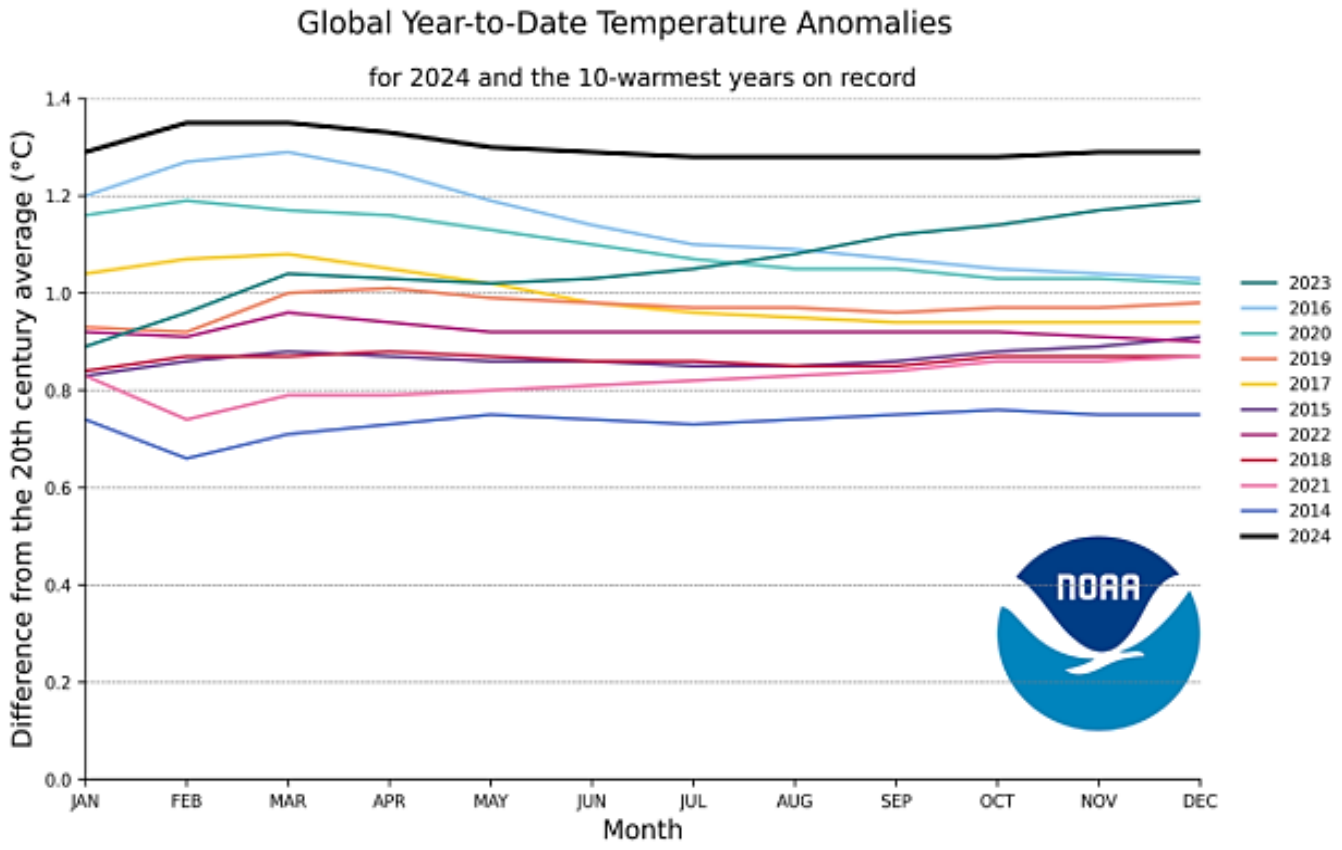
Extreme Weather Outlook: Summer 2025

*"The 10 warmest years in the 143-year record have all occurred **since 2015**. The 2024 January–December 2024 global surface temperature ranked warmest in the 175-year record at 1.29°C (2.32°F) above the 20th century average" (NOAA).*



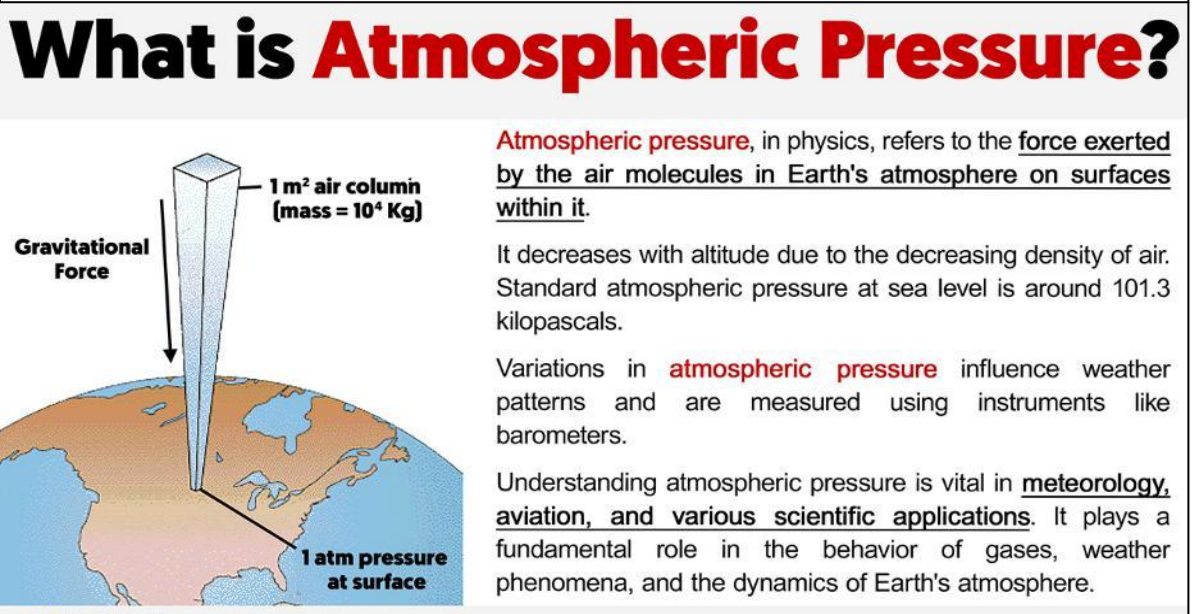
Chief Meteorologist Ms. Sunny Wescott
Critical Infrastructure and Emergency Response Operations

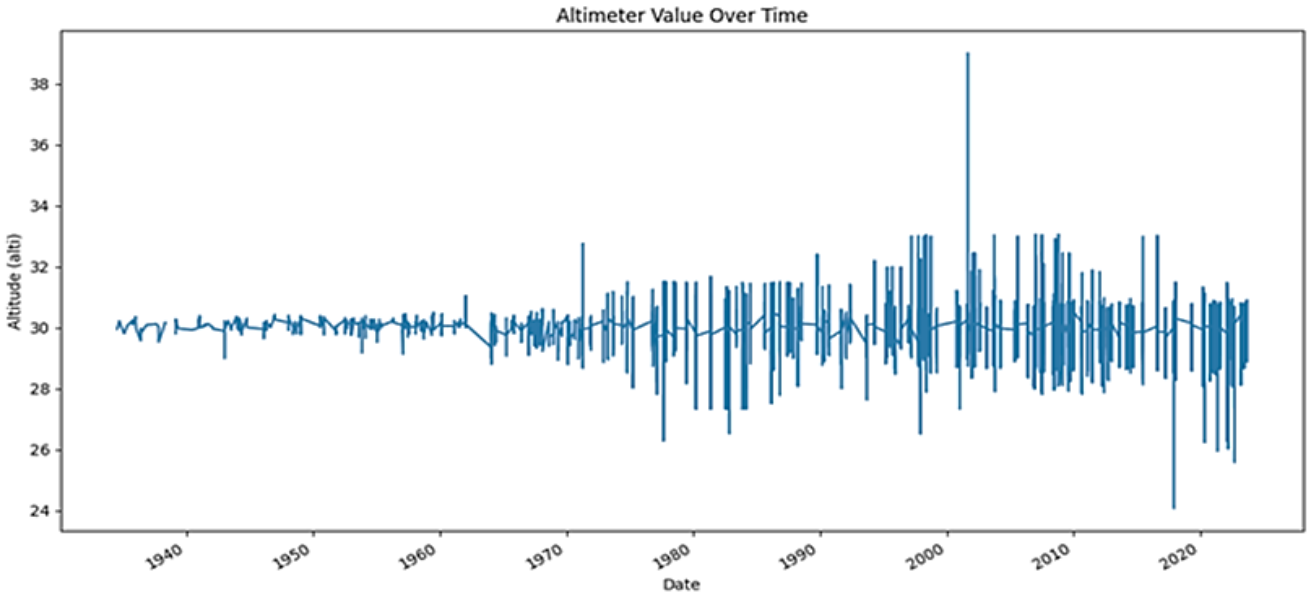
Major Pressure Swings Begin

As low pressures continue to change in depth and intensity, the high-pressure events are left to dominate for longer periods, increase coverage area, and promote significant levels of humidity and water vapor adding to trapped heat.

- The low-pressures drive global cooling winds, bring rainfall and storm events, and are responsible for all notable cloud coverage.
- High-pressures yield clear skies, heat domes, haze, stagnant air, and even the cold air damming periods.

This means a change in either pressure consistency or strength brings immediate consequences for the water cycle.





ASOS Raw Data
National Overview

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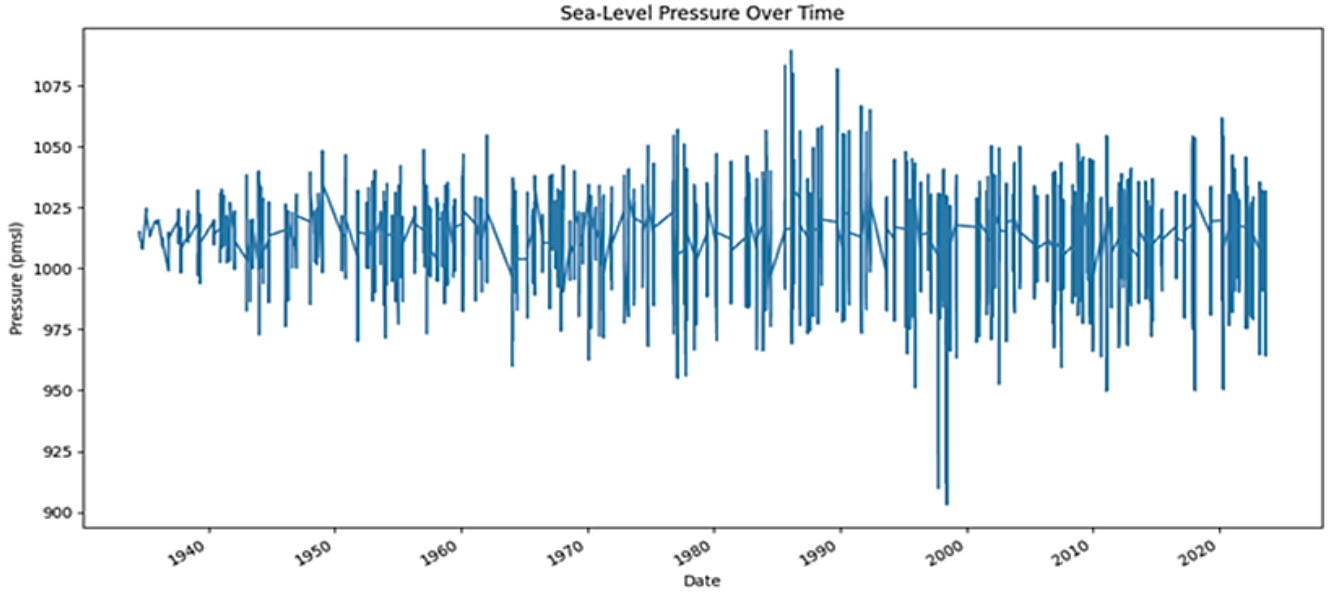

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Aridification and Hydro

The year 2024 was the world's warmest on record globally, and the first calendar year in which global temperatures exceeded 1.5°C above its pre-industrial levels.

"We are now teetering on the edge of passing the 1.5ºC level defined in the Paris Agreement and the average of the last two years is already above this level. These high global temperatures, coupled with record global atmospheric water vapor levels in 2024, meant unprecedented heatwaves and heavy rainfall events".

Aridification Risk: Summer 2025 combines the abnormal dry/warm conditions from 2024 summer, and fall, and the 2024-2025 winter.

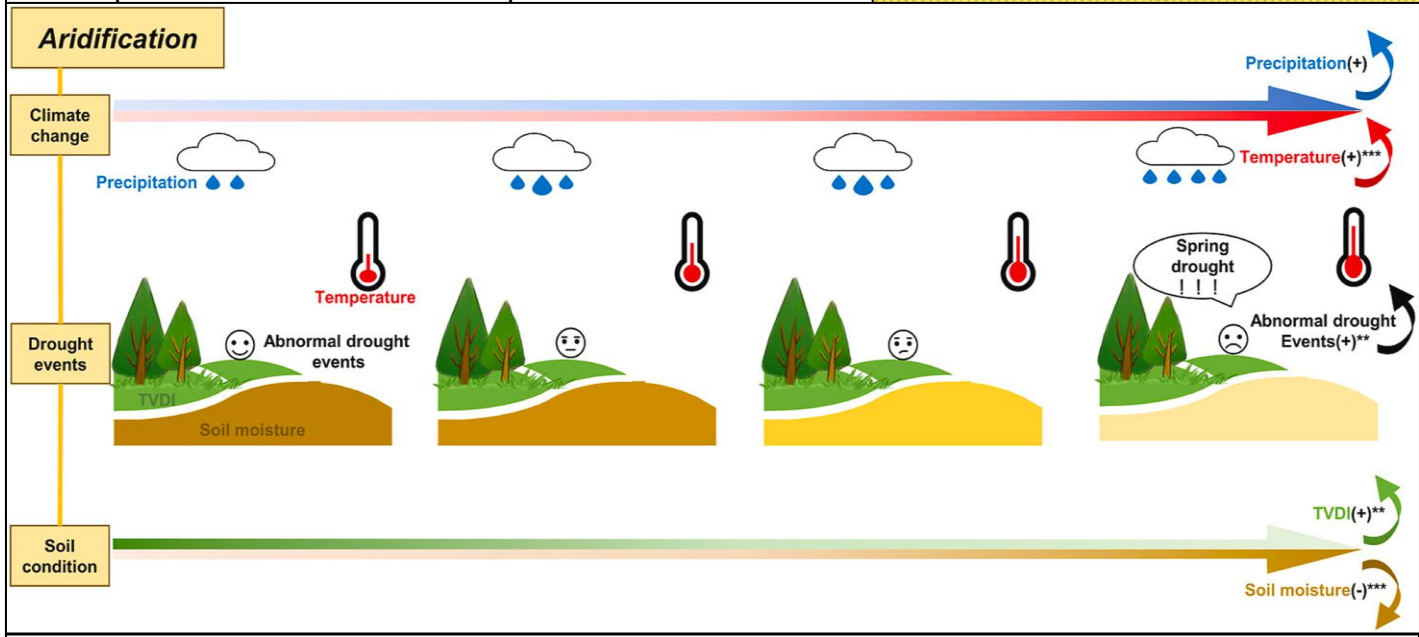
- Climate scientists say increasing global temperatures have driven soil moisture in the Southwest below a critical point, creating a positive feedback loop of hotter and drier conditions.
- About 61% of loss in Colorado River water is because of increased evapotranspiration, rather than a lack of precipitation

The threat of aridity or the lack of water resources on land affects 40% of Earth's arable lands — or about 2.2 million square miles — and another 7%, if the effects of soil erosion were added to the total, according to a new research published in December 2024.

- By 2040, the area at risk expands by 3.9% globally, translating to a loss of 20 million tons of maize, 19 million tons of rice, 8 million tons of soybeans and 21 million tons of wheat.
- 77.6% of the Earth's land became permanently drier in the three decades leading up to 2020, compared to the previous 30-year period (1961-1990).

In China, 2000 to 2019 was the driest in the region during the last 120 years, with the summer drought as the most severe. Over time it shifted from a summer to spring drought; in terms of soil, the soil aridification trend in the region was severe with 16.1% of the areas becoming significantly drier in summer, and 41.6% in spring.

The jet stream, a high-altitude river of fast-moving air, influences rainfall patterns by steering the movement of weather systems and moisture. It essentially acts as a "highway" for storms, guiding them across the northern hemisphere. This means, whatever conditions occur "upstream" or across the Asian continent, the US could see replicated over time in similar patterns.

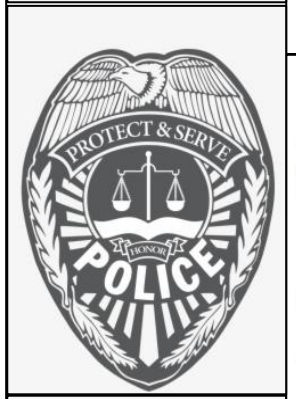


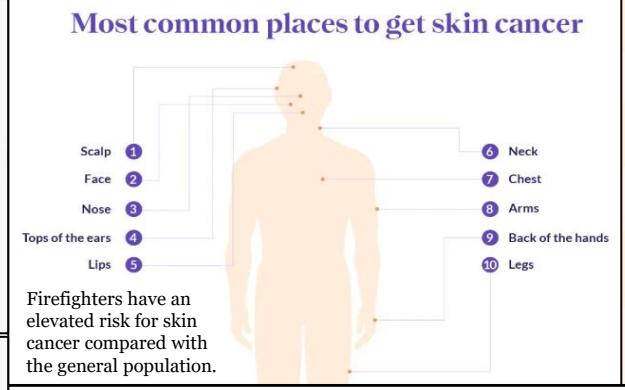
In a recently published study, the UA researchers at the Center for Complex Hydrosystems Research conducted a comprehensive analysis to determine the impact of drought on hydropower generation during the 18-year period and identify the relative vulnerability of each state to drought. They found a considerable decline in hydroelectric power between 2003 and 2020 at a cost of an estimated $28 billion to the sector nationwide.

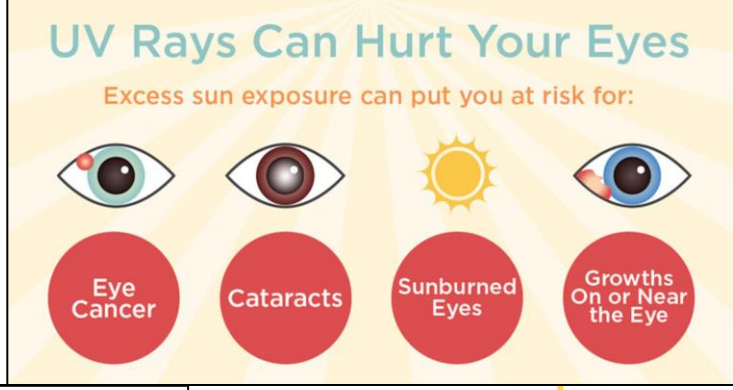
‘Too Hot To Op’

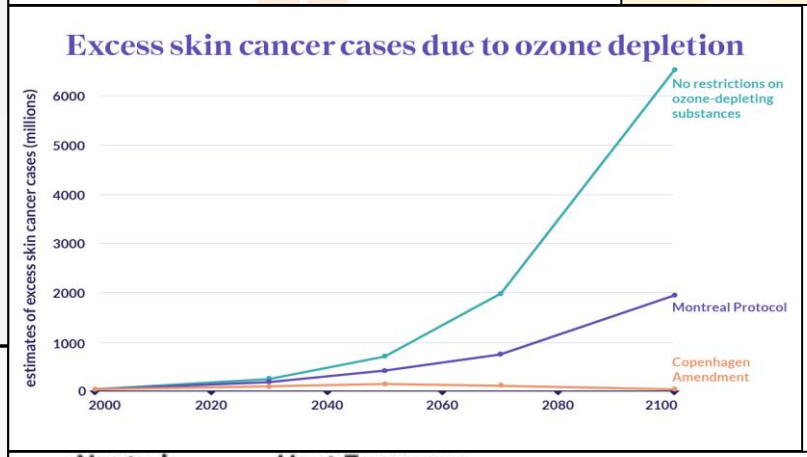
<u>First Responders/Operators Risks from Heat</u>

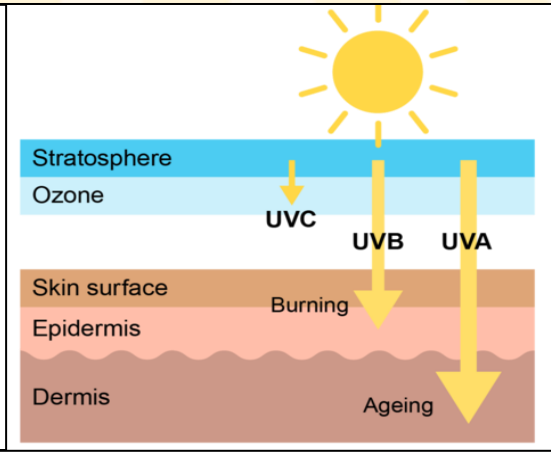
- Higher Rates of Skin Cancer
- Inhalation of Greater Concentrations of Pollution
- Vision Impairment due to Reflectivity
- Overheating – Gear Amplification
- Equipment Degradation
- Dehydration and Mental/Physical Fatigue
- Heat Exhaustion/Stroke
- Sweat Induced Rashes
- Eczema Flareups – Heat
- Higher Heart Attack Risk
- Syncope (fainting)
- Cramps or Swollen Legs (reduced mobility)
- Increased Risk of Kidney Disease
- Extended Muscle Recovery Times
- Blisters from Burns/Heat Exposure
- Brittle Hair/Hair Loss from UV Light Exposure
- Increased Ingrown Nails or Bunions/Hammertoes
- Amplified PTSD Reactions – Heat-Induced Anxiety
- Sleep Disturbance – Persisting Body Temperature
- Development of Secondary Hyperhidrosis

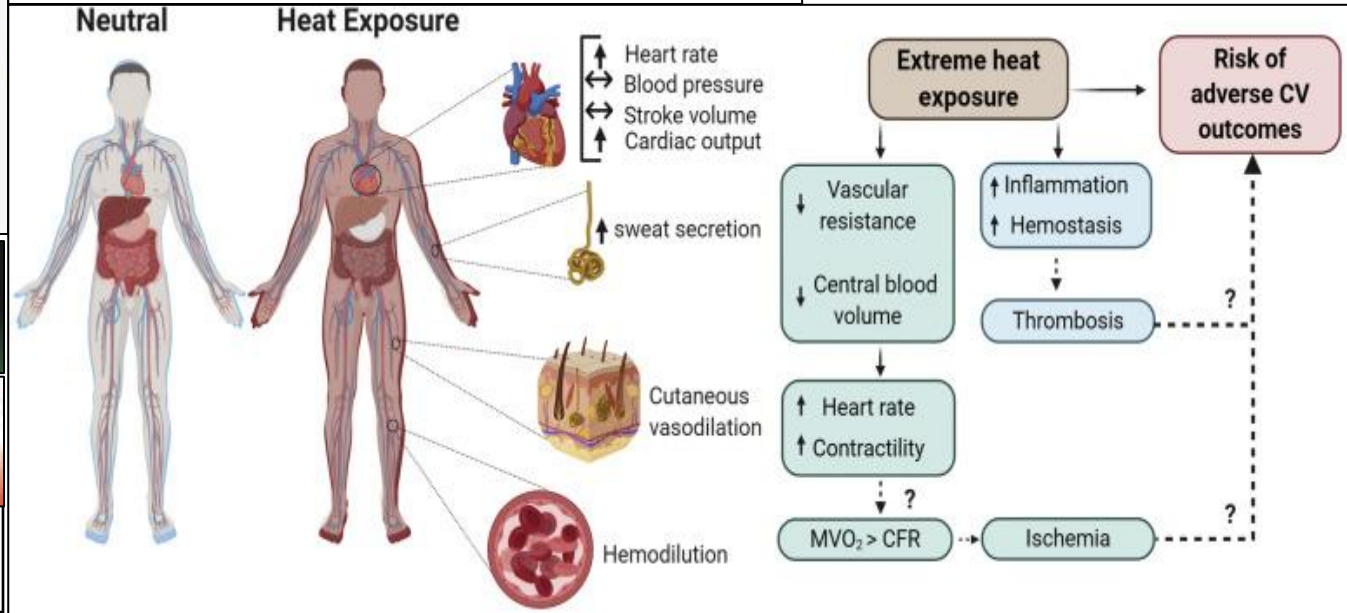












BLUF: Extreme Weather Trends for Stormwater

Extreme rain can cause flooding in low-lying areas that have poor drainage and insufficient stormwater infrastructure systems.

This can cause flooding throughout the city, even for inland neighborhoods. Rain-driven flooding can occur suddenly and intensely, but flood conditions may subside more quickly compared to coastal surge flooding.

Extreme rainfall events will increase in number and severity in the future because of the change in baseline temperatures.

By the end of the century, cities could experience as much as 30% more annual rainfall than today, and 1.5 times as many days with over an inch of rain.

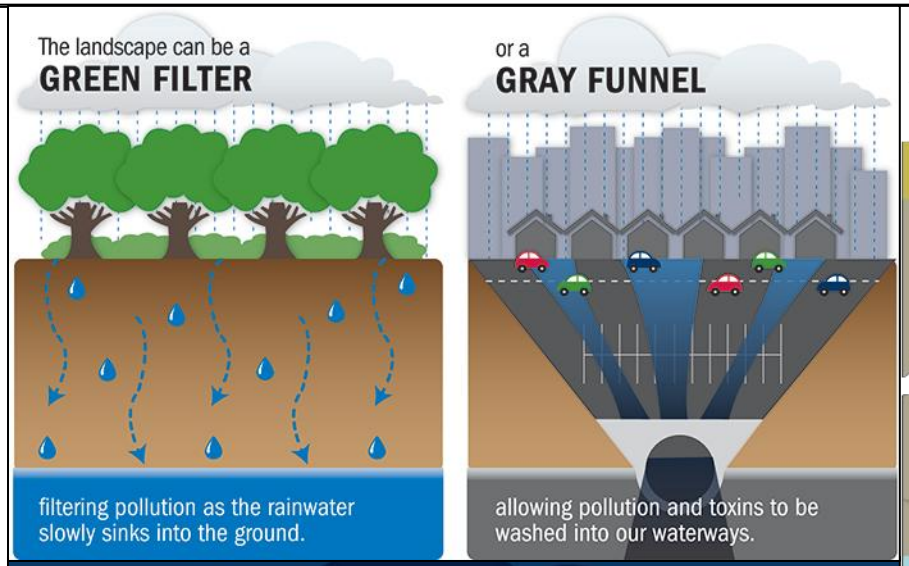
As sea level and groundwater tables rise, stormwater will drain more slowly and contribute to flooding.

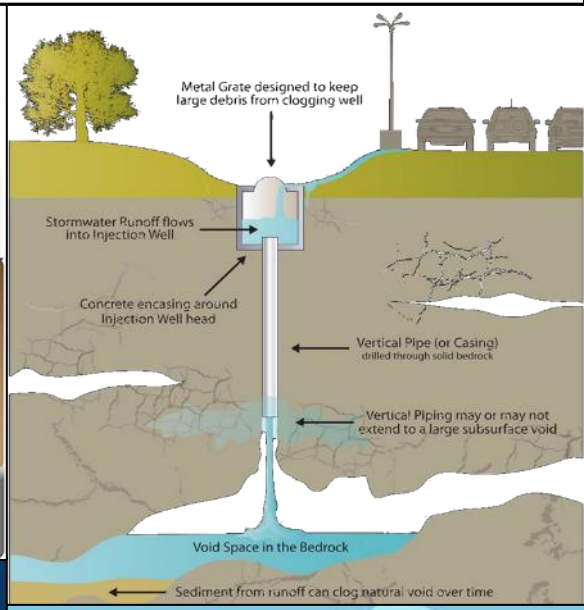
- Record rainfall events in 2019 resulted in more than 100 Minnesota communities releasing partially treated wastewater into area rivers and streams.
- Untreated sewage carries pathogens and other contaminants that pose human health and ecological risks.

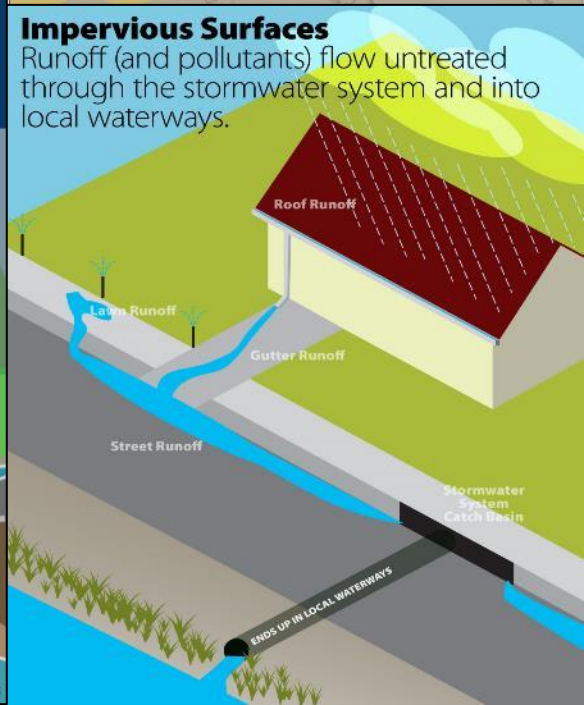
Extreme temperature swings can degrade the quality of materials in addition to the aging process already underway.

- Canals, reservoirs, earthen dams, roadways, sidewalks, and drainage ditches require water to hold the soils together.

Sinkholes are just one of many forms of ground collapse, or subsidence. Land subsidence is a gradual settling or sudden sinking of the Earth's surface owing to subsurface movement.







Changing Spring Conditions

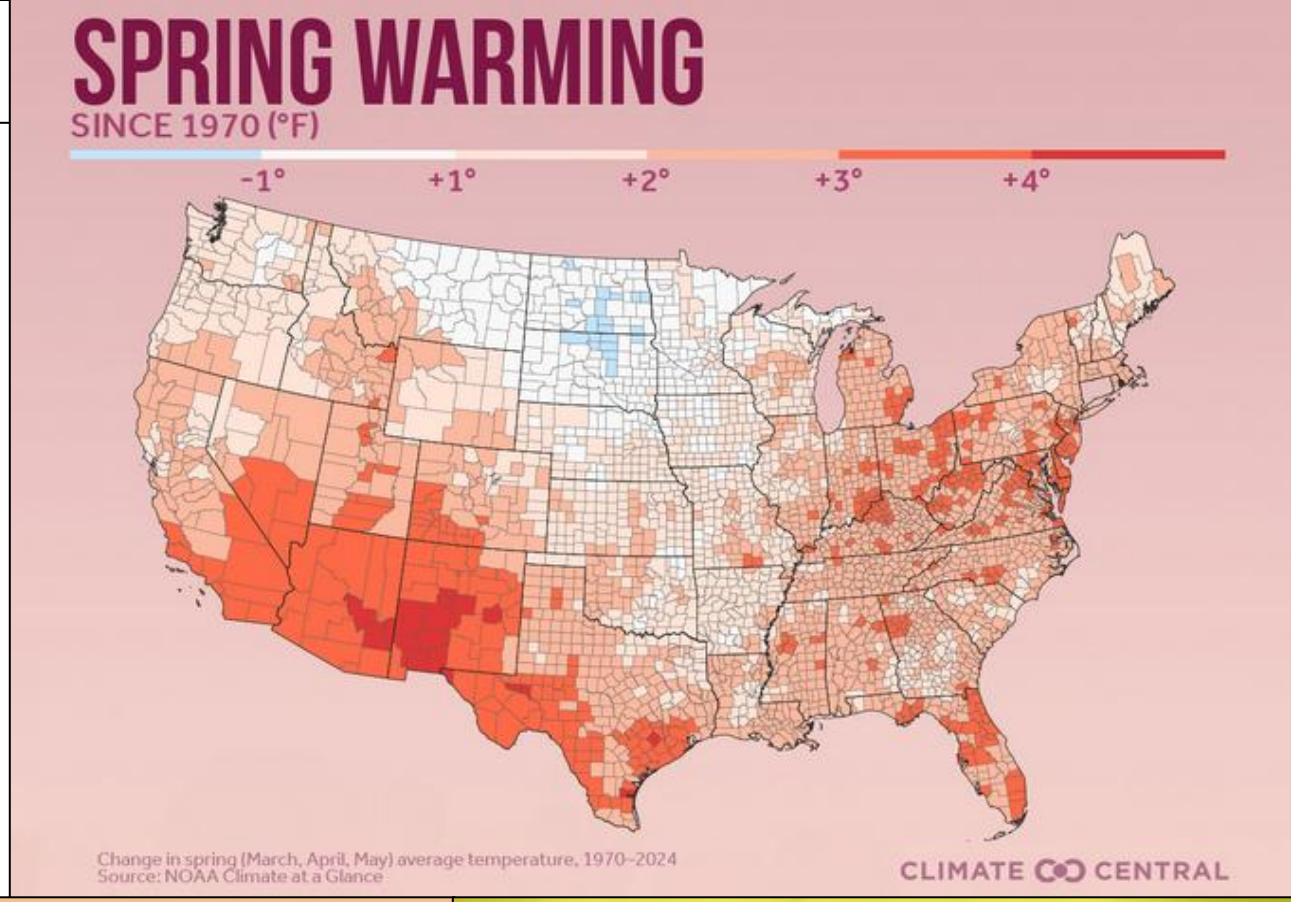
The spring season has warmed in 234 (97%) of the 241 U.S. cities analyzed — by 2.4°F on average.

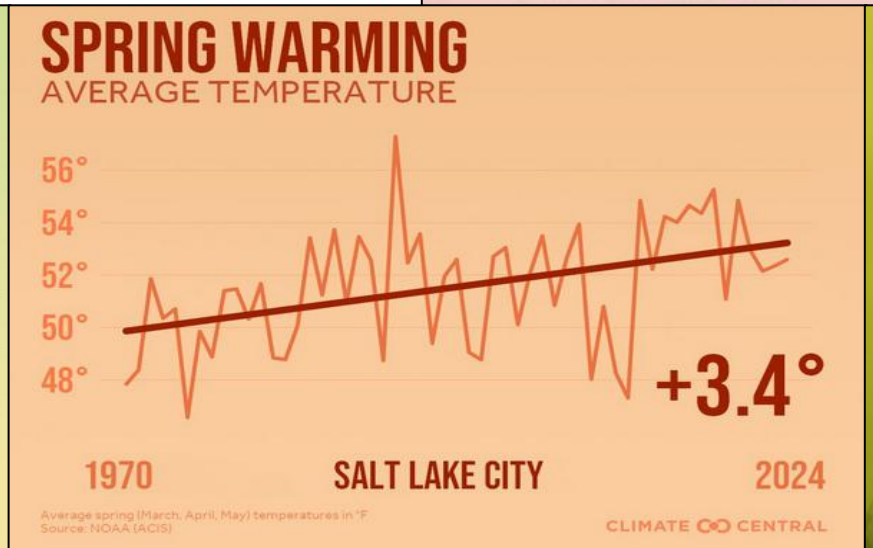
- Unusually warm spring days now happen more often. Four out of every five cities now experience at least one more week of warmer-than-normal spring days than in the 1970s.
- Spring has warmed the most across the southern tier of the country, particularly in the Southwest.
- Spring warming can prolong seasonal allergies, worsen wildfire risk, and limit snow-fed water supplies.

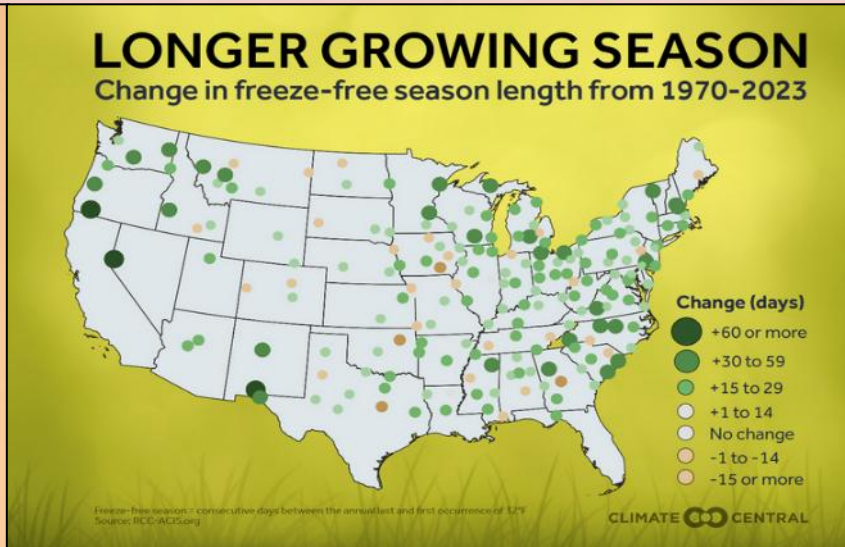
Spring warmed the most, on average, in locations across the southern tier of the country: Southwest (3.4°F), South (2.7°F), Southeast (2.5°F), and Ohio Valley (2.5°F).

- Most locations (80%, or 194) now experience at least seven additional warmer-than-normal spring days than they did in the early 1970s.

Warmer, shorter winters mean an [earlier spring thaw and later fall freeze](#).

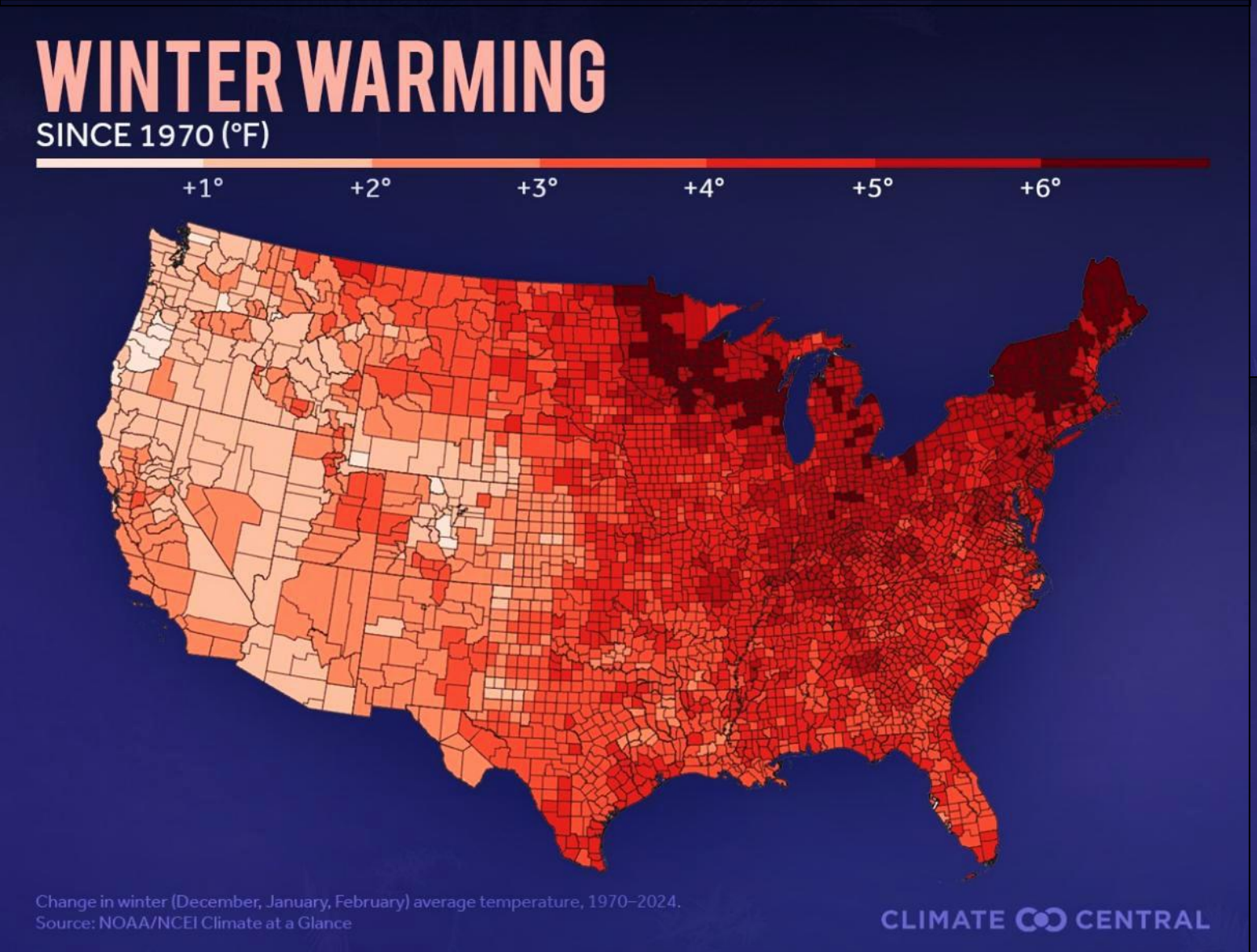


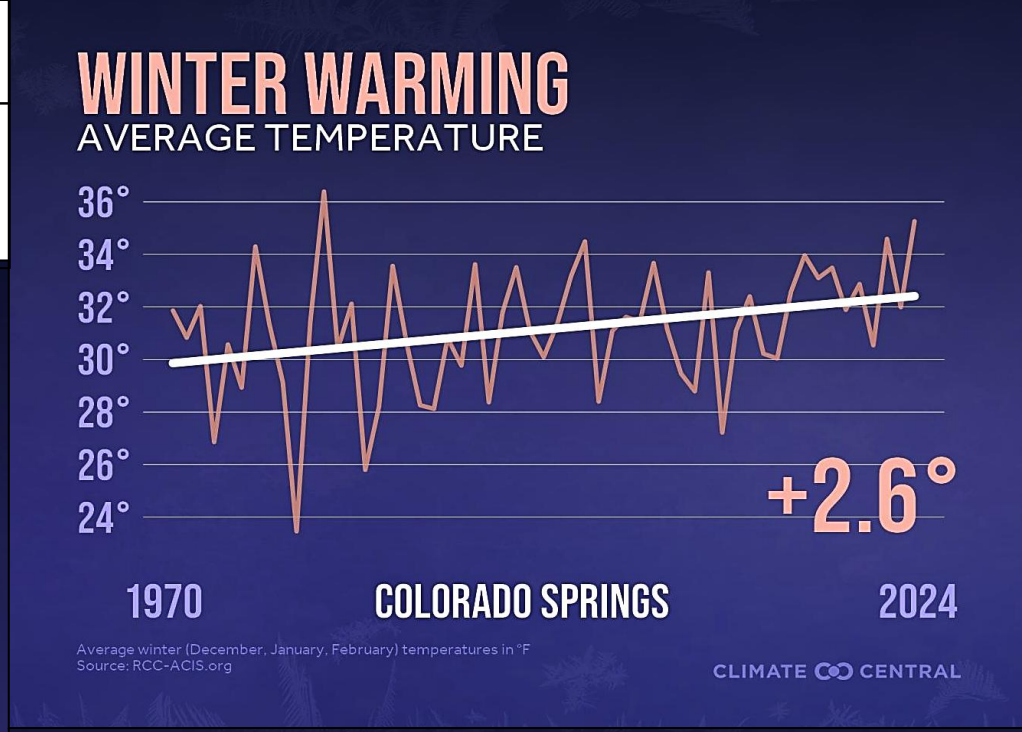


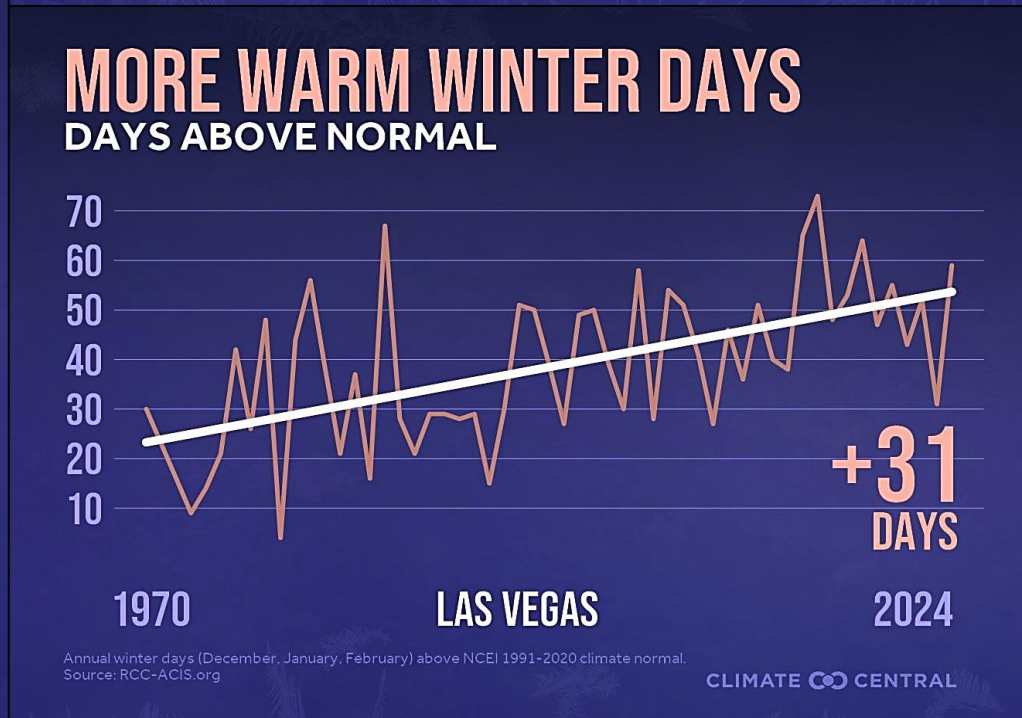


Climate Central's Warming Winter Graphics

Winters have warmed by 4°F on average across 235 U.S. cities since 1970. Warmer, shorter winters have lingering effects on health, water supplies, and agriculture throughout the year.







Groundwater Access and Subsidence Rates

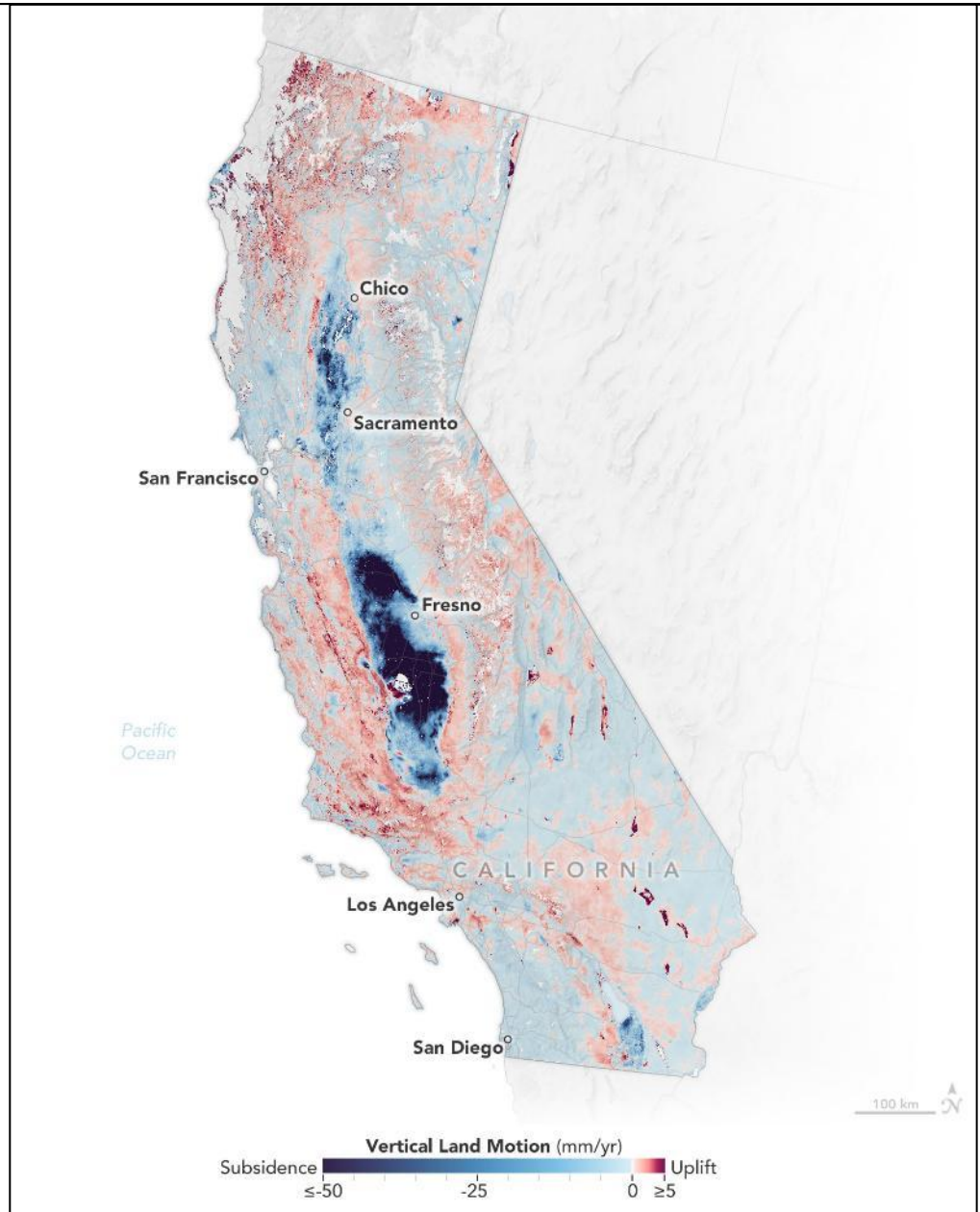
According to a study in 2020, enough water was pumped out that the central valley region is sinking at rates of up to 25cm (9.84 inches) per year.

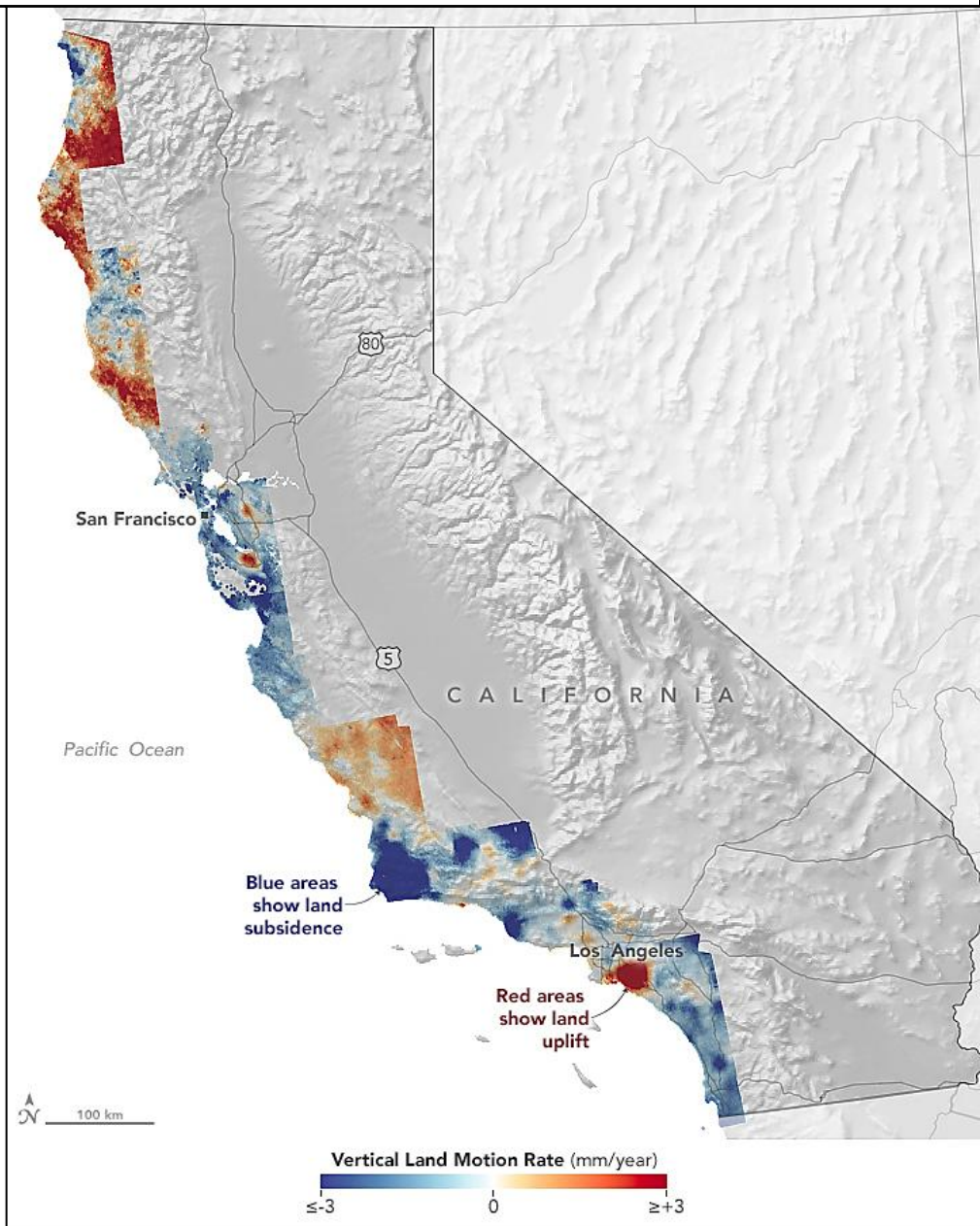
Between 2012-2016, while California experienced a particularly bad drought, aquifer depletion resulted in land subsidence of up to 60 cm per year (23.6 inches) in parts of the central valley.

By 2050, sea levels in California are expected to increase between 6 and 14.5 inches (15 and 37 centimeters) higher than year 2000 levels.

A 2024 study from Stanford researchers shows central California's vast San Joaquin Valley has sunk at a record pace (+1 foot annually) from 2006 to 2022.

Similar studies have been done in China, Turkey, Iran, and Taiwan to name a few.





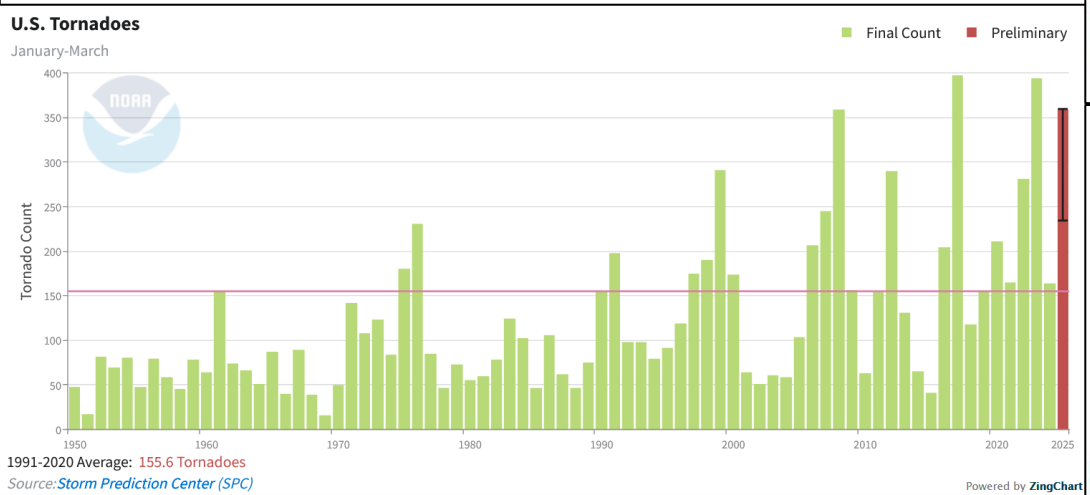
NCEI - NOAA

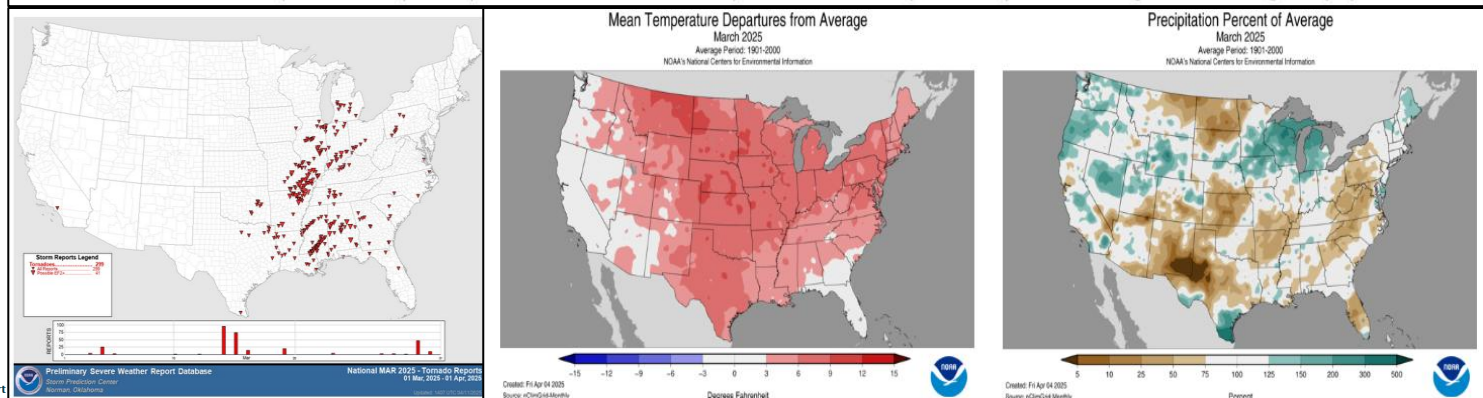
The average temperature over the contiguous U.S. (CONUS) in March was 46.9°F, 5.4°F above average, ranking as the sixth-warmest March in the 131-year record.

- Kansas recorded its fourth-warmest March on record (tied with 1946), while Nebraska and Texas each saw their fifth warmest.
- Texas recorded its second-warmest average March maximum temperature at 77.8°F — the warmest March (maximum temperature) since 1907.
- Southcentral Alaska and the North Slope experienced much-above-average temperatures during March, along with parts of the Southeast, where Sitka tied for its third-warmest March on record.
- On March 2, Anchorage set a record-high temperature of 46°F, breaking the previous record set in 1958.

West Virginia had its fifth-driest March on record, while Michigan and Wisconsin recorded their second- and fifth-wettest March, respectively.

Wildfires burned across southern Appalachia towards the end of March, driven by strong winds and dry conditions, and exacerbated by the additional fuel available from downed trees following Hurricane Helene.





March 2025 was the third-warmest March on record for the globe in NOAA's 176-year record.

The March global surface temperature was 1.31°C (2.36°F) above the 20th-century average of 12.7°C (54.9°F).

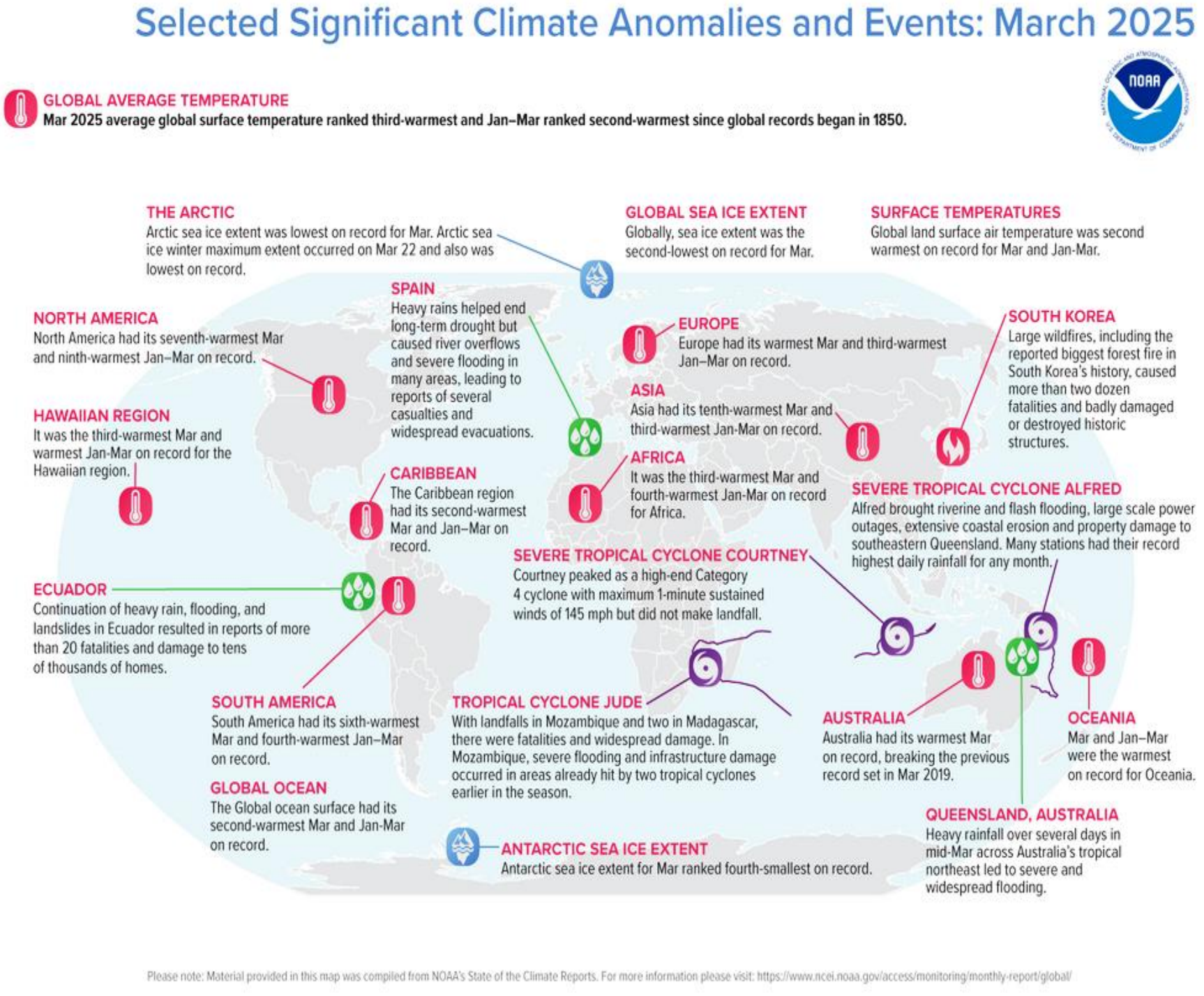
- Global land-only March temperatures ranked second warmest on record at 2.24°C (4.03°F) above average.
- Ocean-only temperatures also ranked second warmest on record for March at 0.90°C (1.62°F) above average.

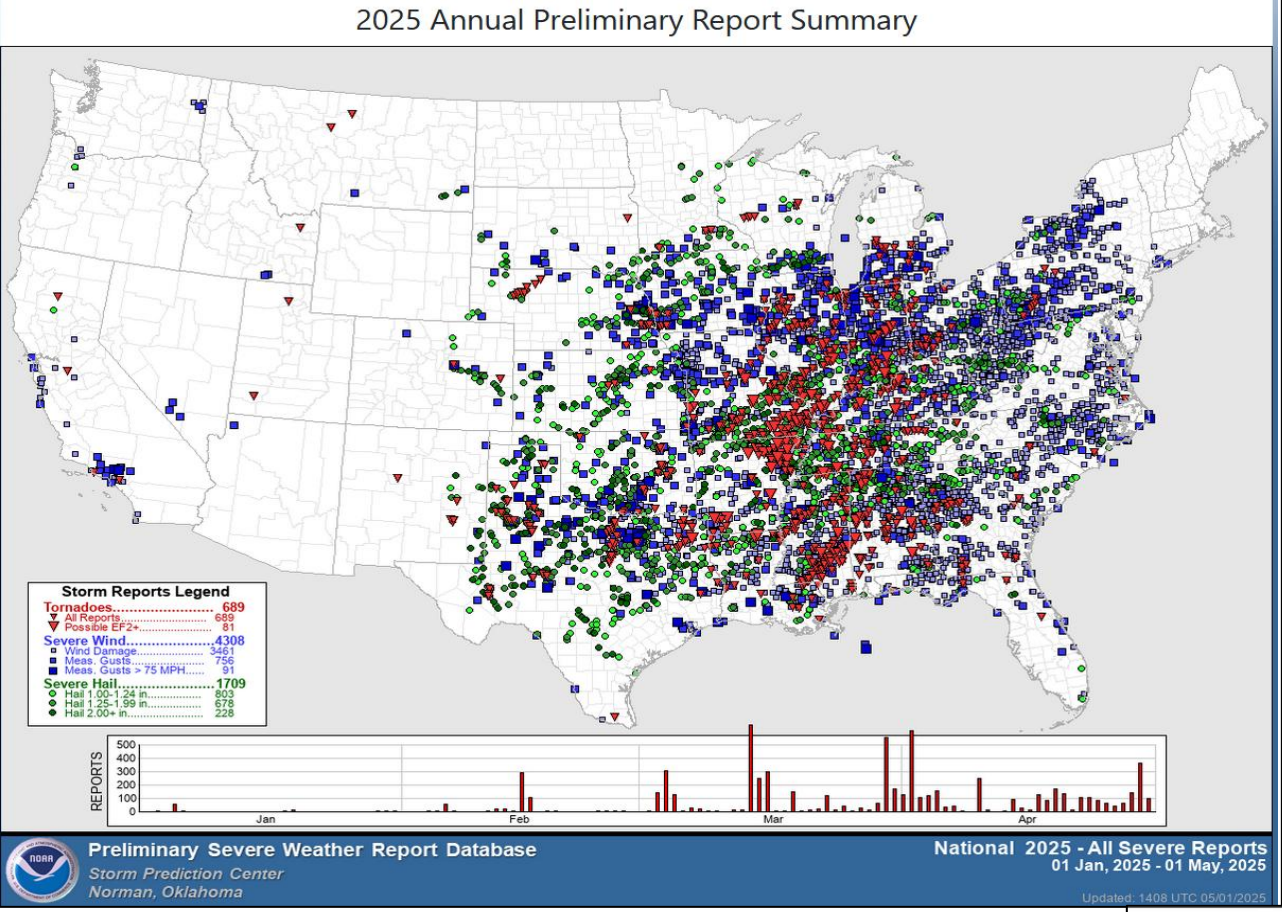
Approximately 3.9% of the global land surface was affected by record-warm conditions in March, areas that included much of the southern half of Australia, parts of northern Africa, areas of southern Brazil, and parts of southeastern Europe.

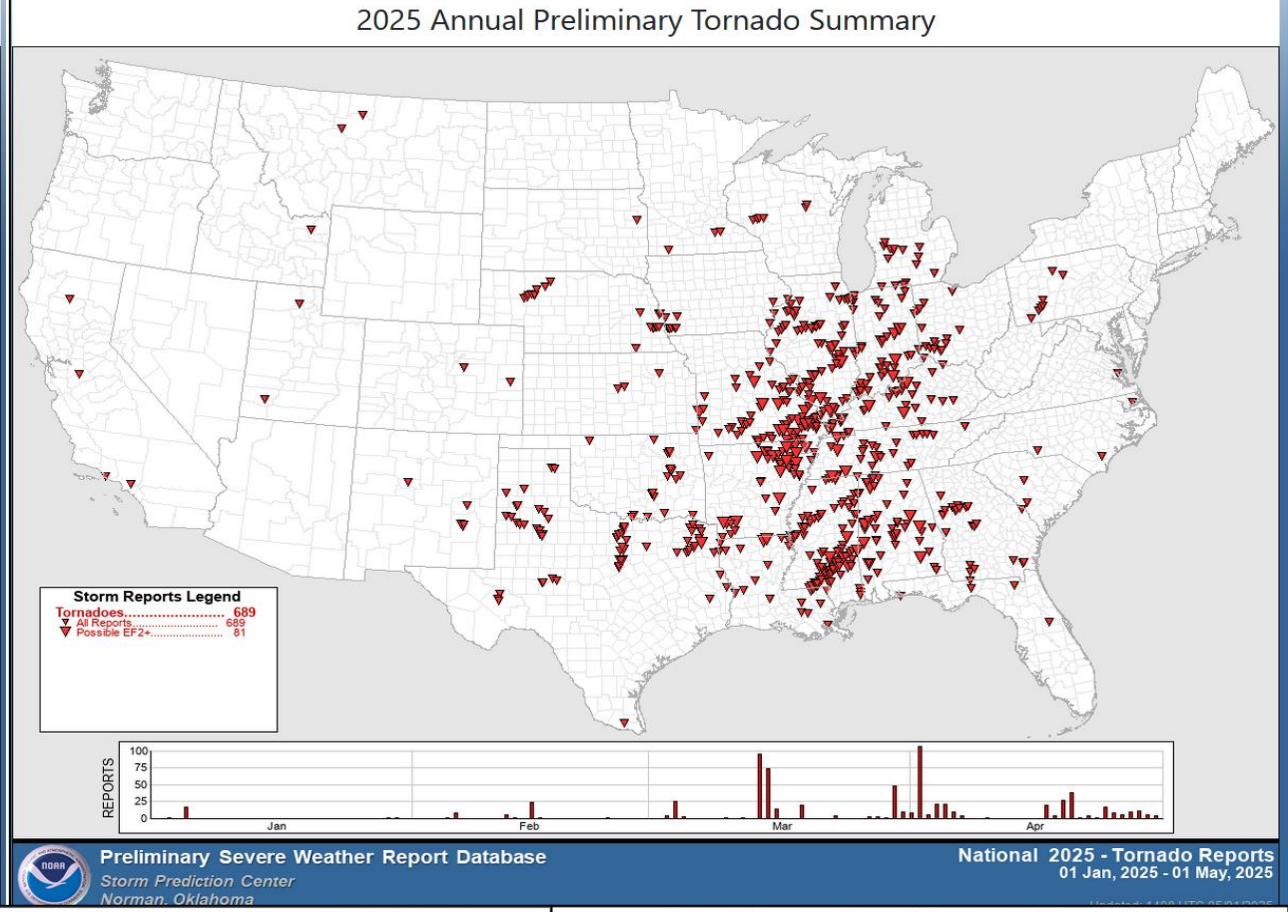
Sea surface temperatures were record warm across a large area of the western tropical Pacific, parts of mid-latitude central Pacific, as well as small areas in the southeast Pacific, the southwest Atlantic, and small parts of the Southern Ocean.

- Europe had its warmest March on record, South America its sixth-warmest, and Africa its third-warmest March.

8 named storms occurred in March, which was above the 1991-2020 average of 6. A record 5 occurred in the SW Indian Ocean (tying 1995).



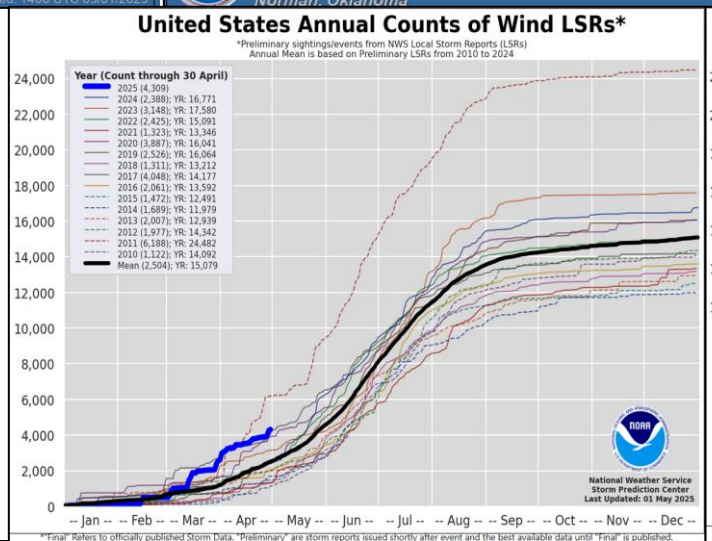


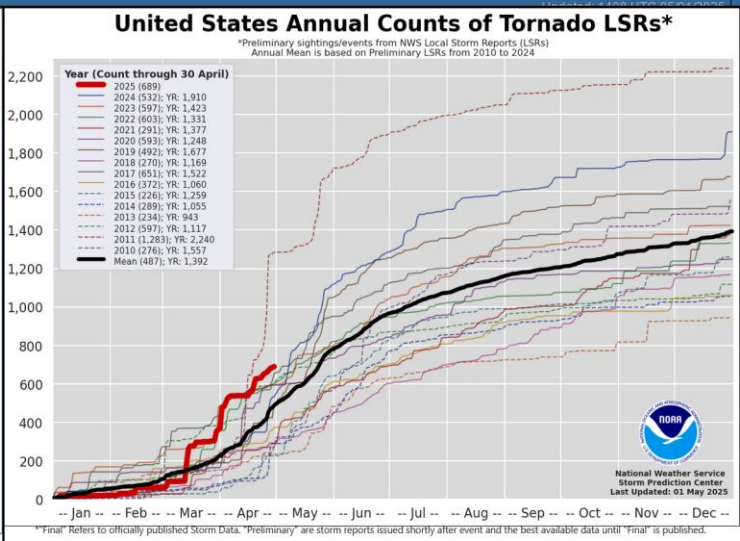


Awareness: So far, the US is well above the annual average for tornadic activity with the only year in the past 15 with more tornadic activity to date being 2011.

- At 689 tornadoes so far through initial review, this trend highlights a significant risk for communities east of the Front Range but also includes Utah, Idaho, Montana, and California.
- Damaging wind events are also nearly record-setting whereas hail is ranging in the top five years for frequency of events.

Hail reaching DVD size was reported earlier this week in Texas while a major hail event was reported in Russia the first week of April, damaging wheat crops, and in China last week



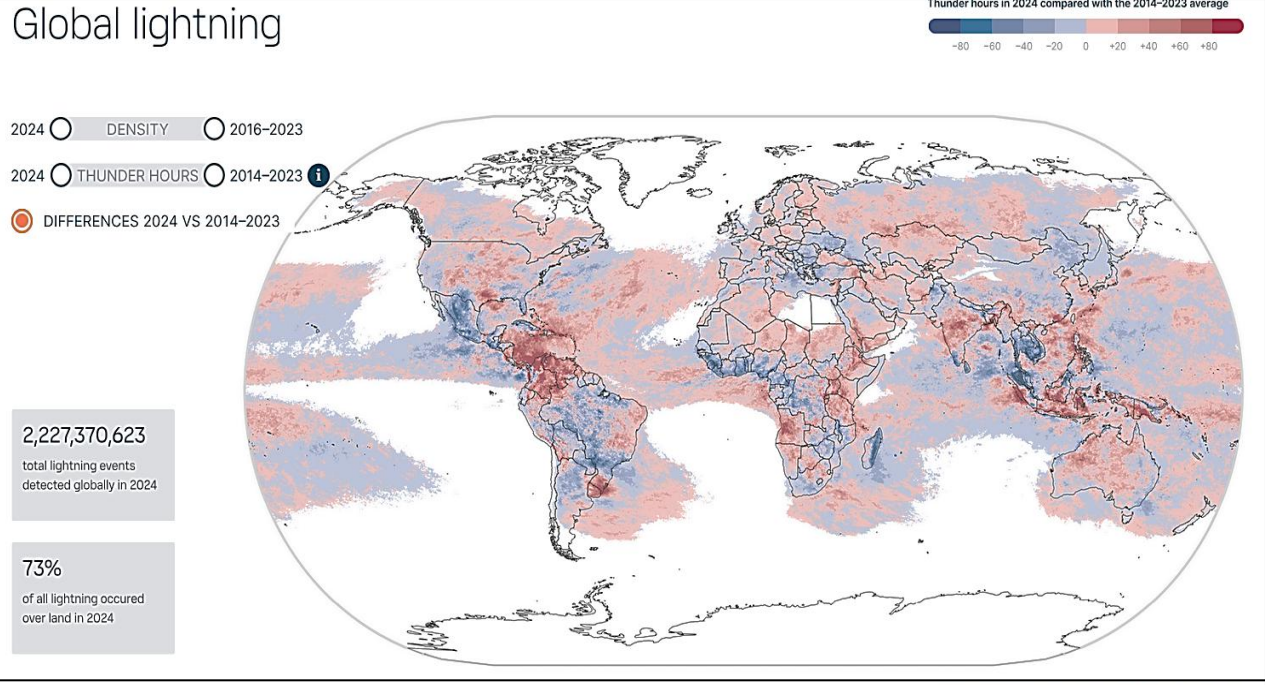


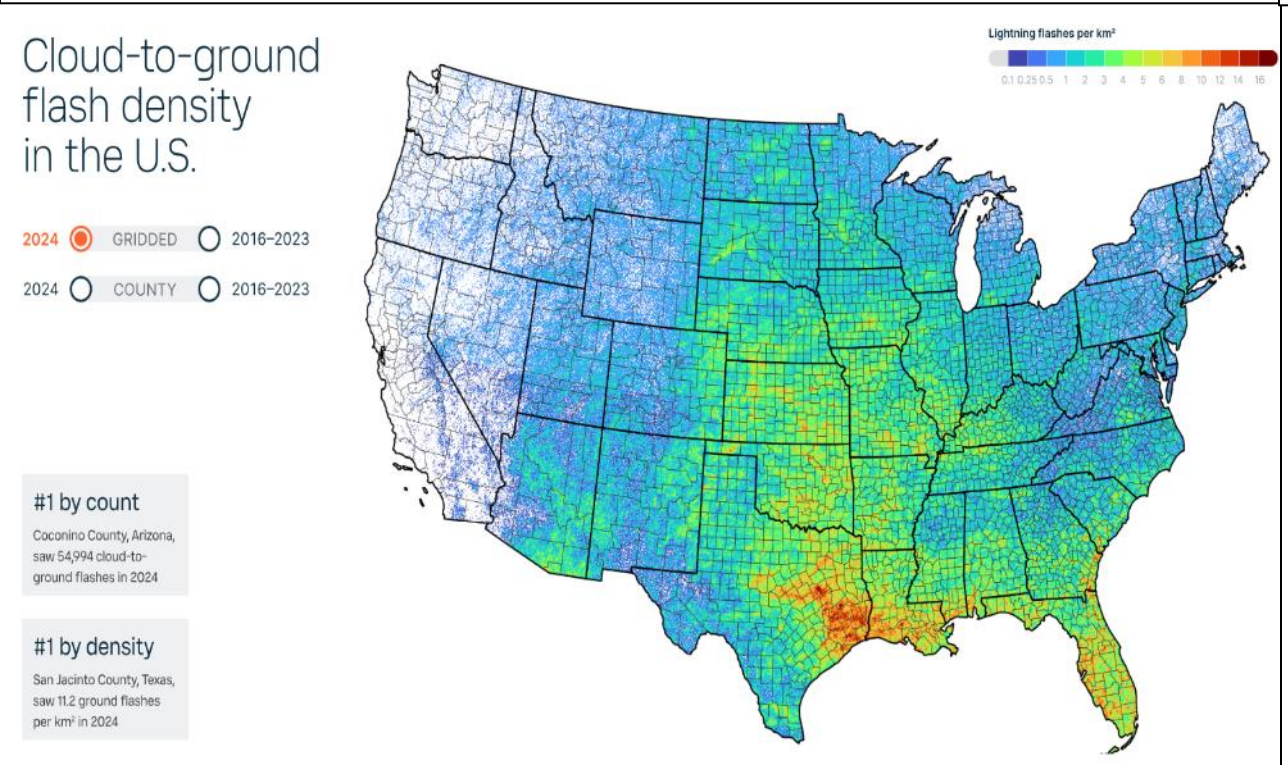
Lightning Distribution Updates

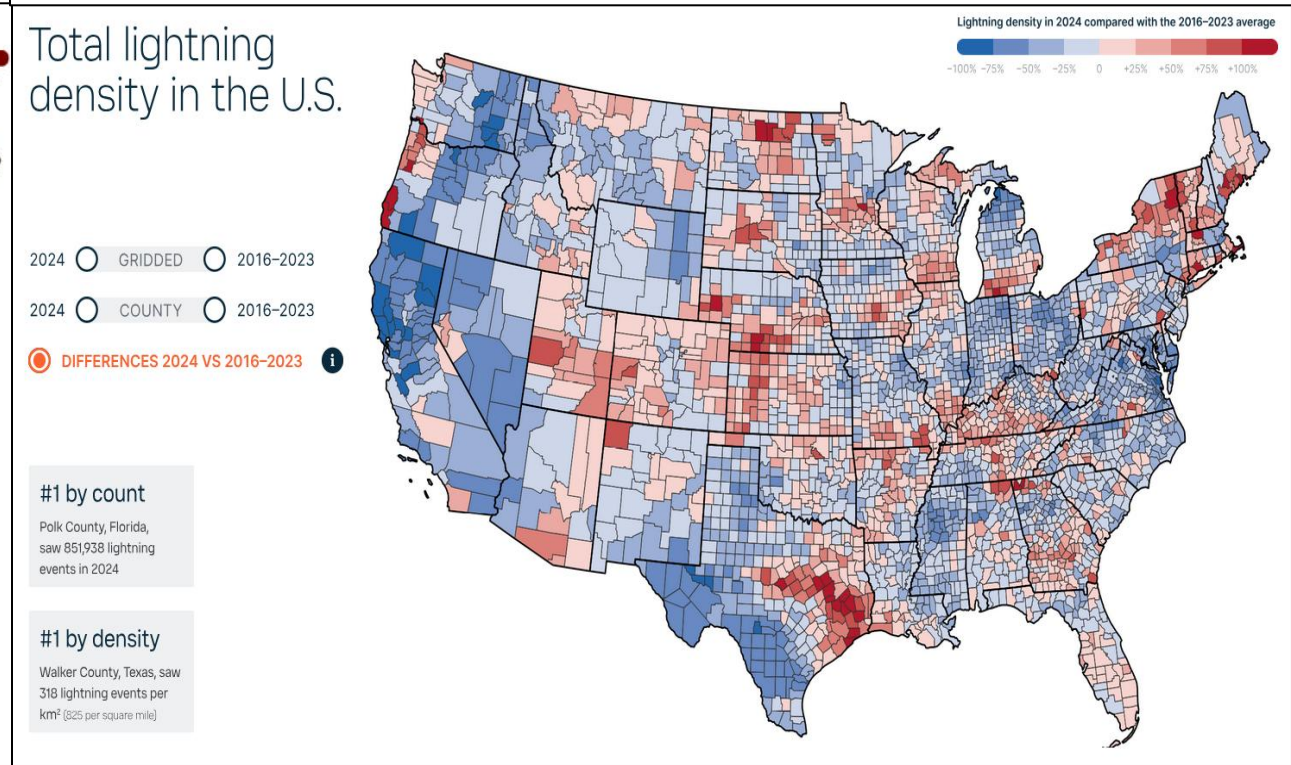
Hailstorms are by far the costliest hazard associated with severe thunderstorms. Hail will become less common but larger and more damaging because of human-caused climate change.

- Column-maximum severe hail days are projected to increase robustly in most locations outside of the southern Plains, a distribution that closely mimics projections of thunderstorm days.
- The global mean lightning rate increased by 7.1% from the pre-industrial period to the present day, which was attributed to increased graupel occurrence.

From 1980–2024, 48 severe storm events producing 1-billion dollars or more in damages with the most severe storms on record in 2024.







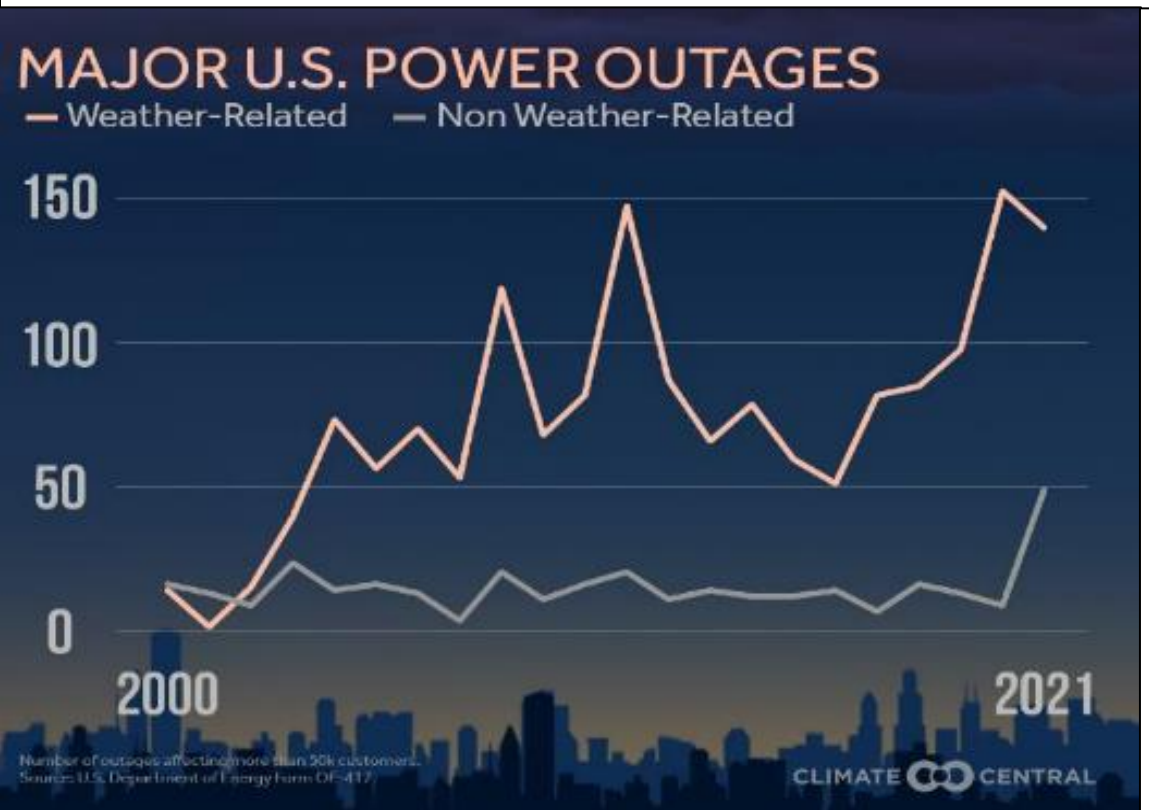
Energy Sector Losses – Ex Wx

Between 2000 and 2023, 80% of reported major outages in the U.S. were due to weather-related events. Severe hailstorms can damage renewables like wind turbines and solar power.

- The average annual number of weather-related power outages increased by roughly 78% during 2011-2021, compared to 2000-2010.
- The U.S. experienced about two times more weather-related outages during the 10 years 2014-2023 versus the first 10 years analyzed of the 2000's (2000-2009).

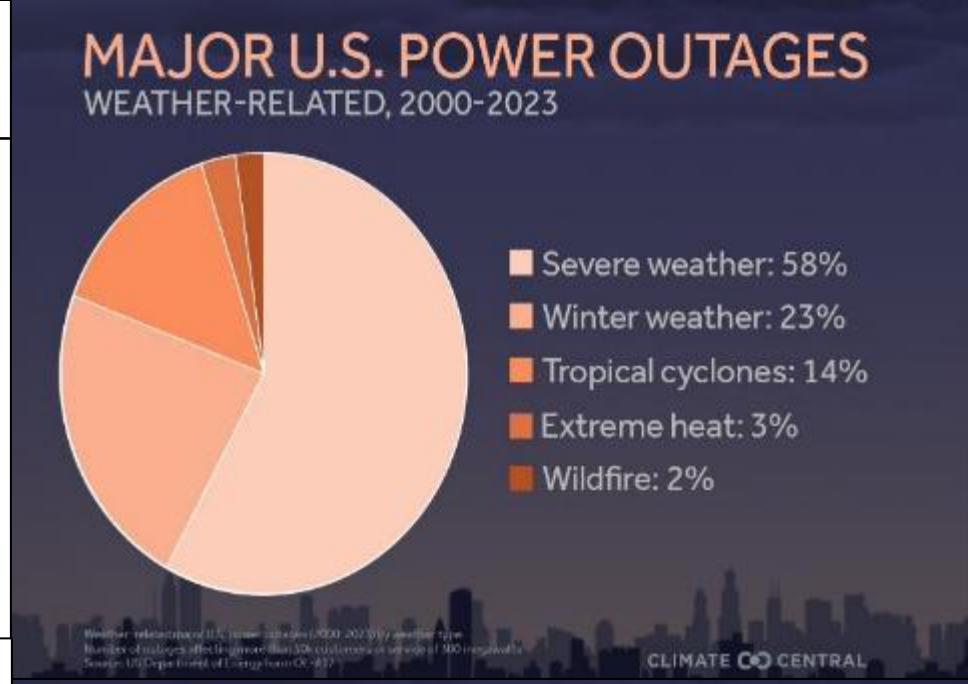
Solar panels and turbines exposed to icing, freezes, or hail may see significant output loss.

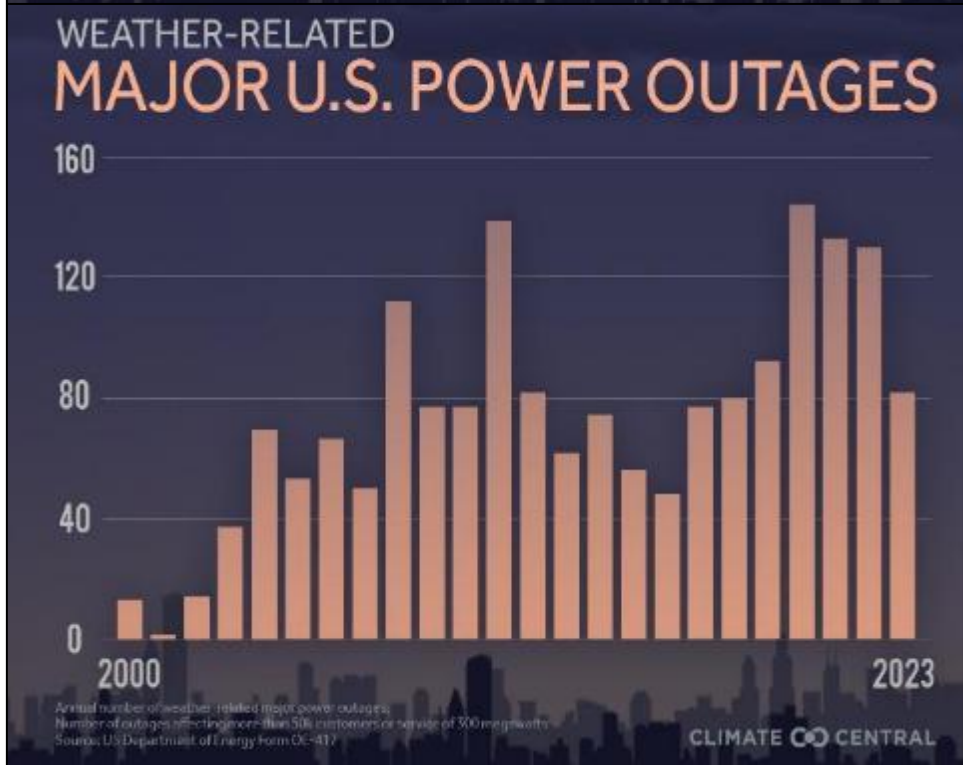
Wind turbines also face significant costs from lightning at +$100 million a year and accounts for about 60% of the blade losses. A turbine in Oklahoma has been struck 111 times in 4 years while a quarter of all sites report at least one strike per turbine per year.



The Southeast (360), South (352), Northeast (350), and Ohio Valley (301) experienced the most weather-related outages from 2000 to 2023.

Most outages were caused by severe weather (58%), winter weather (23%), and tropical cyclones (14%). These events are all likely to increase in damages caused and duration of outages to rise.



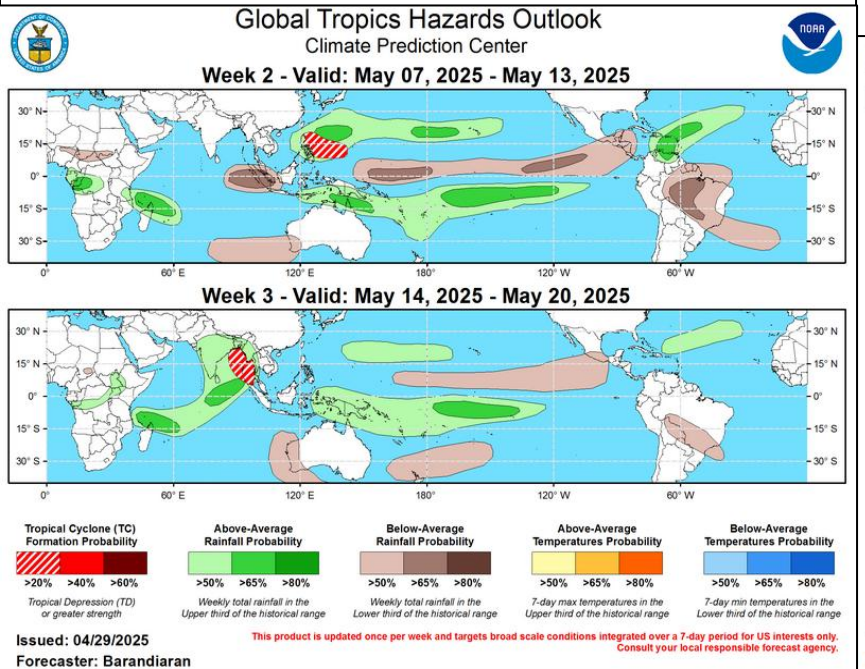


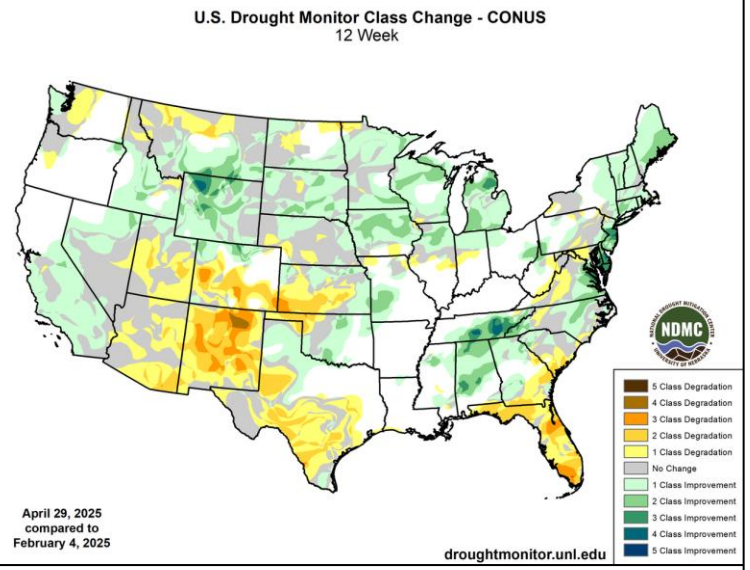
Drought and Rain

Comparing the current conditions and the outlooks against the evaporative demand maps from EDDI, there is a clear vegetative impact for wildfire risks and water quality/streamflow developing in New Mexico and Southwest Texas with additional threats from Florida through Virginia and across the Great Lakes region.

Watching closing the wildfire outlooks, the NIFC has the focus areas for May aligning well with evaporative risk.

Last reported May 2nd, this year remains above the 10-year average and is now the top year for most fire events and the top 6 for acres burned.



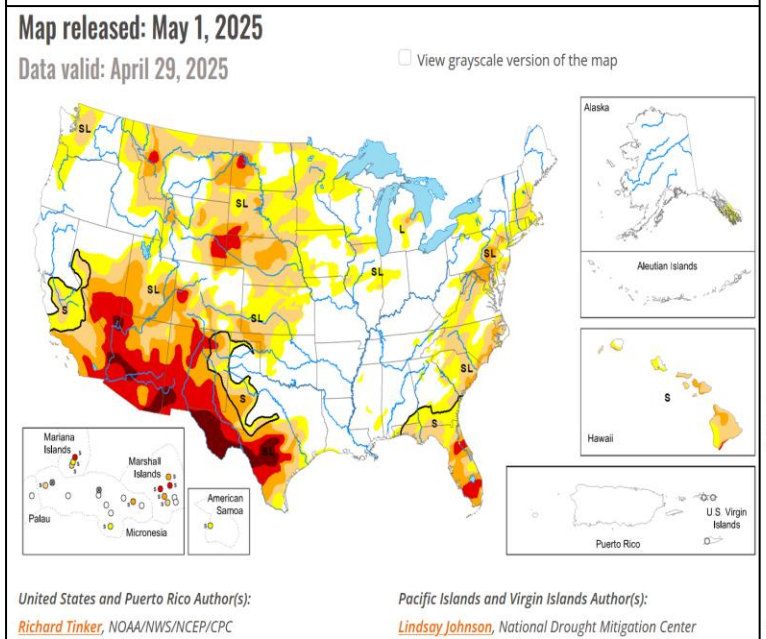


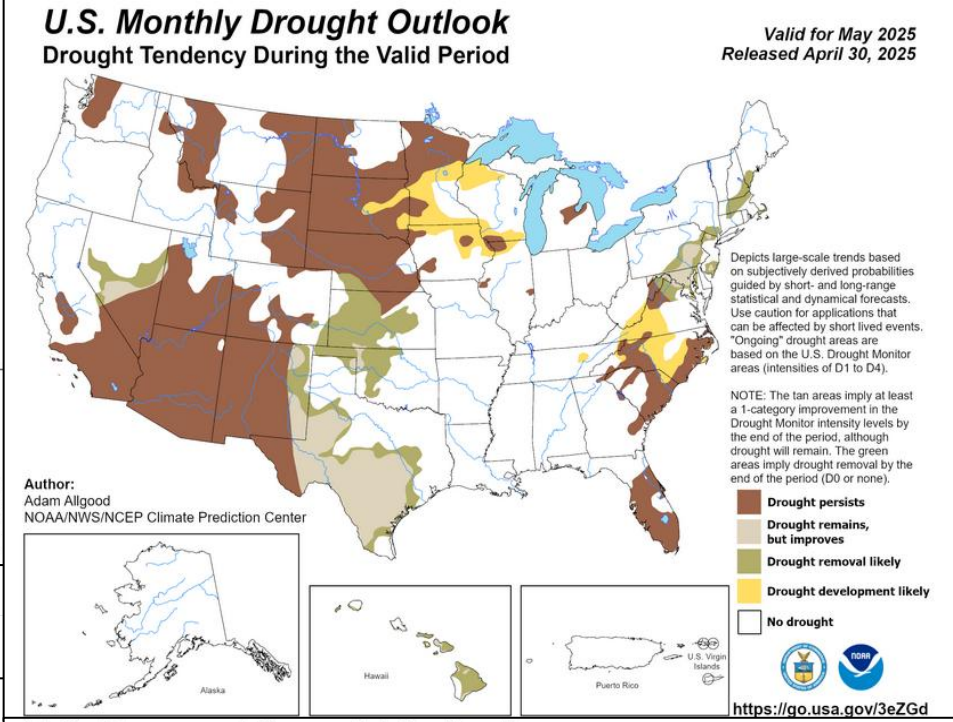
Year-to-date statistics

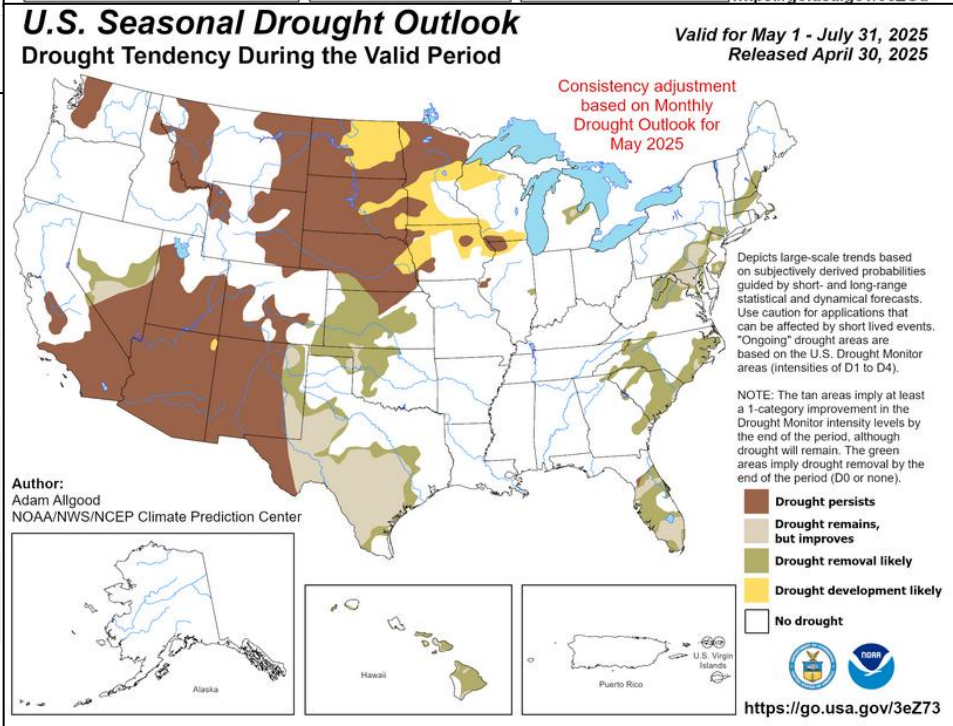
2025 (1/1/25-4/25/25)	Fires: 21,194	Acres: 973,830

10-year average Year-to-Date

2015-2024	Fires: 14,413	Acres: 898,011







Spring 25: NOAA vs Farmers Almanac

Forecasters predict above-average temperatures for the East and Gulf Coast regions, while drought conditions continue in the Southwest.

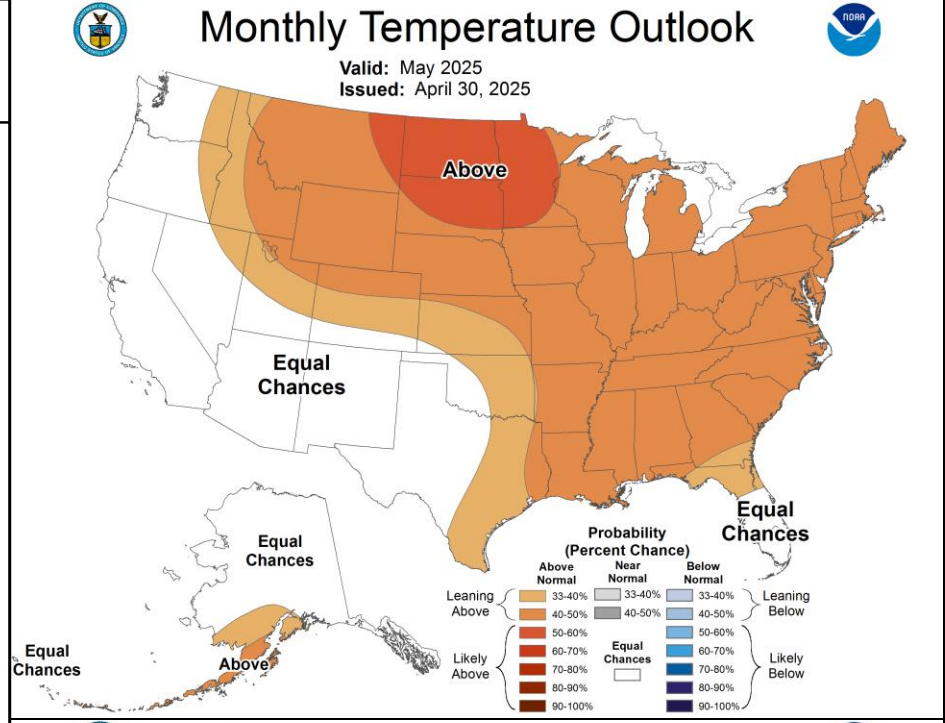
- NOAA's National Water Center predict that widespread major flooding is not expected this spring across the CONUS, and significantly reduced flood risk exists over much of the US.
- As the graphics show, the desert southwest, where the snowpack losses have contributed significantly to worsening drought trends, will continue to experience higher temperatures and below normal precipitation while most of the eastern US reported a higher baseline.
- The amount of drought growth across the US has continues to reflect in areas which reported notable increases in evaporative demand over the past 6 months to 1-year.
- Not depicted are the islands like Hawaii and Puerto Rico where drought and wildfire conditions continue to expand and threaten water quality.

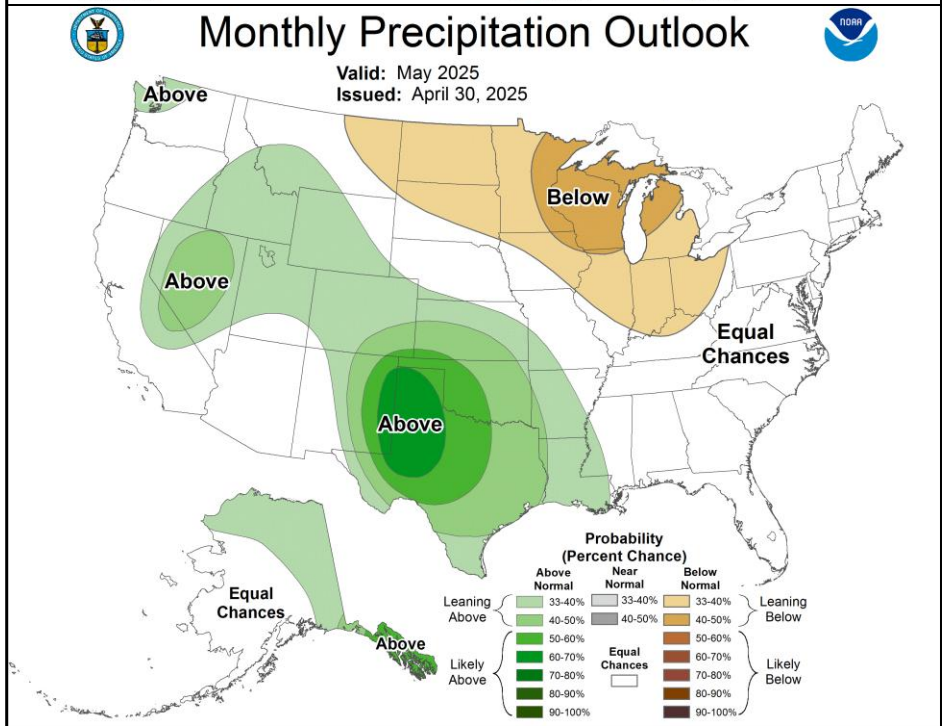
The Farmers Almanac: The U.S. spring outlook predicts warmer-than-normal temperatures for most of the country, with a few exceptions: southern and central California, Desert Southwest, southern Florida, and western Ohio Valley, where it will be near to below normal.

- While April will likely end up warmer than average across the Intermountain West, chilly spells could lead to a late frost in some areas in May.

Much of the country will experience more rainfall than usual. However, dry conditions are expected in the following regions: upper New England, southern Florida, Texas–Oklahoma and the Heartland, the western Ohio Valley and Lower Great Lakes, the northern High Plains and Upper Midwest, and the Pacific Northwest and northern California.

- A relatively active severe weather season is expected, with the potential for damaging winds, hail, and tornadoes—especially in the Deep South, which is forecast to see a wetter-than-normal spring and more frequent thunderstorms.
- The best chances for late-season snowflakes (outside of the mountains of the West) will be across the Lower Great Lakes, an area that may experience chillier weather during April.





Summer 25: NOAA vs Farmers Almanac

Summer officially starts with the summer solstice on **Friday, June 20, 2025.**

In 2025, states in the U.S. section of the lower Colorado River basin will see a reduction of over 1 million acre-feet from prior years.

- Mexico's allocation will decline by approximately 280,500 acre-feet under the 1944 treaty.

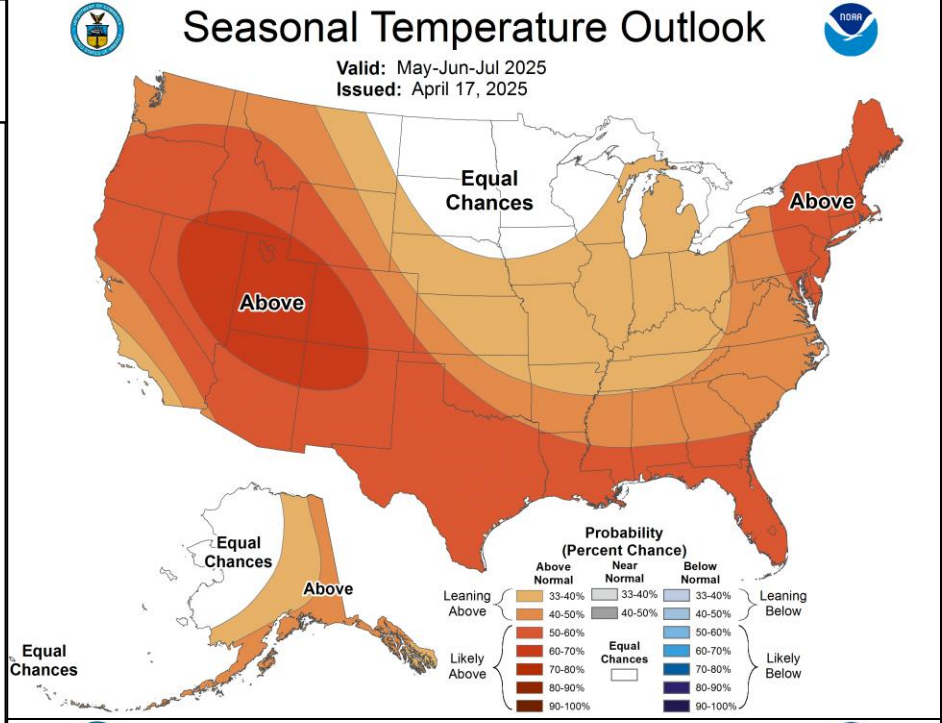
The beginning of spring saw: about 300 Tornadoes in March (4 major event days), 52 in February (most during mid-month), 21 in January (first few days of the month).

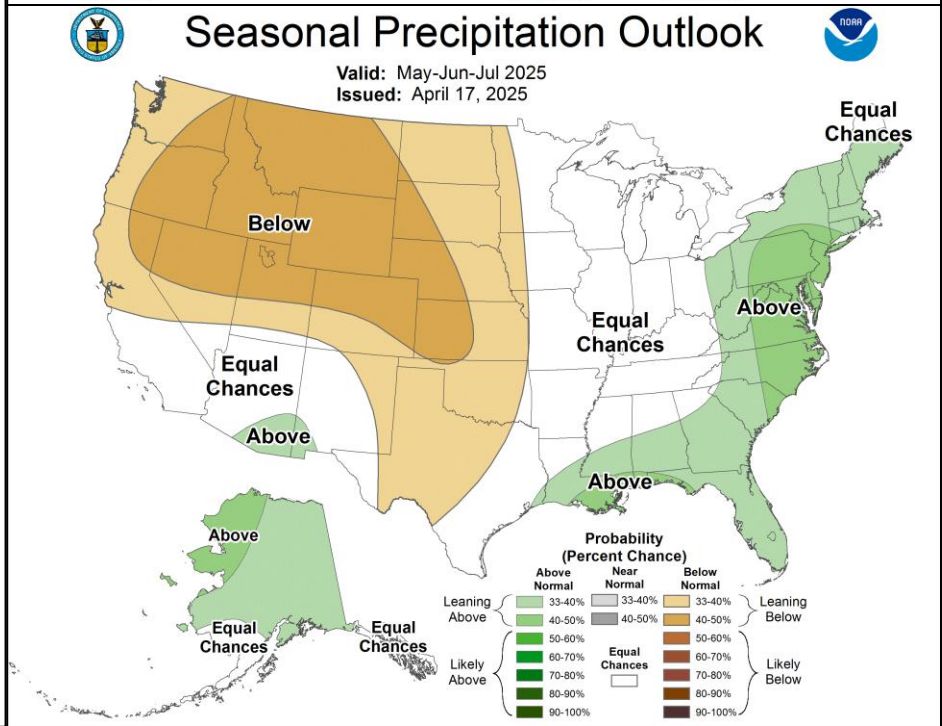
- The average annual tornado count is 1,200. January's average is 39, February ranges 44-75, and March is 80. The most active March on record was in 2022 at 234 tornadoes.
    - March 2025 likely set the new record by nearly 65 events.

The Farmer's Almanac states: predictions indicate a gradual buildup to record-breaking heat.

- The Farmers' Almanac is using words like: broiling, sultry, sizzling, and 'brutally humid' to summarize summer from coast to coast. Furthermore, the outlet is predicting that, "long-time high temperature records may be broken this year."
- The Farmers' Almanac goes on to explain that while the "Far West" will experience a dry summer with below-average precipitation, the rest of the country should see "near-average" precipitation.

Given the shifts in surface water, drought, vegetative stress, intense solar radiation, and increased thunderstorm activity with damaging winds, it is likely that wildfire ignitions from lightning will go up and soil stability will be challenged nation-wide.



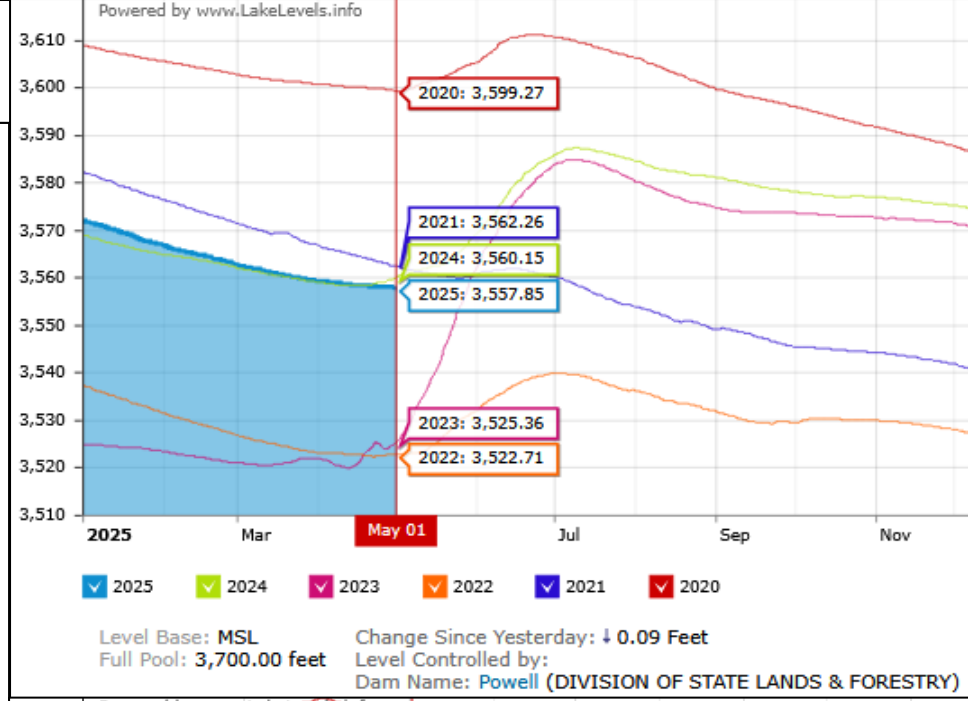


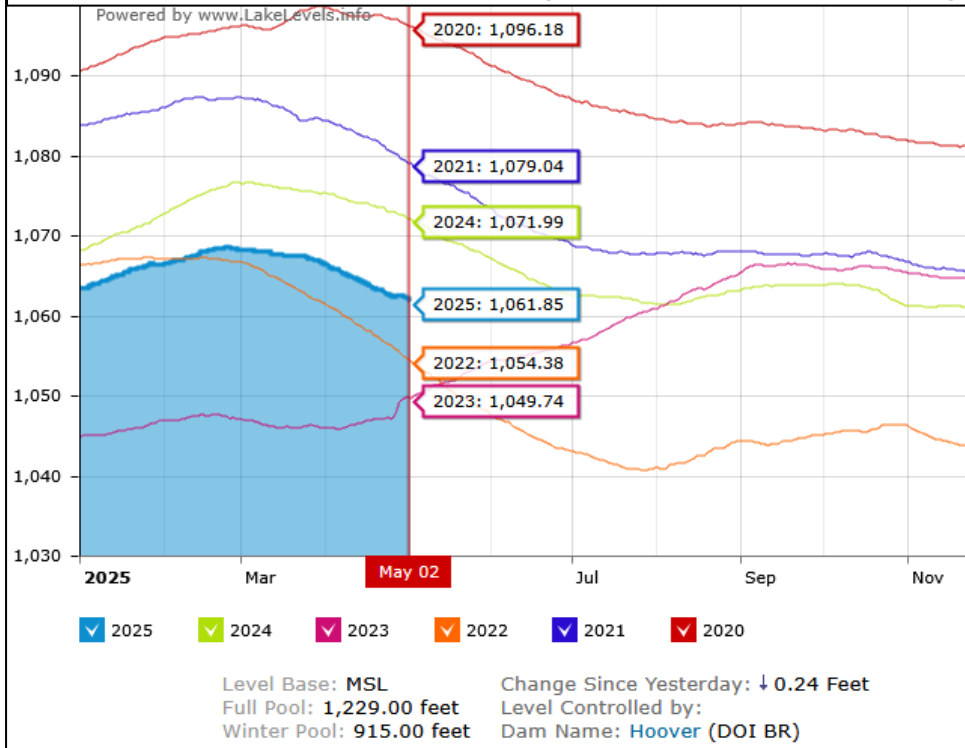
Colorado River: Restrictions and Loss

Allocations from the upper basin to the lower basin have faced significant issues in recent years as vegetation continues to decay at rapid rates due to heightened evaporation and greater water needs from industry, agriculture, and communities as heat and drought expands.

- This year's runoff from greater snowpack in the northern Rocky Mountains has placed this year closer to last year, but above the 2022-2023 droughts for the lower basin.
- Distribution of water resources in recent years faced tiered restrictions to lower basins and increased demand from upper basin states reservoirs.
    - The current administration has begun rescinding additional releases from lower basin states for areas like Tijuana in Northwestern Mexico, bordering California.
        - This area has reported record breaking wildfires during the southern California wildfires of 2024 and faces diminished water access due to cartel prevalence.
- The Rio Grande ran dry for the first time in 40 years in 2022. This February, New Mexico is reported a shockingly dry winter, with 60% of the state experiencing some level of drought.
    - At the end of February, 12 out of 27 snow monitoring stations reported no snow, breaking records across the state.
- In New Mexico, water experts said the Rio Grande is likely to dry up completely in Albuquerque as early as June.
    - A 2024 study explained how uneven warming drives a cycle that leads to measured flows in Western rivers and streams being consistently lower than predictions based solely on snowpack measurements.
        - The megadrought that has gripped the region since 1999 will intensify.

California Water Concerns: In both 2013 and 2022, the January snowpack was well above average thanks to December storm activity, only for dry conditions to take over the rest of the winter, quickly erasing early season snow totals and continuing existing drought conditions across the state. The state appears to be repeating similar issues, although more severe now.





Mississippi River – Reduced Flow

May 1st: The high elevation snowpack in the Upper Missouri Basin was below average. The snowpack in the St. Mary Basin was 77%, and the Milk River Basin was 65%.

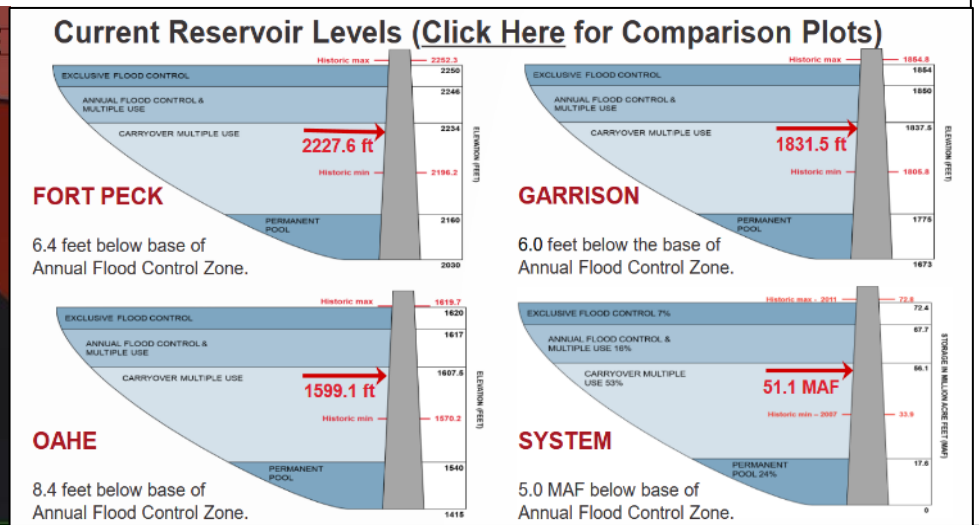
Stream flow in the Upper Missouri Basin is forecast to be below to near average during the upcoming Summer. The St. Mary River is forecast to have 57% of average May-September flows.

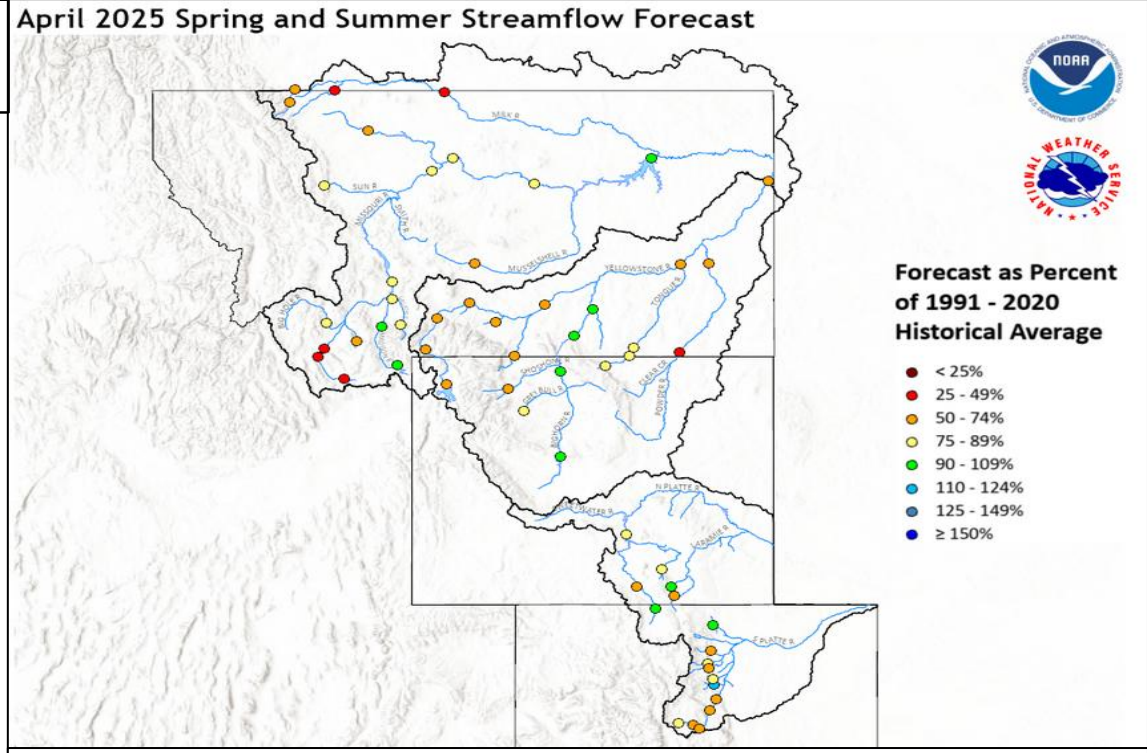
- Runoff is expected to range around 47% of average for the Missouri Basin above Fort Peck, Montana.

Of the four major irrigation reservoirs in Montana; Lima Reservoir had 123% average storage, Clark Canyon was holding 112% of average water, Gibson Reservoir had 70% of average stored water, and Fresno Reservoir had 52% of average stored water.

- The high elevation snowpack in the Yellowstone Basin was below average. The snowpack in the Upper Yellowstone Basin was 74% of average.

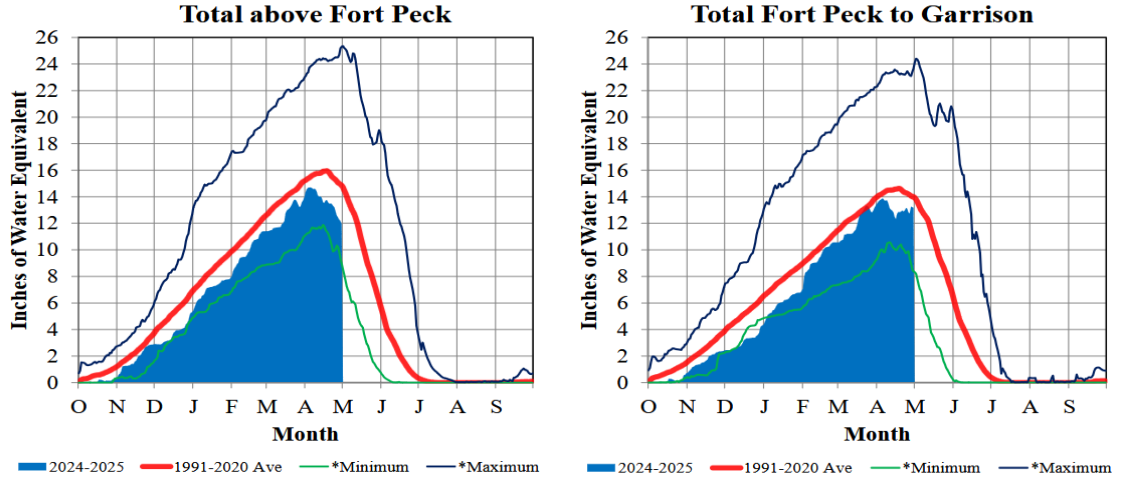
Forecast stream flow in the Yellowstone Basin is below to near average for the upcoming Spring and Summer.





Missouri River Basin – Mountain Snowpack Water Content 2024-2025 with comparison plots from recent high and low years

30-Apr-2025



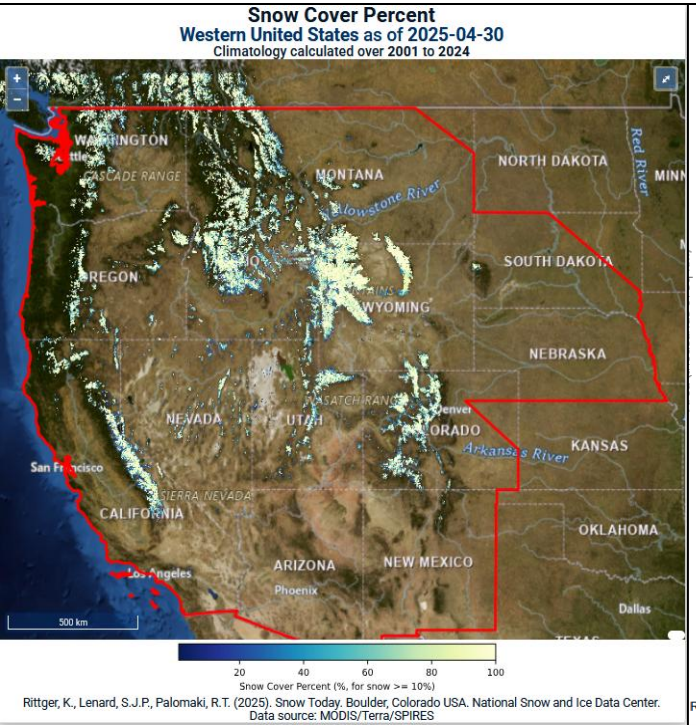
On April 30, 2025 the mountain Snow Water Equivalent (SWE) in the "Total above Fort Peck" reach is 11.9" and 81% of the annual peak remains. The mountain SWE in the "Fort Peck to Garrison" reach is 13.2" and 95% of the annual peak remains. The normal peak for both reaches occurs near April 17. The "Total above Fort Peck" reach peaked on April 5 at 14.7" SWE and 92% of the normal peak. The "Fort Peck to Garrison" reach peaked on April 5 at 13.9" SWE and 95% of the normal peak.

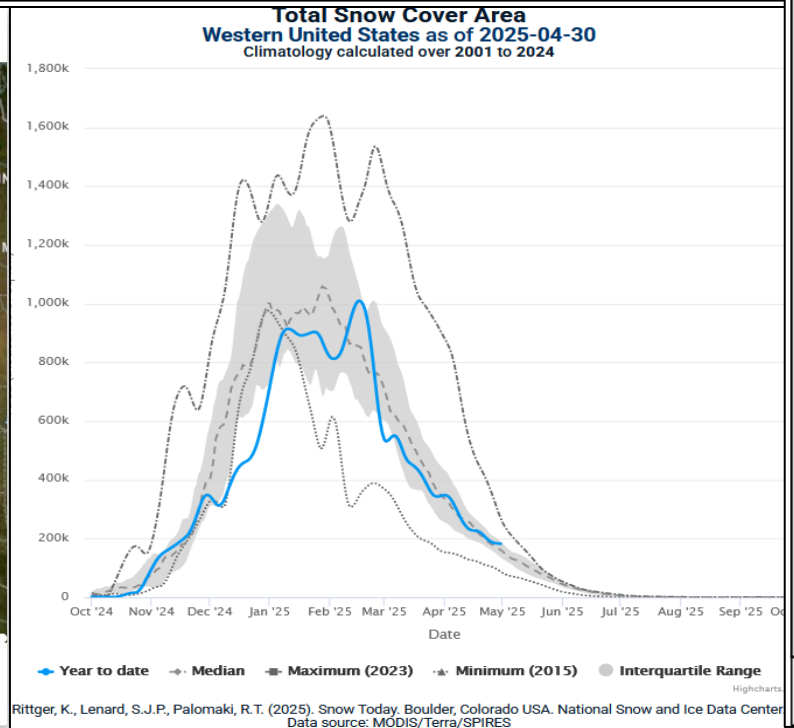
Snow Levels Today

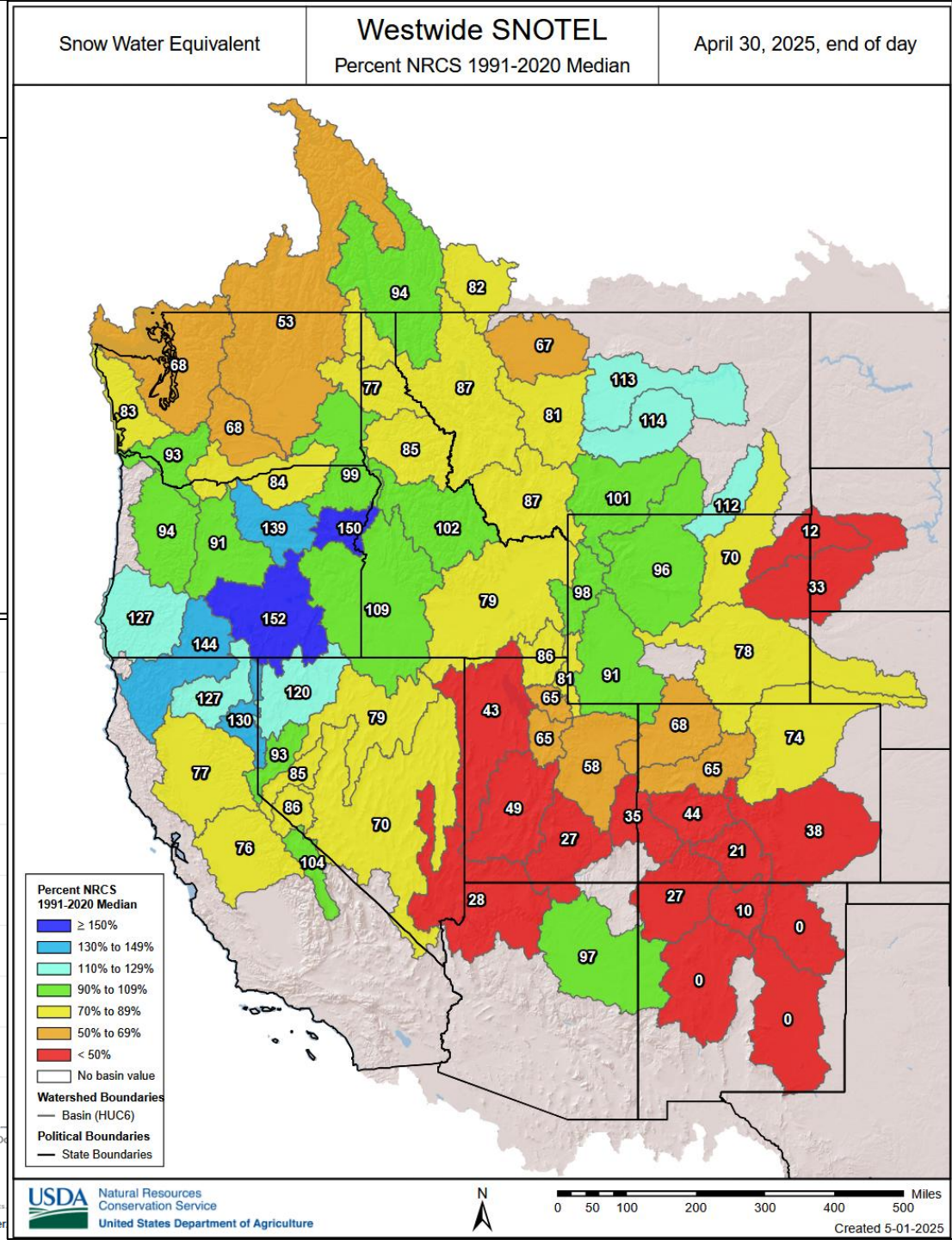
Over the past month snow levels have changed **significantly**. Many states are reporting rapid loss of snowpack, similar to the threats emerging in India and Pakistan.

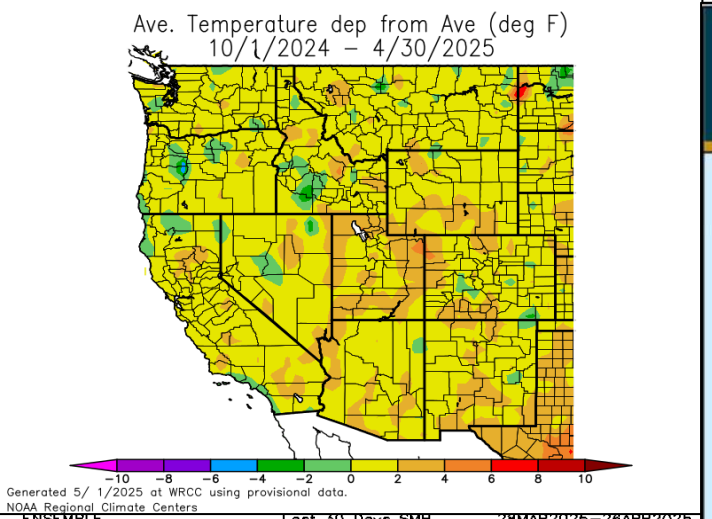
Colorado's median SWE levels heading into May are the fourth lowest since winter 1986-87, after peaking between April 7-9.

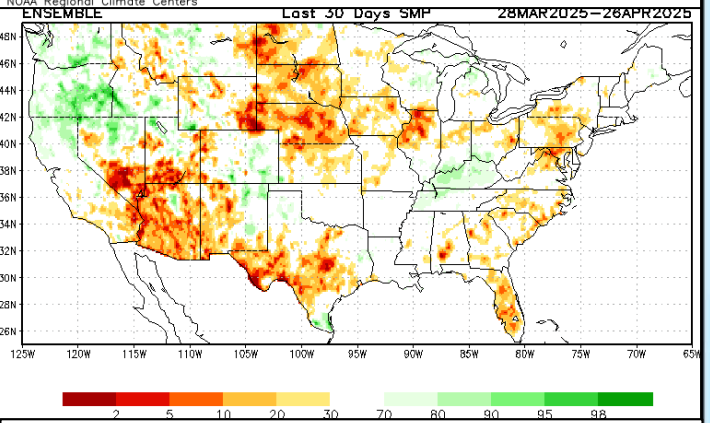
- The state's snowpack reached its highest overall percentage-of-median average in mid-January at around 95%, then recessed into below-average ranges for the remainder of the winter. (Snowfall totals are available for the season)
  - Colorado's median snowpack is at 58% of average on April 30, 2025
  - The snowpack peaked on April 7th with a statewide average of 89%.
- Dust continues to impact water flow in new study from Utah.

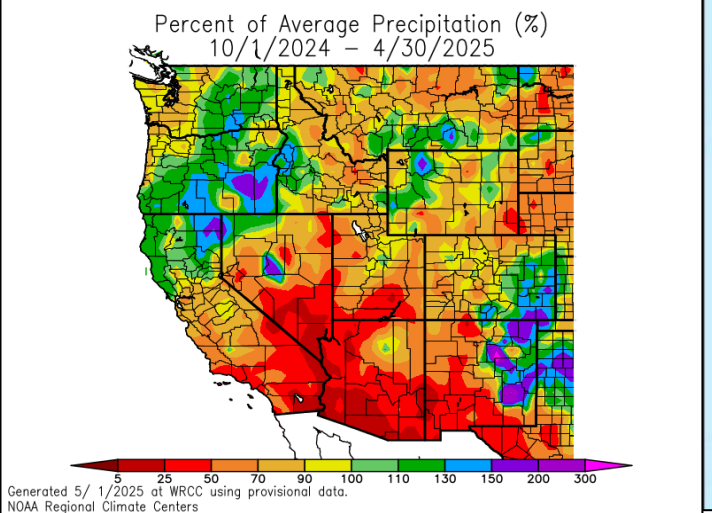


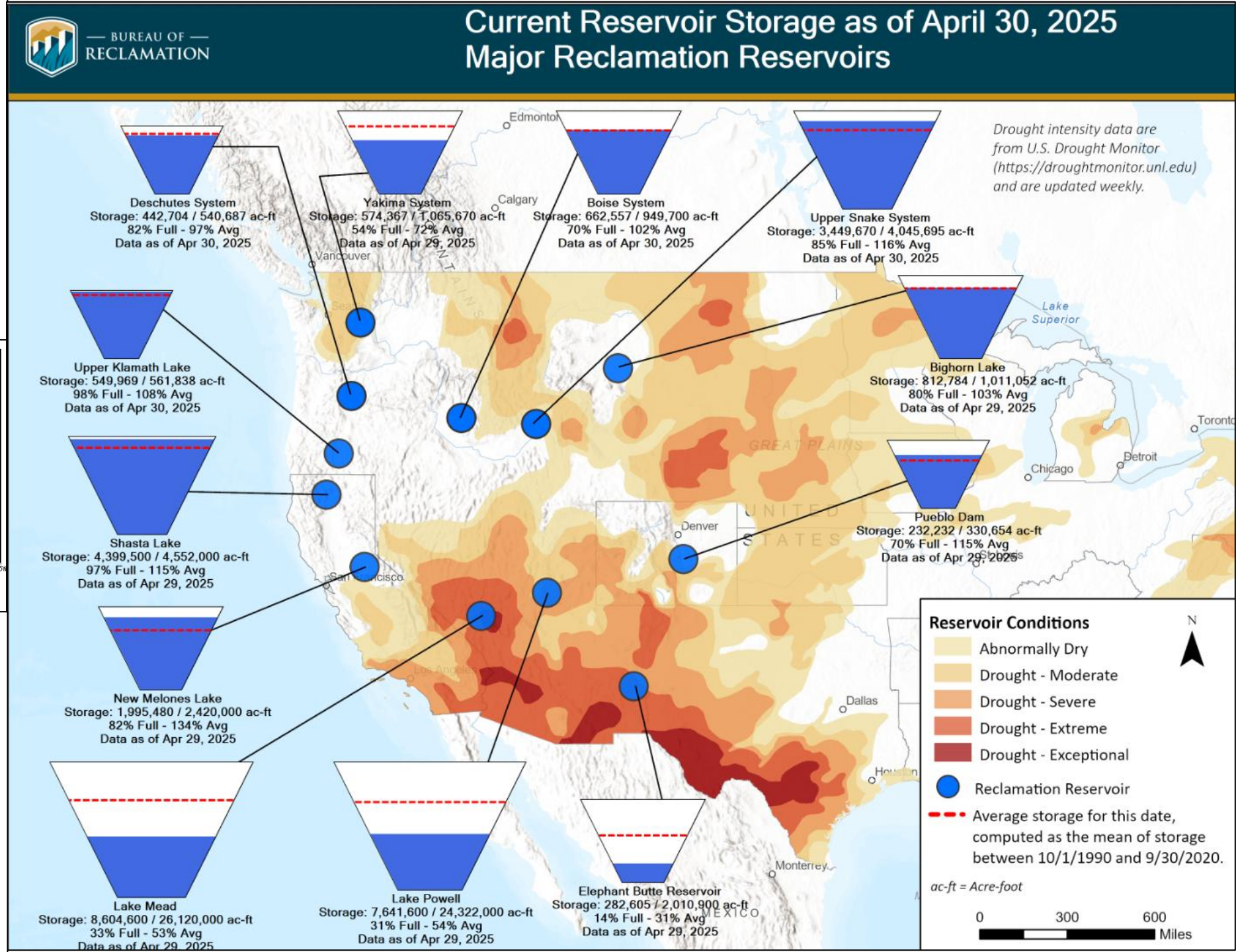





Ave. Temperature dep from Ave (deg F)
10/1/2024 – 4/30/2025
−10 −8 −6 −4 −2 0 2 4 6 8 10
Generated 5/ 1/2025 at WRCC using provisional data.
NOAA Regional Climate Centers


ENSEMBLE
Last 30 Days SMP
28MAR2025–26APR2025
2 5 10 20 30 70 80 90 95 98


Percent of Average Precipitation (%)
10/1/2024 – 4/30/2025
5 25 50 70 90 100 110 130 150 200 300
Generated 5/ 1/2025 at WRCC using provisional data.
NOAA Regional Climate Centers


BUREAU OF RECLAMATION
Current Reservoir Storage as of April 30, 2025
Major Reclamation Reservoirs
Drought intensity data are from U.S. Drought Monitor (https://droughtmonitor.unl.edu) and are updated weekly.
Deschutes System
Storage: 442,704 / 540,687 ac-ft
82% Full - 97% Avg
Data as of Apr 30, 2025
Yakima System
Storage: 574,367 / 1,065,670 ac-ft
54% Full - 72% Avg
Data as of Apr 29, 2025
Boise System
Storage: 662,557 / 949,700 ac-ft
70% Full - 102% Avg
Data as of Apr 30, 2025
Upper Snake System
Storage: 3,449,670 / 4,045,695 ac-ft
85% Full - 116% Avg
Data as of Apr 30, 2025
Upper Klamath Lake
Storage: 549,969 / 561,838 ac-ft
98% Full - 108% Avg
Data as of Apr 30, 2025
Bighorn Lake
Storage: 812,784 / 1,011,052 ac-ft
80% Full - 103% Avg
Data as of Apr 29, 2025
Shasta Lake
Storage: 4,399,500 / 4,552,000 ac-ft
97% Full - 115% Avg
Data as of Apr 29, 2025
Pueblo Dam
Storage: 232,232 / 330,654 ac-ft
70% Full - 115% Avg
Data as of Apr 29, 2025
New Melones Lake
Storage: 1,995,480 / 2,420,000 ac-ft
82% Full - 134% Avg
Data as of Apr 29, 2025
Lake Mead
Storage: 8,604,600 / 26,120,000 ac-ft
33% Full - 53% Avg
Data as of Apr 29, 2025
Lake Powell
Storage: 7,641,600 / 24,322,000 ac-ft
31% Full - 54% Avg
Data as of Apr 29, 2025
Elephant Butte Reservoir
Storage: 282,605 / 2,010,900 ac-ft
14% Full - 31% Avg
Data as of Apr 29, 2025
Reservoir Conditions
Abnormally Dry
Drought - Moderate
Drought - Severe
Drought - Extreme
Drought - Exceptional
Reclamation Reservoir
Average storage for this date, computed as the mean of storage between 10/1/1990 and 9/30/2020.
ac-ft = Acre-foot
N
0 300 600
Miles
Edmonton
Calgary
Vancouver
Lake Superior
Toronto
Detroit
Chicago
Denver
Dallas
Houston
Monterrey
MEXICO
GREAT PLAINS

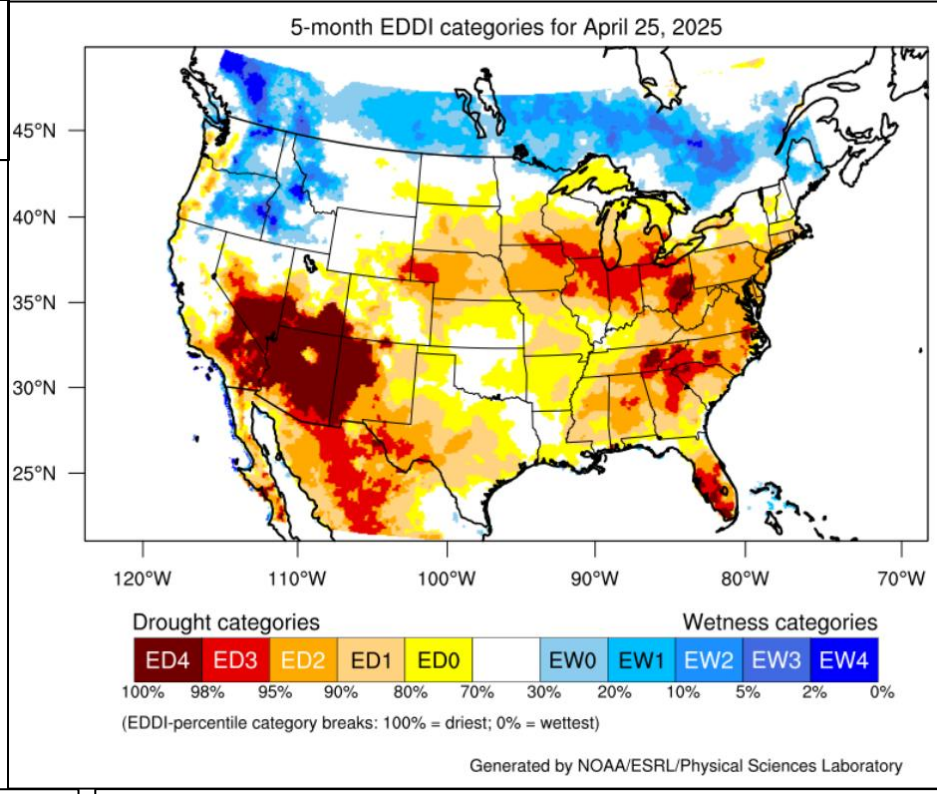
Soils and Evaporative Demand

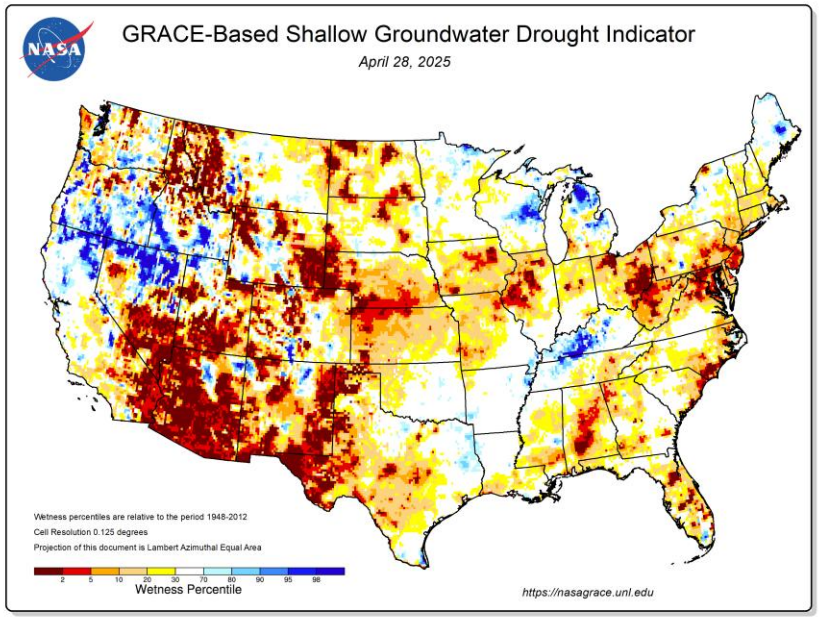
Using 23 years of satellite data, University of Utah hydrologists studied how dust-darkened snow is hastening runoff and reshaping the future of water in the Southwest.

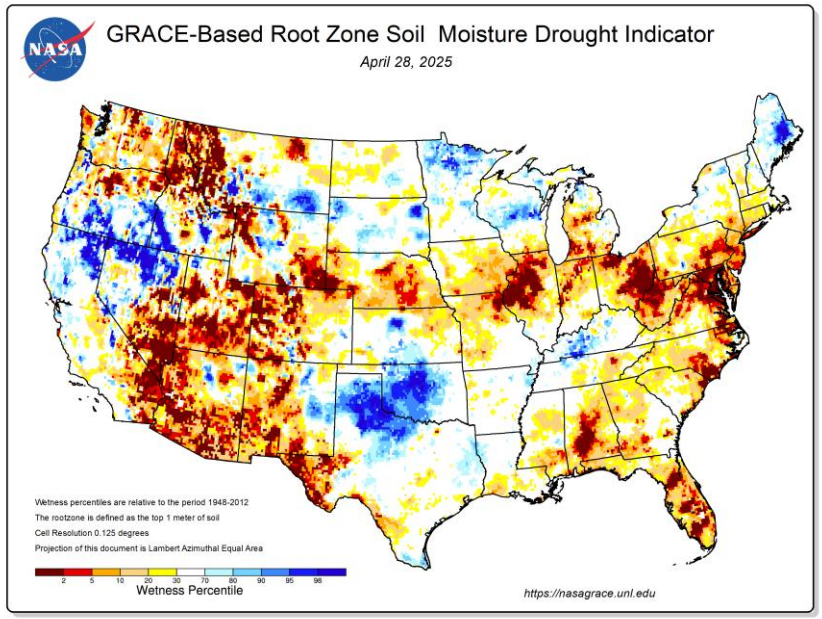
- The new study found that dust deposition can speed snowmelt by up to 1 millimeter water-equivalent per hour when the sun is at its peak.
- In high-dust years, that adds up to 10 millimeters of melt per day that can be directly attributed to the darkening effect.
- The highest snowpack dust concentrations in 13 years at an Alta study site were recorded in 2022, accelerating snowmelt by 17 days with impacts primarily driven from dry-beds at the Great Salt Lake.

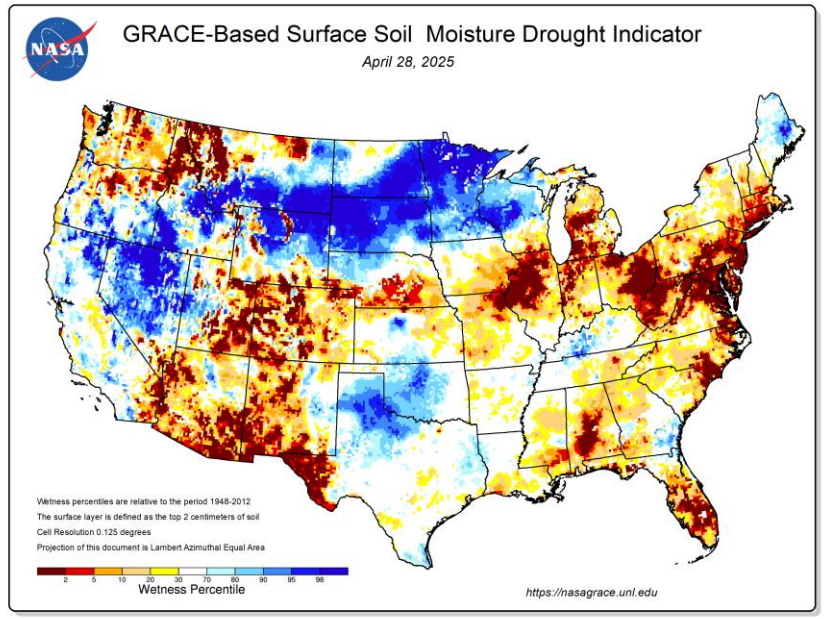
Western states are running out of time to submit a proposal for federal analysis of the Colorado River Basin water-sharing agreements.

- The basin's largest reservoirs, Lake Mead and Lake Powell, are 33% full. But the water use is average compared to the last 15 years.









Wildfire Outlook Maps 2025

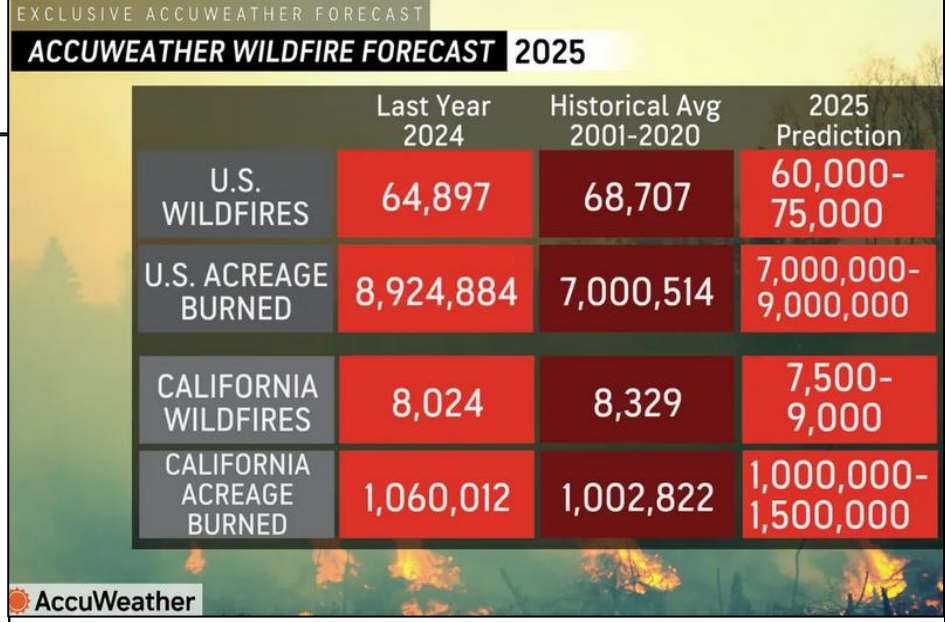
AccuWeather predicts increased wildfire risk across the U.S. in 2025, particularly in the Carolinas due to Tropical Storm Helene's aftermath.

- While summer thunderstorms typically mitigate fire activity, dry spells could still lead to flare-ups in the Carolinas, Georgia, Florida, and along the Gulf Coast.
- AccuWeather's team of long-range experts says more than 30 states across America will face a "moderate," "high," or "very high" risk of fires this fall.
- Unlike South Carolina, a larger region of North Carolina is expected to see moderate fire risk through fall 2025.

Energy bills could run high this summer as AccuWeather long-range forecasters predict a hotter-than-normal season across large swaths of the United States.

- Phoenix had its earliest100F temperature reading in seven years on April 10.

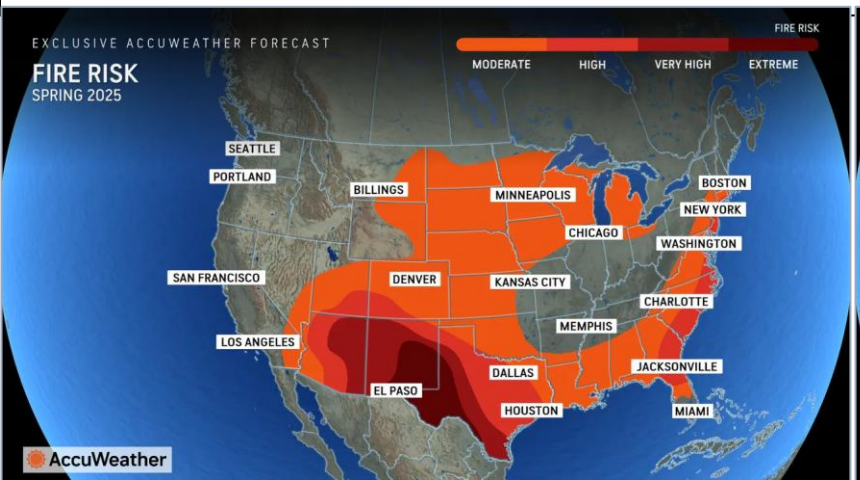
Temperatures June through August will be above the historical average, the worst of the heat expected in the northern Rockies and across the Plains where records could be challenged on multiple occasions.

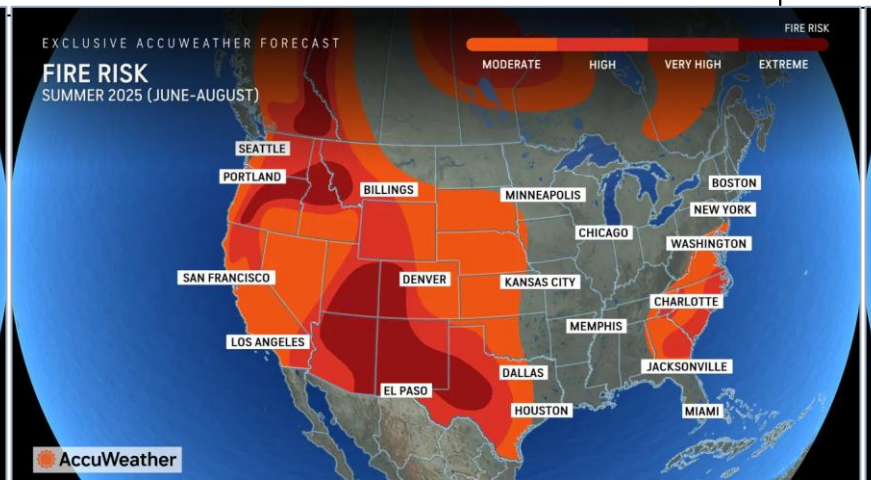


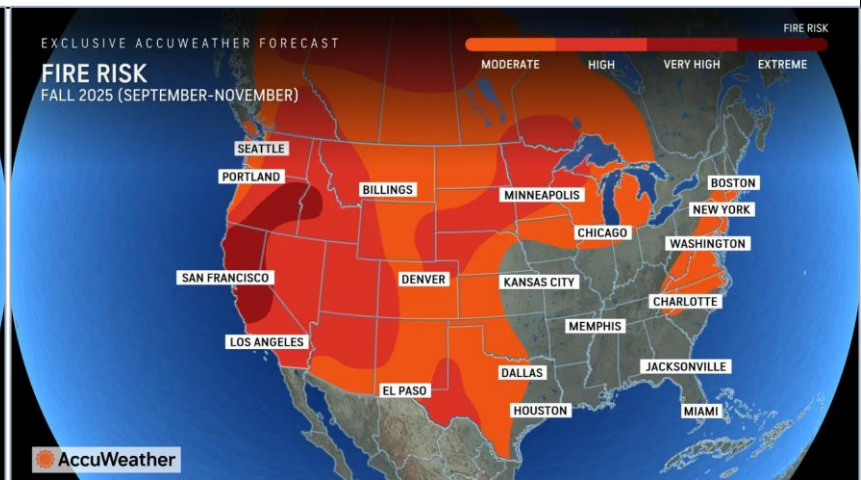
	Last Year 2024	Historical Avg 2001-2020	2025 Prediction
U.S. WILDFIRES	64,897	68,707	60,000-75,000
U.S. ACREAGE BURNED	8,924,884	7,000,514	7,000,000-9,000,000
CALIFORNIA WILDFIRES	8,024	8,329	7,500-9,000
CALIFORNIA ACREAGE BURNED	1,060,012	1,002,822	1,000,000-1,500,000

In June-August 2025, AccuWeather predicts that much of both states will be at mild to moderate risk of drought, particularly in the Eastern areas of the states.

The release added that there is an ongoing risk of fires across parts of the Carolinas and southern Appalachians this spring.
Fire risk remains high in Hawaii this Summer.







Additional International Extreme Weather Implications

In July 2024, extreme weather events like torrential rain and resulting floods cost China $10.1 billion in economic losses. China also reported the highest temperatures in its history.

Recent political actions triggered some Chinese companies to push into South Korea while South Korea chipmakers move to Indiana.

- One major sector affected is the semiconductor and display manufacturing with a major technology company in South Korea being silently acquired by a Chinese Firm.

A recent study indicated Korea could face groundwater depletion by 2080. Asia's desertification rate is 37%, exceeding Africa's 32%.

- Desertification is occurring in approximately 77% of Mongolia’s territory and 27% of China's land area. The microchip sector uses as much water as the city of Hong Kong.
    - South Korea faces extreme heat with over 250,000 livestock having died in the extreme heat last year.

One area in Sydney reported 3 inches of rain in just one hour with the Sydney airport registering 70km/h winds.

- 2 inches of rain reported in <30 minutes initially causing trains and roadways reportedly came to a standstill due to high flood waters and damages reported from hail. Major damage and collapsed roofs reported in Harden

Geologists uncovered the world’s largest iron ore deposit in Western Australia, Hamersley, with ~55 billion metric tons worth +$5.77 trillion and over 1.4 billion years old.

The French government plans to pledge a gigawatt of nuclear power for anew artificial-intelligence computing project expected.

- France has pledged to conserve up to 10% of water use by 2030 while19 dams regulate the water levels of this critical resource.

Brazil reported significant flooding just 3 weeks ago resulting in damages to coastal cities and a state of emergency declaration.

In late December, 75% of all ports in Peru (91) were closed due to large waves on the coast from a persisting wind event associated with a pattern off the western US coastline causing damage to ports and coastal infrastructure in both Peru and Ecuador.

Switzerland’s glaciers have lost 10% of their volume the past two years with up to 80% expected to be lost by 2100.

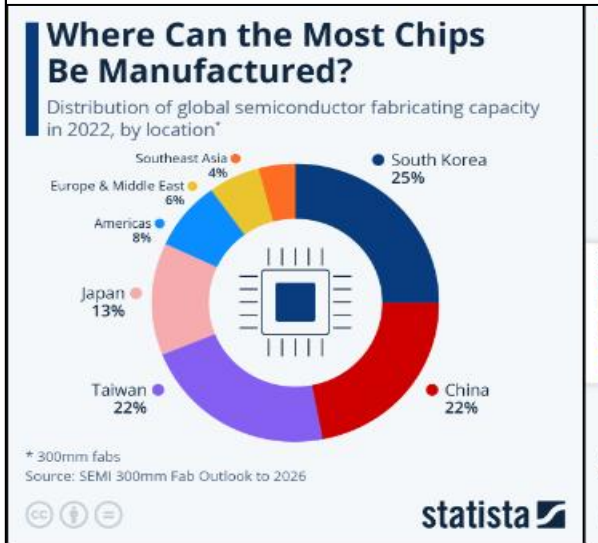
The past three years the nuclear power sector in France has reportedly reduced operations during summer due to overheating rivers with low-flows impacting cooling sources for operations.

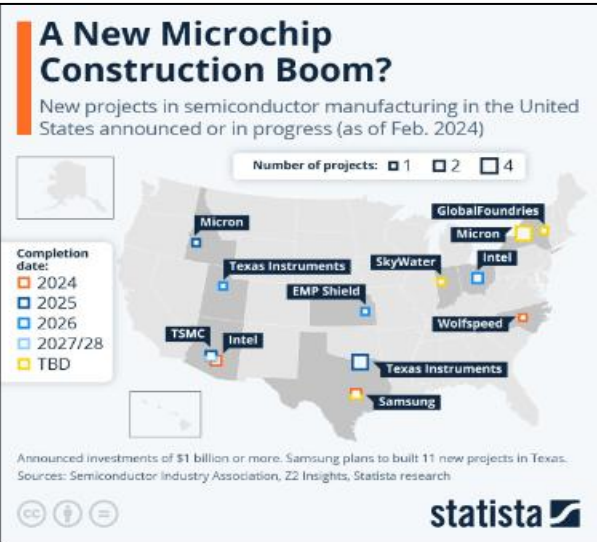
- The river at risk moves goods to the Mediterranean, sustains farmland the size of Belgium, and produces hydroelectricity too in addition to the nuclear and drinking water provisions.

According to the "World Atlas of Desertification" released by the European Commission, desertification is underway in 75% of the Earth's land area, with a forecast in which over 90% of the land area will be degraded by 2050.

- United Nations Convention to Combat Desertification statistics (2023) reveal over 100 million hectares of healthy and productive land were degraded annually from 2015 to 2019, and the scientific journal Nature reports that 15 billion trees are lost each year.

27 countries in Africa’s tropical zone experienced unusually heavy rainfall in 2024 compared to their historical norms.





Extreme Heat vs Infrastructure

Infrastructure Impacts from Heat: Impacts are likely to carry across all industries.

- Security – Staff and Systems
- Emergency Services/Medical – Staff, Supply Chain, and Equipment
- IT Sector – Heat vs Datacenters
- Water Sector – Quantity and Quality
- Energy Sector – Cooling and Capacity
- Critical Manufacturing – Supply Chain and Sites
- Food/Ag – Crops and Livestock
- Financial/Commercial Facilities – Materials and Operations
- Nuclear – Cooling and Stability
- Government Facilities – Sites, Staff, Society
- Transportation – Functionality and Stability
- Telecommunications – Connection Sites and Interdependencies
- Dams/Chemical – Structural Integrity and Risk

Heat fueled rains: Extreme rainfall events will increase in number and severity in the future because of climate change.

- By the end of the century, cities could experience as much as 30% more annual rainfall than today, and 1.5 times as many days with more than one inch of rain.

The University of Bristol study forecasts average annual flood losses would increase by 26.4% from $32 billion currently to $40.6 billion in less than 30 years.

- The national floodplains are expected to grow by approximately 45% by 2100.
- Just one inch of floodwater can cause up to $25,000 in damage (FEMA).

CONTACT

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- Email: Sunny@unlimitedweather.com
- Download: https://linktr.ee/swescott

HELPFUL STARTS

- NOAA Repository:

https://www.ncei.noaa.gov/cdo-web/

- Frontal Boundaries:

https://aviationweather.gov/gfa/#progchart

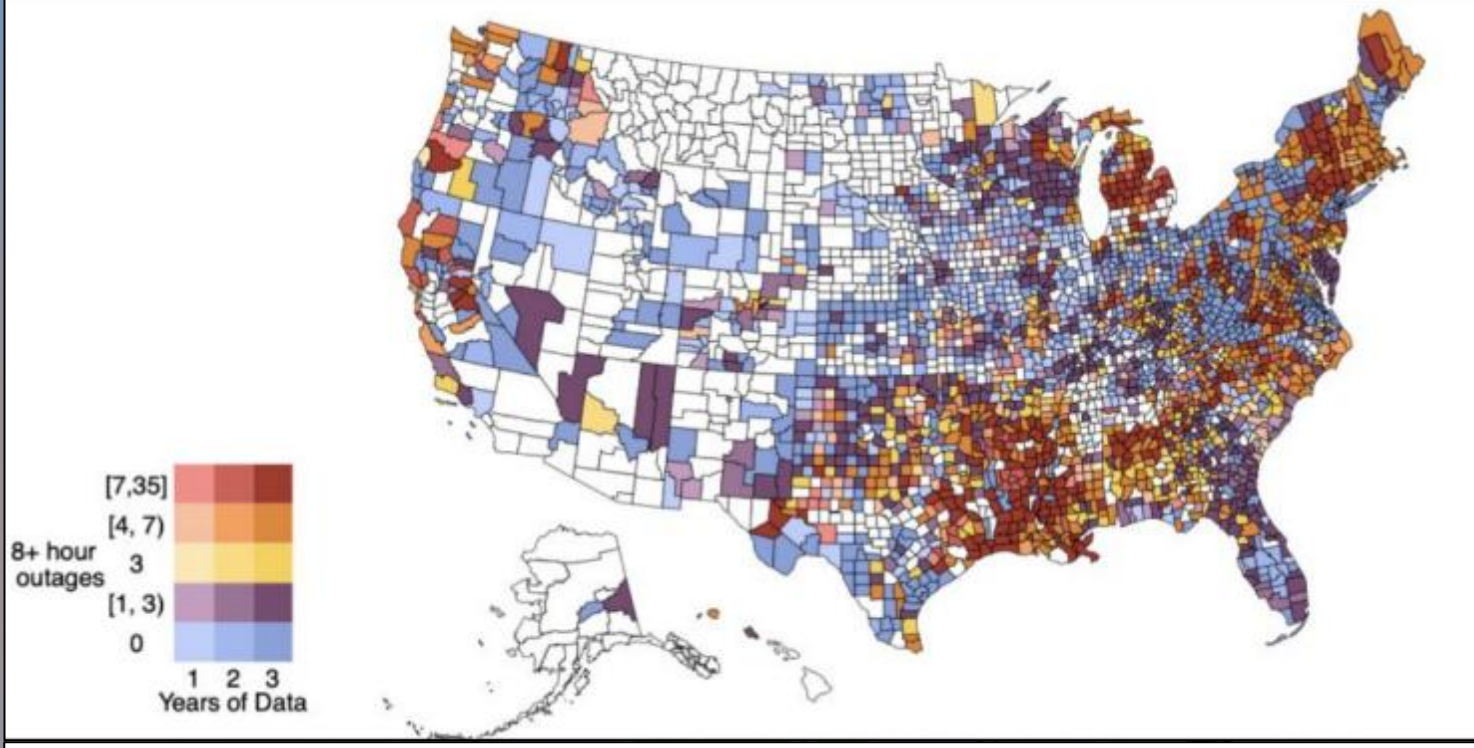
- Infographics:

https://www.climatecentral.org/

- World Meteorological Organization:

https://wmo.int/topics/extreme-weather

2018-2020 - County-level Map of Power Outages +8 Hour Duration



Between 2018 and 2020 over 231,000 power outages lasting more than an hour occurred nationwide.

Of those, 17,484 stretched at least eight hours with most attributed to severe weather or wind/rain events.

- Heavy precipitation makes a power outage 5x more likely.
- Tropical cyclones make a power outage 14x more likely.
- A tropical cyclone with heavy precipitation on a hot day make power outages 52x more likely.