspectives

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NPPD / NDEE Power Summit
6 October, 2022

SCHOOL OF NATURAL
RESOURCES
UNIVERSITY OF NEBRASKA
LINCOLN

Nebraska's climate past

- Temperatures are warmer now than what they used to be.
 - 1930s are a notable period in our historical record.
- We have trended toward wetter conditions with more heavy rain events.
- Drought has been and continues to be a normal part of our climate.
- Extremes are generally getting worse with 'weather weirding'.

Nebraska's climate past

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2011 flood



2012 drought



Nebraska's climate past

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2019 flood



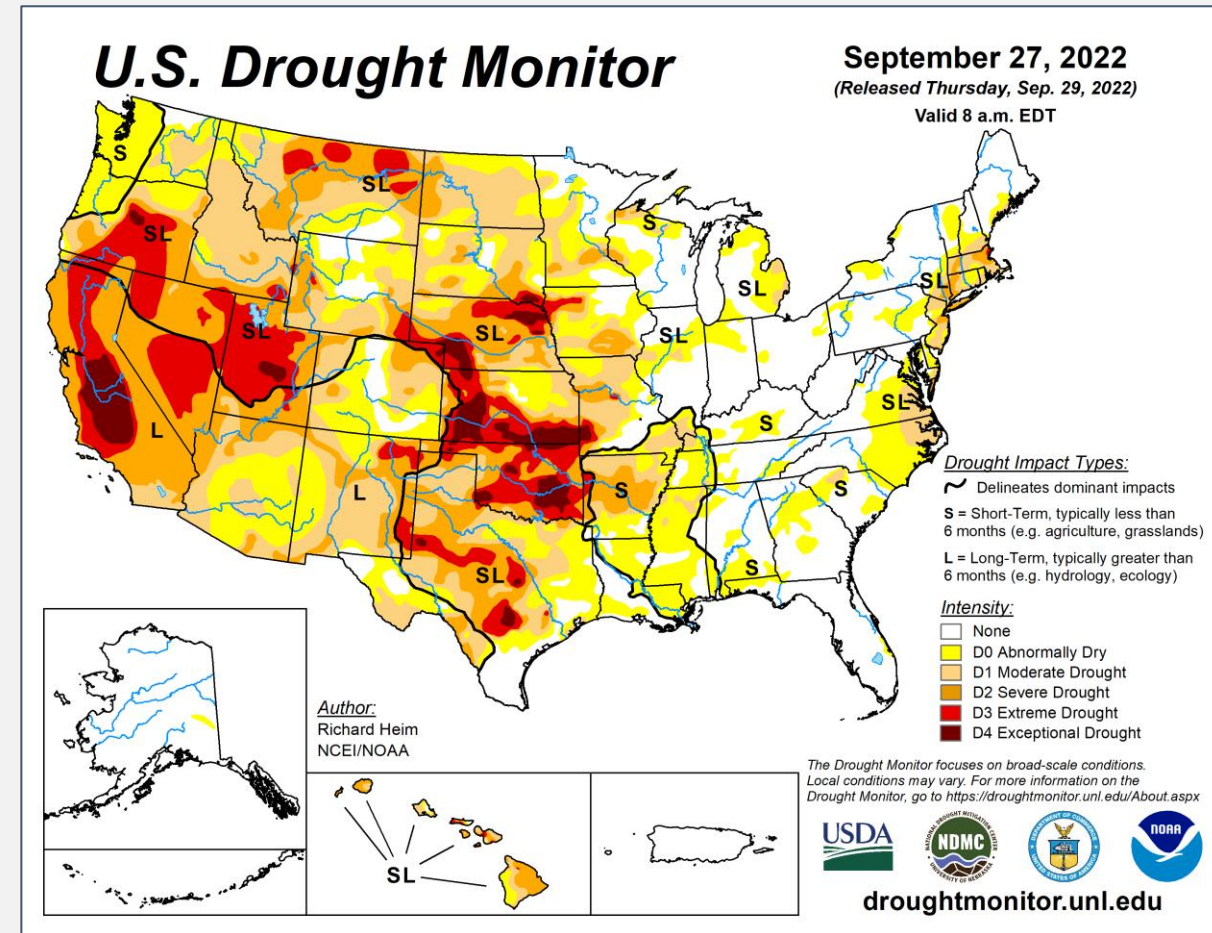
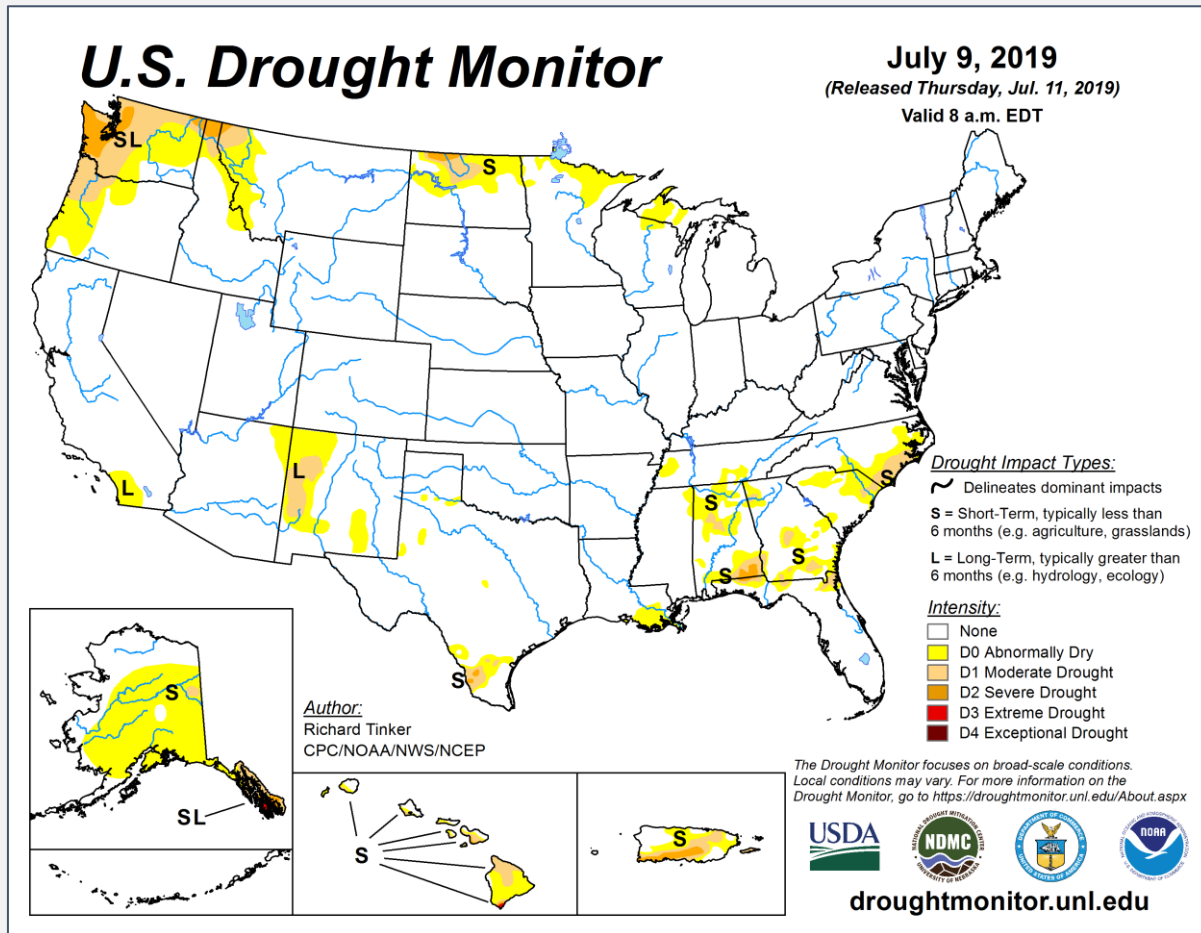
ongoing drought



From too much to not enough

3rd wettest year (2019)

3rd driest summer (2022)



Current drought in the U.S.

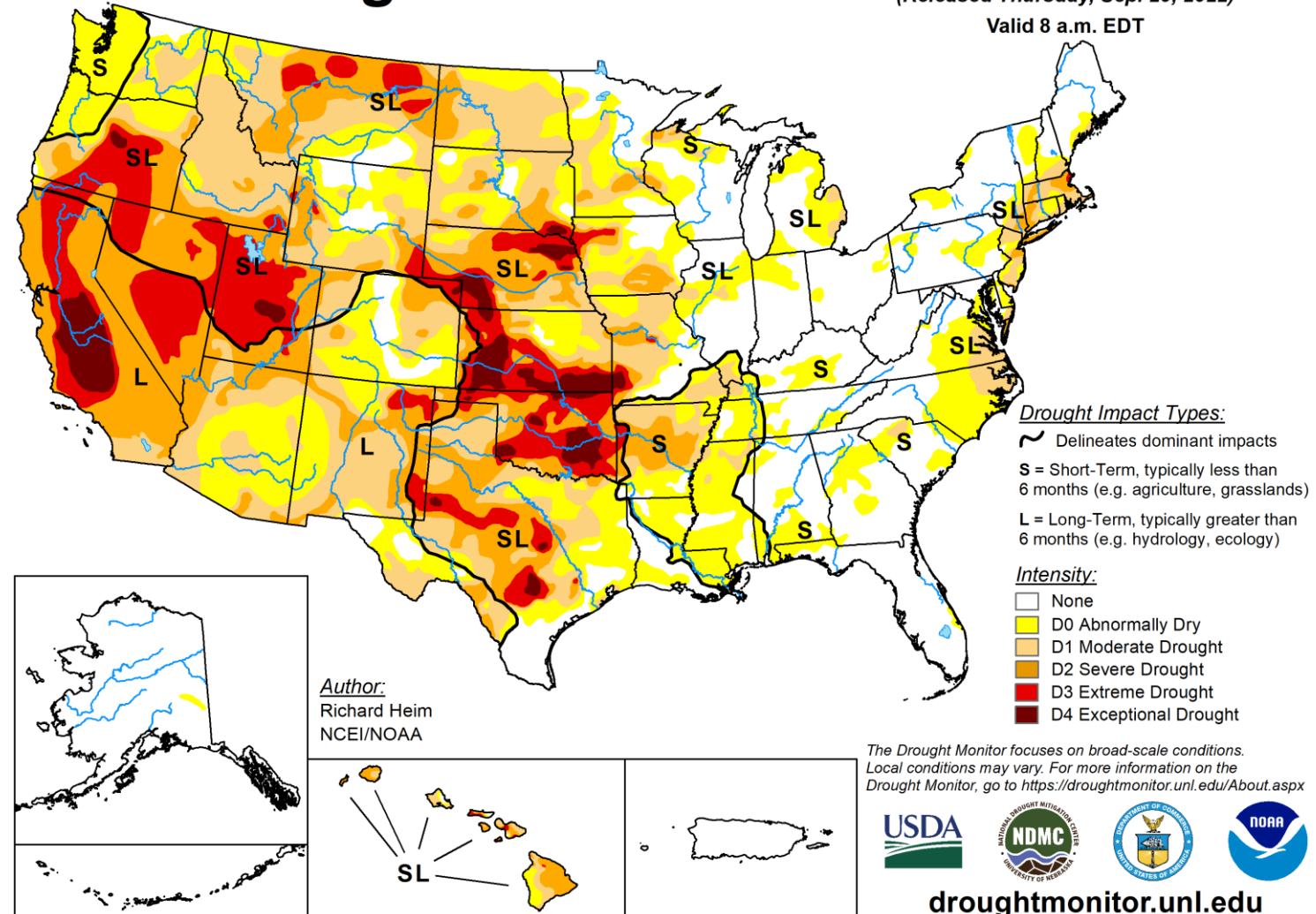
- Dry west / wet east.
- Third year of drought conditions in Nebraska.
- Also entering our third La Niña year.

U.S. Drought Monitor

September 27, 2022

(Released Thursday, Sep. 29, 2022)

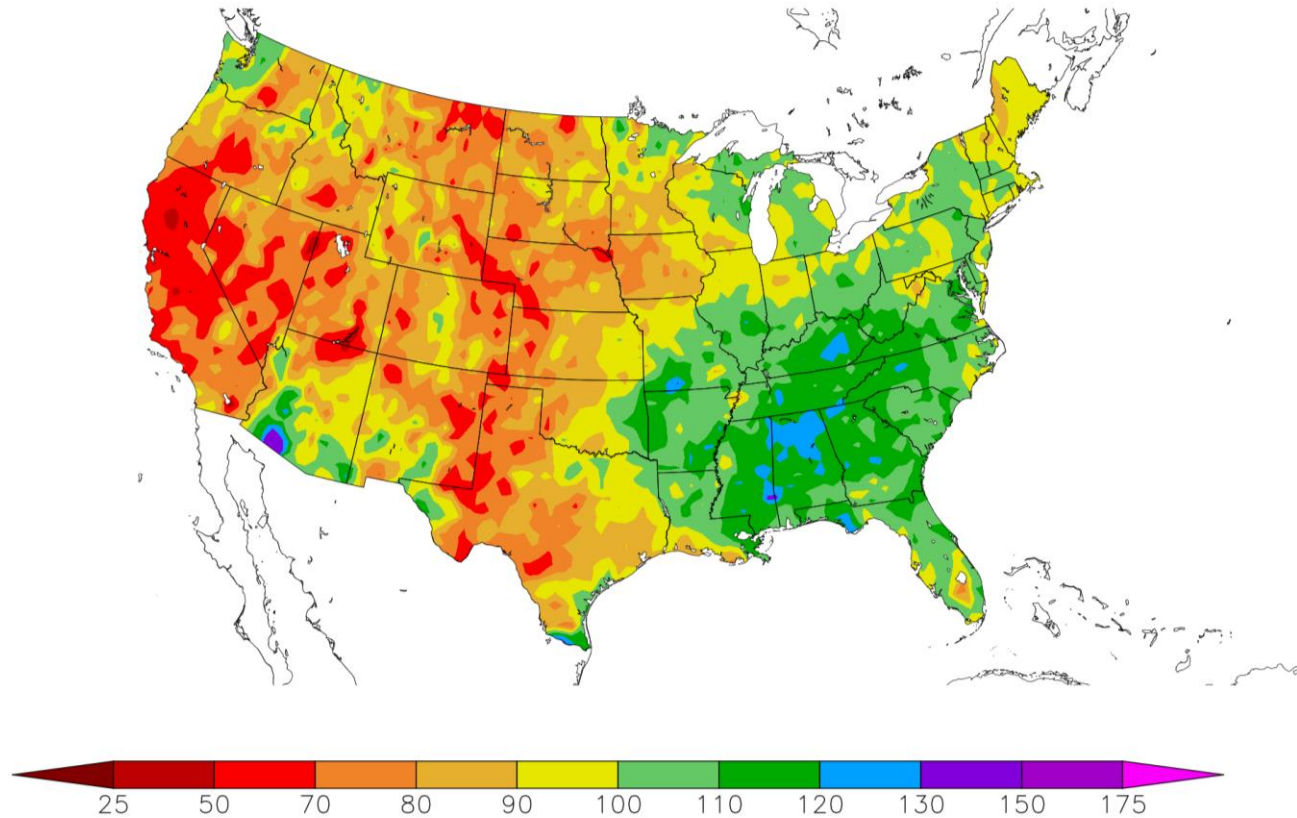
Valid 8 a.m. EDT



Precipitation tendency

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Percent of Normal Precipitation (%)
10/2/2019 – 10/1/2022

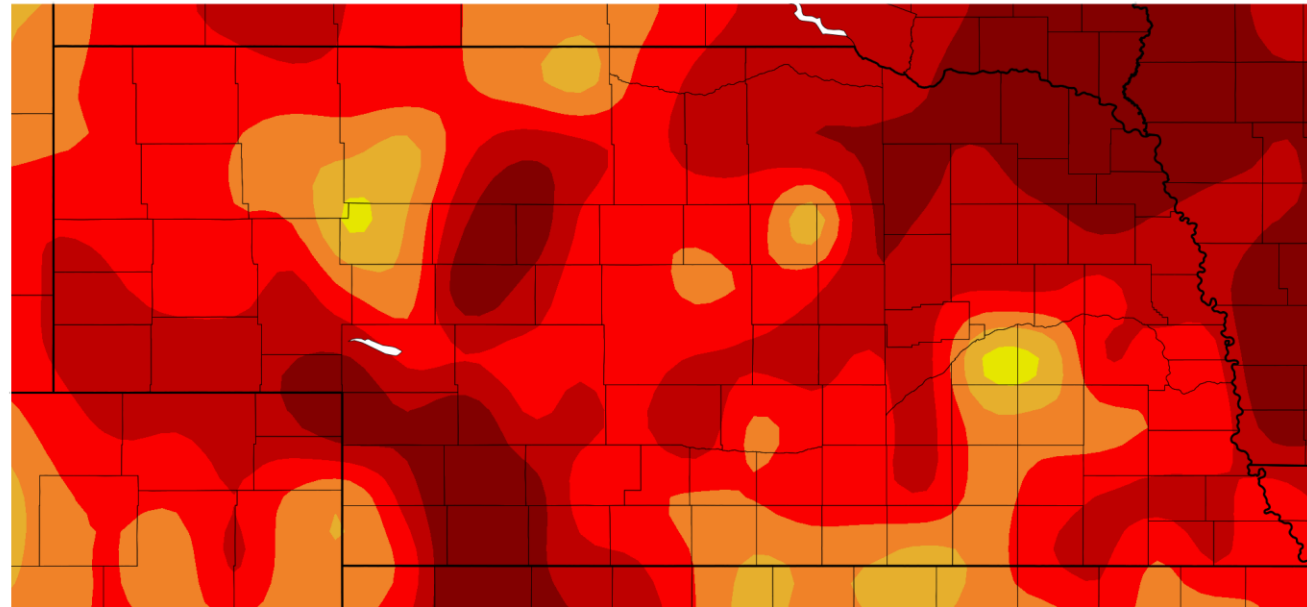


Generated 10/2/2022 at HPRCC using provisional data.

NOAA Regional Climate Centers

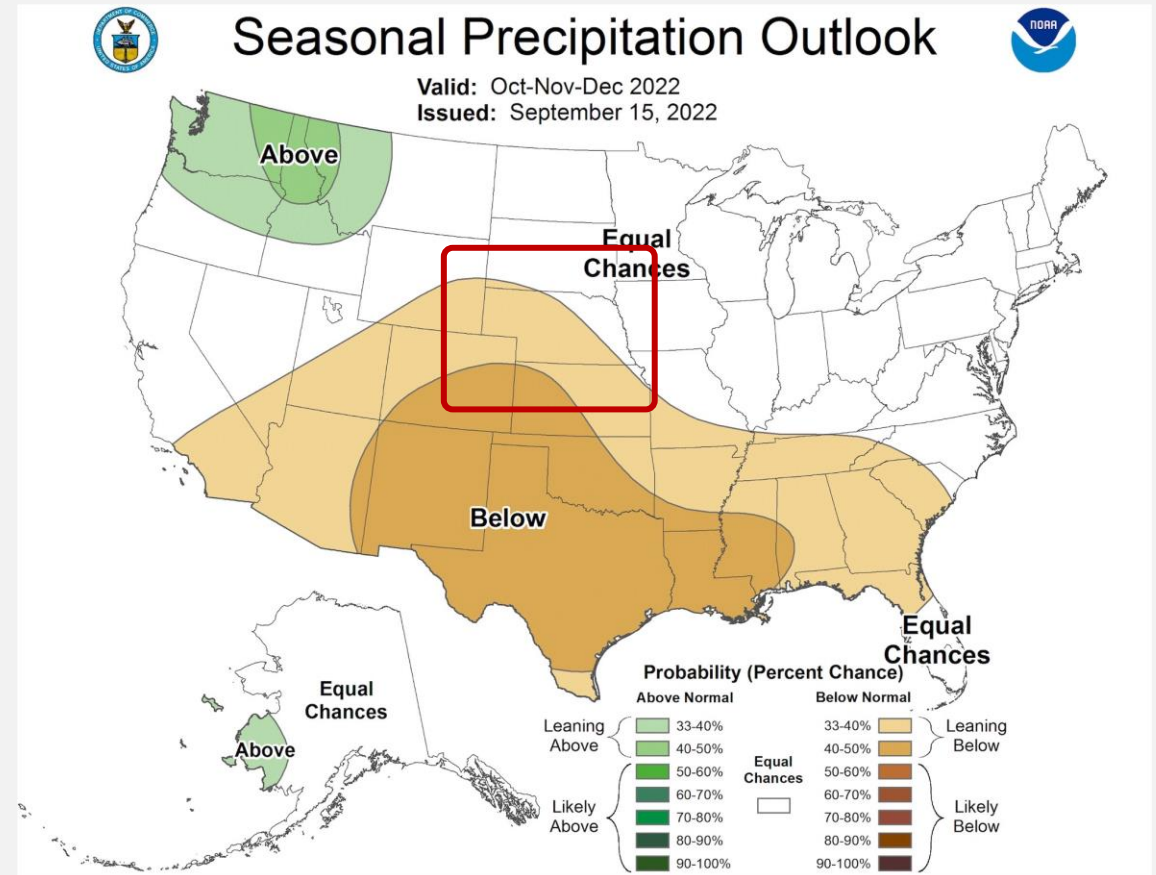
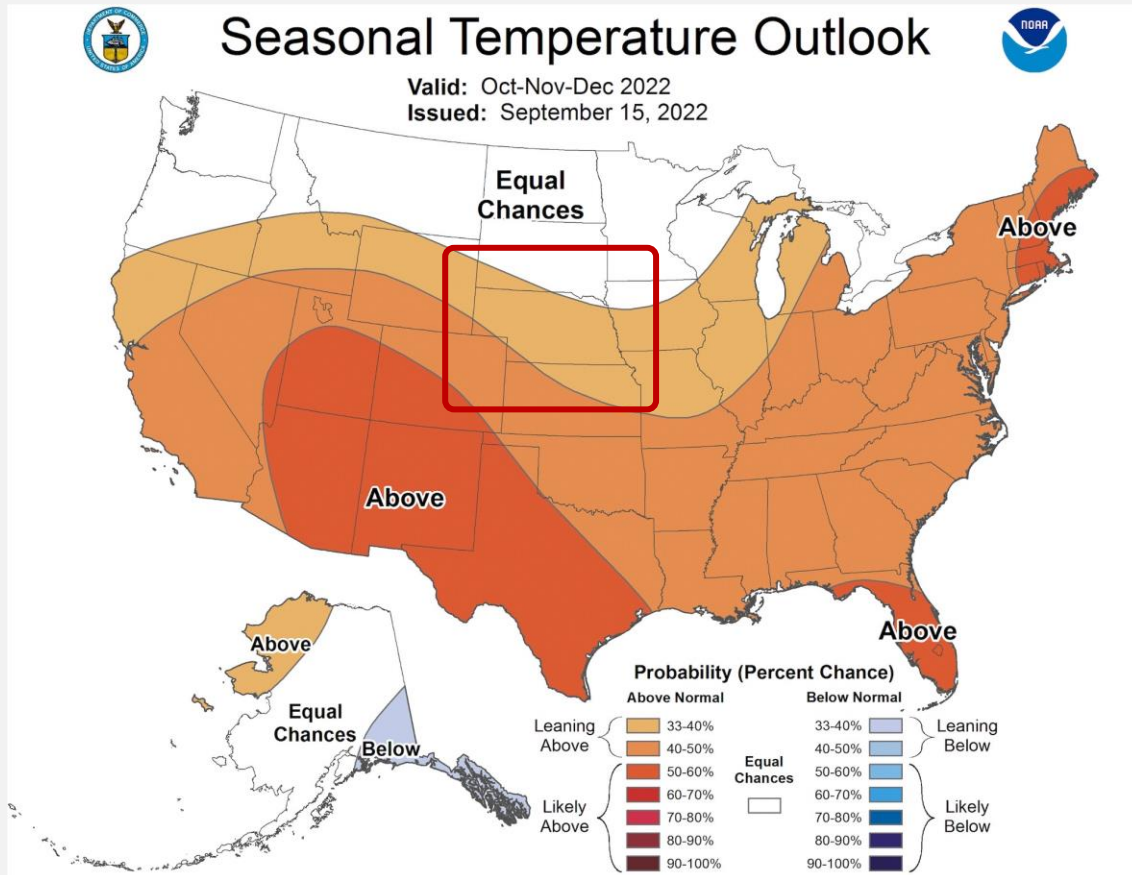
Precipitation tendency

Departure from Normal Precipitation (in)
10/2/2019 – 10/1/2022



Seasonal outlook (Oct - Dec)

- Increased chances for warmer than normal across Nebraska. Dryness signal continues for much of the state.



Drought outlook (Oct - Dec)

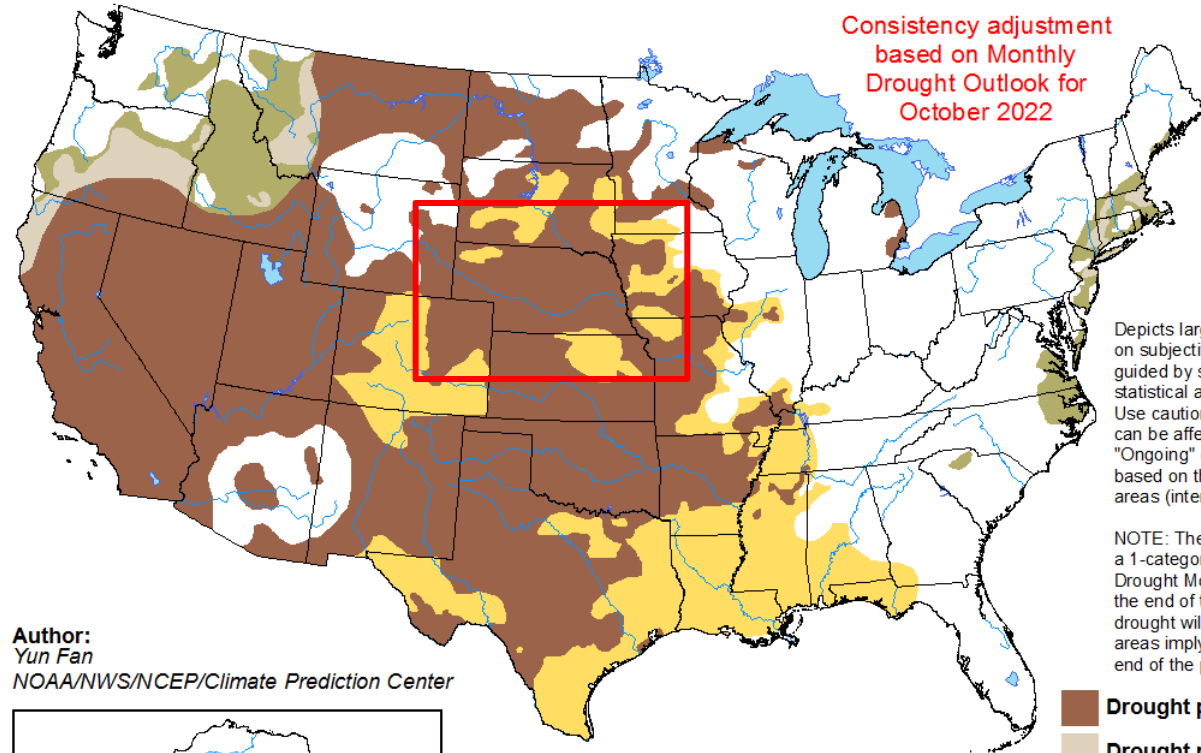
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- Drought persistence where it is.
- Drought development where it is currently abnormally dry.

U.S. Seasonal Drought Outlook Drought Tendency During the Valid Period

Valid for October 1 - December 31, 2022
Released September 30, 2022

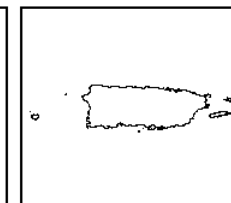
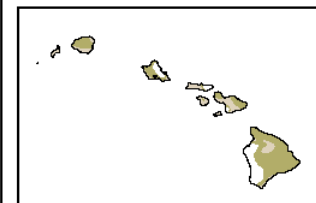
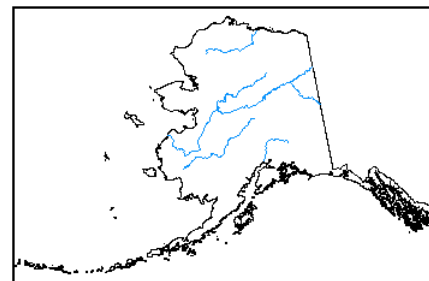
Consistency adjustment
based on Monthly
Drought Outlook for
October 2022



Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to D4).

NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).

Author:
Yun Fan
NOAA/NWS/NCEP/Climate Prediction Center



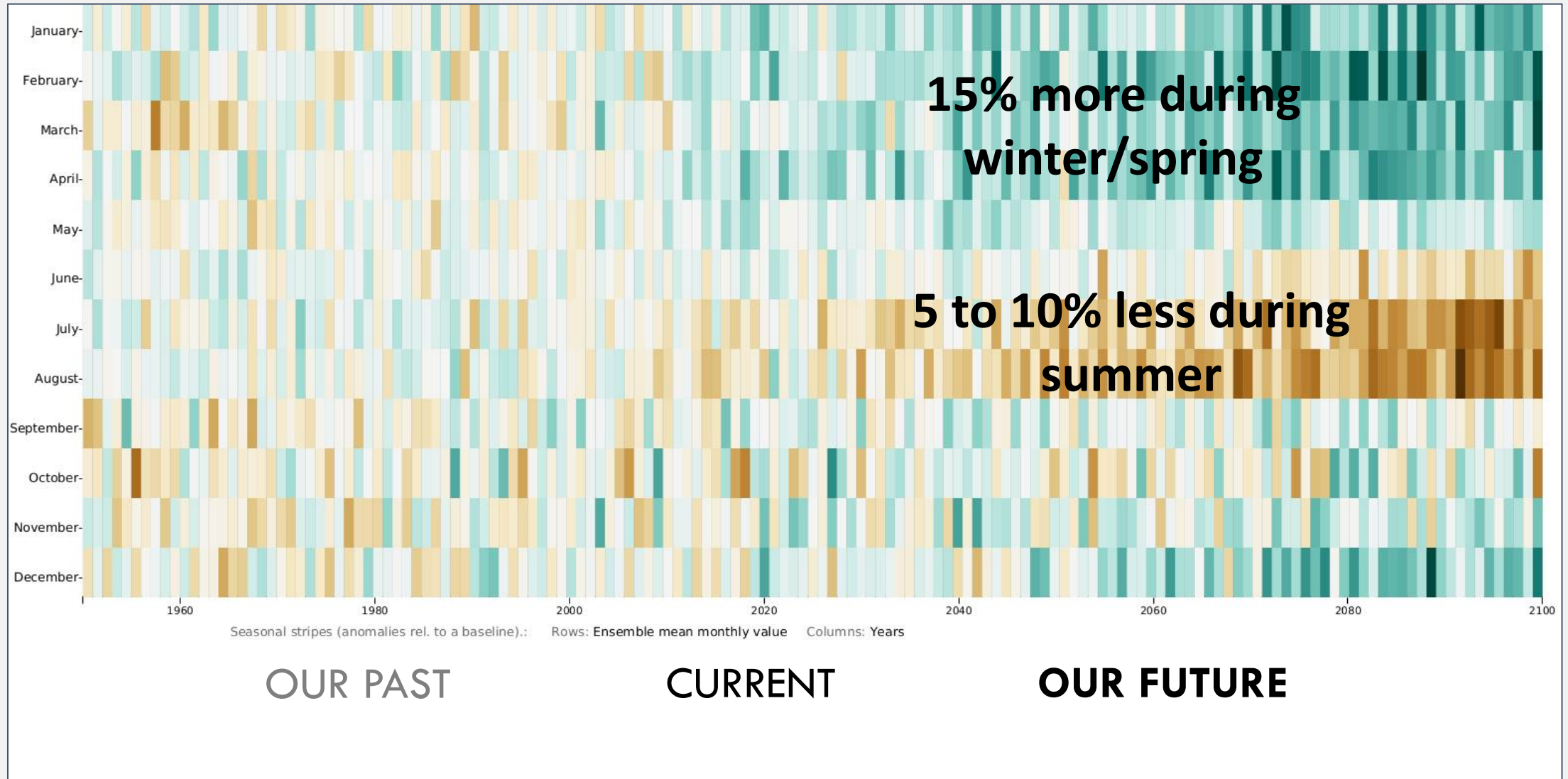
- Drought persists
- Drought remains but improves
- Drought removal likely
- Drought development likely



<http://go.usa.gov/3eZ73>

Climate outlook (2050)

Precipitation shifts relative to our current climate



Climate outlook (2050)

- We will have a greater percent of precipitation falling as heavy events
When it rains, it will pour.



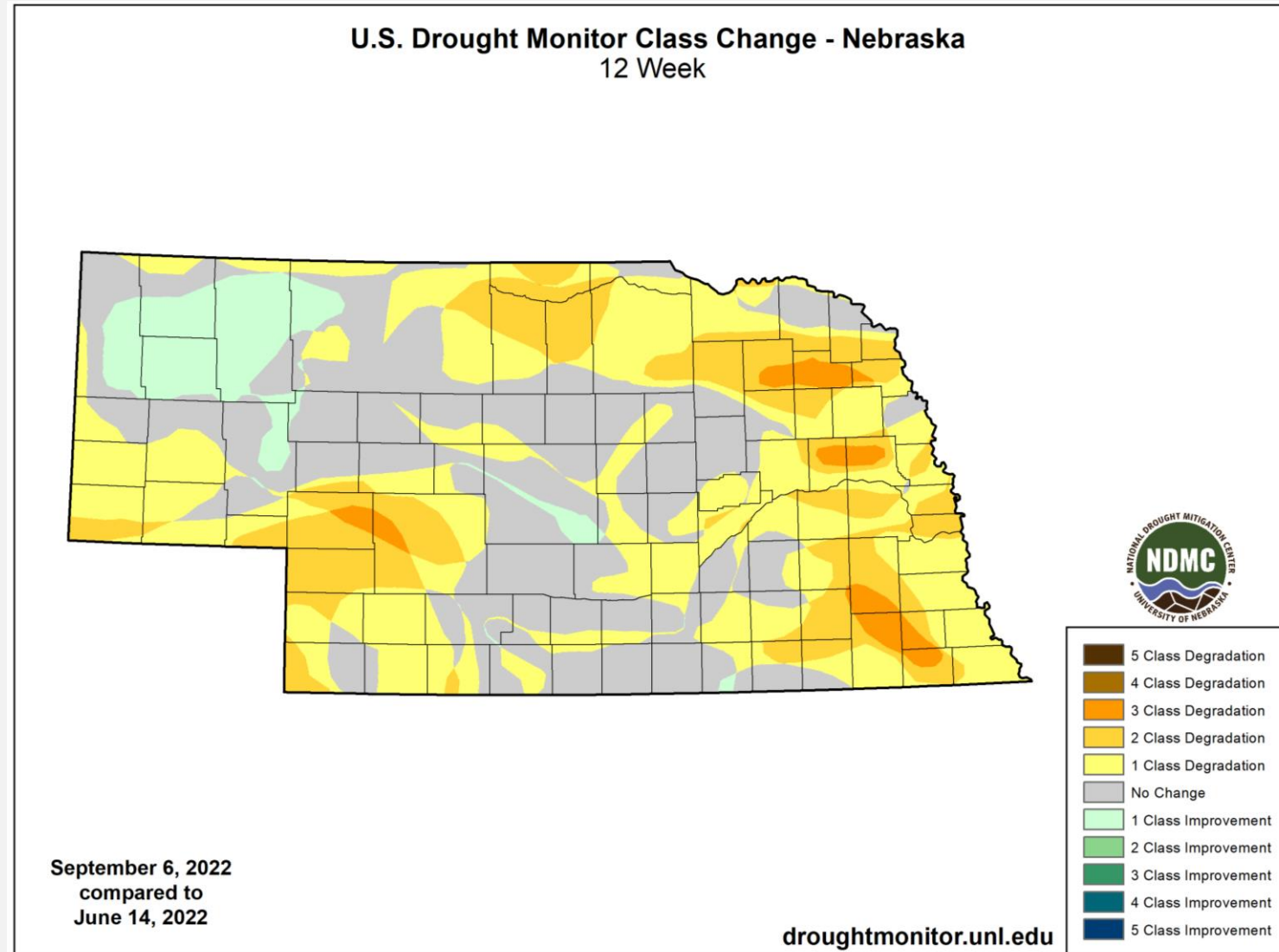
Climate outlook (2050)

- Timing can be everything for heavy rain events.



Climate outlook (2050)

- There will be a greater likelihood of quick onset, or 'flash', droughts.



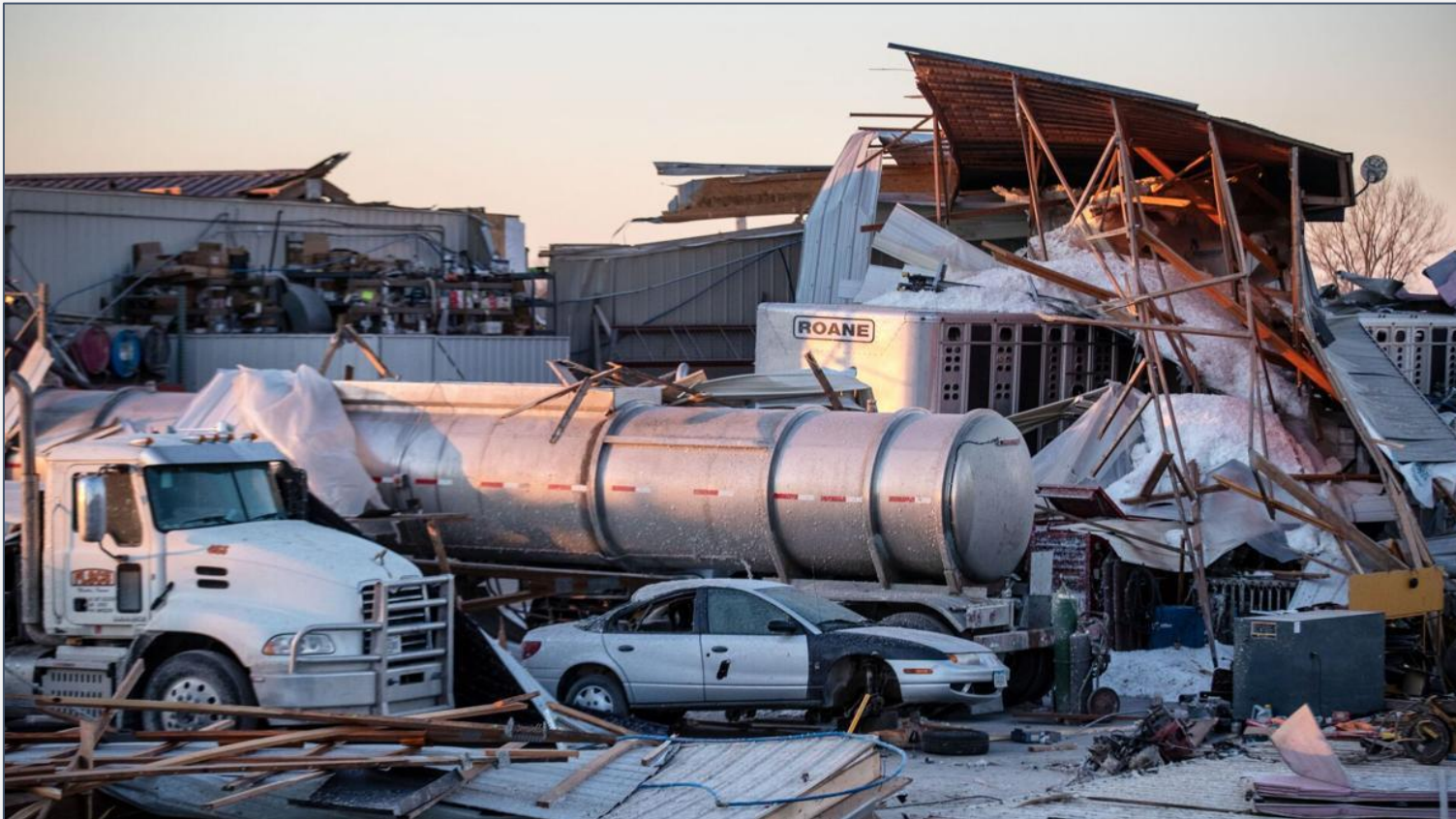
Climate outlook (2050)

- Nebraska's temperatures will be similar to present day southern Kansas.



Climate outlook (2050)

- We should plan for extreme weather events happening **outside of past expected ranges.**



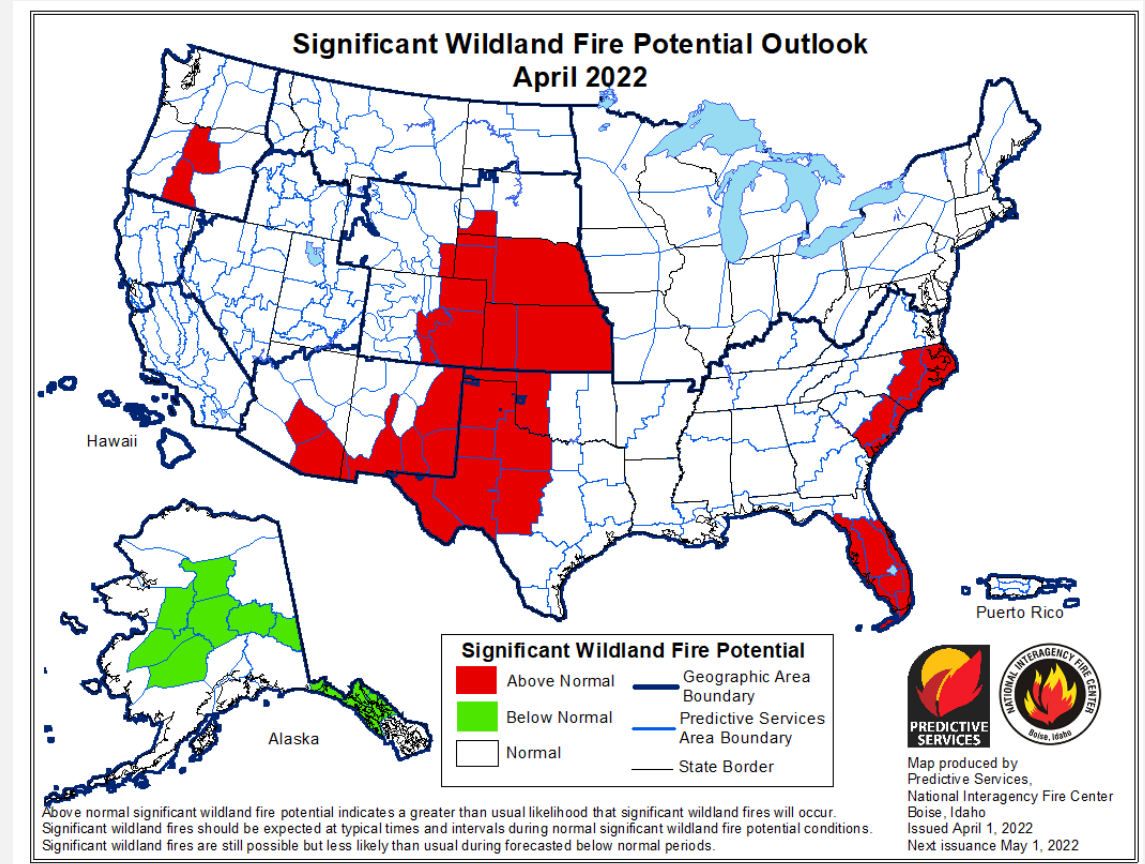
December 2021 derecho impacts Nebraska and Iowa with tornados, high winds, hail.

Climate outlook (2050)

- Combination of dry conditions and high winds yield increased wildfire risk.

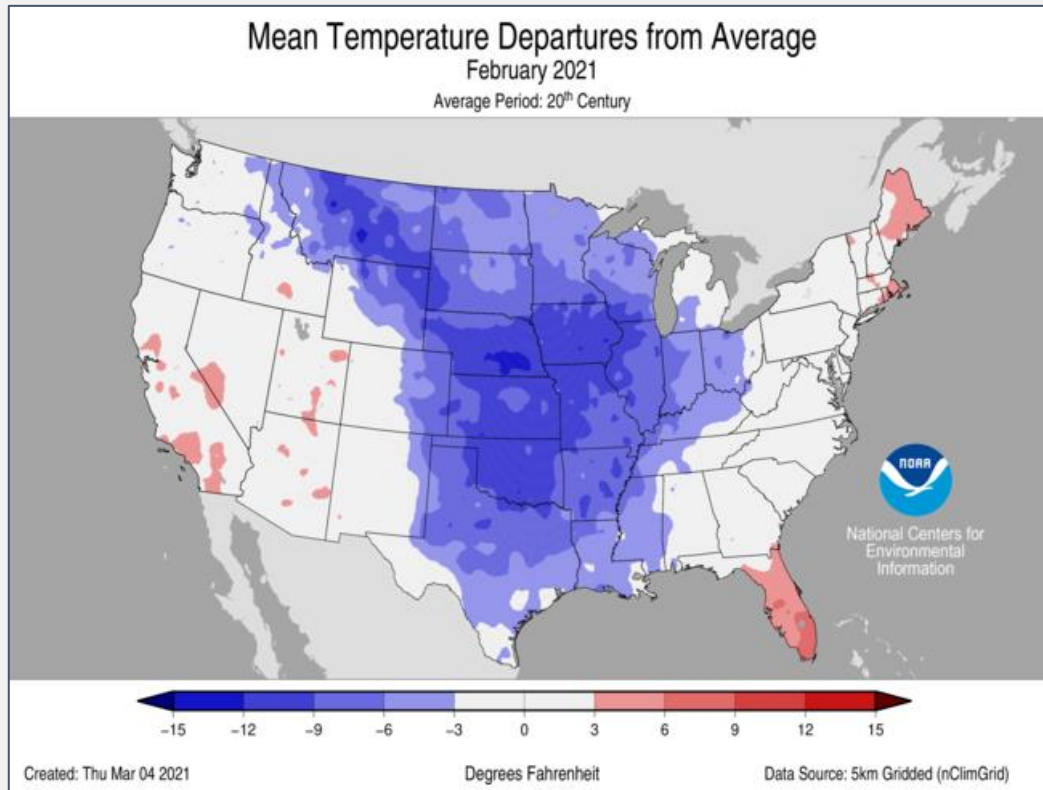


Road 702 fire results in loss of life, injuries and 44,000 acres burned in KS, NE.



Considerations

- Recent trends matter, and we can still get cold.



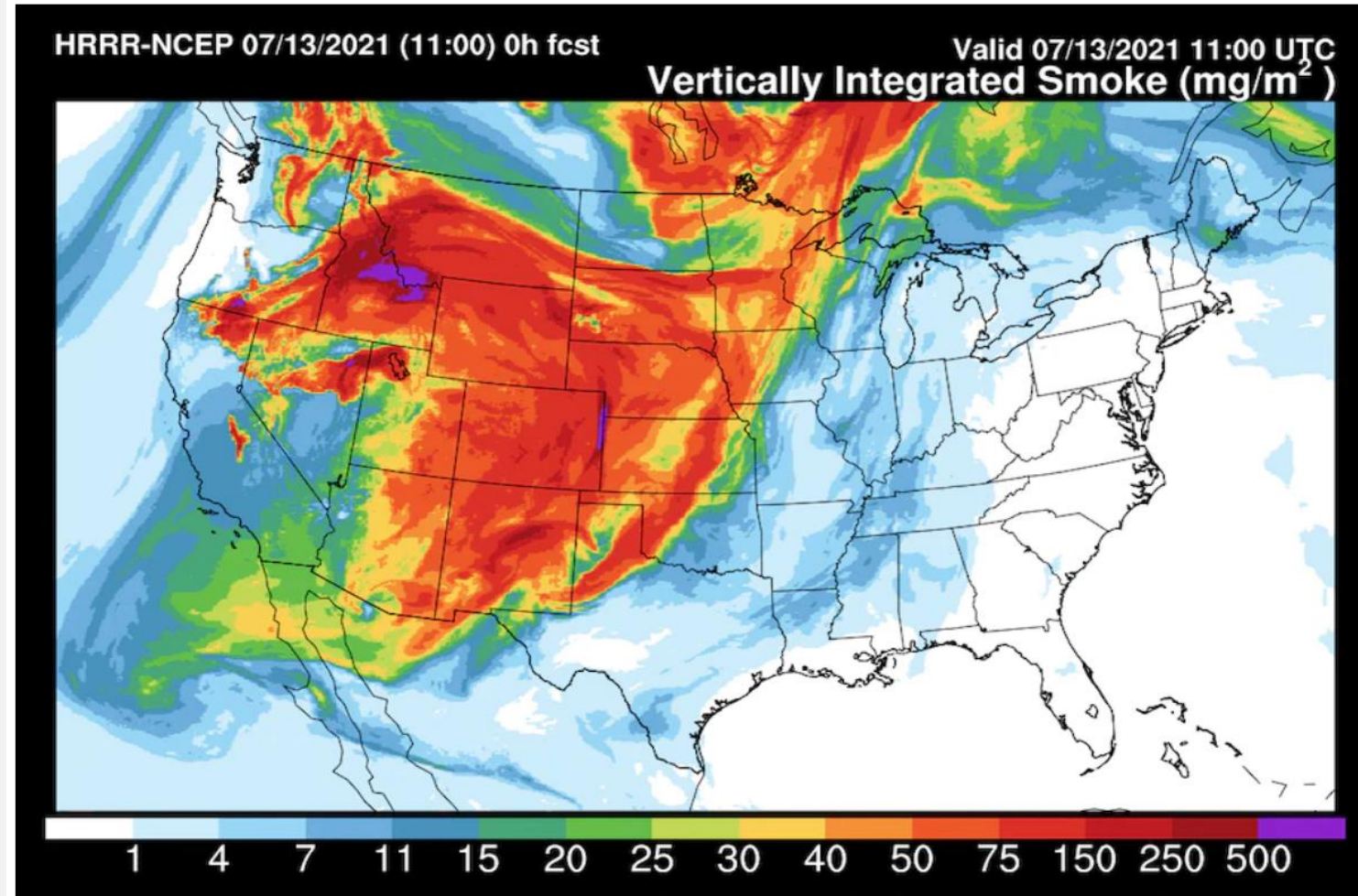
Thomas Shea/AFP via Getty Images. 17 February, 2021.

February 2021 storm and cold weather results in millions without power, rolling blackouts.

Considerations

- Extremes outside of Nebraska also matter.

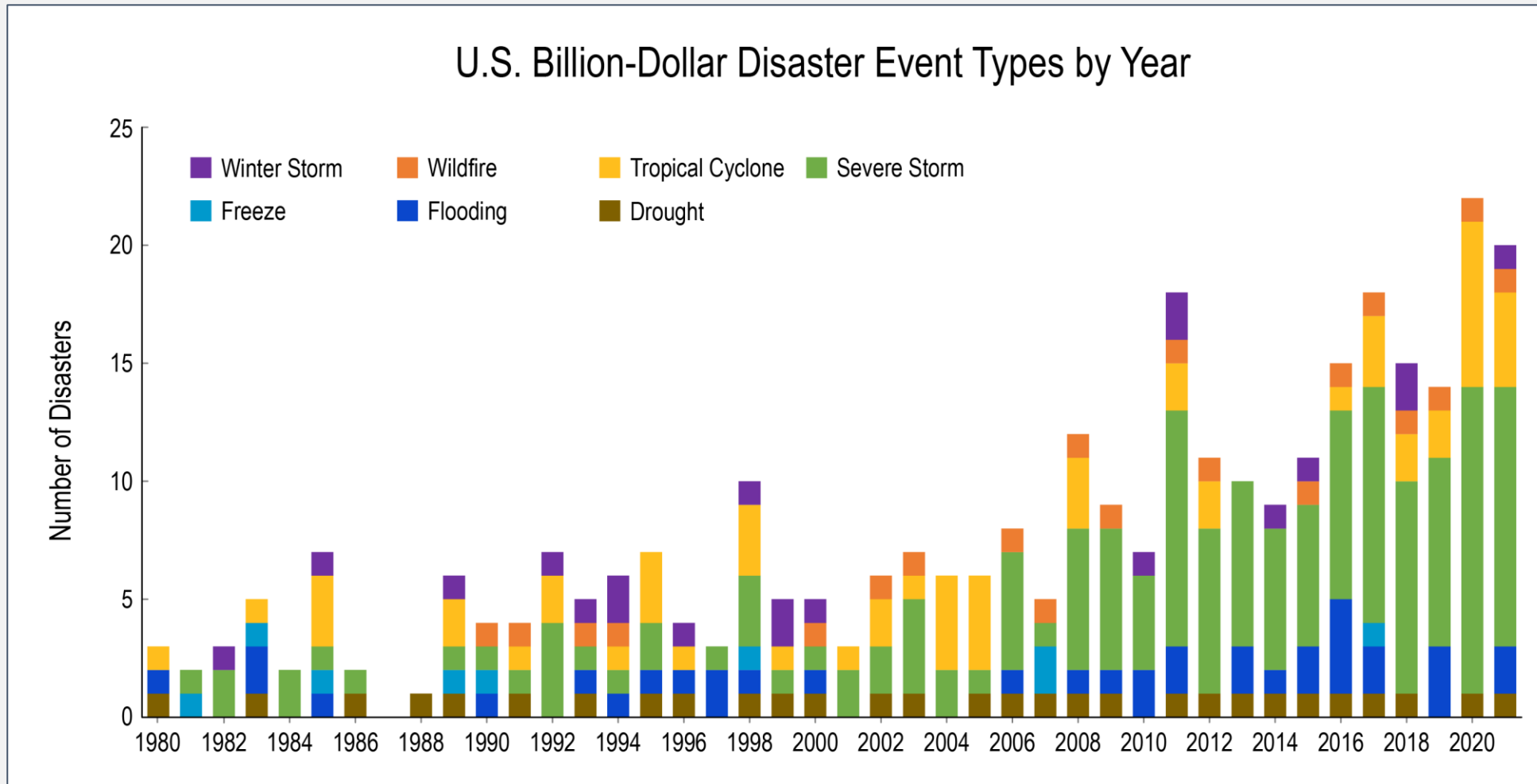
Wildfire risk in the west will increase, leading to negative health outcomes regionally.



Wildfire smoke, summer 2021.

Considerations

- Costs to deal with our future climate will go up.

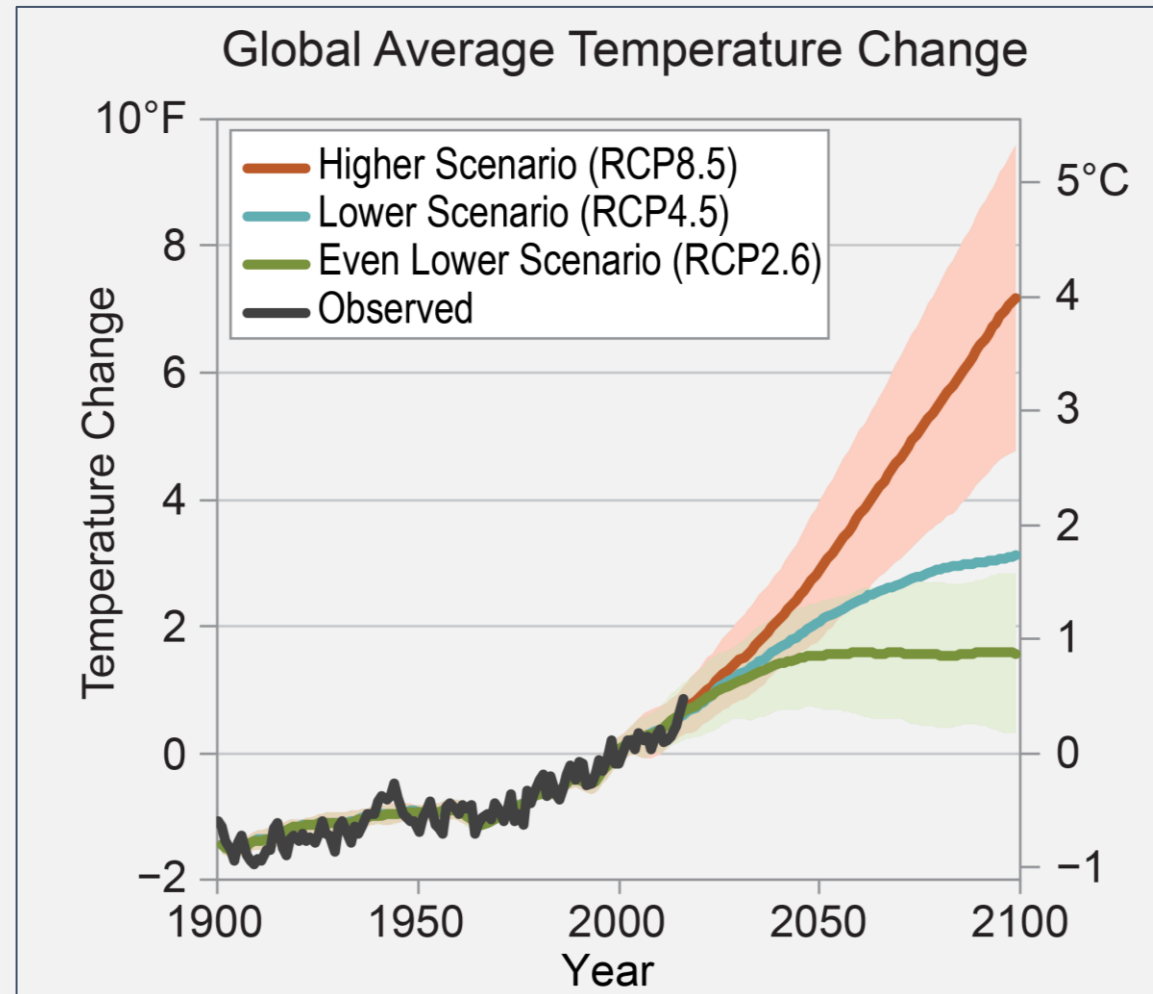


Considerations

- What we do now to prepare does matter.

RCP8.5
Our current path.

RCP4.5
Action now.



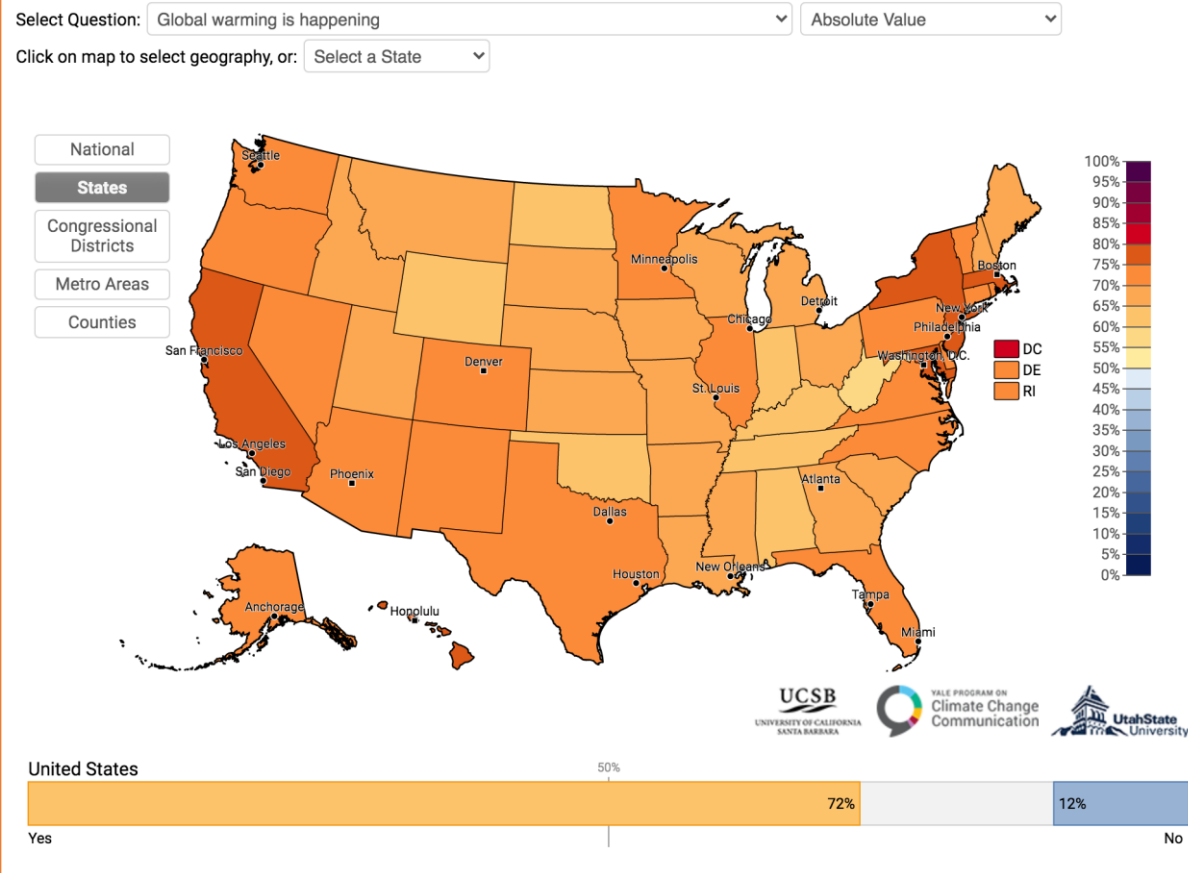
High risk,
Catastrophic
impacts

Less risk,
Manageable
impacts

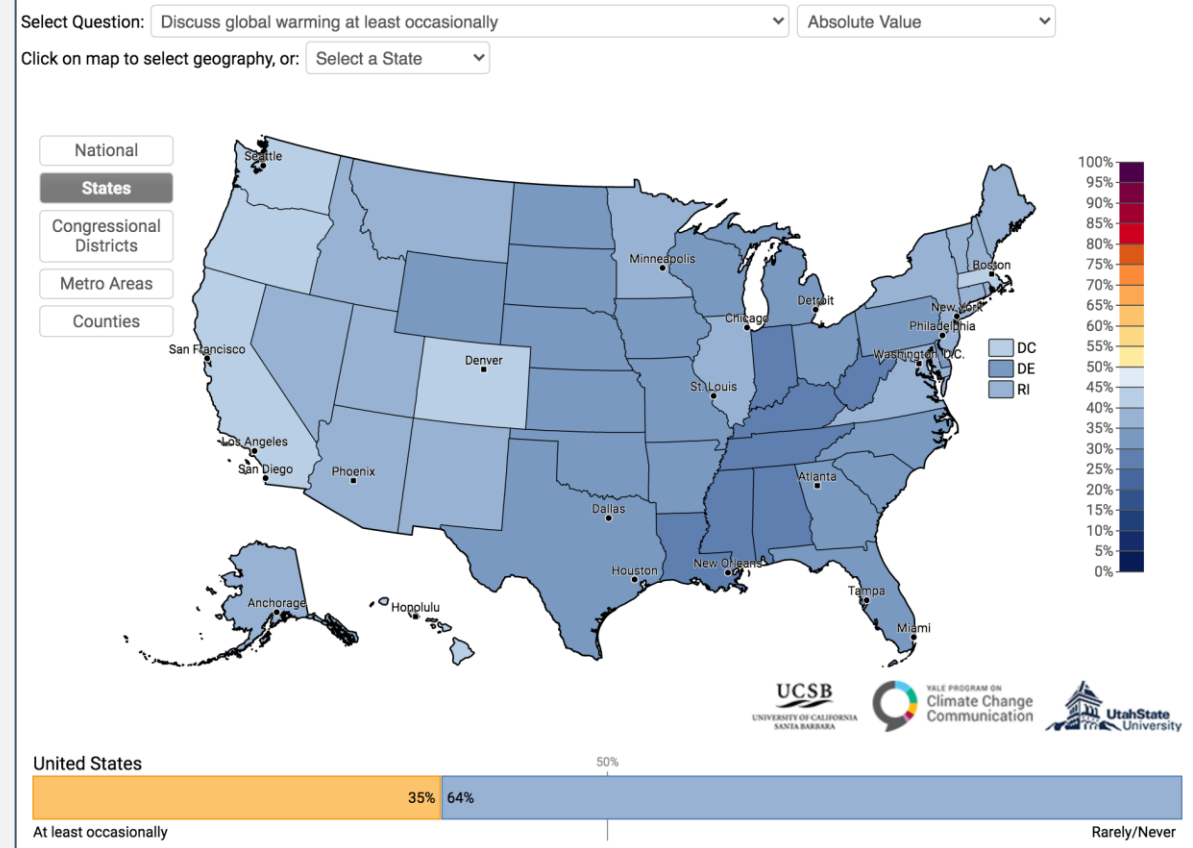
Considerations

- People probably 'care' about climate change more than you think.

Estimated % of adults who think global warming is happening (72%), 2020



Estimated % of adults who discuss global warming at least occasionally (35%), 2020



Nebraska's perceptions

“I don't know that I believe in global warming, but I do think we could be doing more to protect our environment.”

Thank you and contact me

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