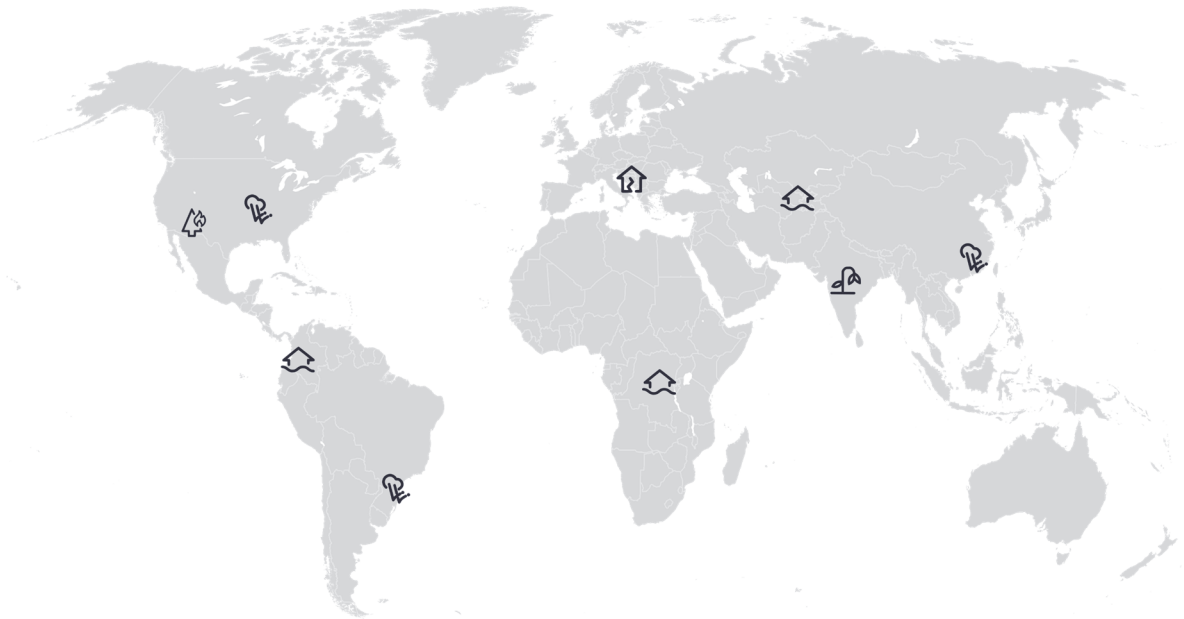


Weekly Cat Report

April 29, 2022



Executive Summary



Event	Affected Region(s)	Fatalities	Economic Loss (\$)	Page
Severe Convective Storm	United States	0	100+ million	3
Flooding	Uzbekistan	5+	Millions	6
Flooding	Colombia	5+	Millions	6
Severe Convective Storm	China	0	10s of millions	6
Earthquake	Bosnia and Herzegovina	1	Unknown	6
Wildfire	United States	1+	Millions	7
Severe Convective Storm	Brazil	0	Millions	7
Flooding	Rwanda, DR Congo	20+	Unknown	7
Heatwave	India, Pakistan	0	N/A	7

Please note that any financial loss estimate is preliminary and subject to change. These estimates are provided as an initial view of the potential financial impact from a recently completed or ongoing event based on early available assessments. Significant adjustments may inevitably occur. All losses in US dollars (\$) unless noted otherwise.

Along with this report, we continue to welcome users to access current and historical natural catastrophe data and event analysis on Impact Forecasting's Catastrophe Insight website: <http://catastropheinsight.aon.com>

United States: Severe Convective Storm

Overview

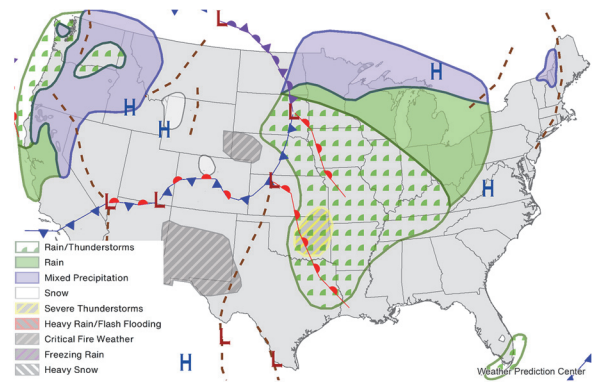
A robust April storm system generated multiple weather hazards across the western, northern, and central United States between April 21-24, including critical fire weather, winter weather, and severe convective storms. Widespread impacts from severe convective storms were incurred in the Plains and resulted from very large hail, damaging winds, heavy rainfall, and isolated tornadoes. Softball sized hail pelted localities in southern Missouri on April 21. The total economic and insured loss was each individually anticipated to exceed \$100 million.

Meteorological Recap

A dynamic storm system featuring a highly amplified upper-level trough and closed low pressure system brought several days of unsettled and severe weather to the western, northern, and central United States between April 21-24. In addition to severe storms, the robust system resulted in heavy snow and blizzard conditions in the Rockies and Northern Plains, while extremely critical fire weather persisted in the Southwest – primarily in Arizona, Colorado and New Mexico.

On April 21, storm clusters and severe discrete cells were ignited across the central Plains following strong diurnal heating in the vicinity of a northward lifting warm front. Large hail were reported in parts of Nebraska, Kansas, and Missouri.

On April 22, the Storm Prediction Center issued an Enhanced Risk (level 3 out of 5) for severe weather across a corridor spanning from western Nebraska southward into the Texas Panhandle, surrounded by a broader region of Slight Risk (level 2 out of 5). Severe storms in this region were favored in the vicinity of

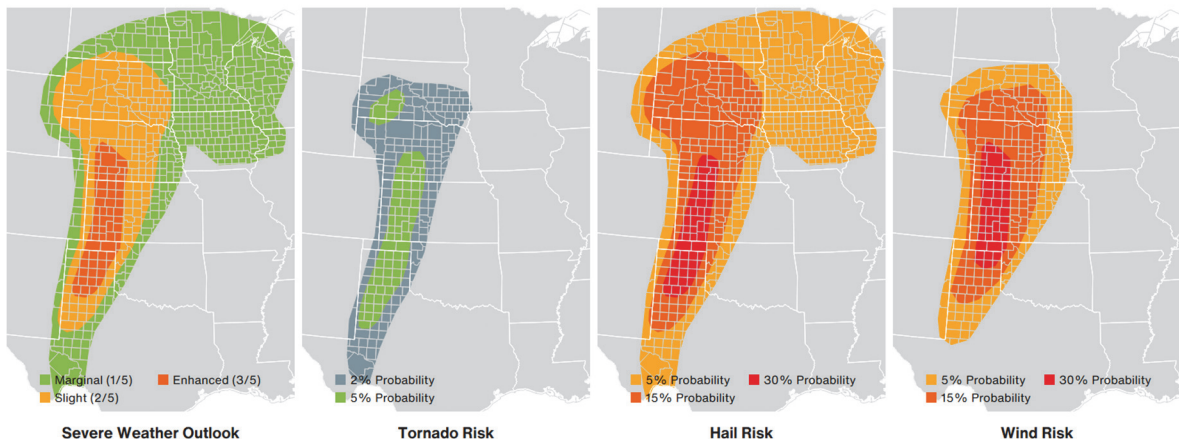


U.S. Surface Analysis on April 21
Data. Weather Prediction Center

U.S. Severe Convective Storm Outlook: April 22, 2022

All Hazards

Data: NOAA
Graphic: Aon (Catastrophe Insight)



an approaching dry line (a boundary which separates moist and dry air) and trailing cold front associated with the developing area of low pressure ejecting from the Rockies into the Plains.

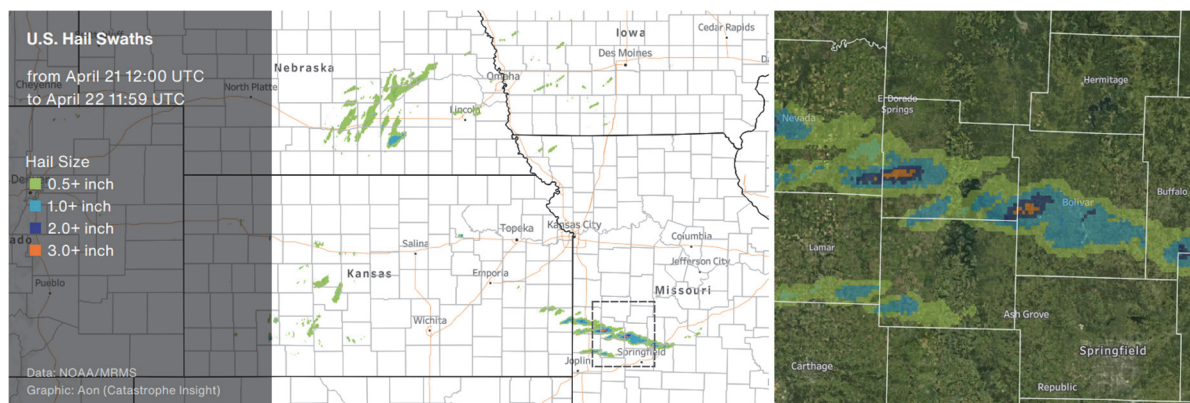
Favorable wind shear (change in wind speed and/or direction with height), surface heating, and step mid-level lapse rates ahead of the approaching dry line resulted in the development of numerous storm clusters and supercells by the evening. Subsequently, lines of severe storms with embedded rotation evolved in western Kansas and Nebraska. During this period, severe weather hazards spanned from South Dakota into the Texas Panhandle and included damaging winds, isolated tornadoes, and large hail – greater than or equal to 2.0 in (5.1 cm).

On April 23, the maturing storm system continued to traverse the Dakotas and northeastern Canada while a broad shield of precipitation along the storms north and west sides produced heavy rainfall and winter weather. Elsewhere, locally heavy rainfall and severe thunderstorms endured in the vicinity of a potent cold front and dryline slowly pushing eastward across the Plains. The SPC issued a Slight Risk (level 2 out of 5) for severe weather along an elongated corridor from the Upper Midwest into Oklahoma. Lines of severe storms and several supercells swept across the Plains, while additional storm development evolved further northwest, in the vicinity of the low-pressure center.

As the potent cold front continued to push toward the East Coast on April 26, severe storms evolved in parts of the Mid-Atlantic and Southeast. Linear segments and thunderstorm clusters generated multiple instances of hail and strong straight-line winds, particularly in central Virginia and North Carolina.

Event Details

On April 21, a discrete storm over southern **Missouri** produced very large hail, which included hailstones reaching 4.0 in (10 cm) in parts of Polk County. The golf ball to softball sized hail resulted in notable damage near Bolivar, which included holes in siding, broken windows, and dented vehicles. In **Kansas**, hail reaching 2.0 in (5.1 cm) were observed in Ford County.



On April 22, a line of storms generated notable damages in western **Kansas** in the overnight hours. An EF1 tornado, with maximum estimated wind speeds of 110 mph (177 kph), touched down in Wallace County. The tornado resulted in significant damage in the town of Sharon Springs - which included impacts to homes, torn off roofs, broken windows, flipped vehicles, and toppled trees and power poles. A second EF1 tornado affected parts of Sheridan and Decatur Counties. Hail approaching and topping 2.0 in (5.1 cm) were observed in **Kansas, Oklahoma, South Dakota, and Texas**. In rural **South Dakota**, hail reaching 3.5 in (8.9 cm) pelted localities in Jackson County.

Non-tornadic winds resulted in additional damage to property, infrastructure, and trees - particularly in the **Texas** and **Oklahoma** Panhandles, **Kansas**, **Nebraska**, and **South Dakota**.

In **Nebraska**, a gust of 79 mph (127 kph) was measured in Grant County. In **Texas**, a gust of 76 mph (122 kph) was recorded in Sherman County

On April 23, minor tornadic wind damage was surveyed in **Kansas**, **Minnesota**, and **Oklahoma**. In **Iowa**, straight-line winds caused thousands of power outages across central portions of the state – including at least 8,000 customers in Polk County alone.



Tornado damage in Sharon Springs, Kansas

Source: NWS-DAT

Across the **Rockies**, eastern **Montana**, and the western **Dakotas**, late season heavy snow and blizzard conditions resulted in hazardous travel and closed and impassable roadways. Snowfall totals in this region reached and topped 12 to 18 in (30 to 45 cm) through April 23. At the peak of the event, no fewer than 18,000 customers across North and South Dakota and eastern Montana were without electricity. In **North Dakota**, at least 650 power poles were toppled in Burke and Divide Counties' alone. In **Minnesota**, local State of Emergencies were declared due to flooding along the banks of the Red Lake River near Crookston.

In **Canada**, heavy rainfall and flooding in northwestern **Ontario** prompted a State of Emergency in Fort Frances after the failure of a wastewater treatment plant. Throughout the region numerous roadways were washed-out or covered in debris. In **Manitoba**, hundreds of calls regarding flooding and inundation of basements were received by authorities in Winnipeg. No fewer than 13,000 customers in the province lost electricity.

Financial Loss

The latest stretch of severe storms across the United States between April 21-24 was expected to result in both economic and insured losses each individually exceeding \$100 million. Most of the hail and wind related damages were anticipated to be covered by public and private insurers.

Natural Catastrophes: In Brief

Flooding (Uzbekistan)

Flooding and mudslides triggered by torrential rain hit eastern Uzbekistan on April 20, partially Jizzakh Region - where a monthly average amount of rain fell within a two-hour period, according to Uzbekistan's Hydrometeorological Service. Material damage occurred throughout the affected area, along with several injuries and no less than five fatalities. Multiple roads were inundated, and dozens of homes were damaged, forcing more than 100 people to evacuate. Widespread agricultural losses on flooded crops and damaged farms were incurred. Damage assessment remained ongoing, however, total economic losses were expected to be in millions (USD).

Flooding (Colombia)

Central and western parts of Columbia have been affected by another period of rainy and stormy weather through April 25, associated with the first rainy season. The Nariño and Tolima Departments were struck by multiple landslide and flood events which affected 2,700 families and left. At least five people were killed, and one person injured, according to Pan American Health Organization (PAHO WHO). In Nariño, more than 1,500 houses and 260 roads were damaged, including 21 educational centres. Additionally, 2,100 ha (5,190 acres) of crops were affected. In Cundinamarca Department, at least eight fatalities and four missing people were reported, along with damaged houses following floods and landslides on April 21-22. According to Colombia's National Unit for Disaster Risk Management (UNGRD), 33 people lost their lives in total, another 45 were injured and 10 people are still missing. No fewer than 3,100 houses were destroyed or damaged and at least 21,000 people were affected.

Severe Convective Storm (China)

Widespread rainfall with strong winds affected southern China between April 24-26, including localized hail in Guizhou, Fujian, and Shanghai. According to the China Meteorological Administration, this was the largest scale convective storm this year. Ninghua county in Fujian alone reported more than 1,000 damaged houses with close to 8,000 people affected. Heavy rainfall caused flash flooding in urbanized areas in Jiangxi, Hunan, and Henan. Changsha in Hunan recorded close to 80 mm (3.1 in) rainfall in an hour on April 25. Nanyang in Henan activated flood control level III (the third highest response) and several merchant stores were inundated. Roadways in Wanzhou district in Chongqing collapsed under the deluge. Total economic losses were anticipated to be minimally in the tens of millions (USD), based on initial estimates from various county-level authorities.

Earthquake (Bosnia and Herzegovina)

A magnitude-5.7 earthquake hit southern Bosnia and Herzegovina in the late evening of April 22. The quake struck at a depth of 5 km (3.1 mi) and was located 42 km (26.1 mi) southeast of the Mostar city, according to the European Mediterranean Seismological Center (EMSC). Local authorities reported that one person was killed, and at least two others injured. Nearly 350 buildings were assessed to be damaged. Economic losses were estimated to be in the lower millions (USD), according to the PAGER methodology by the U.S. Geological Survey (USGS).

Wildfire (United States)

Hot and dry conditions, severe drought, and very high winds resulted in extreme fire danger across the Southwest and Plains over a multi-day period ending April 23. The top tier, extremely critical, fire weather was forecast by the Storm Prediction Center (SPC) across central New Mexico and eastern Colorado on April 22. In New Mexico, Emergency Declarations were enacted for Mora, Colfax, Lincoln, San Miguel and Valencia Counties due to ongoing fires. Most recently, evacuation orders were prompted in San Miguel and Mora Counties where the merged Calf Canyon and Hermits Peak Fire Complex has affected at least 63,720 acres (25,786 ha). Preliminary reports confirmed structures were impacted. State-wide, five large fires alone have affected at least 152,465 acres (61,700 ha) through April 28. Damage assessments remained ongoing. Elsewhere, one firefighter was killed, and 15 others injured while battling wildfires in Nebraska.

Severe Convective Storm (Brazil)

Intense thunderstorms caused notable damage the state of Paraná in southern Brazil on April 23-24 with strong winds and heavy rain. According to the State Civil Defense, Maripa was among the hardest hit. In total, no fewer than 1,300 homes sustained roof damage across the state while at least 91 were destroyed. Approximately 473,000 customers lost power during the storm.

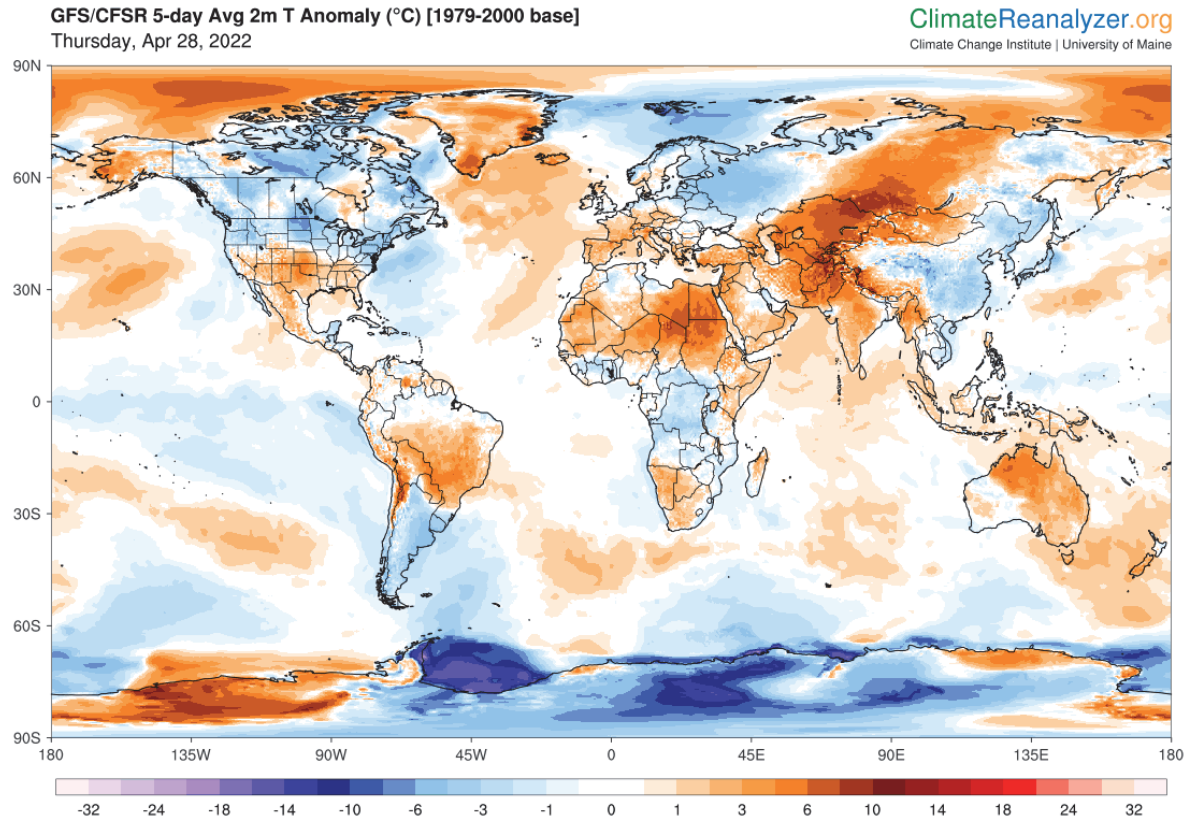
Flooding (Rwanda, DR Congo)

Intense rains affected several districts in western Rwanda and eastern Democratic Republic of Congo on April 23-25. Multiple flood and landslide events resulted in notable material damage and casualties. In Rwanda, at least 11 people died and 13 were injured, according to local authorities (MINEMA, REMA). Hundred of houses were destroyed, while several bridges and roads were damaged and blocked. Flooding caused significant crop damage in wetland areas across the country. An above-average rainfall period is expected to persist in the coming days across western and northern parts of Rwanda. In eastern Democratic Republic of Congo, nine people lost their lives and eight others were injured in a landslide resulting from heavy rain. Additional property damage to houses and vehicles was noted.

Heatwave (India, Pakistan)

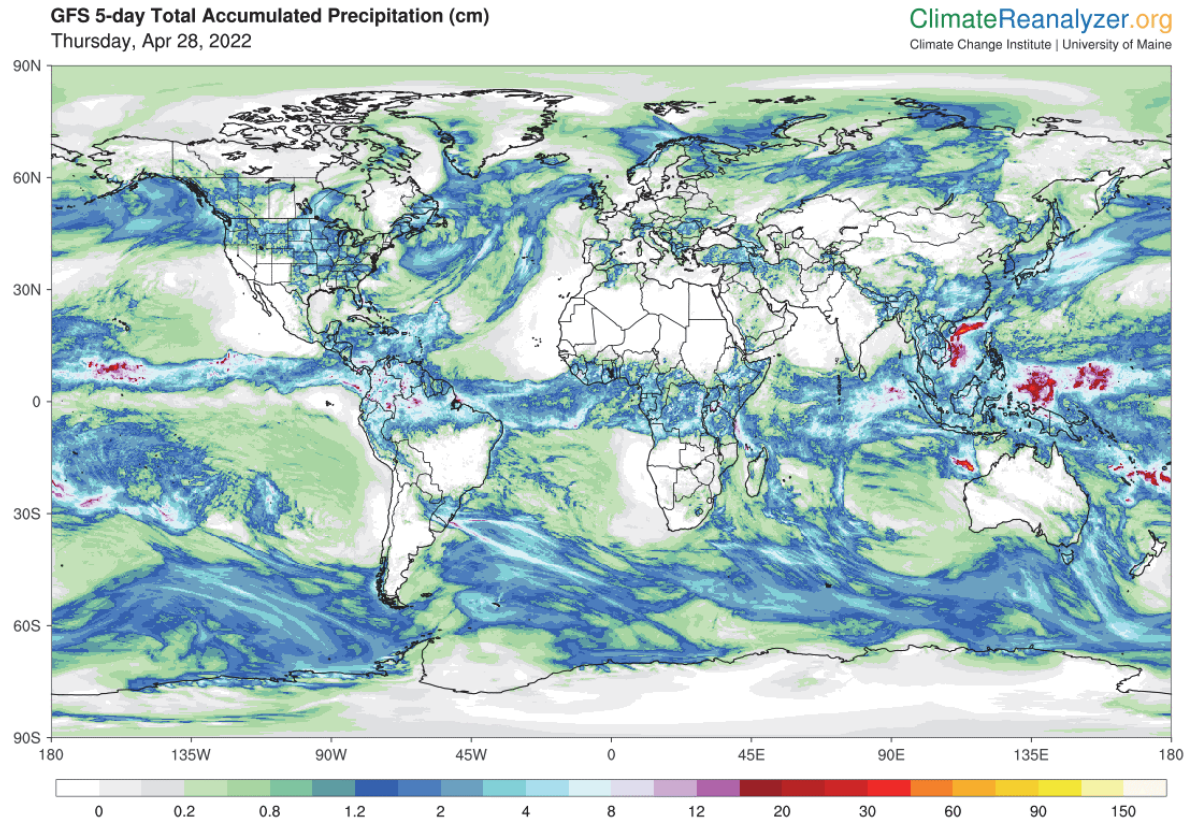
A significant heat wave gripped India in mid- to late-April, with conditions forecast to continue for another week. Heat wave condition have been recorded for at least 16 days this month, and temperature in localities of the western region have not dropped below 40°C (104°F) since March. Five locations recorded temperatures which topped 45°C (113°F) on April 27. The scorching heat was a catalyst in the burning of a 17-story landfill in New Delhi and is expected to have a significant impact on the country's wheat harvest. India has already recorded its hottest March on record in 2022. In Pakistan, the Ministry of Climate Change issued a heatwave alert to all provinces on April 28, as temperatures reaching 50°C (122°F) were expected. Dadu reached 47°C (116°F) on April 26. Heat-related deaths and illness remain a concern in both countries.

Global Temperature Anomaly Forecast



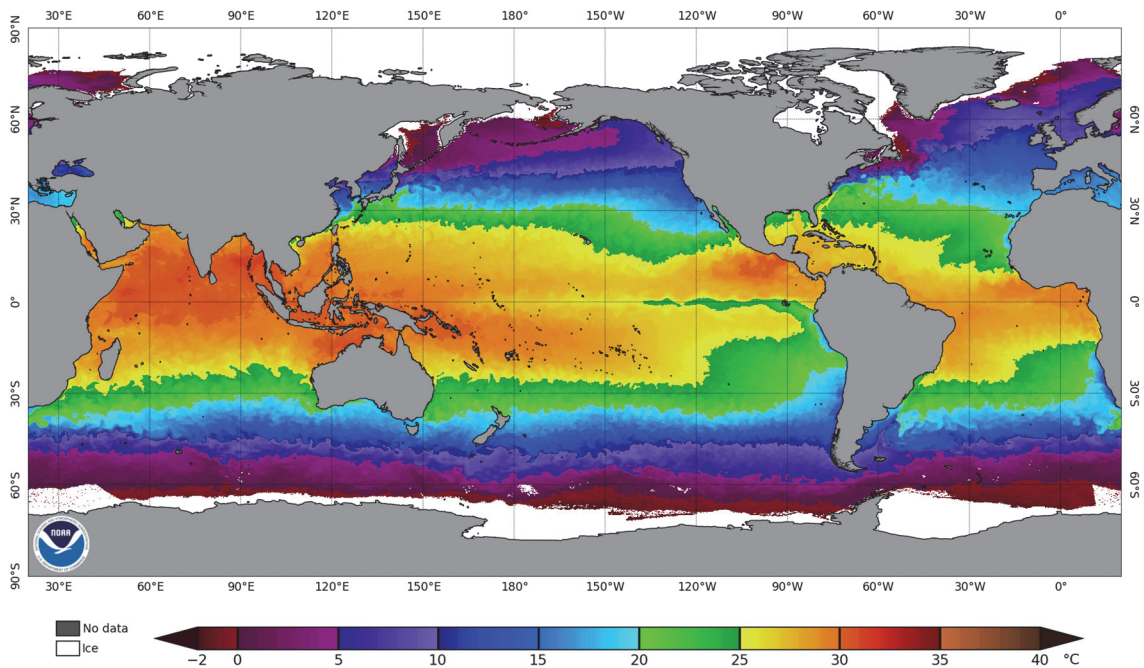
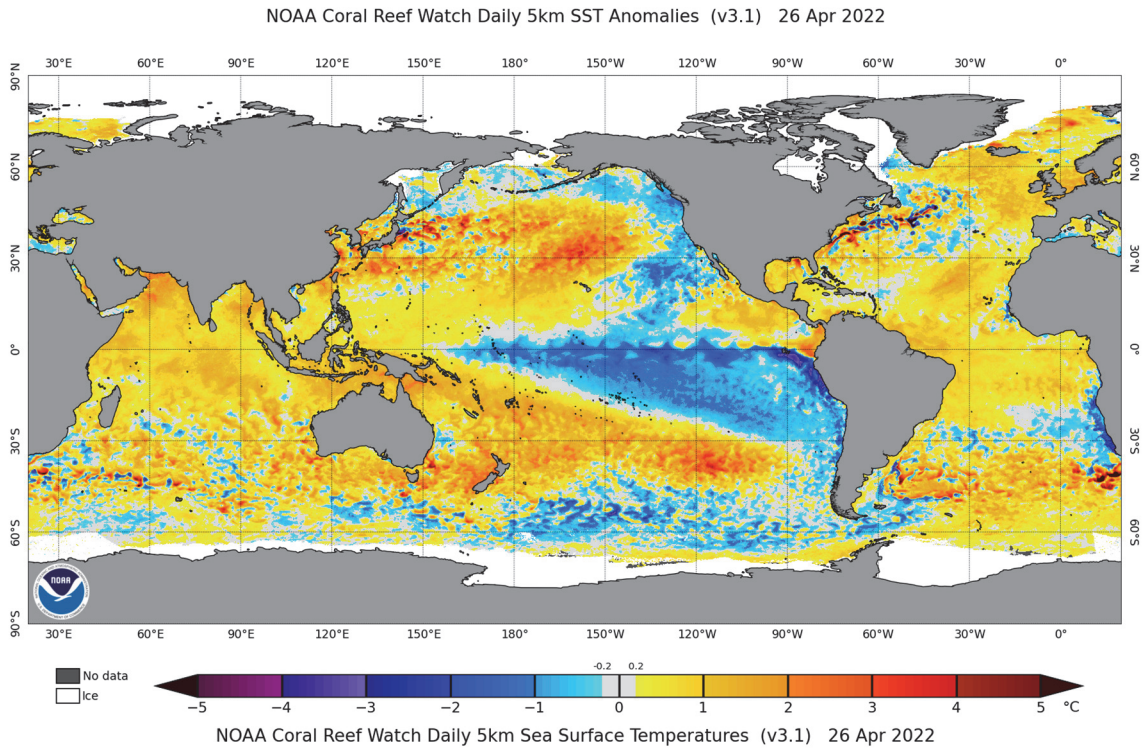
Source: Climate Reanalyzer, Climate Change Institute, University of Maine, USA

Global Precipitation Anomaly Forecast



Source: Climate Reanalyzer, Climate Change Institute, University of Maine, USA

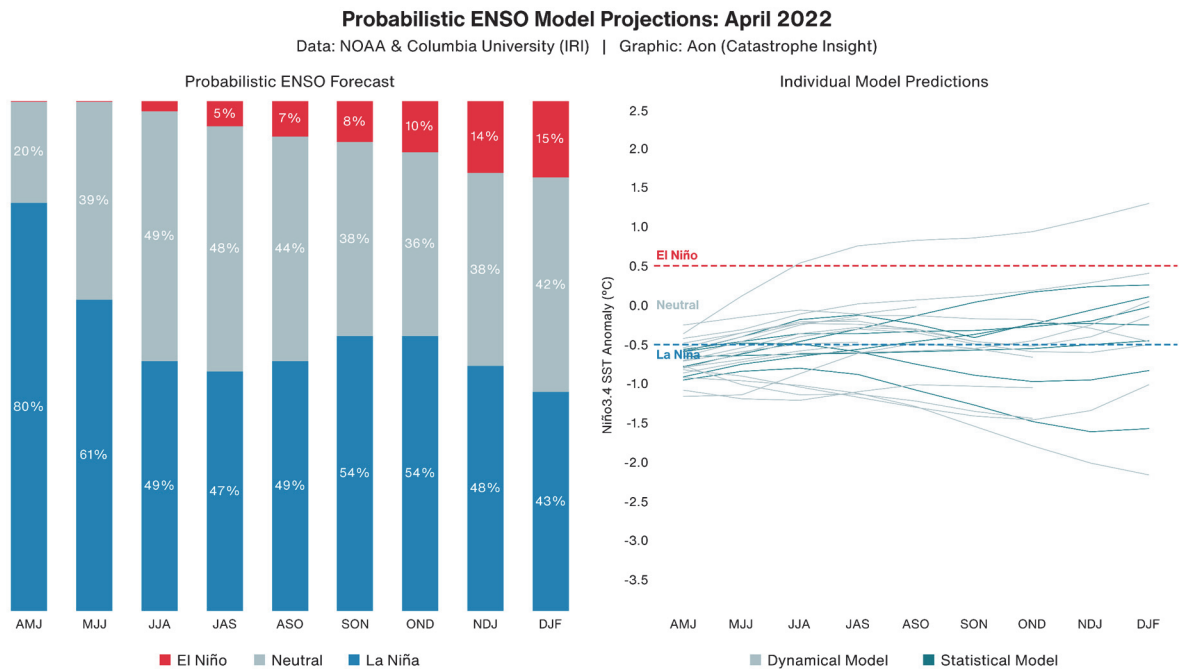
Weekly Sea Surface Temperature (SST) Maps (°C)



El Niño-Southern Oscillation (ENSO)

Overview

La Niña conditions are likely to continue into the Northern Hemisphere summer. NOAA cites a 59 percent chance of La Niña conditions persisting during the June-August timeframe, and a 50-55 percent chance of transitioning to ENSO neutral conditions into the early fall.



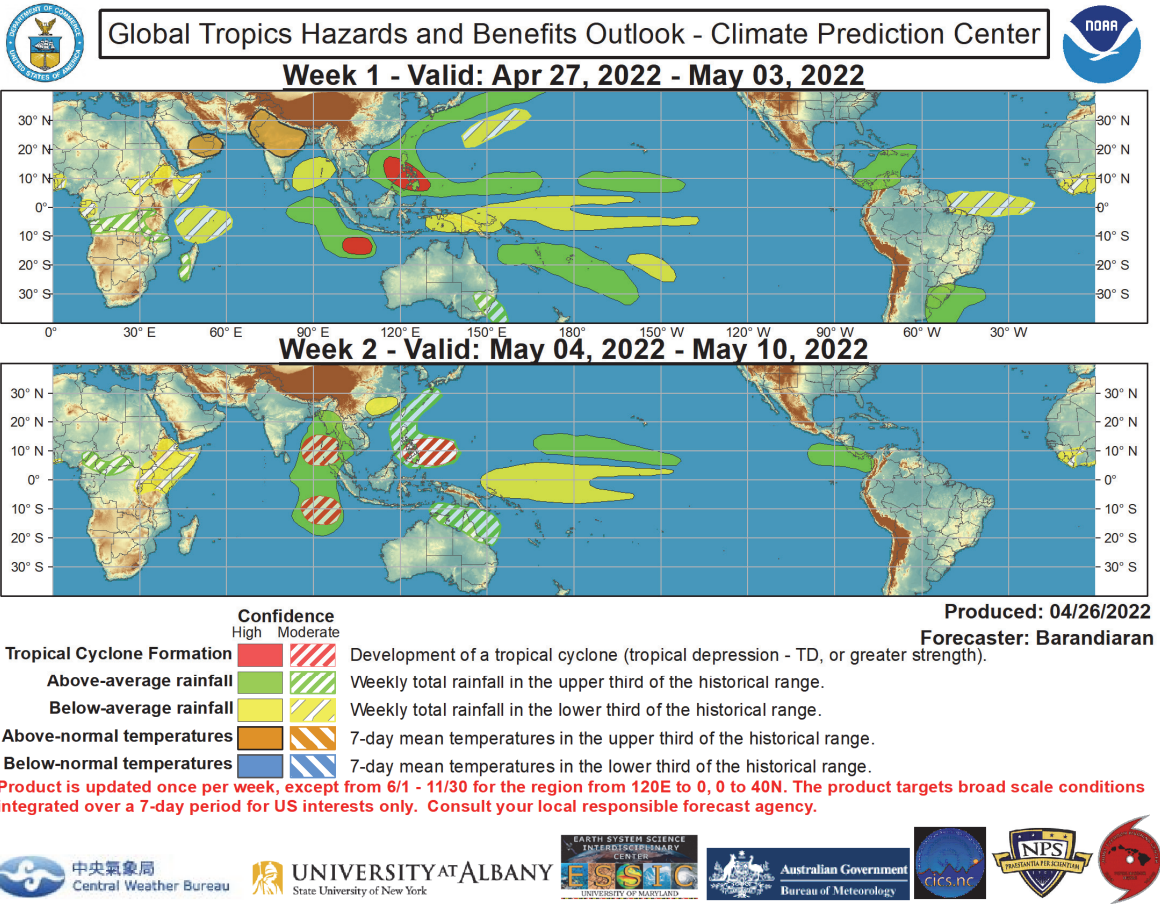
El Niño: Warm phase of an ENSO cycle. Sea surface temperatures of +0.5°C occur across the east-central equatorial Pacific.

La Niña: Cool phase of an ENSO cycle. Sea surface temperatures of -0.5°C occur across the east-central equatorial Pacific.

Neutral: A period when neither El Niño nor La Niña conditions are present.

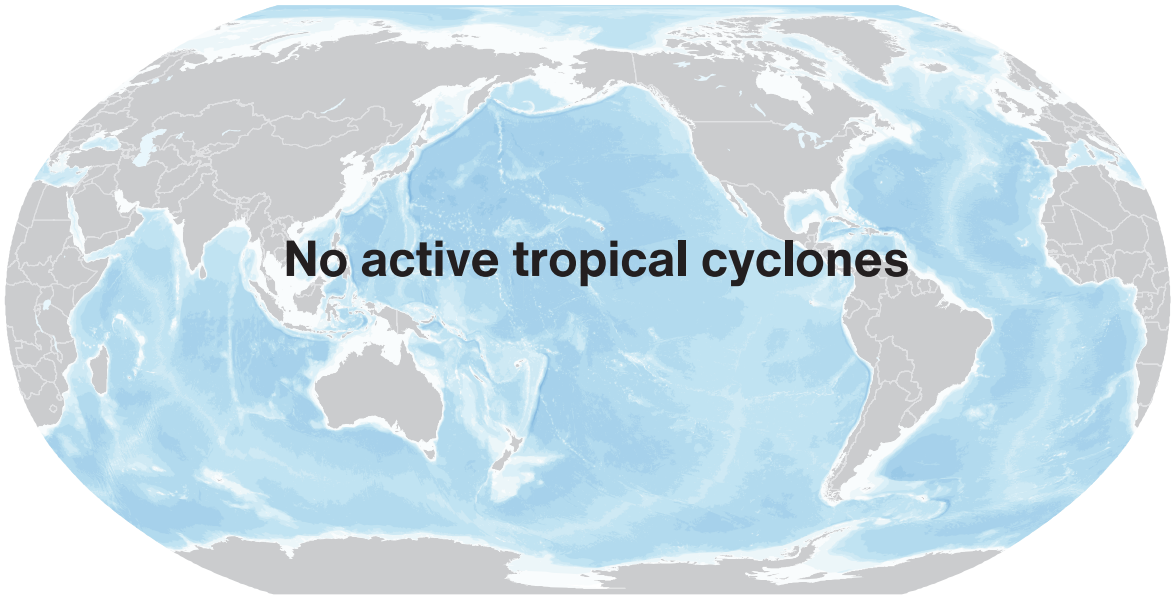
El Niño (La Niña) is a phenomenon in the equatorial Pacific Ocean characterized by a five consecutive 3-month running mean of sea surface temperature (SST) anomalies in the Niño 3.4 region that is above the threshold of +0.5°C (-0.5°C). This is known as the Oceanic Niño Index (ONI).

Global Tropics Outlook



Source: Climate Prediction Center (NOAA)

Current Tropical Cyclone Activity



● Tropical Depression
 ● Tropical Storm
 ● Category 1
 ● Category 2
 ● Category 3
 ● Category 4
 ● Category 5

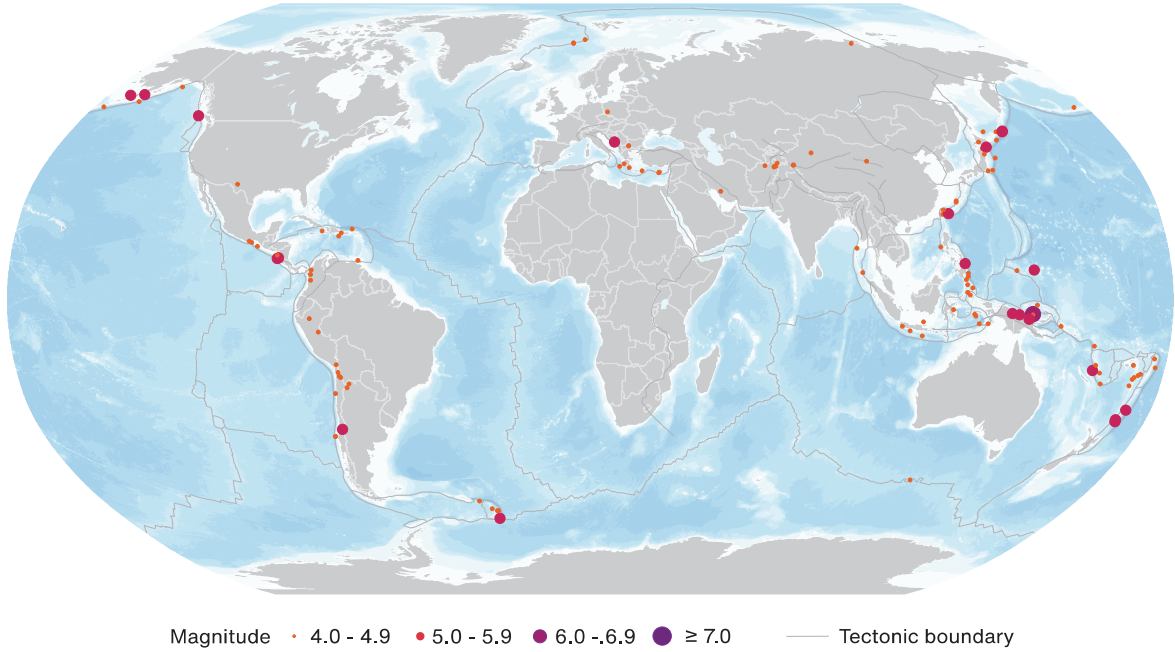
Storm Name	Location	Winds	Location from Nearest Land Area

* TD: Tropical Depression, TS: Tropical Storm, HU: Hurricane, TY: Typhoon, CY: Cyclone

** N: North, S: South, E: East, W: West, NW: Northwest, NE: Northeast, SE: Southeast, SW: Southwest

Source: National Hurricane Center, Joint Typhoon Warning Center, Central Pacific Hurricane Center (NOAA)

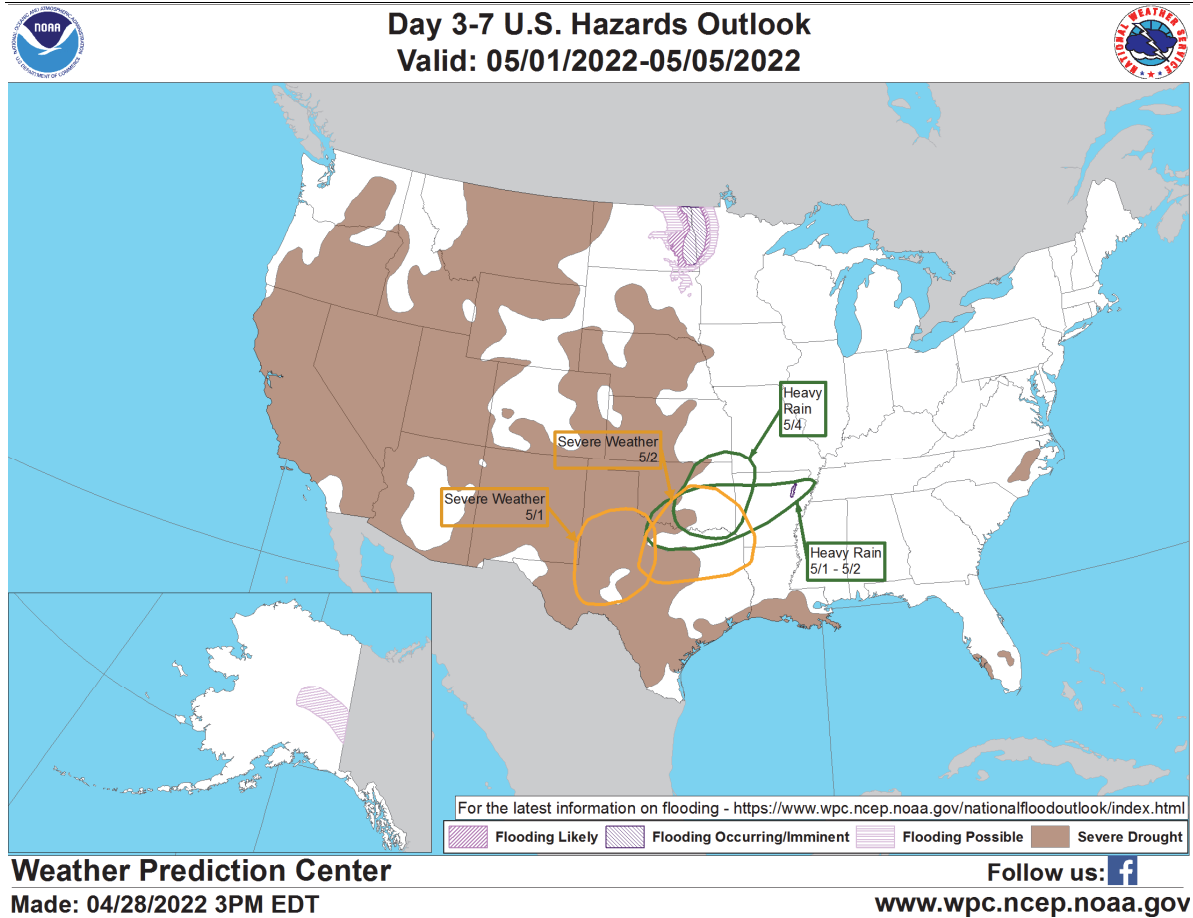
Global Earthquake Activity ($\geq M4.0$): April 22 - 28



Date (UTC)	Location	Magnitude	Epicenter
04/28/2022	3.95S, 146.66E	6.0	17 km (11 mi) NE of Madang, Papua New Guinea

Source: United States Geological Survey

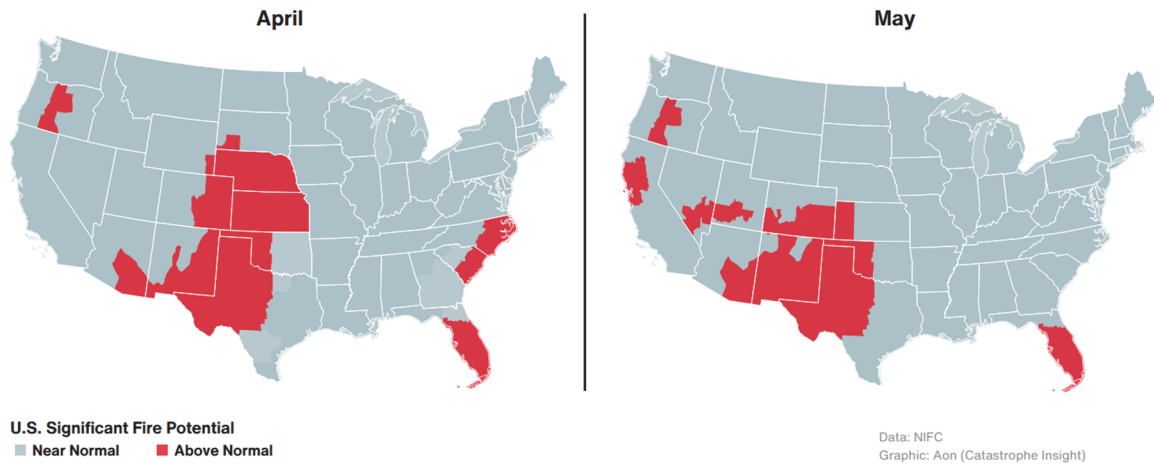
U.S. Hazard Outlook



- A series of shortwaves troughs and an associated frontal system will generate unsettled weather across the southern United States during the first week of May. This pattern will feature the potential for severe storms and heavy rainfall across the Southern Plains and Middle to Lower Mississippi Valley between May 1-2.
- Additional rounds of heavy rainfall and thunderstorm are likely across the Southern Plains on May 4.
- Ongoing flooding will linger in the Upper Midwest, aided by recent bouts of heavy rainfall and seasonal snowmelt.
- Amid ongoing drought conditions, periods of critical fire will continue across parts of the Southwest and Rockies, maintaining an active start to the Western fire season.

Source: Weather Prediction Center (NOAA)

U.S. Wildfire: Significant Fire Risk Outlook & Activity



Annual YTD Wildfire Comparison: April 28

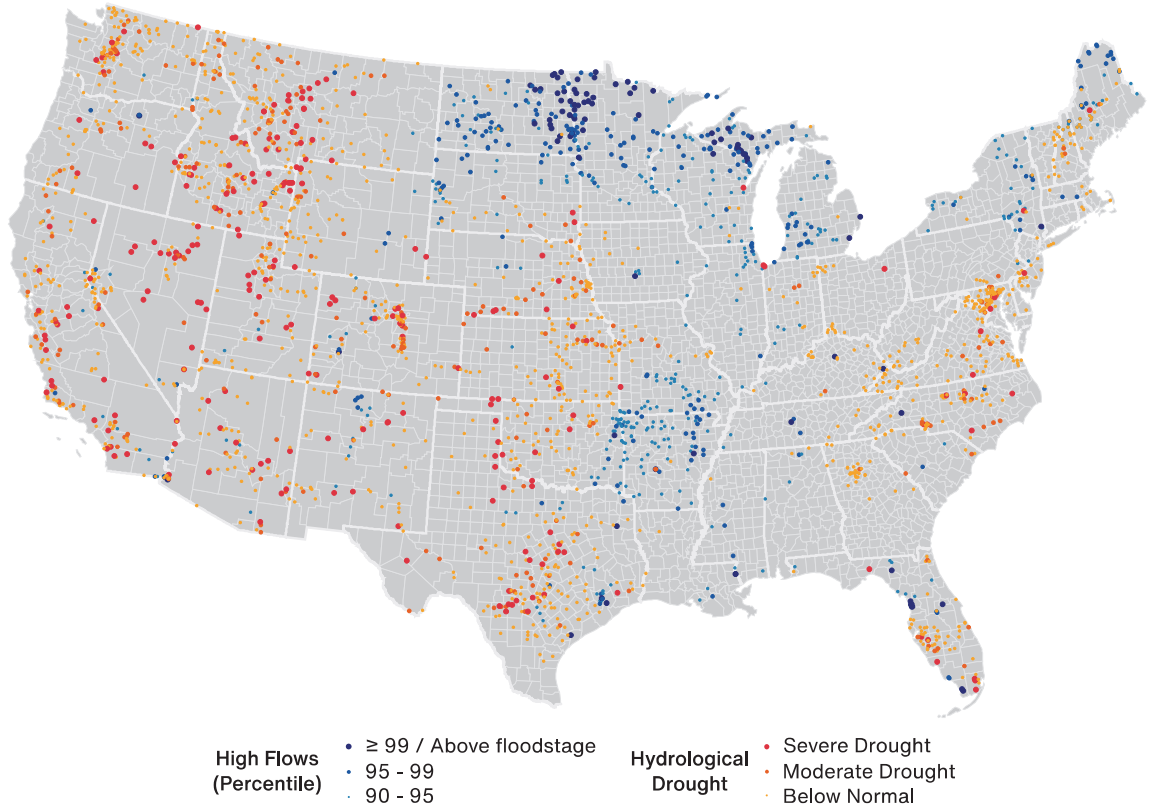
Year	Number of Fires	Acres Burned	Acres Burned Per Fire
2018	16,979	955,463	56.27
2019	9,772	191,411	19.59
2020	11,564	218,836	18.92
2021	17,005	441,656	25.97
2022	21,181	1,080,836	51.03
10-Year Average (2012-2021)	14,958	727,141	48.61

Top 5 Most Acres Burned by State: April 28

State	Number of Fires	Acres Burned	Acres Burned Per Fire
Texas	3,932	427,928	108.83
New Mexico	170	190,504	1,120.61
Oklahoma	948	158,874	167.59
Kansas	48	46,354	965.71
Mississippi	1,232	42,436	34.44

Source: National Interagency Fire Center

U.S. Current Riverine Flood Risk



A $\geq 99^{\text{th}}$ percentile indicates that estimated streamflow is greater than the 99th percentile for all days of the year. This methodology also applies for the other two categories. A stream in a state of severe drought has 7-day average streamflow of less than or equal to the 5th percentile for this day of the year. Moderate drought indicates that estimated 7-day streamflow is between the 6th and 9th percentile for this day of the year and 'below normal' state is between 10th and 24th percentile.

Top 5 Rivers / Creeks: Highest Percentile for Water Height

Location	Current Stage (ft)	Percentile
Red Lake River at Crookston, Minnesota	20.02	99.17
Clearwater River at Red Lake Falls, Minnesota	13.50	98.95
Rainy River at Manitou Rapids, Minnesota	18.72	98.92
Goose River at Hilsboro, North Dakota	14.25	98.90
Little Missouri River at Marmarth, North Dakota	8.53	98.81

Source: United States Geological Survey

Source Information

United States: Severe Convective Storms

U.S. National Weather Service

U.S. Storm Prediction Center

U.S. Weather Prediction Center

CatIQ

Residents react to significant storm damage in Polk County, *KY3 News*

A building collapse, a barn destroyed: Storm damage reported in Iowa, *KCCI CBS*

Natural Catastrophes: In Brief

InciWeb

Wildfires Tear Across Several States, Driven by High Winds, *US News*

Pan American Health Organization (PAHO WHO)

Colombia's National Unit for Disaster Risk Management (UNGRD)

Deadly Floods and Mudflows Strike After Torrential Rain, *Floodlist*

Balance of damage caused by heavy rains in Nariño, *Caracol Radio*

Storm that hit Paraná leaves rural areas without electricity since Friday. *Canal Rural*

European Mediterranean Seismological Center (EMSC)

U.S. Geological Survey (USGS)

Large-scale Heavy Rainfall in the South Continues, Flooding in Some Areas, *CCTV News*

Saturday heavy downpour destroys property, kills 11 people, *The New Times*

Indian Meteorological Department (IMD)

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