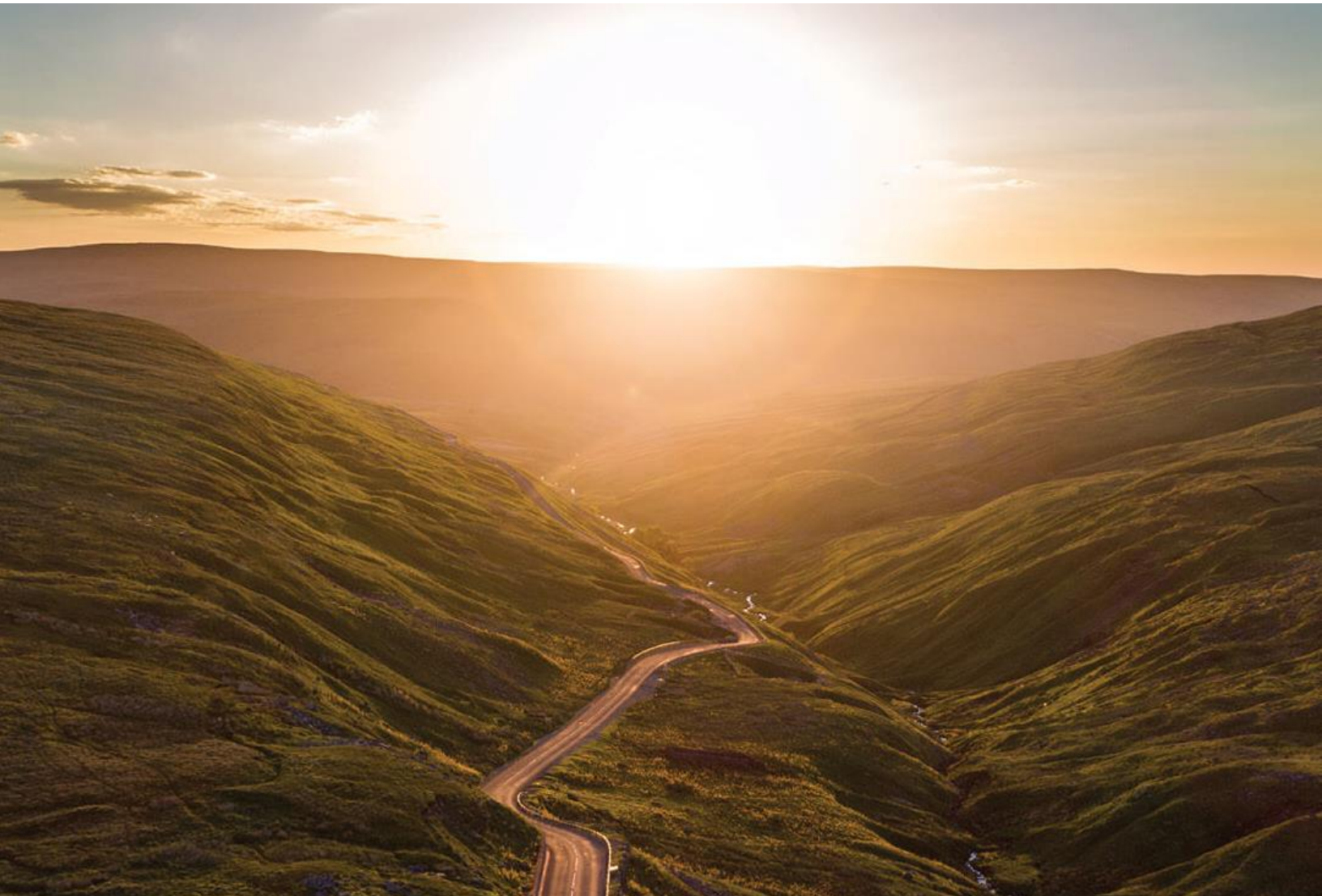


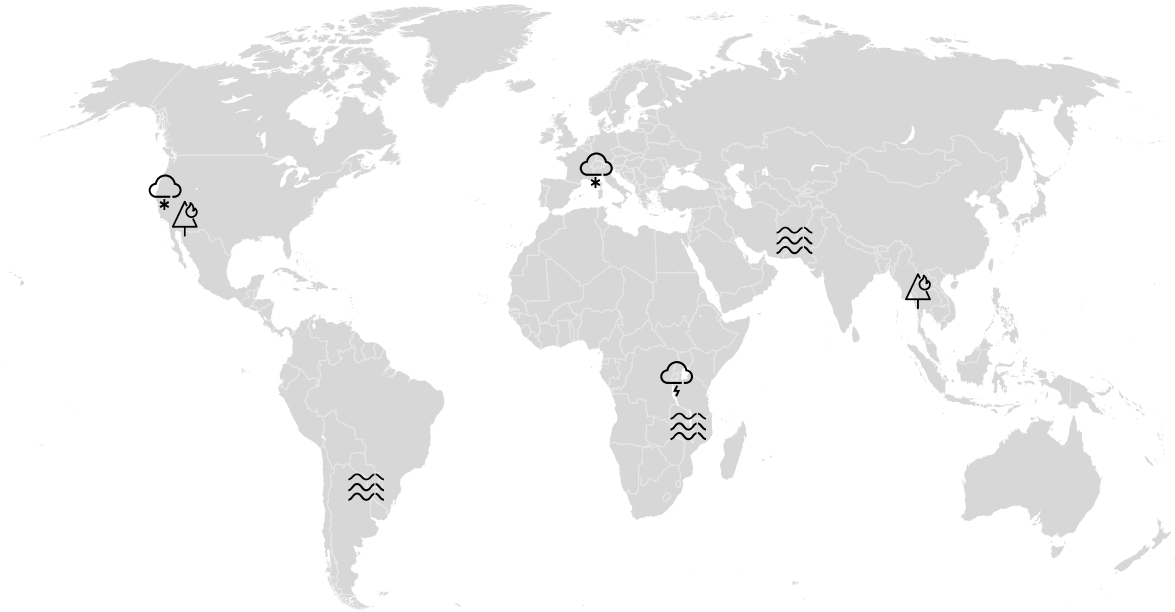
AON

Weekly Cat Report

March 8, 2024



Executive Summary



Event	Affected Region(s)	Fatalities	Economic Loss (\$)	Page
Winter Weather	United States	2	10s of millions	3
Flooding & Winter Weather	Pakistan, Iran, Afghanistan	84	Millions	5
SCS & Winter Weather	Southern Europe	4	Millions	7
Flooding	Argentina	0	10s of millions	7
Flooding	Malawi	6	Unknown	7
Severe Convective Storm	Burundi	0	Unknown	7
Wildfire	United States	0	Negligible	7
Wildfire	Thailand	0	Unknown	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: Winter Weather

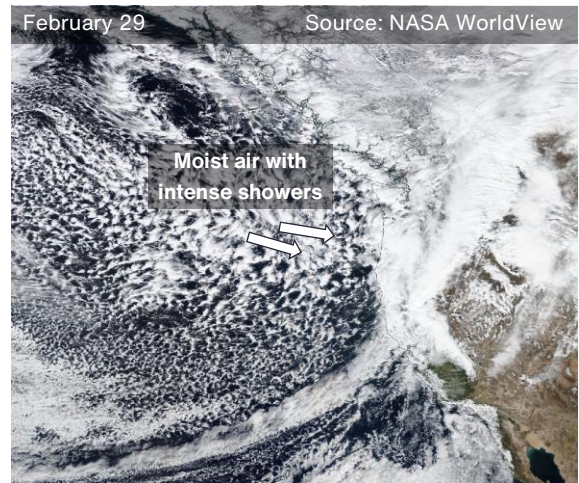
Overview

A dynamic weather system generated substantial snowfall and strong winds over the Western United States between February 28 and March 4. Blizzard conditions resulted in power outages, travel disruptions, and vehicle crashes. Heavy snowfall enhanced conditions for deadly avalanches across the affected region. Total economic and insured losses can potentially reach into the tens of millions USD.

Meteorological Recap

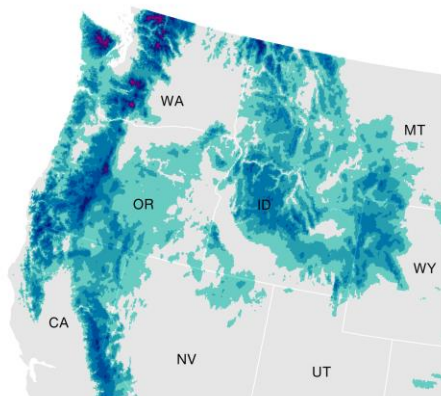
A slow-moving low-pressure system over the western coast allowed for the interaction of moist air mass from the Pacific with cooler air mass progressing southward from Canada. This resulted in substantial snowfall and strong winds. On February 28, the Weather Prediction Center (WPC) started to warn before heavy snowfall, blizzard conditions, widespread damaging winds, and cold air.

Much of the Intermountain West experienced widespread wind gusts and extreme snow accumulations. The most extreme conditions targeted the highest elevations of the Sierra Nevada. The Cascade and Coastal Mountain ranges within Washington and Oregon received heavy snowfall primarily on February 28-29. The northern California mountain ranges were notably impacted after suffering through widespread blizzard conditions on March 1-4. Snowfall rates exceeding 3 inches (75 mm) per hour led to some locations receiving over **10 feet / 3 meters** of snow. Exposed locations recorded hurricane-force wind gusts of 170+ mph / 270+ kph, according to the WPC.



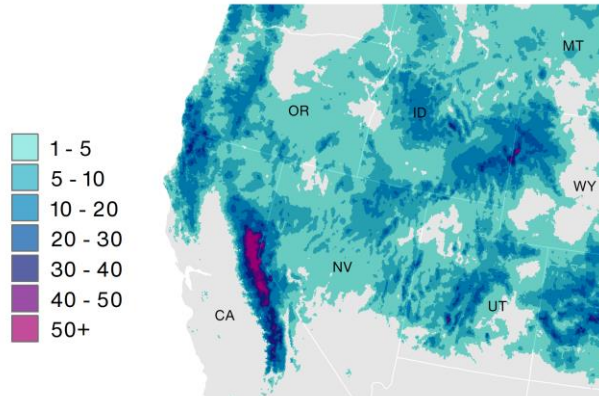
Western U.S. Snowfall (inches)

From February 28 to March 1 (00 UTC)



Data: NOAA

From March 2 to March 4 (00 UTC)



The table below shows the highest snowfall totals within the 4 days between February 29 (4 AM) and March 4 (4 AM), according to the National Weather Services (WPC).

Location	4-day Snowfall Total (inches/cm)	Location	4-day Snowfall Total (inches/cm)
Sugar Bowl	126 / 320	Dodge Ridge	89 / 226
Soda Springs CalTrans	116 / 295	Sierra Snow Lab	75 / 191
Kingvale CalTrans	106 / 269	Boreal	74 / 188
Palisades Tahoe	96 / 244	Eagles Lakes CalTrans	66 / 168

Event Details

The storm caused widespread power outages to thousands of customers, notably in California, and resulted in dozens of vehicle crashes, travel disruptions, and stranded drivers across the impacted area. Avalanches triggered by heavy snowfall killed two persons in the states of Washington and Idaho. Unfavorable conditions also prompted closure of ski resorts in the region.

Financial Loss

Despite the locally elevated severity of the winter storm in California, total economic and insured losses were not expected to reach higher than the tens of millions USD, based on preliminary assessments.

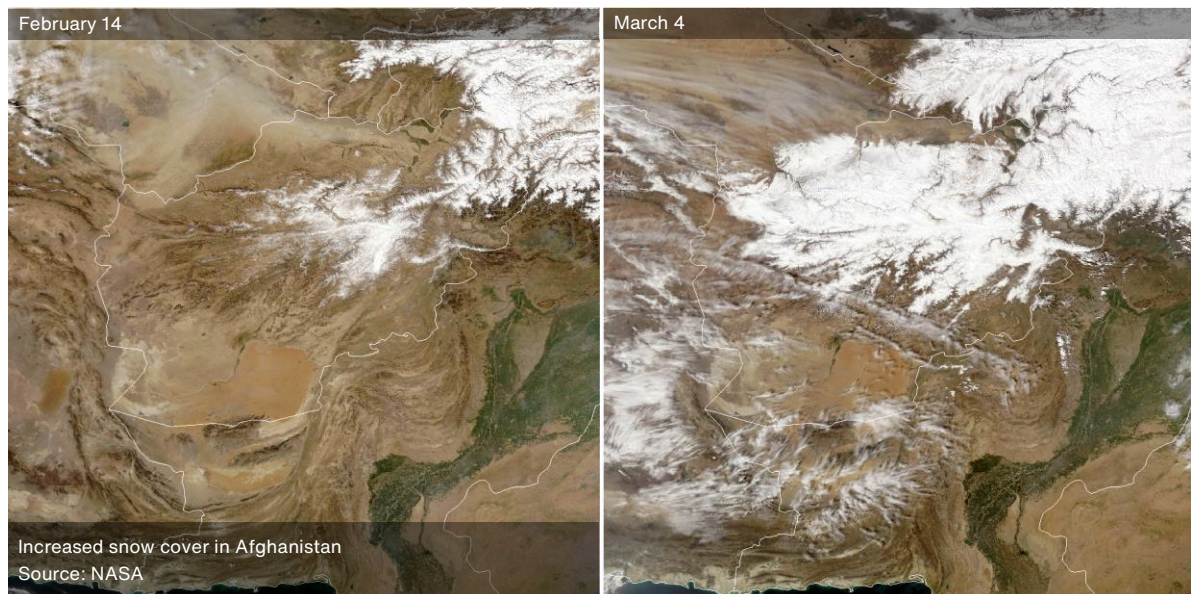
Pakistan, Iran, Afghanistan: Flooding & Winter Weather

Overview

Since February 27, parts of southwestern Asia, including Pakistan, south-eastern Iran, and Afghanistan, have experienced heavy precipitation that resulted in casualties and material damage. As of March 6, local disaster authorities have reported at least 84 deaths, dozens of injured people, and hundreds of destroyed or damaged houses, along with notable agricultural losses across the affected countries.

Meteorological Recap

Heavy precipitation up to 150 mm / 5.9 inches was observed in south-eastern Iran, eastern Afghanistan, and central northern Pakistan during the period between February 27 and March 4. Torrential rainfall triggered severe floods, and exposed high-elevated locations received significant amounts of snow. Weekly precipitation totals were well above long-term averages for this time of the year.



Event Details

In **Pakistan**, the provincial disaster authorities from Khyber Pakhtunkhwa Province, northern Pakistan, reported at least 40 fatalities flood-related fatalities, and 62 people suffered injuries. More than 630 houses were destroyed or damaged. Most of the losses occurred in the districts of Bajaur, Khyber, Makaland, Mohmand, and Lower and Upper Dir. An additional 5 people lost their lives in Balochistan Province, along with no fewer than 21 injured, and about 240 houses that were damaged due to flooding. Hundreds of people were forced to leave their homes in the region. Heavy rains and snowfall at higher elevations triggered multiple landslide events that blocked several roads, including the Karakoram Highway. Rescue operations by army and civil forces are still ongoing.

Notable losses due to recent flooding were reported also in south-eastern **Iran**. Hundreds of thousands of people were affected across Iran's Sistan and Baluchistan provinces, particularly in the cities of Dashtiari, Qasrqand, Nikshahr, and Chabahar. Widespread flooding resulted in material damage to local infrastructure and to more than 500 houses. Agricultural losses to more than 18,000 hectares (44,500 acres) of land were also incurred.

No fewer than 39 people lost their lives and over 30 others were injured across different provinces in **Afghanistan** as the country battles heavy snowfall and rainfall. Cities of Kandahar, Helmand, Sar-e-Pol, Badakshan, Balkh, Jawzjan, Badghis, Faryab, Herat, Ghazni, Daykundi, and Ghor were among the hardest hit. Media reported more than 630 completely or partially destroyed homes and notable agricultural losses, including about 14,000 killed livestock.

Financial Loss

Due to a lack of reliable estimates from the affected areas, it remains too early to determine the total economic impact of this wintry and rainy episode on the region.

Natural Catastrophes: In Brief

SCS & Winter Weather (Southern Europe)

A low-pressure system over the Western Mediterranean brought localized strong winds, heavy rainfall and snowfall, into the regions of eastern Spain, parts of southeastern France and parts of Italy between March 1 and 4. Heavy rainfall resulted in localized flooding and landslides, and a large amount of fresh snow in the western Alps triggered multiple avalanches that resulted in several fatalities. Four fatalities due to avalanches were reported from the Swiss and Italian Alps between March 2-3. In the Italian Piedmont Province, dozens of people were evacuated due to avalanches and landslides.

Flooding (Argentina)

An intense storm system generated approximately 300 mm (11.8 in) of rain in the city of Corrientes, northern Argentina on March 3. Of this amount, roughly 200 mm (7.9 in) fell in only one hour. This resulted in widespread flooding in the city and locally significant impacts. Hundreds of people had to leave their homes and tens of thousands were left without power. Initial assessments suggested economic losses in the tens of million USD.

Flooding (Malawi)

Flash flooding triggered by torrential rains has affected more than 14,000 people in Nkhotakota District in central Malawi since February 27, resulting in 6 fatalities, 4 injured people, and notable material damage to local infrastructure, according to the country's disaster management authority (DoDMA).

Severe Convective Storm (Burundi)

North-eastern Burundi, particularly the Muyinga Province, has been affected by heavy rainfall, intense winds, and hailstorms since March 2, resulting in five injured people and material damage to more than 130 houses.

Wildfire (United States)

Several wind-driven wildfires have burned hundreds of hectares across north-western Arizona. The Aubrey Fire near the town of Seligman is currently the largest fire that has already burned more than 3,800 acres (1,500 hectares) of land and is not fully contained, according to the Arizona Department of Forestry and Fire Management.

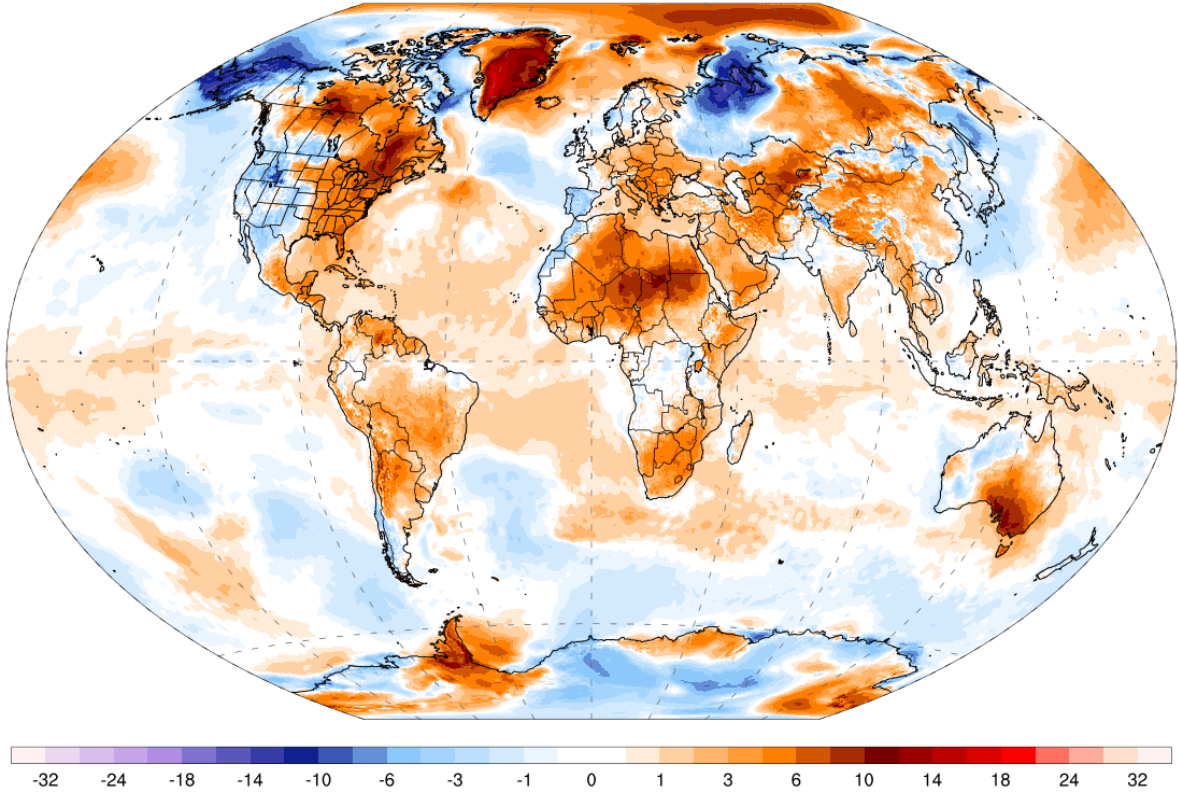
Wildfire (Thailand)

Widespread fires have affected north-western Thailand since March 1, particularly the Mae Hong Son Province. According to the Global Wildfire Information System (GWIS), the total burnt area has reached nearly 40,000 hectares (98,800 acres).

Global Temperature Anomaly Forecast

GFS 2m T Anomaly (°C) [CFSR 1979-2000 baseline]
Days 1-3 Avg | Fri, Mar 08, 2024

ClimateReanalyzer.org
Climate Change Institute | University of Maine

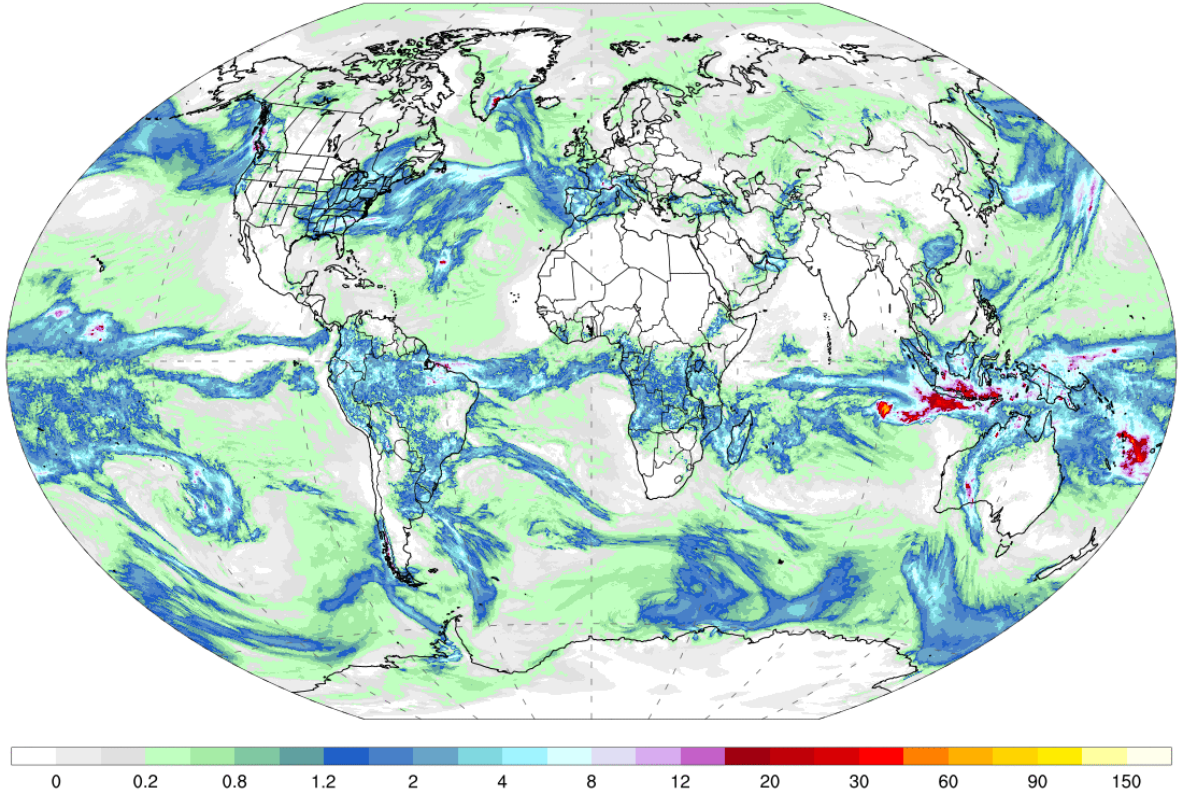


Source: Climate Reanalyzer, Climate Change Institute, University of Maine, USA

Global Precipitation Forecast

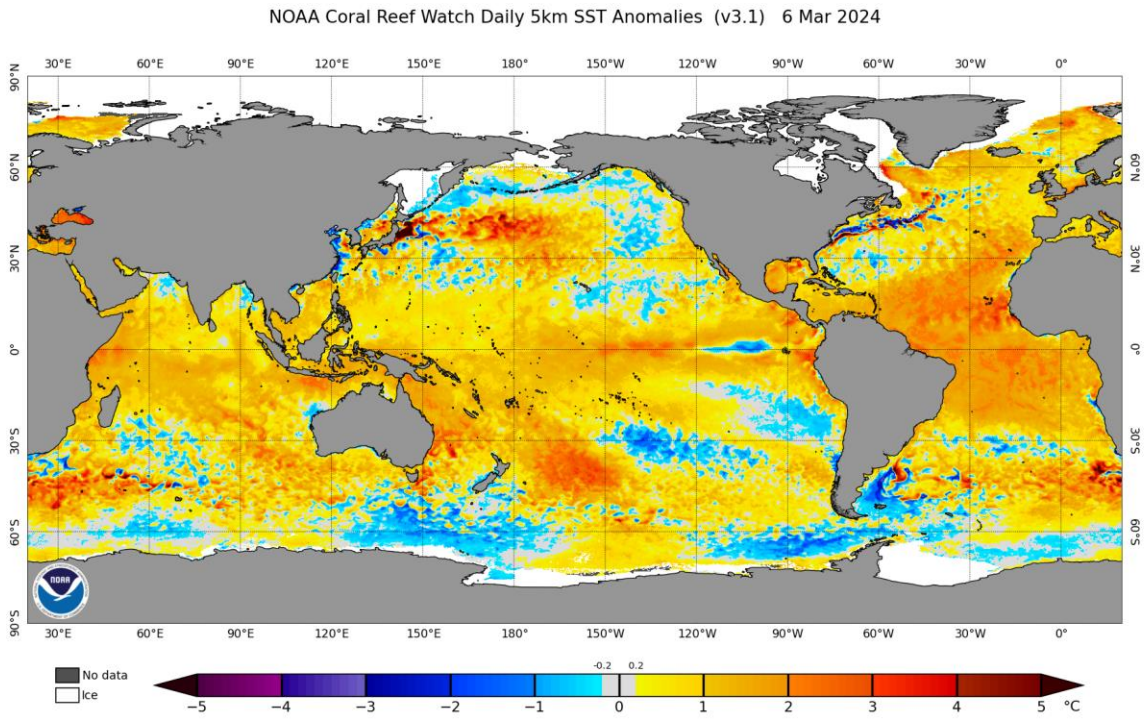
GFS Accumulated Precipitation (cm)
Days 1-3 Total | Fri, Mar 08, 2024

ClimateReanalyzer.org
Climate Change Institute | University of Maine

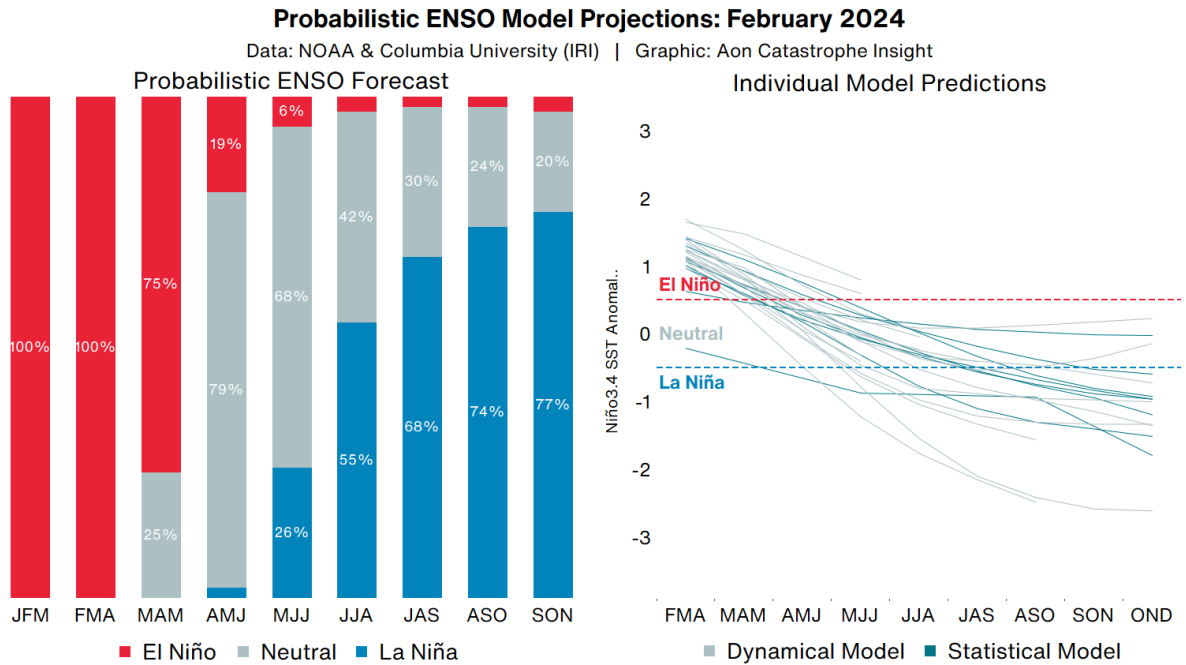


Source: Climate Reanalyzer, Climate Change Institute, University of Maine, USA

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



El Niño-Southern Oscillation (ENSO)



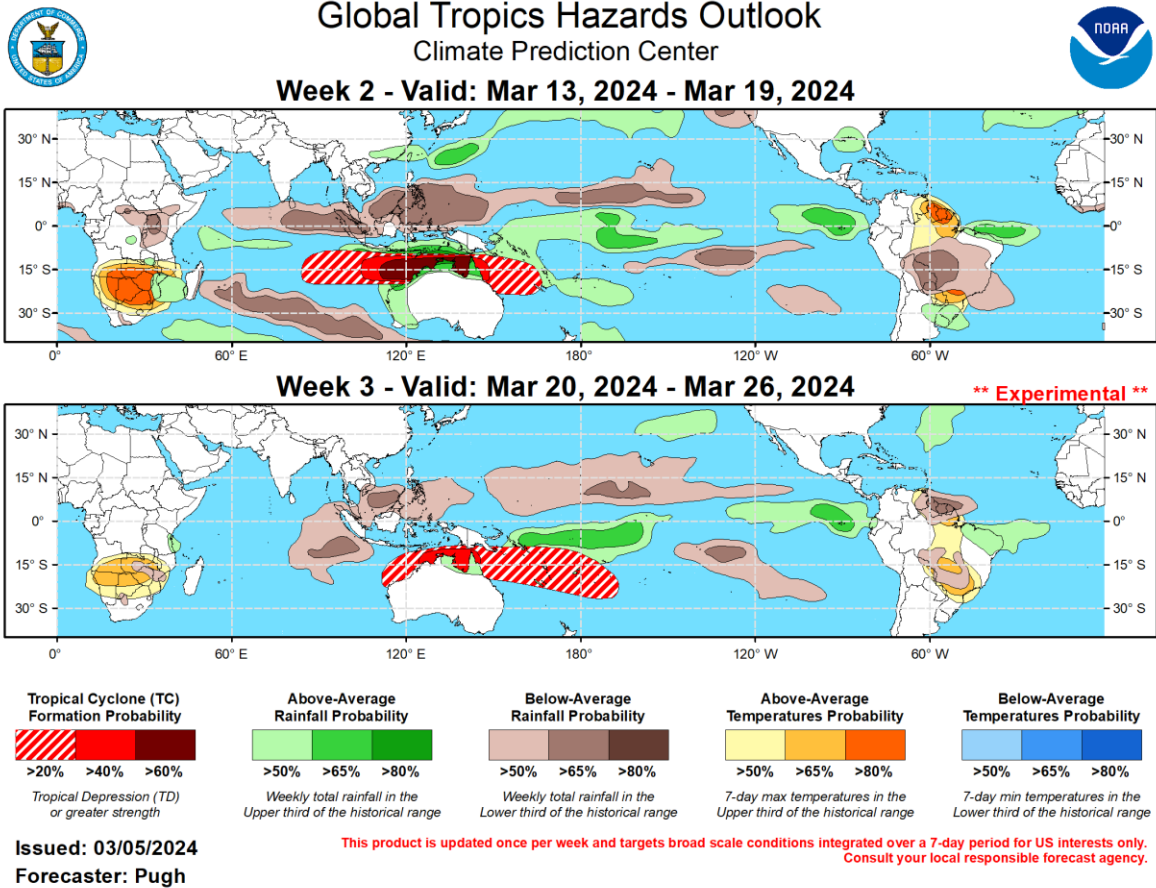
El Niño: Warm phase of an ENSO cycle. Sea surface temperatures of +0.5°C occur across the east-central equatorial Pacific.

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.

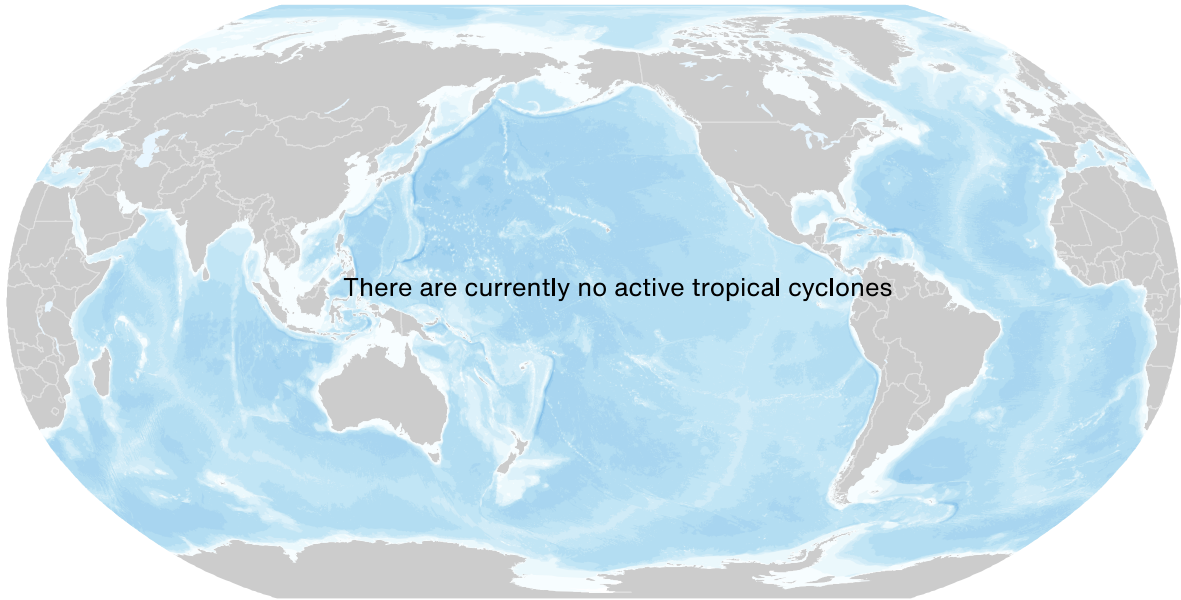
El Niño (La Niña) is a phenomenon in the equatorial Pacific Ocean characterized by a five consecutive 3-month running mean of sea surface temperature (SST) anomalies in the Niño 3.4 region that is above the threshold of +0.5°C (-0.5°C). This is known as the Oceanic Niño Index (ONI).

Global Tropics Outlook



Source: Climate Prediction Center (NOAA)

Current Tropical Cyclone Activity



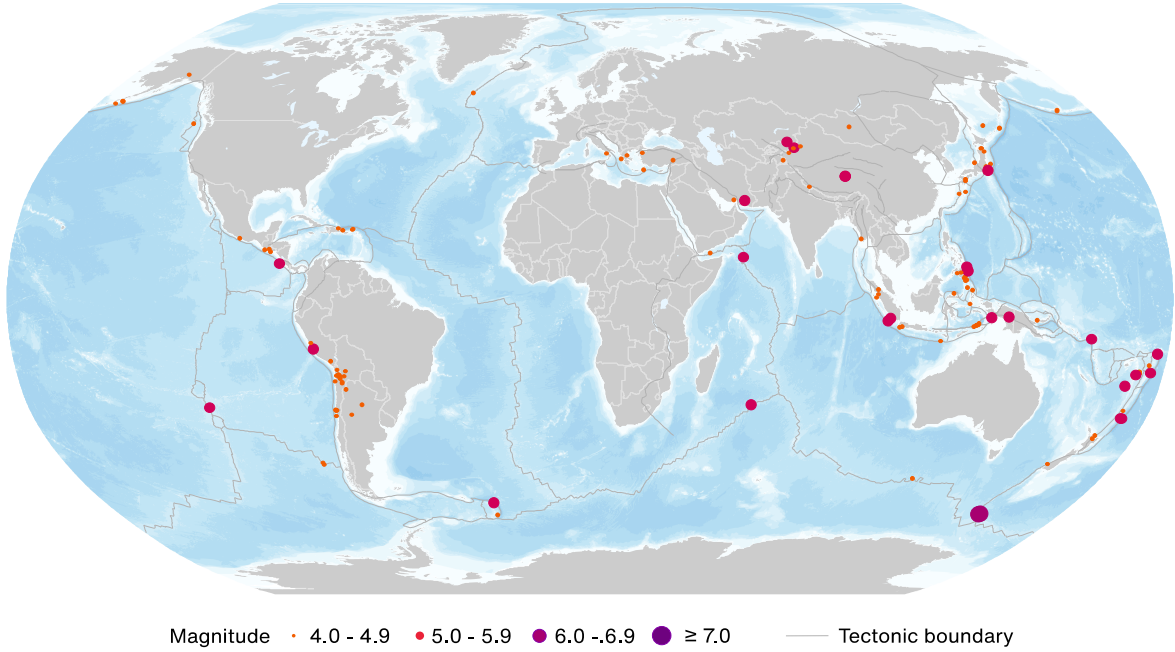
🌀 Tropical Depression 🌀 Tropical Storm 🌀 Category 1 🌀 Category 2 🌀 Category 3 🌀 Category 4 🌀 Category 5

* 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)

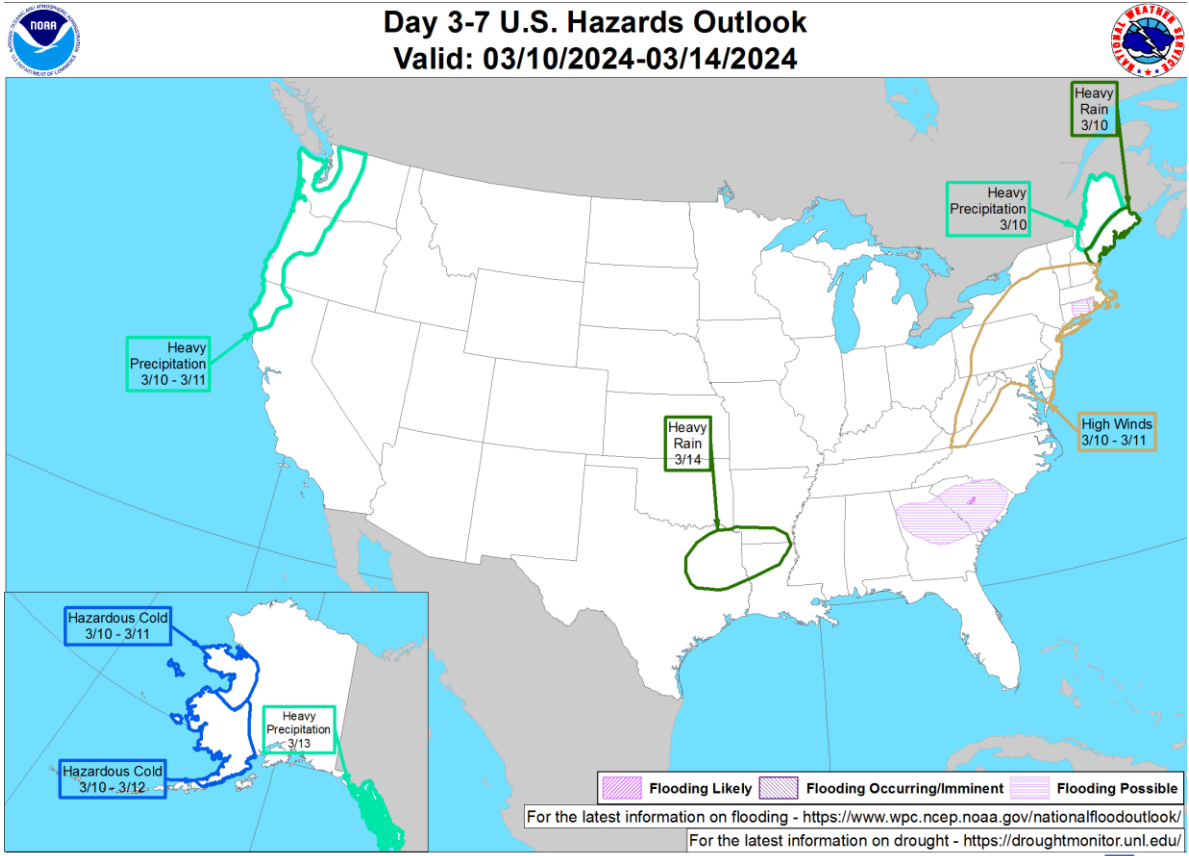
Global Earthquake Activity ($\geq M4.0$): March 1-7



Date (UTC)	Location	Magnitude	Epicenter
3/3/2024	58.90S, 159.16E	6.7	Macquarie Island region
3/5/2024	59.17S, 158.80E	6.1	Macquarie Island region

Source: United States Geological Survey

U.S. Hazard Outlook

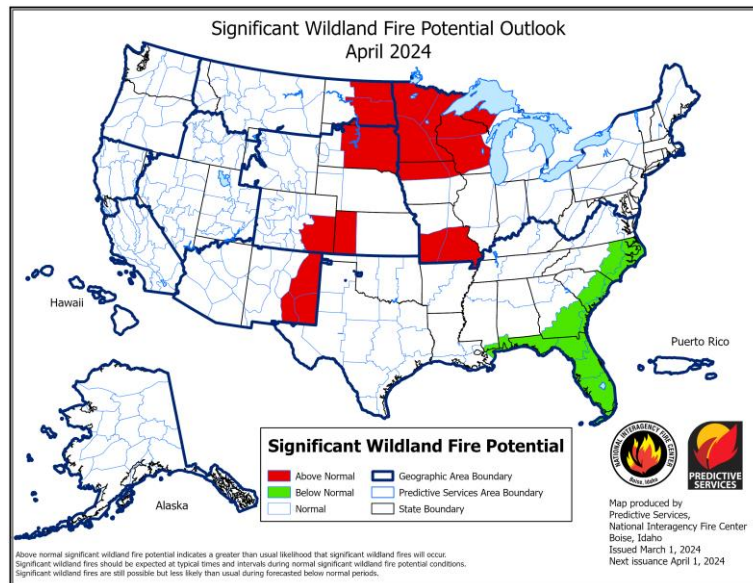
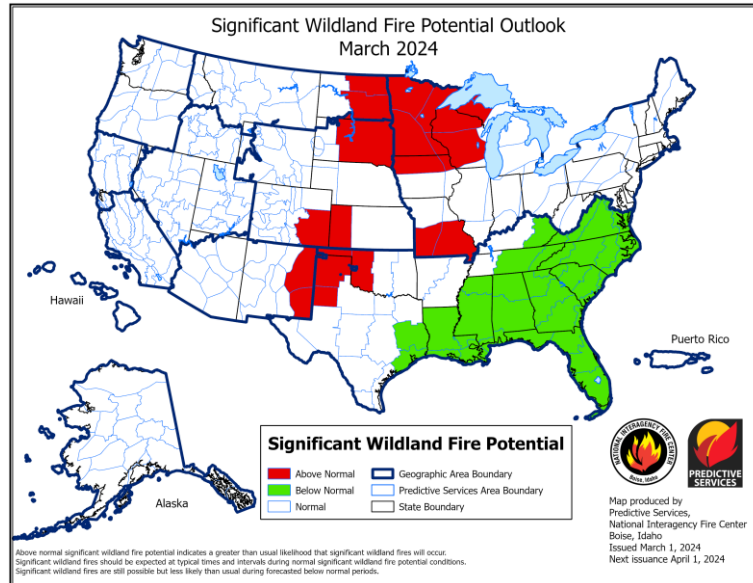


Weather Prediction Center
Made: 03/07/2024 03:01 PM EST

Follow us:  
www.wpc.ncep.noaa.gov

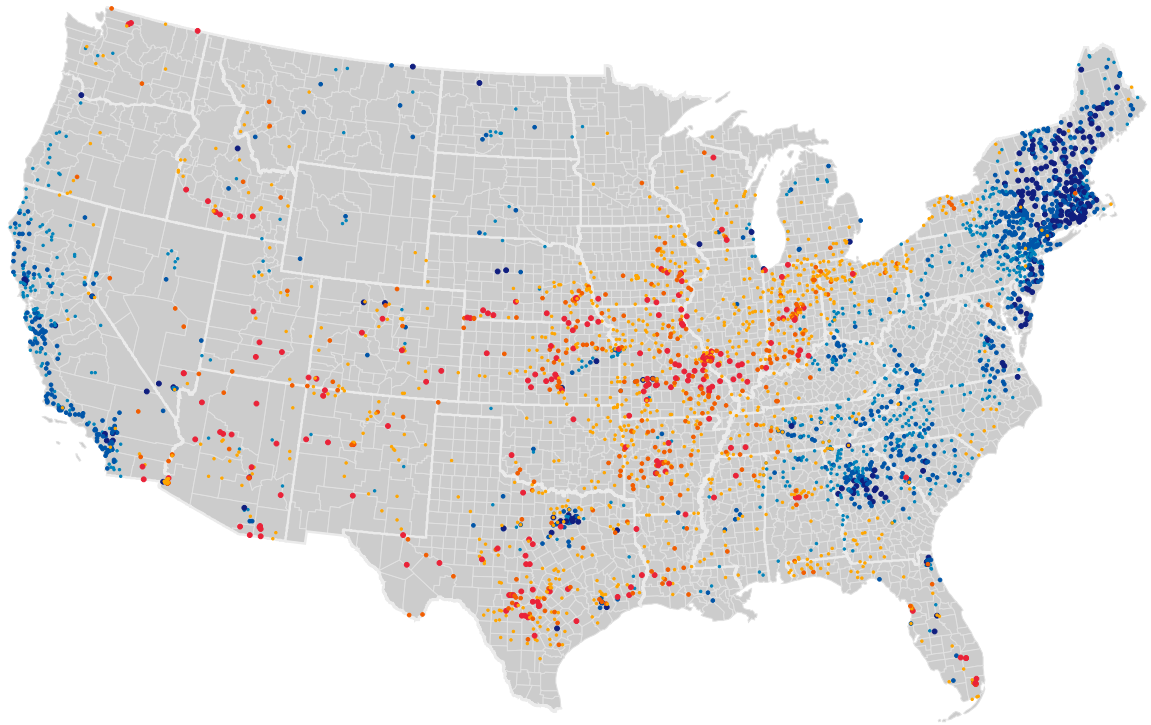
Source: Climate Prediction Center (NOAA)

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



Source: NIFC

U.S. Current Riverine Flood Risk



High Flows (Percentile)

- ≥ 99 / Above floodstage
- 95 - 99
- 90 - 95

Hydrological Drought

- Severe Drought
- Moderate Drought
- Below Normal

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: Winter Weather

The U.S. Weather Prediction Center (WPC)

The U.S. National Weather Service (NWS)

California towns buried under more than 10 feet of snow, *CNN*

Pakistan, Iran, Afghanistan: Flooding & Winter Weather

National Disaster Management Authority of Pakistan (NDMA)

Provincial Disaster Authorities

Climate Prediction Center's Central Asia Hazards Outlook

ReliefWeb

39 Killed As Afghanistan Battles Heavy Rains, Snowfall, *NDTV World*

Natural Catastrophes: In Brief

Department of Disaster Management Affairs of Malawi (DoDMA)

The Arizona Department of Forestry and Fire Management

Thailand: Emergency crews responding to wildfires across Mae Hong Son Province as of March 7

Météo-France

Météo-France Global Wildfire Information System (GWIS)

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