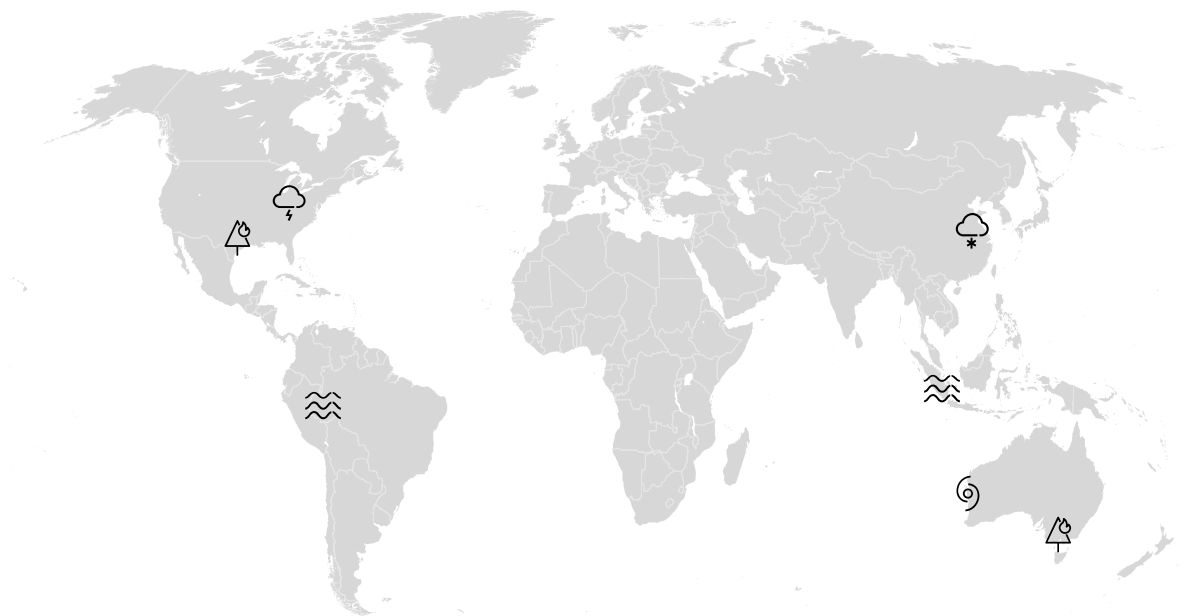


Weekly Cat Report

March 1, 2024



Executive Summary



Event	Affected Region(s)	Fatalities	Economic Loss (\$)	Page
Wildfire	United States	2	100s of millions	3
SCS & Winter Weather	United States, Canada	0	100s of millions	6
Wildfire	Australia	0	Millions	9
Flooding & Landslide (Update)	South America	57+	10s of millions	10
Flooding & Landslide	Indonesia	5	Unknown	12
Winter Weather (Update)	China, Mongolia	1	Unknown	12
TS Lincoln (Update)	Australia	1	Negligible	12

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: Wildfire

Overview

Hot and windy conditions have accelerated wildfire growth in the southern United States since February 26. Notably, several destructive wildfires have since appeared in the Texas Panhandle, leading to one fatality, thousands of evacuations, and many damaged homes and structures. The Smokehouse Creek Fire in Texas has already burned more than a million acres, becoming one of the largest fires in recorded state history. Total aggregate losses can potentially reach the hundreds of millions of USD.

Meteorological Recap

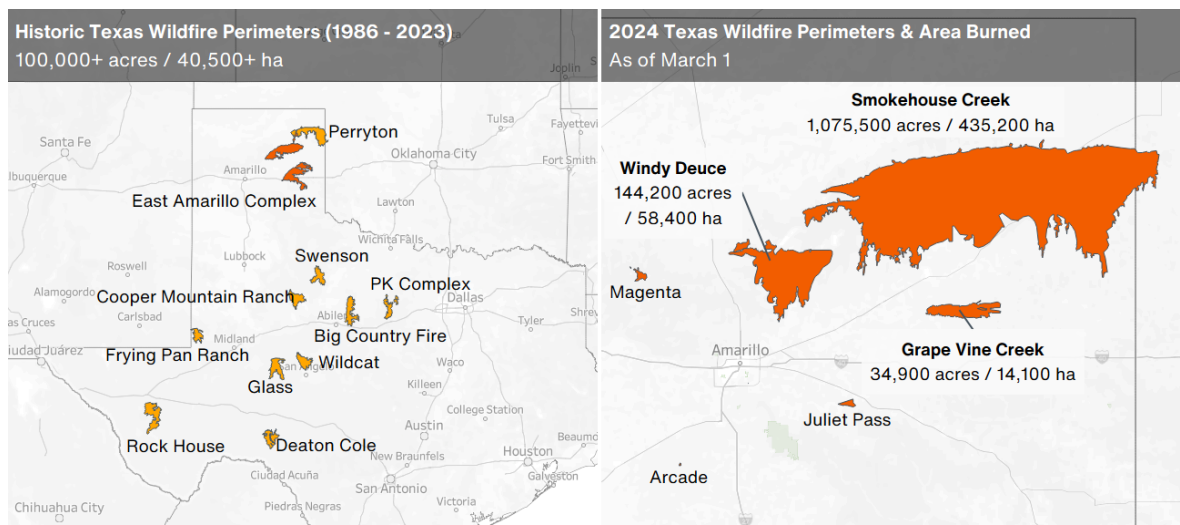
Much of the south-central United States has experienced record-warm temperatures in recent days as dozens of monthly records have been broken. Notably, on February 27, the city of Killeen in central Texas became the first U.S. city to hit 100°F (37.8°C) in 2024. This unseasonable warmth, along with powerful winds ahead of a low-pressure system and cold front, created ideal wildfire conditions in the south-central U.S. on February 26-27. As a result, several wildfires ignited and quickly spread over the Texas Panhandle and western Oklahoma. A sudden wind shift after a cold frontal passage on February 28 further exacerbated wildfire growth in the area.

Historical Context

The largest current fire, the **Smokehouse Creek Fire**, has already burned more than **1,070,000 acres (433,000 hectares)** of land as of March 1. This ongoing fire, which is currently larger than the state of Rhode Island, has now become one of the largest fires in Texas state history. The East Amarillo Complex Fire from March 2006 previously held this record after burning over 907,000 acres (367,000 hectares) of land. 17 years ago, this destructive fire claimed at least 12 lives, destroyed about 100 homes, and generated around \$150 million (2024 inflated) in economic losses.

The table below shows the top 10 largest wildfires in Texas state history, according to the Texas A&M Forest Service. Historic fire locations are also shown on the map below.

Fire Name	Ignition Date	Area Burned (Thousands of acres)	Area Burned (Thousands of hectares)
Smokehouse Creek	Feb 26, 2024	1,075.5	435.2
East Amarillo Complex	Mar 12, 2006	907.2	367.1
Big Country	Mar 10, 1988	366.0	148.1
Perryton	Mar 6, 2017	318.2	128.8
Rockhouse	Apr 9, 2011	314.4	127.3
Glass	Feb 25, 2008	220.0	89.0
Deaton Cole	Apr 25, 2011	175.0	70.8
Cooper Mountain Ranch	Apr 11, 2011	162.6	65.8
Wildcat	Apr 10, 2011	158.3	64.1
Lefors East	Mar 6, 2017	135.0	54.6



Event Details

As of March 1, local authorities report three major ongoing active fires in the Texas Panhandle (see Graphic above). The **Smokehouse Creek Fire** has impacted the Texas communities of Canadian, Glazier, Pampa, and Miami, as well as part of western Oklahoma. As of this writing, about 50% of this fire has been contained. The nearby **Windy Deuce** and **Grape Vine Creek** fires have been partially contained.

Across Morre, Hutchinson, and Potter counties, two persons have been killed while around 100 homes and dozens of vehicles have been damaged. At least 13 more homes have also been destroyed in Oklahoma. The dangerous fire prompted evacuations of more than 6,500 people across the affected area, according to the Federal Emergency Management Agency (FEMA). At least 60 counties declared a disaster situation.





Smoke and flames from Smokehouse Creek and Windy Deuce fires

Source: InciWeb

Financial Loss

Although the event is still unfolding, given the current damage assessments, total economic and insured losses could reach into the hundreds of millions of USD.

United States, Canada: SCS & Winter Weather

Overview

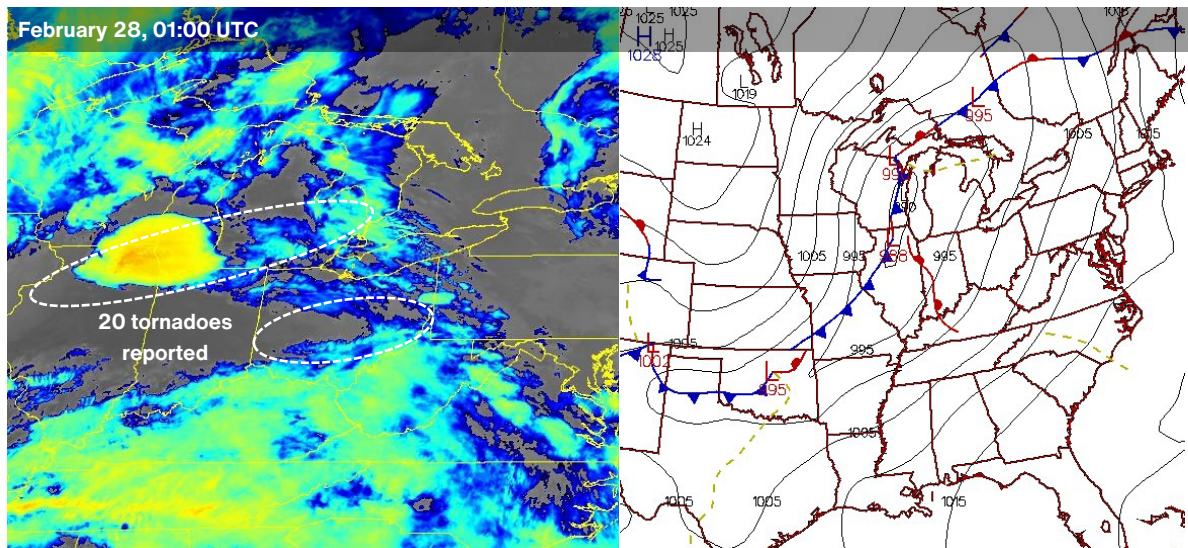
A dynamic weather system crossed over the United States and Canada on February 26-29, bringing hazardous weather and drastic temperature changes. Heavy snow was seen across the Rocky Mountains and Great Plains while Atlantic Canada experienced strong winds and flooding. Notably, severe weather heavily impacted the Midwest, southeast U.S., and Ontario, leading to widespread damage. Total economic and insured losses could reach into the hundreds of millions USD.

Meteorological Recap

Winter Weather

On February 26-27, a powerful low-pressure system moved from southwest Canada into the north-central United States. Along the trailing cold front, heavy snow fell across several states within the Rocky Mountains and northern Great Plains. Parts of northern Colorado, including Denver, were issued snow squall warnings as snow rates reached 2 inches (50 mm) per hour.

Severe Convective Storms & Temperature Shifts



Early on February 27, strong thunderstorms developed along a frontal boundary stretching over the Great Lakes region. In southern Ontario, these rare wintertime storms brought gusty winds and small hail up to 15 mm (0.6 inches), especially near the town of London.

Later that day, a secondary low-pressure system developed near the Missouri, Iowa, and Illinois borders. Near this low, sufficient moisture, abundant wind shear, and a very sharp cold front set the stage for explosive thunderstorm development after sunset. These storms moved from northern Illinois to southern Michigan, producing wind gusts up to 82 mph (130 kph) and hail up to 2 inches (5.1 cm) in diameter. Additionally, at least 14 tornadoes were reported across this area, mostly near Chicago.

Soon after midnight on February 28, a separate line of severe storms developed, primarily around the Ohio and Tennessee River Valleys. Large hail and powerful winds were seen across Indiana, Ohio, Kentucky, West Virginia, Tennessee, Alabama, Georgia, and South Carolina. Notably, another 6 tornadoes were reported in Ohio, including three EF-2 tornadoes within Franklin, Clark, Madison, and Monroe counties.

Preceding this severe weather outbreak in the central U.S. and southern Canada were record-warm temperatures. Around 480 daily high records were broken and nearly 100 monthly high records for February were broken on February 25-27. However, after the sharp cold front and severe storms moved through the region, dozens of locations experienced rapid temperature shifts on February 27-28. In fact, some areas saw temperatures drop by over 60 °F (33 °C) in less than 24 hours.

Location	Dates	Maximum Temperature (°F)	Minimum Temperature (°F)	Temperature Difference (°F)
Davenport, IA	2/27-2/28	77	11	-66
Kansas City, MO		76	15	-61
St. Louis, MO		86	26	-60
Oklahoma City, OK		80	25	-55
Chicago, IL		74	20	-54

Flooding & Winds

The aforementioned weather system eventually progressed over Atlantic Canada on February 28-29. Potent rainfall up to 150 mm (5.9 inches) and wind gusts exceeding 100 kph (62 mph) were reported in New Brunswick and Nova Scotia, according to Environment Canada. Much of the heaviest rainfall occurred in the town of Sussex, which caused notable flooding impacts.

Event Details

Extensive severe weather damage occurred primarily across the Midwest. Many homes and businesses, including a large warehouse, were heavily damaged by an EF-2 tornado in Grand Blanc, Michigan. More significant property and infrastructure damage, including within the Wright-Patterson Airforce Base, was seen in Ohio. In the Chicago metro, moderate property damage occurred due to hail and strong winds.



Tornado damage in Grand Blanc, Michigan (left) and Annawan, Illinois

Source: Grand Blanc Township, NOAA DAT

Strong winds and heavy rainfall over Atlantic Canada led to widespread school closures and caused over 32,000 power outages. Numerous homes and businesses experienced flooding damage in Sussex, while minor property damage due to hail occurred within the town of London in southern Ontario.

Hazardous winter weather conditions around Denver, Colorado caused numerous vehicle accidents and at least 400 delayed flights.

Financial Loss

Given the widespread impacts between the U.S. and Canada, especially severe weather impacts, total economic and insured losses could reach hundreds of millions USD.

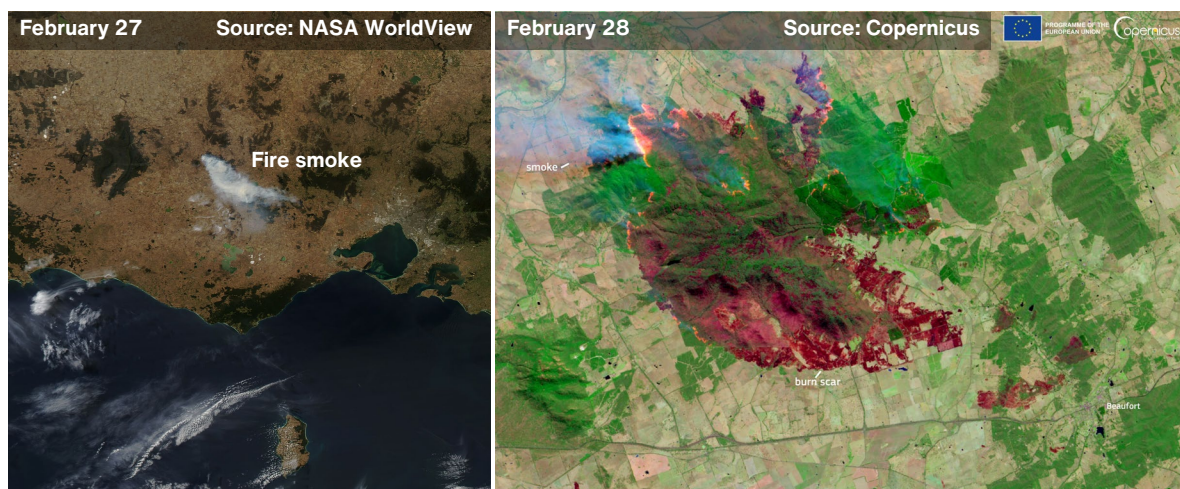
Australia: Wildfire

Overview

Southern Australia has experienced a prolonged period of warm and dry weather that resulted in enhanced wildfire conditions, particularly in the state of Victoria, prompting evacuations of tens of thousands of people.

Meteorological Recap

Warm and dry weather, typically seen with the current El Niño pattern, together with high winds have created prime wildfire conditions over much of southern Australia. Temperatures have rapidly risen to the 40°C range (104°F), with wind gusts reaching up to 80 kph (50 mph) across the affected area.



Event Details

Over 15 wildfires have been burning since February 22, heavily impacting remote parts of **Victoria**. The most dangerous fire was burning at Bayindeen-Rocky Road in western Victoria, prompting officials to evacuate over 30,000 residents, most of them from the nearby towns of Raglan and Beaufort. As of February 28, the fire has burned around 21,000 hectares (51,900 acres), according to Victoria Emergency Services. The fire destroyed 6 homes, killed numerous livestock, and caused 5,000 homes to lose power. More than 1,000 firefighters have been deployed to combat the fire, which was held under control on February 29.



Source: Country Fire Authority

South America: Flooding & Landslide (Update)

Overview

This year's rainy season across the South American continent has brought increased rainfall, severe flooding, and landslide events in several countries, including Ecuador, Brazil, Peru, and Bolivia, resulting in casualties and widespread damage within the affected region.

Meteorological Recap

Increased precipitation totals during this year's rainy season are associated with the El Niño climate phenomenon, which remains active in the Eastern Tropical Pacific. This warm ENSO (El Niño-Southern Oscillation) phase results in an increase in sea temperature that generates incessant heavy precipitation on the coasts of Ecuador and northern Peru, and elsewhere inland. Localized heavy rainfall consequently causes river overflows and floods.

Event Details

Notable losses due to flooding were seen in several countries in recent days and weeks.

Almost 500 flood events have been reported across 23 provinces of **Ecuador** between January 29 and February 28. Eleven municipalities have declared a state of emergency recently due to flooding. According to the Secretariat of Risk Management of Ecuador (SGR), 6 people have died (3 in Azuay Province), 7 others have been injured, and more than 107,000 people have been affected. Notable structural, infrastructural, and agricultural losses have been incurred, including various levels of damage to more than 24,500 houses, destroyed roads, and more than 24,000 hectares (59,300 acres) of impacted crops. Most of the losses have been reported in the provinces of Manabí, Guayas, and Los Ríos. See the table below for more details (data released by SGR on February 28).

Ecuador's Province	Fatalities	Affected People	Affected houses
Manabí	1	58,221	14,521
Guayas	0	23,430	6,657
Los Ríos	0	11,122	2,537
Esmeraldas	0	6,261	191
Cotopaxi	0	3,632	11
Santa Elena	0	2,262	143
Others	5	~2,700	~500

Repeated flood and landslide events have been reported in various parts of **Brazil**. Most recently, flash flooding after torrential rains occurred across the state of Santa Catarina, particularly in Joinville city, where a state of emergency was declared. The states of Rio Grande Do Sul and Rio de Janeiro in southern Brazil have been impacted by heavy rainfall since February 21. Subsequent flooding and landslides have killed 9 people and displaced nearly 550 people, primarily from the Nova Iguaçu and Japeri Municipalities.

Material losses due to heavy rainfall and flooding have been reported also in **Peru** since February 19. According to the National Institute of Civil Defense (INDECI) of Peru, hundreds of people have been affected and notable infrastructural and structural damage to more than 110 buildings have been incurred in the Tumbes Region. In Tahuamanu Province, at least 2,800 people have been affected, several people have been injured, and about 600 houses have been flooded by the overflow of the Acre and Yaverija Rivers. Power outages and a lack of drinking water have also been reported in the impacted area.

In **Bolivia**, heavy rainfall triggered a dam break and consequent floods in the Cochabamba Department on February 25, forcing dozens of people to leave their homes and damaging at least 30 houses downstream. National disaster authorities claimed that seasonal flooding has already left 42 people dead, affected more than 30,000 people, and destroyed over 450 houses across the country.

Financial Loss

Total losses related to the seasonal rains and flooding are subject to later assessment as the rainy season usually lasts till May. However, this year aggregate losses will likely stand relatively high due to the structural and agricultural damage that has already been incurred across the region.

Natural Catastrophes: In Brief

Flooding & Landslide (Indonesia)

Heavy rainfall, flooding, and landslides have continued to affect various parts of Indonesia since February 16. Recently, landslide events that occurred in Luwu Regency (South Sulawesi) and Magelang Regency (Central Java) on February 25-26, were responsible for 5 deaths, at least 10 injured, and several destroyed houses. On February 25, heavy rains triggered severe flooding across Aceh Province in Sumatra, affecting almost 14,000 people and resulting in some structural and agricultural losses. About 3,500 houses have been inundated and 1,200 people have been displaced, according to the local disaster authority (BNPB).

Winter Weather (China, Mongolia) – Update

The cold air outbreak has impacted much of China since February 17. On February 23, snow and ice led to a 100-car pileup in the city of Suzhou in eastern China, where at least 9 people were injured. Meanwhile, Mongolia has also been heavily impacted by winter weather as the country received the heaviest snowfall this winter in nearly 50 years. One person was killed while over 1.5 million livestock died due to extreme cold and snow.

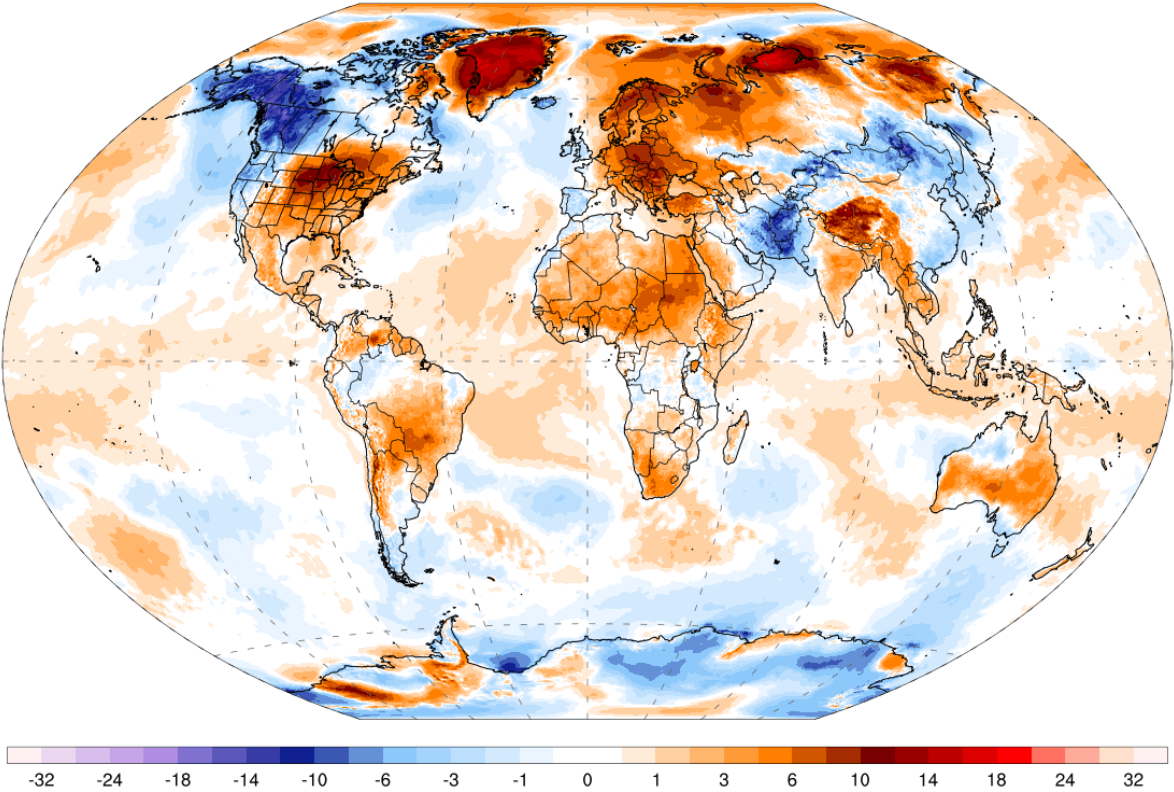
Tropical Storm Lincoln (Australia) - Update

The system made a second landfall near Carnarvon in Gascoyne, Western Australia, on February 24. Although Lincoln did not strengthen as much as initially feared due to dry air entrainment, some additional crop damage was seen due to flooding which was triggered by heavy rainfall that fell over Western Australia.

Global Temperature Anomaly Forecast

GFS 2m T Anomaly (°C) [CFSR 1979-2000 baseline]
Days 1-3 Avg | Fri, Mar 01, 2024

ClimateReanalyzer.org
Climate Change Institute | University of Maine

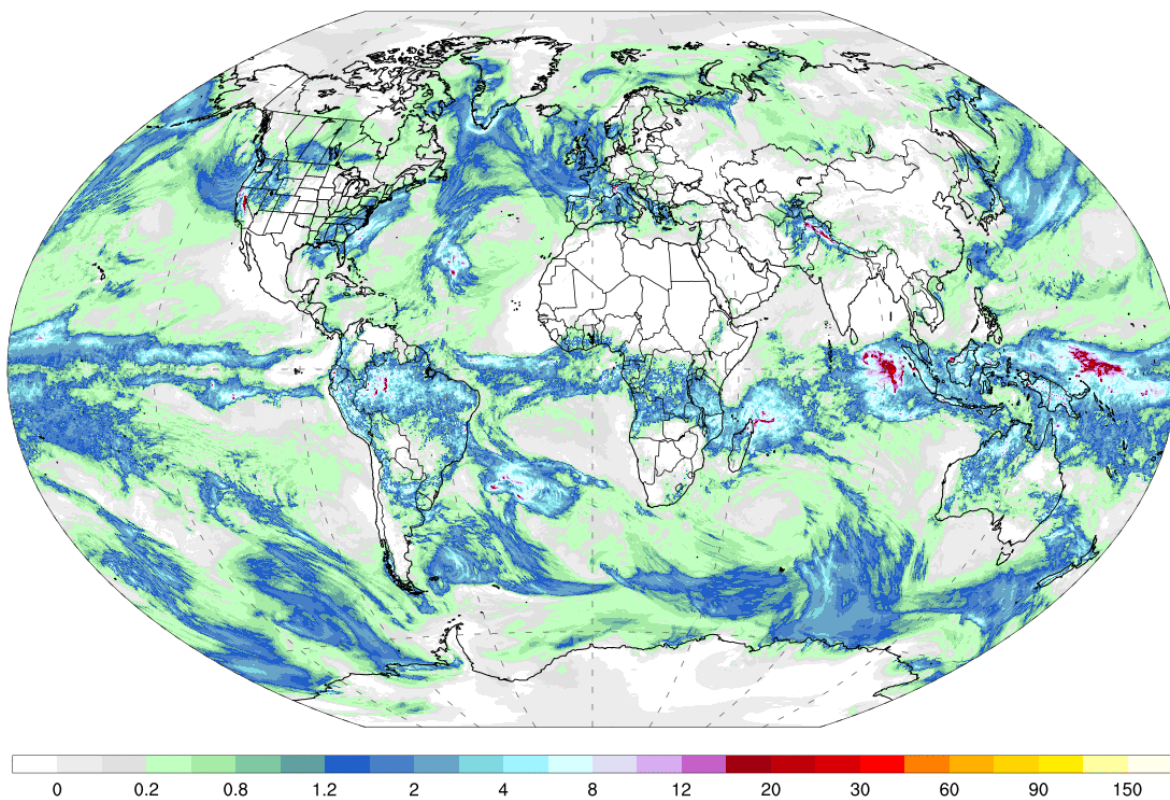


Source: Climate Reanalyzer, Climate Change Institute, University of Maine, USA

Global Precipitation Forecast

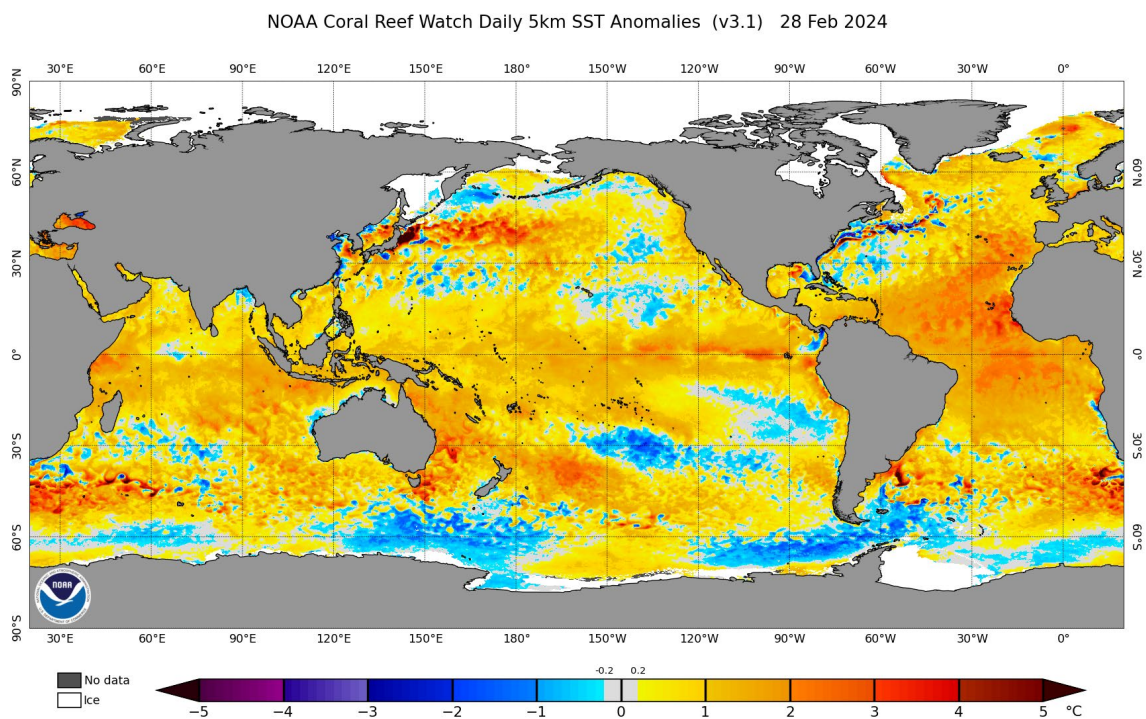
GFS Accumulated Precipitation (cm)
Days 1-3 Total | Fri, Mar 01, 2024

ClimateReanalyzer.org
Climate Change Institute | University of Maine

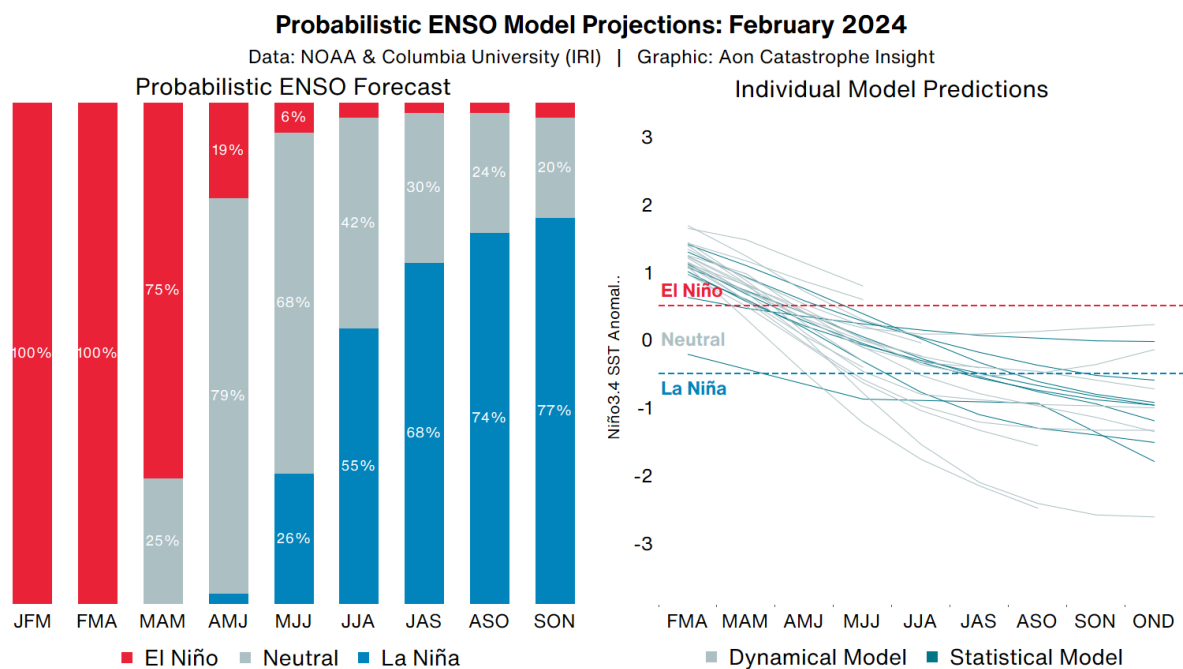


Source: Climate Reanalyzer, Climate Change Institute, University of Maine, USA

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



El Niño-Southern Oscillation (ENSO)



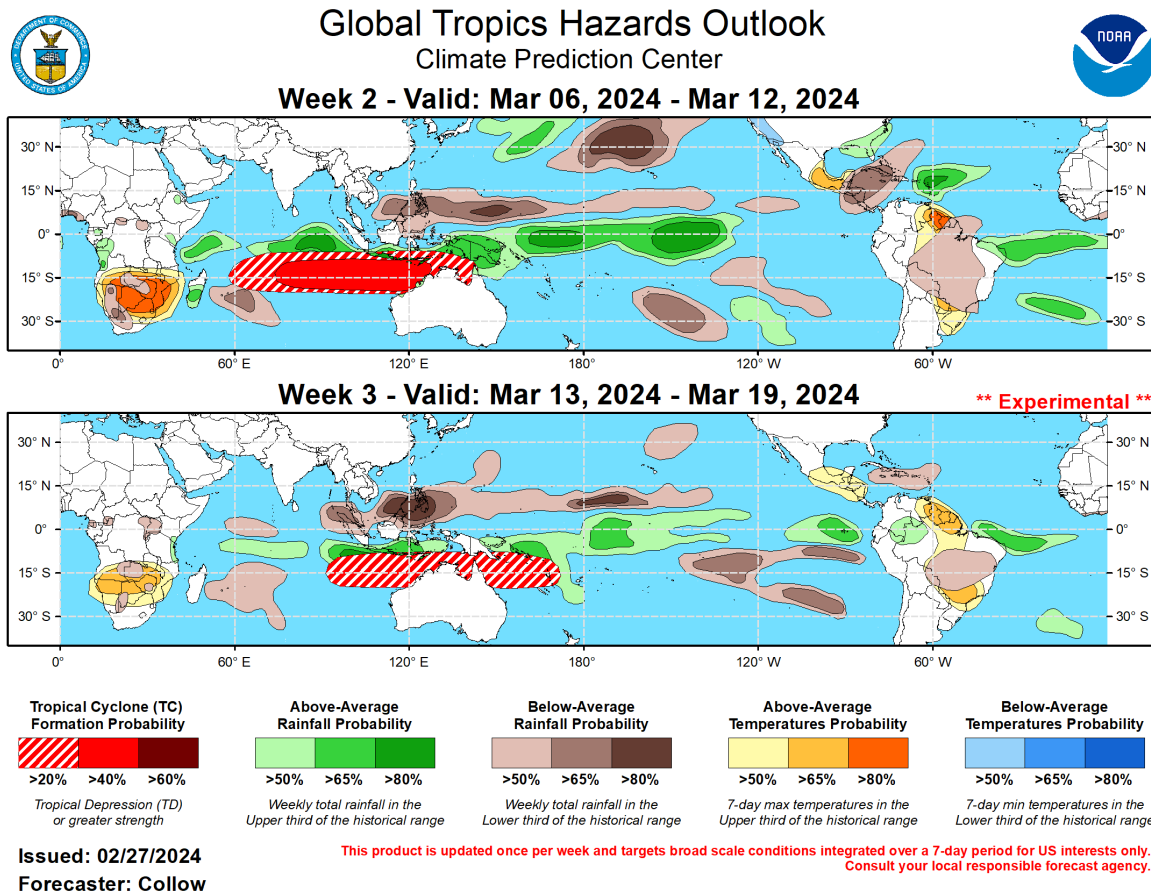
El Niño: Warm phase of an ENSO cycle. Sea surface temperatures of $+0.5^{\circ}\text{C}$ occur across the east-central equatorial Pacific.

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.

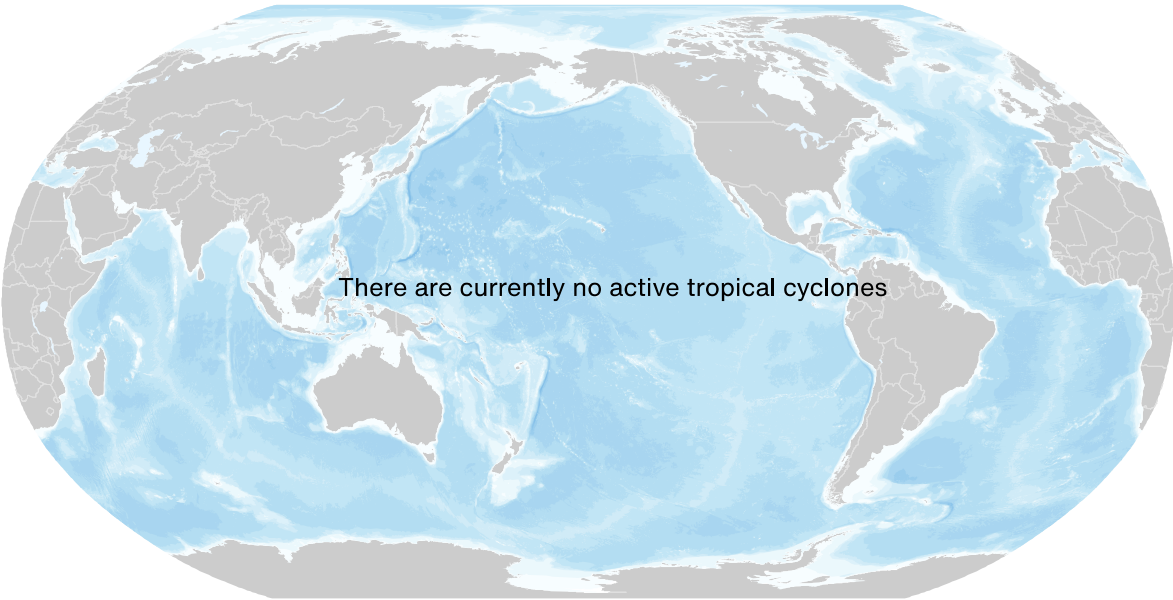
El Niño (La Niña) is a phenomenon in the equatorial Pacific Ocean characterized by a five consecutive 3-month running mean of sea surface temperature (SST) anomalies in the Niño 3.4 region that is above the threshold of $+0.5^{\circ}\text{C}$ (-0.5°C). This is known as the Oceanic Niño Index (ONI).

Global Tropics Outlook



Source: Climate Prediction Center (NOAA)

Current Tropical Cyclone Activity



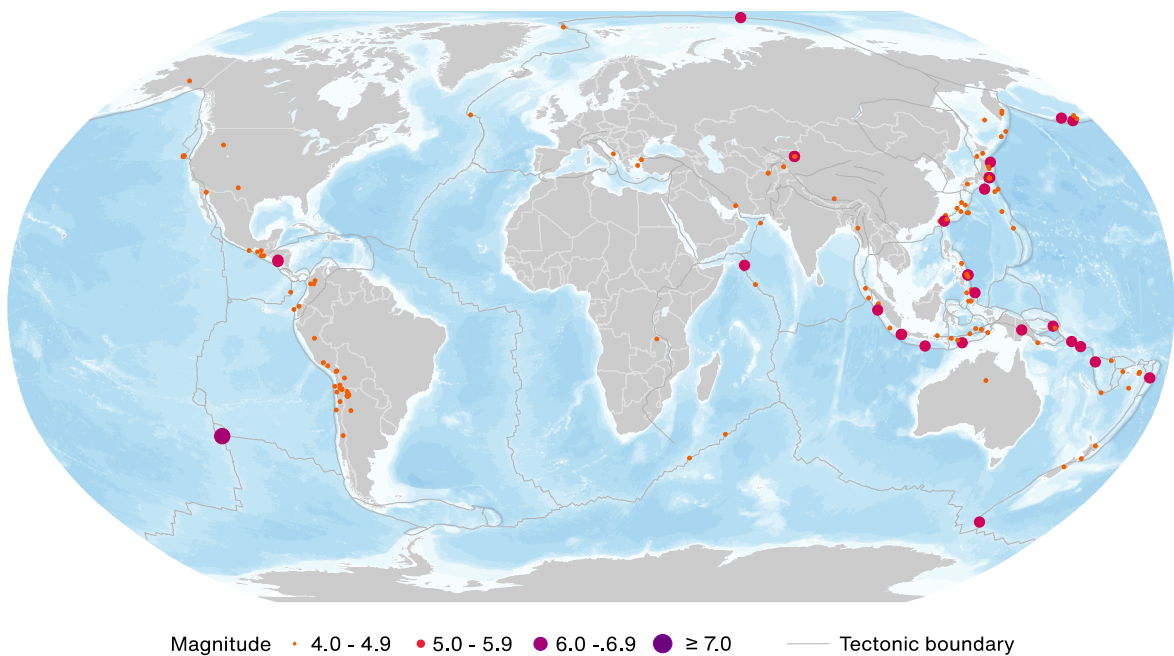
🌀 Tropical Depression 🌀 Tropical Storm 🌀 Category 1 🌀 Category 2 🌀 Category 3 🌀 Category 4 🌀 Category 5

Name	Location	Winds	Center
-	-	-	-

* 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)

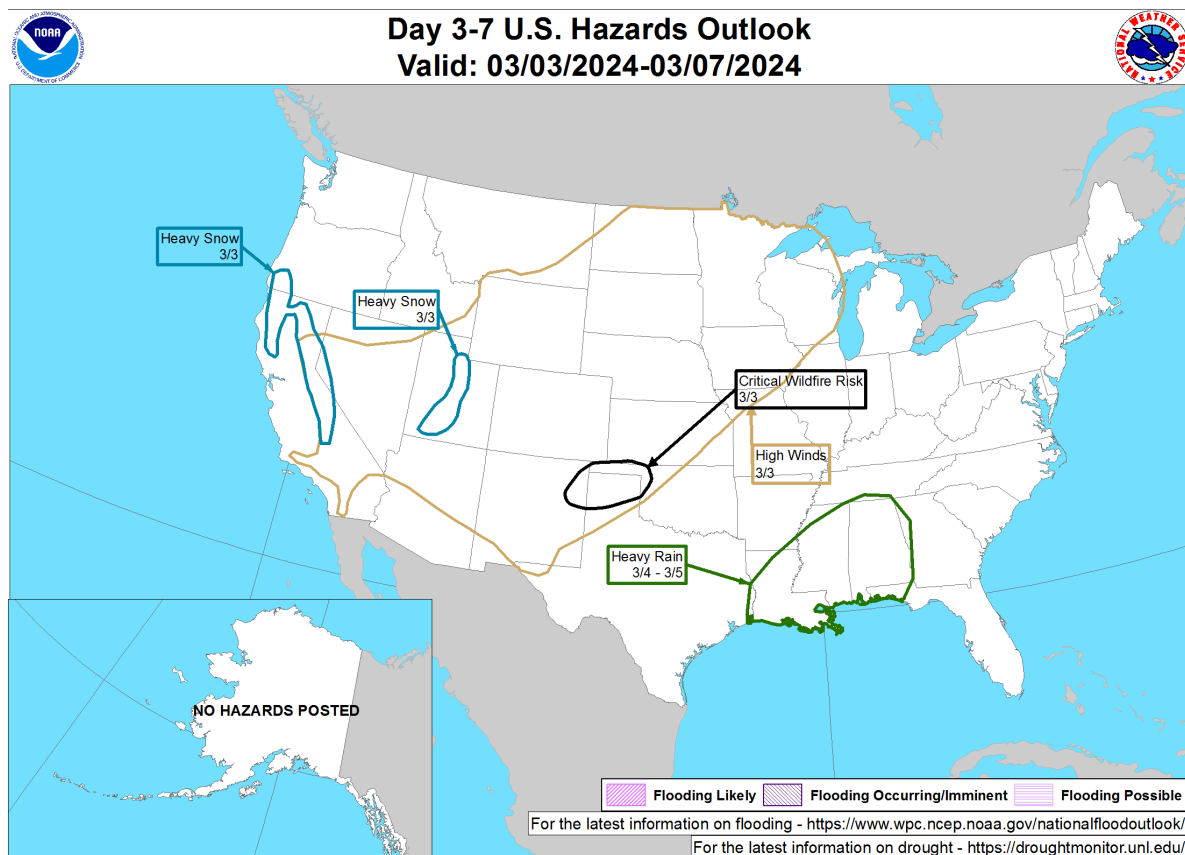
Global Earthquake Activity ($\geq M4.0$): February 23-29



Date (UTC)	Location	Magnitude	Epicenter
2/23/2024	35.12S, 110.79W	6.3	Southern East Pacific Rise

Source: United States Geological Survey

U.S. Hazard Outlook



Weather Prediction Center

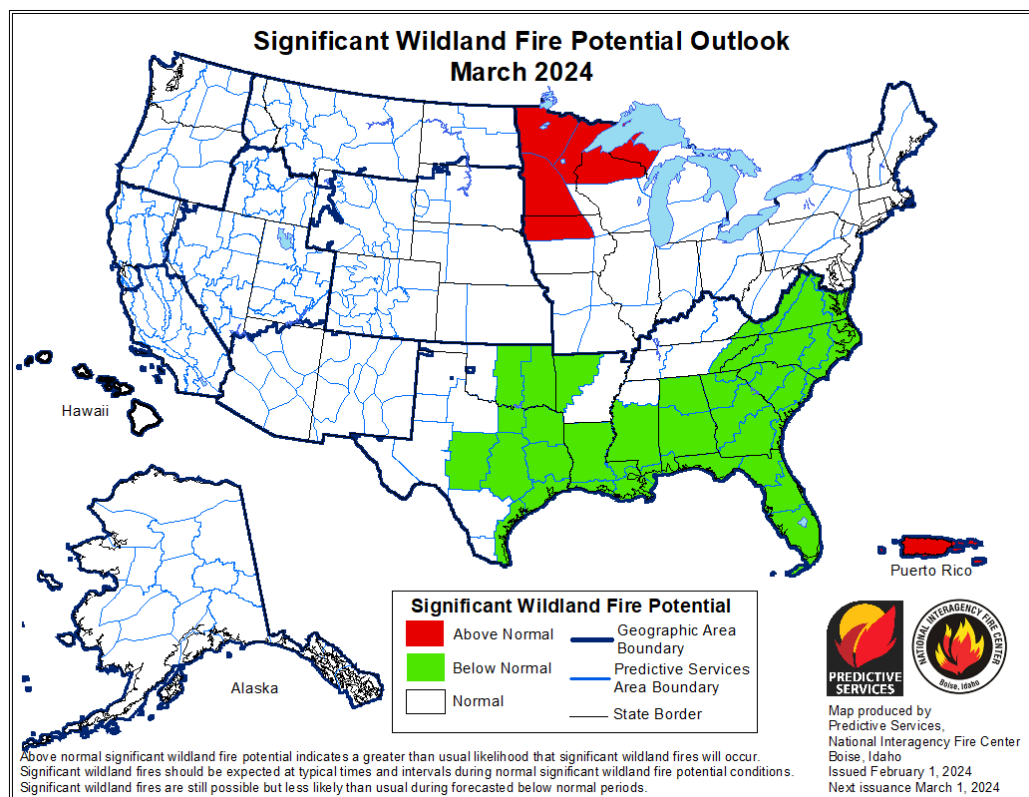
Made: 02/29/2024 02:48 PM EST

Source: Climate Prediction Center (NOAA)

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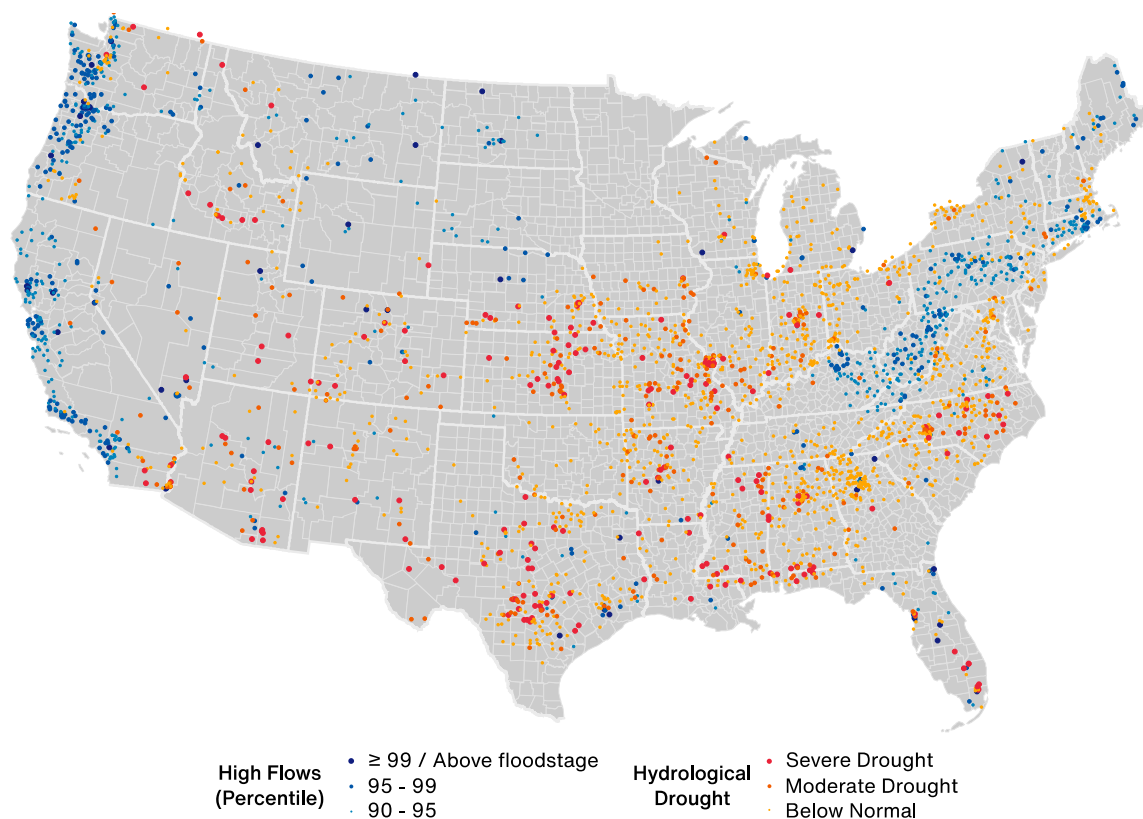
www.wpc.ncep.noaa.gov

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



Source: NIFC

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.

Source: United States Geological Survey

Source Information

United States: Wildfire

Texas A&M Forest Service
National Interagency Fire Center (NIFC)
Monitoring Trends in Burn Severity (MTBS)
Federal Emergency Management Agency (FEMA)
Inciweb

United States, Canada: SCS & Winter Weather

NOAA Damage Assessment Toolkit (DAT)
Grand Blanc Township
Plymouth State University
National Weather Service (NWS)
Storm Prediction Center (SPC)
Environment Canada
Tornadoes reported in Illinois, Michigan, Ohio as storm barrels through Midwest, *ABC News*
What is a snow squall warning? Fast-moving Colorado snowstorm brought several around Denver on Tuesday, *CBS News*
Sussex, N.B., copes with major flooding, evacuations, street closures, *The Weather Network*
Storms Wreak Havoc in Georgia, Disrupting Rush Hour With Downed Trees and Blocked Roads, *The Georgia Sun*

Australia: Wildfire

Country Fire Authority (CFA)
Forest Fire Management Victoria
NASA WorldView
Australian state orders 30,000 people to evacuate due to 'catastrophic' fire risk, *CNN*

South America: Flooding & Landslide (Update)

Secretariat of Risk Management of Ecuador (SGR)
National Institute of Civil Defense of Peru (INDECI)
Ecuador registers more than 105,000 affected by rains and floods in one month, *Primicias*
Bolivia floods: Homes destroyed and animals rescued, *BBC*

Natural Catastrophes: In Brief

BNPB Indonesia
Landslides in Luwu kill five, trap dozens, *Jakarta Post*

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