

# **Weekly Cat Report**

March 29, 2024



## Executive Summary



Event	Affected Region(s)	Fatalities	Economic Loss (\$)	Page
<b>SCS, Winter Weather, Flooding</b>	United States	2	10s of millions	3
<b>Earthquake &amp; Landslide</b>	Indonesia	4	10s of millions	5
<b>Severe Convective Storm</b>	China	0	10s of millions	7
<b>Windstorm Nelson / Nadja</b>	Western Europe	0	10s of millions	7
<b>Wildfire</b>	United States	0	Millions	7
<b>Wildfire</b>	Mexico	4	Millions	8
<b>Earthquake</b>	Papua New Guinea	5	Millions	7
<b>Flooding</b>	Kenya	10	Negligible	8
<b>Flooding &amp; Landslide</b>	Brazil	27	Millions	7
<b>Flooding &amp; SCS</b>	India	6	Unknown	8
<b>Severe Convective Storm</b>	Cuba	0	Unknown	8
<b>Cyclone Gamane</b>	Madagascar	11	Unknown	8
<b>Flooding</b>	Uruguay	0	Unknown	8

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.

## United States: SCS, Winter Weather, Flooding

### Overview

Two weather systems brought widespread flooding, severe storms, and winter weather hazards to the mainland United States on March 21-27. Heavy snow and powerful winds were seen in the northern Great Plains, upper Midwest, and New England interior. Severe storms and heavy rainfall affected parts of California, the eastern U.S., and the southern Great Plains. Aggregated impacts include 2 deaths, numerous vehicle crashes, widespread power outages, and losses possibly in the tens of millions USD.

### Meteorological Recap

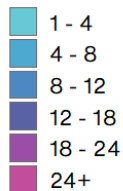
#### March 21-23

Ahead of a mid-level trough, a complex weather system generated severe storms and heavy rainfall over the southern U.S. on March 21-23. Severe weather was concentrated primarily over Texas as storms produced gusts of 60 mph (95 kph) and hailstones up to 2.5 inches (6.4 cm) in diameter. Much of South Florida experienced heavy rainfall, especially Miami-Dade County where several locations received over 4 inches (100 mm) of rain. In fact, three South Florida cities set new daily rainfall records on March 22.

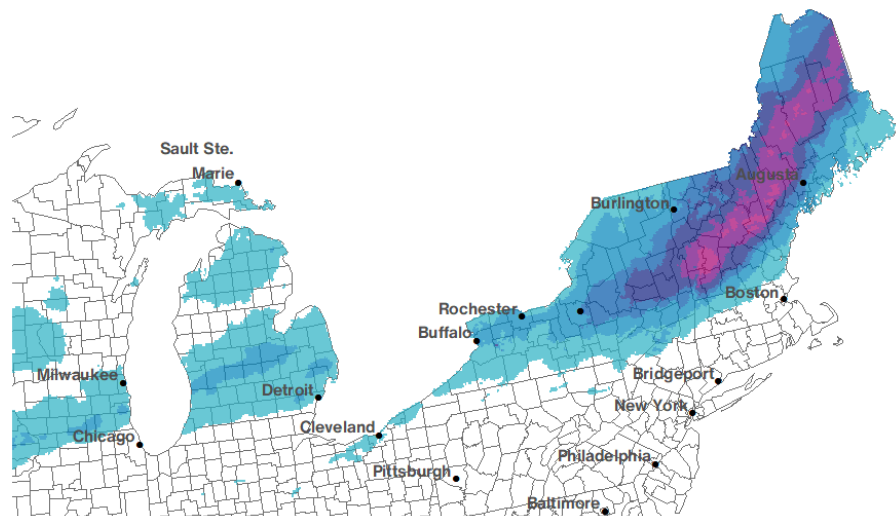
The system progressed into the Mid-Atlantic region and New England with widespread strong winds and heavy precipitation on March 23. Areas further south saw primarily heavy rainfall, including New York City which set a new daily rainfall record on March 23 at 3.66 inches (93 mm) in Central Park. Further inland, very heavy snow fell across upstate New York, Vermont, New Hampshire, and Maine. Some locations in higher elevations even recorded over 2 feet (0.61 meters) of snow.

#### Storm Total Snowfall (inches)

March 22-23, 2024



Data: NOAA



#### March 23-27

A second system from the Pacific Ocean brought various hazards to the western and central U.S. on March 23-27. Storms with hail and wind gusts up to 60 mph (95 kph) affected southern California, especially the Los Angeles metro area. More severe weather was seen over the southern Great Plains

and Southeast U.S., including at least 10 tornado reports. Subsequent NWS surveys found an EF-1 tornado with 100 mph (160 kph) peak winds near Jackson (MS) along with two additional EF-1 tornadoes near Garden City (KS) and Perryton (TX). Further east, the Storm Prediction Center (SPC) received roughly 26 reports of strong winds and hailstones up to 2 inches (5.1 cm) across parts of Florida, Georgia, and South Carolina.

Notably, this storm system also generated an early spring blizzard over the northern Rocky Mountains, northern Great Plains, and upper Midwest. Much of Minnesota was especially impacted by heavy snow and mixed precipitation, leading to hazardous conditions across the state. According to the NWS, the Minneapolis-St. Paul Airport received just under 1 foot (305 mm) of snow while the city of Duluth (MN) saw nearly 25 inches (635 mm) of snow.

### Event Details

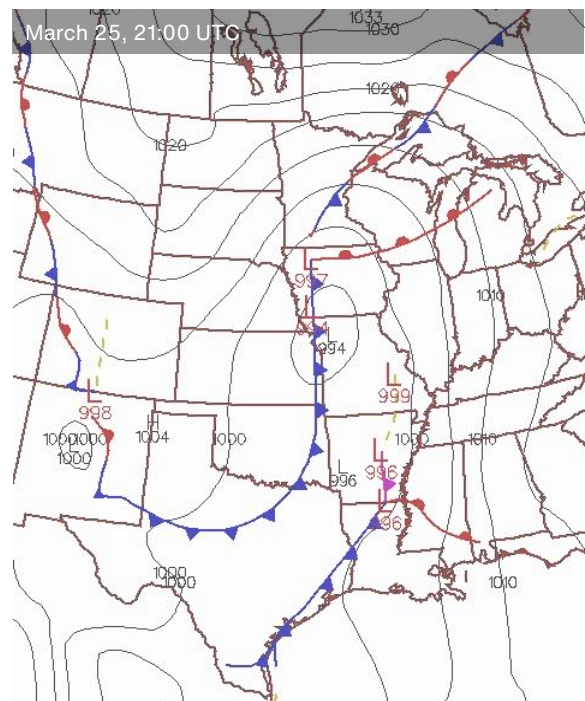
The northeast U.S. experienced the worst impacts as 360,000 homes lost power. A combination of heavy precipitation and powerful winds caused widespread downed trees, property damage, many vehicle accidents, and some localized flooding within this densely populated region. Similar hazards within the Minneapolis-St. Paul metro area also caused significant impacts, including 400 reported vehicle crashes that resulted in 2 deaths.

Further south, severe weather led to a variety of impacts across the southern U.S., especially within Texas. About 135,000 people lost power in the Houston metro area while some tornado-related property damage was reported near Perryton (TX) and Garden City (KS). In southern Georgia, straight-line winds led to downed trees and property damage near the town of Valdosta. Heavy rainfall in southern Florida also led to some minor flooding impacts in Miami Beach and West Palm Beach.

### Financial Loss

Aggregated flooding, severe weather, and winter weather impacts from this past week could drive economic and insured losses into the tens of millions USD.

Location	Dates	Rainfall Total (inches / mm)
Princeton, FL	March 21-23	9.79 / 249
Miami, FL	March 21-23	5.43 / 138
Texas City, TX	March 21	4.85 / 123
East Meadow, NY	March 23	3.84 / 98
New York City, NY	March 23	3.66 / 93





## Indonesia: Earthquake & Landslide

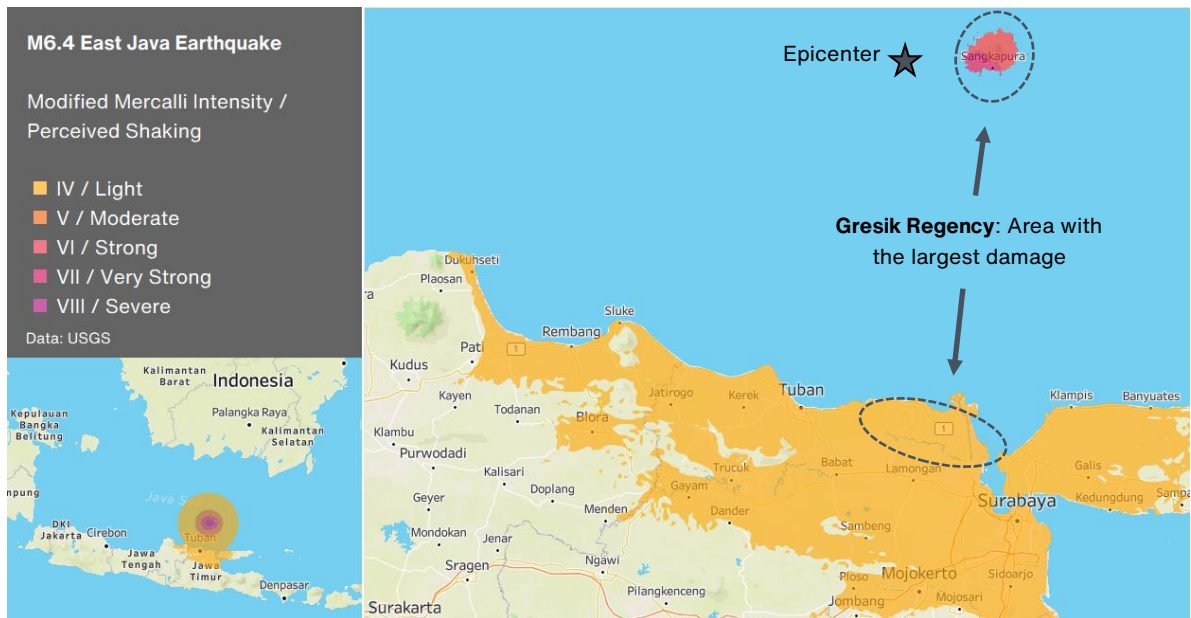
### Overview

A magnitude-6.4 earthquake jolted Indonesia's East Java Province on March 22, causing notable structural damage to more than 5,000 houses across the province. More than 34,000 people have been displaced and several others suffered injuries. In the meantime, additional material and human losses were reported in Western Java due to a landslide and floods that particularly impacted West Bandung Regency on March 24.

### Seismological Recap

An earthquake of magnitude of 6.4 (according to the USGS) occurred in the Java Sea at a depth of 8.5 km (5.3 mi) north of Java Island on March 22 at 8.52 (UTC). A magnitude-5.4 aftershock and many weaker tremors followed after the main shock.

Java Island is located in the tectonically active convergency zone, where the Australia plate subducts beneath the Sunda plate. Large thrust earthquakes close to the Java trench are typically interplate faulting events along the slab interface between the Australia and Sunda plates, according to the USGS. These earthquakes also generally have high tsunamigenic potential. The most notable tsunami earthquakes in the Java region occurred on June 2, 1994 (M7.8) and July 17, 2006 (M7.7), killing hundreds of people and causing notable damage. Historically, there have been several magnitude-8.0+ events in the region.



### Event Details

Most of the damages occurred across the **Gresik Regency** in East Java Province. According to the latest report by the Indonesian Disaster Management Agency (BNPB) from March 26, 8 people have been

injured and at least 34,000 have been displaced, along with about 145,000 affected. USGS PAGER estimated that up to 2,000 people were exposed to severe shaking and up to 26,000 people to very strong shaking.

In addition, notable structural damage to almost 5,200 houses has been incurred, including about 800 buildings that were severely damaged

A recent earthquake occurred amid ongoing, widespread flooding across western Indonesia, that triggered multiple landslide events, including a landslide in West Bandung Regency on March 24 that claimed 4 lives. About 30 houses were reported damaged due to this landslide.



**Damage in Bawean Island, Gresik Regency**

Source: BNPB

### **Financial Loss**

Although the USGS initially suggested a high likelihood of economic losses in the millions USD (based on their PAGER methodology), the earthquake has the potential to reach even higher losses, given the large number of damaged structures that were reported after several days of damage assessments.

## Natural Catastrophes: In Brief

---

### **Severe Convective Storm (China)**

On March 25, powerful thunderstorms rocked parts of eastern China, especially within the Zhejiang province. Several buildings near Jiande City had roofs torn off by strong winds while parts of Yiwu City were heavily damaged due to large hail. Notably, local media reports found 180 home insurance claims and over 11,000 vehicle insurance claims related to hail damage were submitted by the following day on March 26. According to some industry estimates, local insurers will likely pay over CNY100 million (\$14 million) in hail-related claims.

### **Windstorm Nelson / Nadja (Western Europe)**

Low-pressure system Nelson, alternatively named Nadja, affected western Europe on March 27-28, particularly northwestern France and the southern United Kingdom, generating wind gusts up to 180 kph (110 mph) at exposed locations in western France and strong winds up to 100 kph (60 mph) elsewhere. The storm resulted in relatively minor material losses, downed trees, and traffic disruptions across the affected area. Total insured losses could potentially reach into the lower tens of millions EUR.

### **Wildfire (United States)**

Dry air and gusty winds helped ignite more than 100 wildfires within the Mid-Atlantic region of the U.S. since March 20. The largest and most destructive fires have been reported within West Virginia and Virginia, particularly around Page County (VA) and Shenandoah National Park. According to officials, these fires have destroyed around 10-20 structures and burned at least 16,000 acres (6,500 hectares). Additional smaller wildfires were also reported in Maryland and North Carolina.

### **Wildfire (Mexico)**

About 400 wildfires have been reported across Mexico since March 15, which have combined to burn over 32,000 acres (13,000 hectares) of land. As of March 27, at least 4 people have been killed. Dozens of people have been evacuated.

### **Earthquake (Papua New Guinea)**

An earthquake of magnitude of 6.9 jolted in East Sepik Province, western Papua New Guinea, on March 23 (UTC). The USGS estimated that about 200,000 people were exposed to very strong shaking. According to local officials and media reports, tremors damaged or destroyed no fewer than 1,000 houses, killed at least 5 people and injured two others. East Sepik Province has been severely affected by the flooding in recent weeks.

### **Flooding (Kenya)**

Heavy downpours overnight March 24-25 triggered flash flooding in Nairobi City in Kenya. At least 10 people have died and almost 1,200 people have been affected in total. Floods caused notable traffic disruptions due to many inundated roads within the urban area and elsewhere in the affected region.

## **Flooding & Landslide (Brazil)**

Extremely heavy rain between March 22 and 26 led to flooding and landslide incidents across southeast Brazil, particularly within the states of Espírito Santo and Rio de Janeiro. At least 27 people have been killed, mostly from the Mimoso do Sul municipality, while 6 remain missing. According to authorities, at least 90 people have also been rescued and another 7,000 have been evacuated.

## **Flooding & SCS (India)**

Heavy rainfall, thunderstorms, and strong winds have affected Tripura State in north-eastern India since March 23, resulting in casualties and material damage. Local disaster authorities have reported at least 4 deaths within the Dhalai District, and more than 4,500 damaged houses across the districts of Unakoti, Sepahijala, Dhalai, South, West, Khowai, and Gomati. Severe weather resulted in 2 additional deaths and 7 injuries in the Una District of western Himachal Pradesh State.

## **Severe Convective Storm (Cuba)**

Intense rainfall and hailstorms affected western Cuba on March 22-23, in particular the provinces of La Havana, Artemisa, and Mayabeque. Storms resulted in flash flooding, downed trees, several damaged houses, and power outages for more than 260,000 customers. Hundreds of people were forced to leave their homes due to floods and severe weather. Additional material and agricultural damages can be associated with large hail that affected the region as well.

## **Cyclone Gamane (Madagascar)**

Tropical cyclone Gamane made landfall over the Sava Region in northern Madagascar on March 27, as a Category 2 equivalent storm with maximum wind gusts up to 100 mph (160 kph). The storm brought heavy rainfall and floods in the regions of Sava, Diana, Sofia, Analanjirifo, Alaotra Mangoro, and Atsinanana, affecting thousands of people and resulting in at least 11 fatalities, according to the national disaster authority (BNGRC). As of March 28, Gamane is crossing northern Madagascar and is expected to further weaken.

## **Flooding (Uruguay)**

Heavy rainfall in recent days has heavily impacted parts of southern Uruguay, especially the Florida and Durazno Departments. Many locations received 130-150 mm (5-6 inches) of rain on March 20-21, which led to widespread flash and river flooding. Over 6,000 people have been displaced while more than 40,000 customers have suffered power outages. Other heavily impacted departments include Colonia, Canelones, Cero Largo, Paysandú, Rivera, Rocha, and San José.



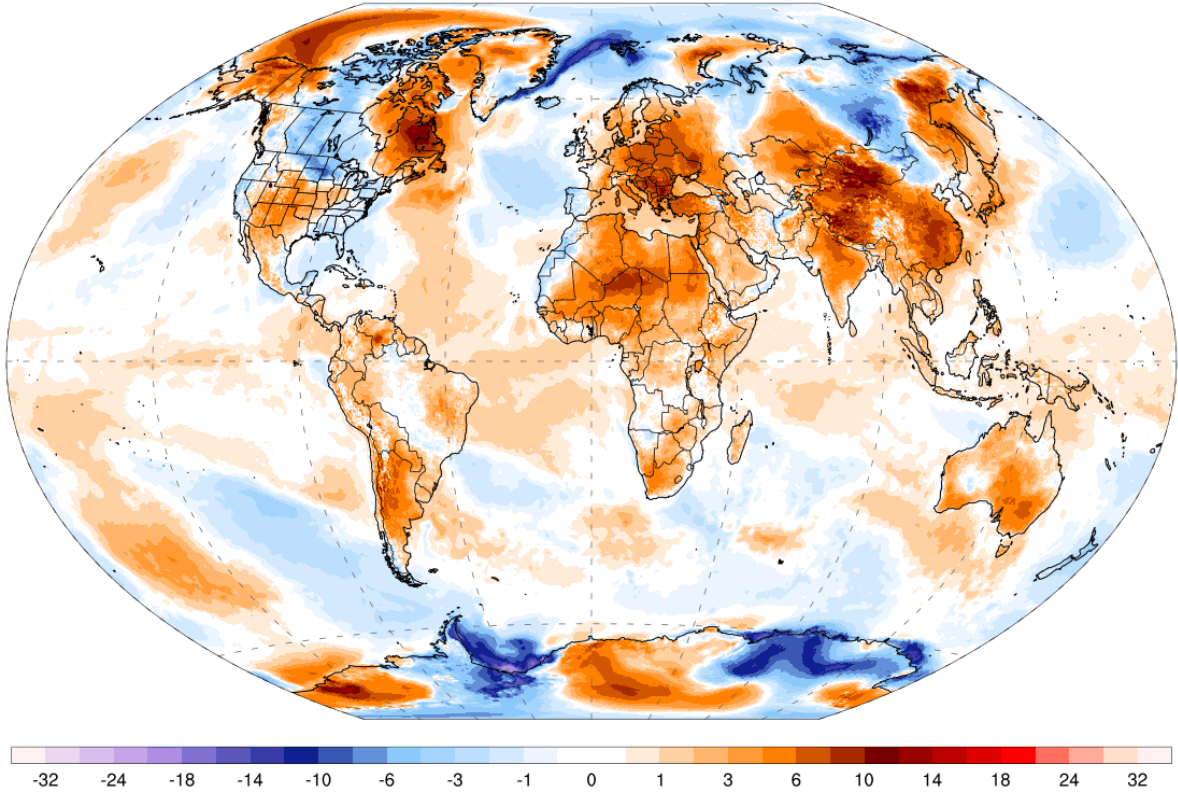
---

## Global Temperature Anomaly Forecast

---

GFS 2m T Anomaly (°C) [CFSR 1979-2000 baseline]  
Days 1-3 Avg | Thu, Mar 28, 2024

ClimateReanalyzer.org  
Climate Change Institute | University of Maine



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

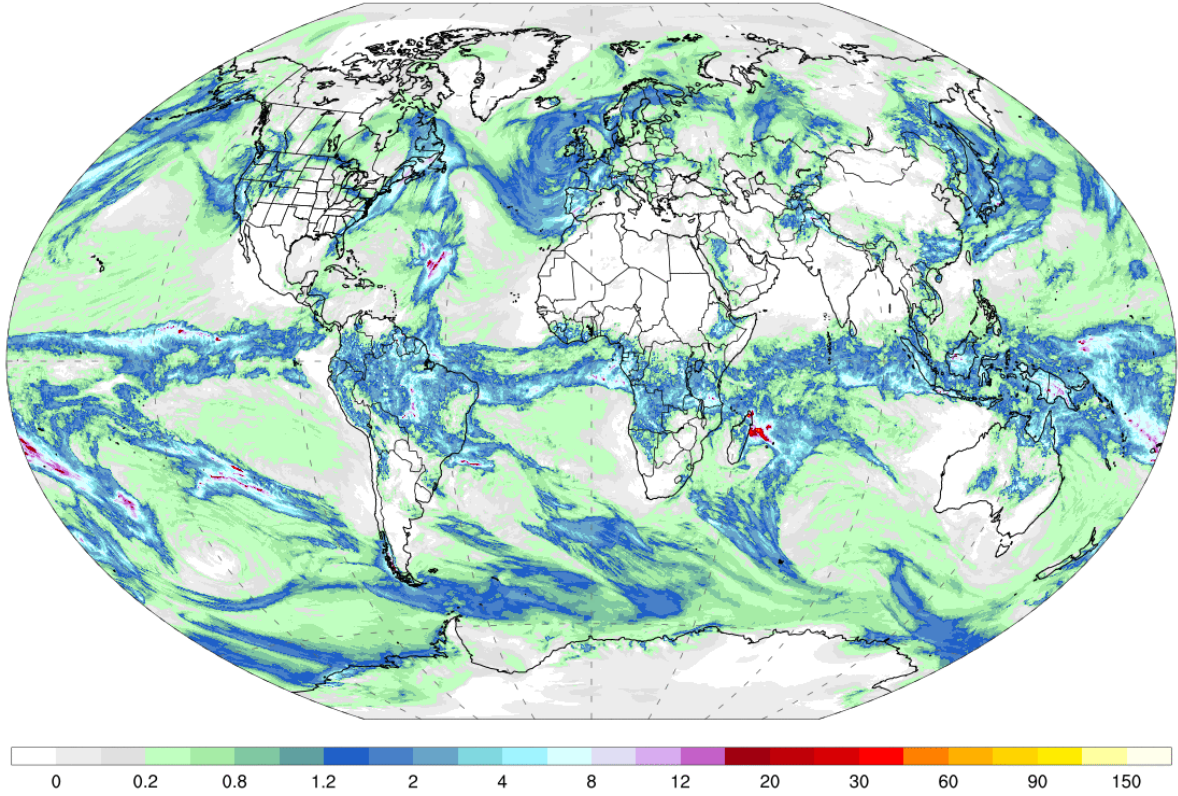
---

## Global Precipitation Forecast

---

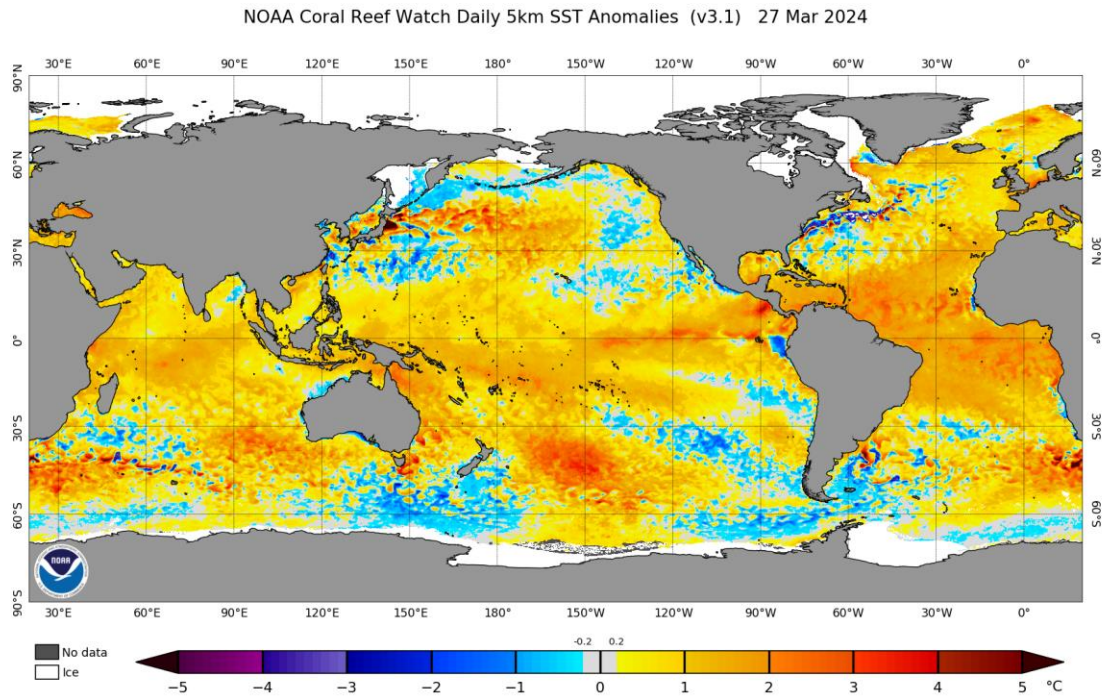
GFS Accumulated Precipitation (cm)  
Days 1-3 Total | Thu, Mar 28, 2024

ClimateReanalyzer.org  
Climate Change Institute | University of Maine



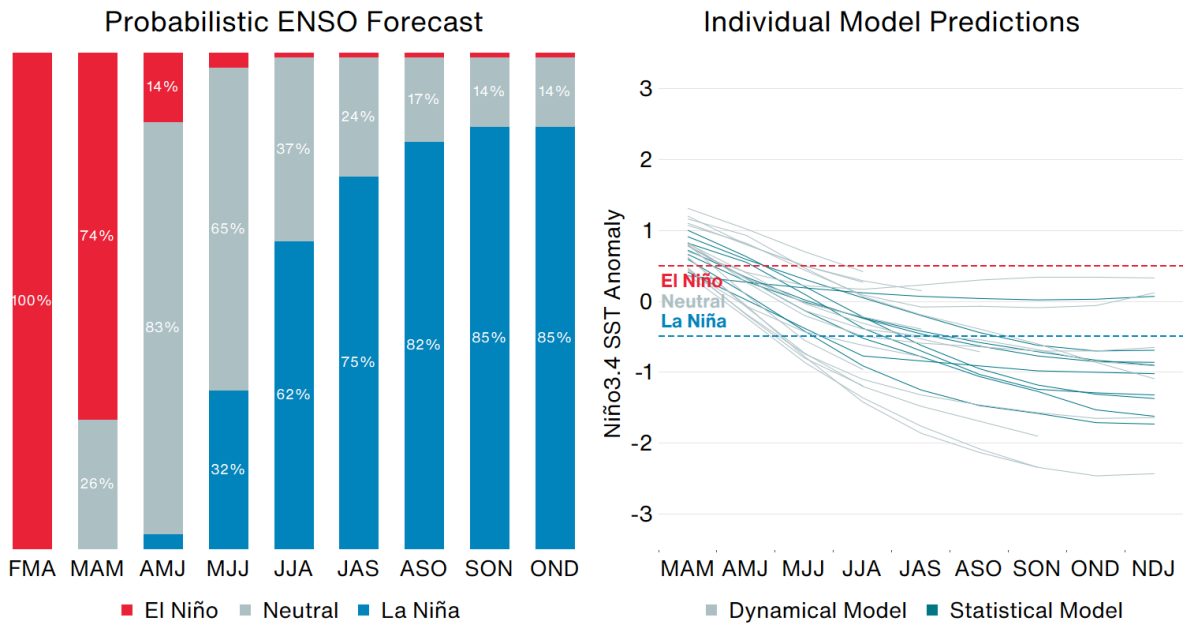
Source: Climate Reanalyzer, Climate Change Institute, University of Maine, USA

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



## El Niño-Southern Oscillation (ENSO)

**Probabilistic ENSO Model Projections: March 2024**



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

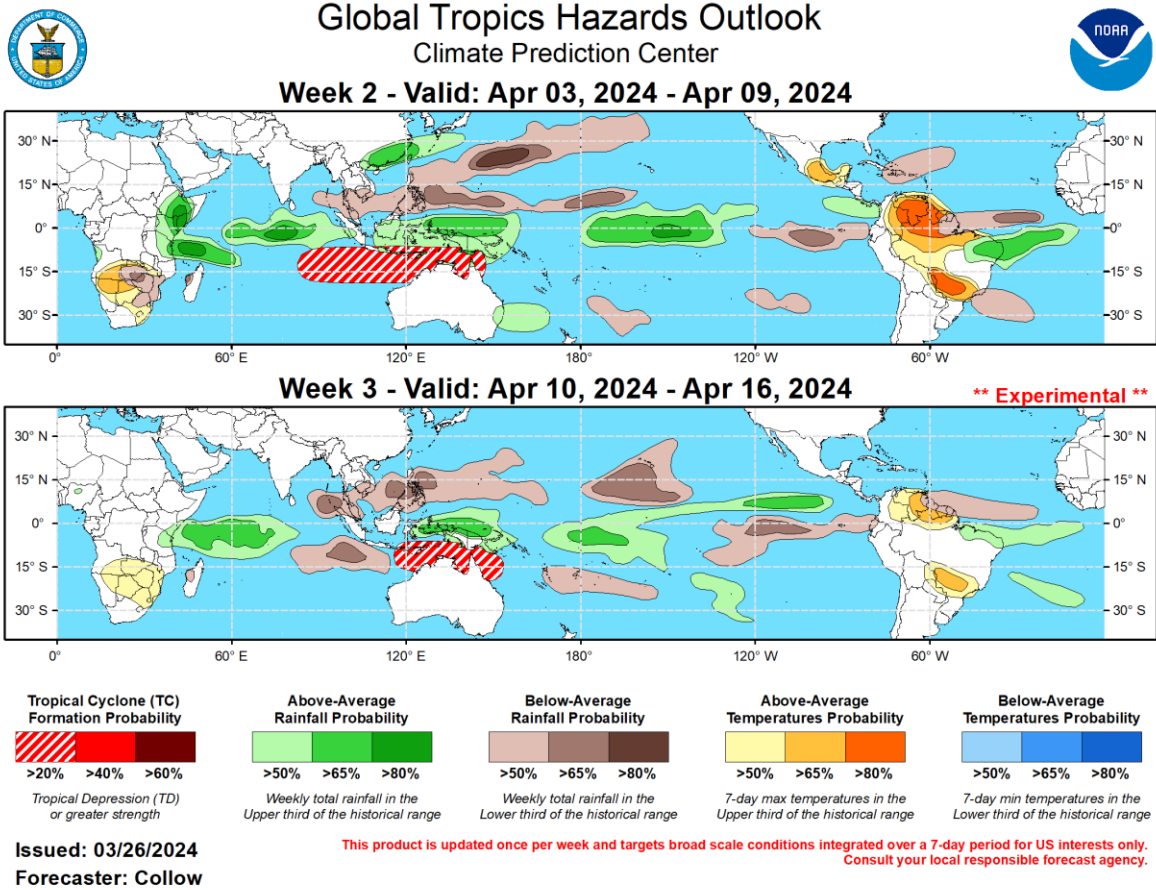
**La Niña:** Cool phase of an ENSO cycle. Sea surface temperatures of -0.5°C occur across the east-central equatorial Pacific.

**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).

Source: NOAA, Columbia University | Graphic: Aon Catastrophe Insight

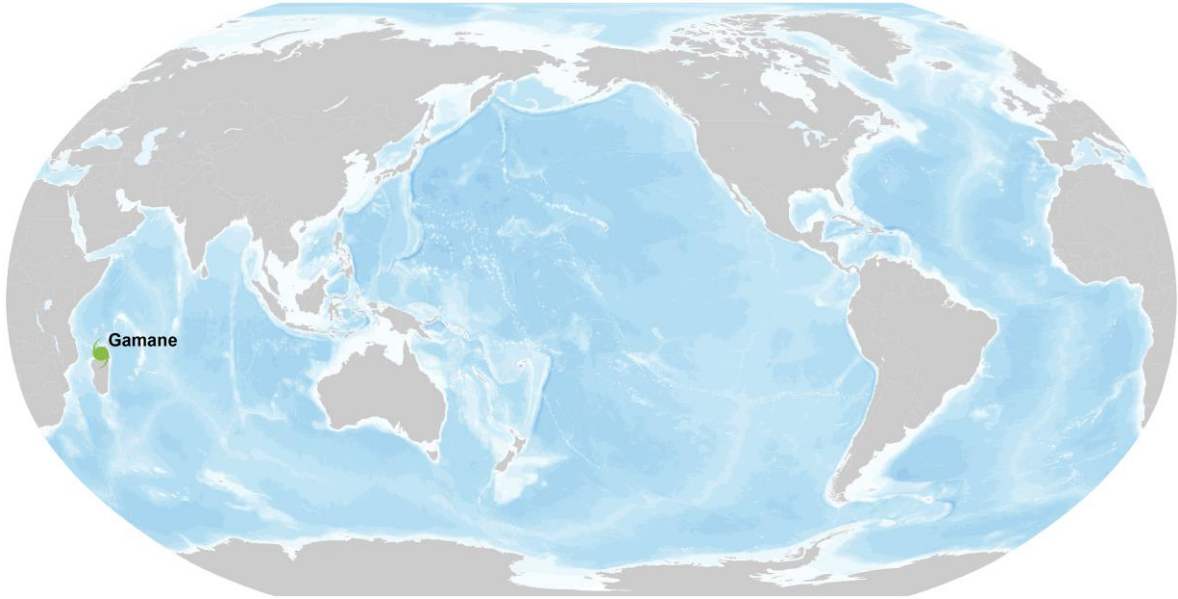
## Global Tropics Outlook



Source: Climate Prediction Center (NOAA)



## Current Tropical Cyclone Activity



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

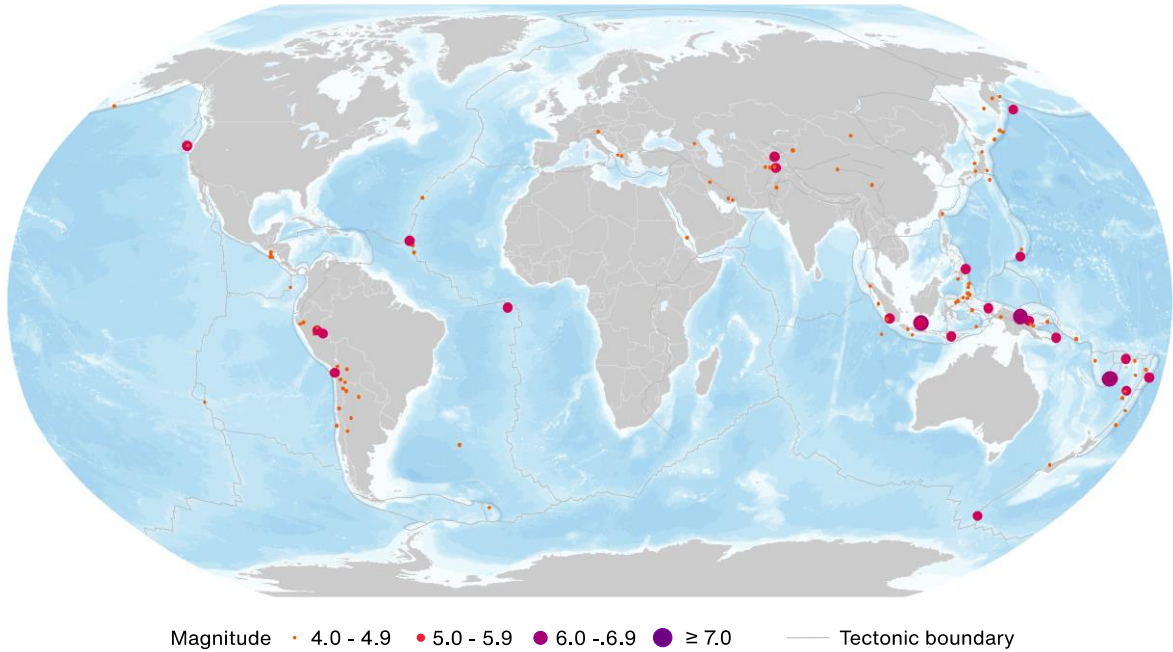
Name	Location	Winds	Center
CY Gamane	14.4S, 47.8E	30	130 mi (210 km) NE from Mahajanga, Madagascar

\* 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)

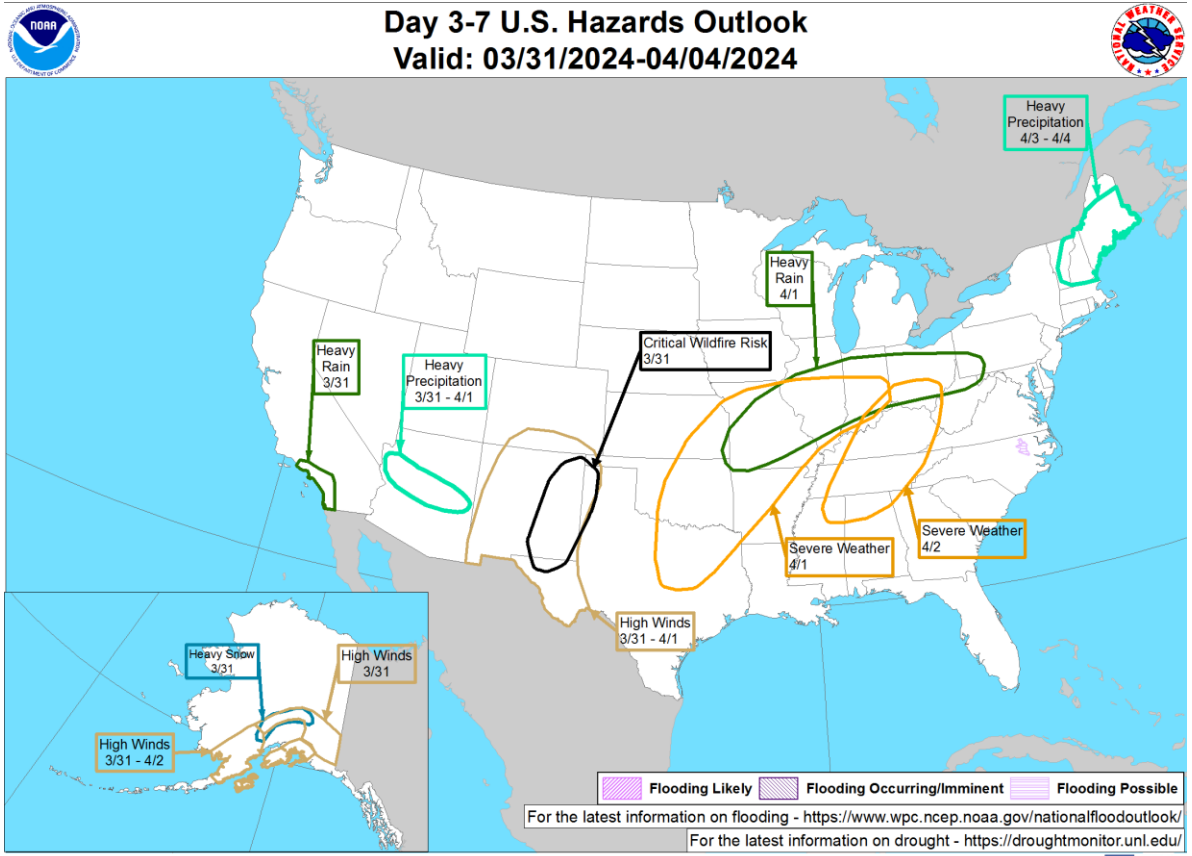
## Global Earthquake Activity ( $\geq M4.0$ ): March 22-28



Date (UTC)	Location	Magnitude	Epicenter
3/22/2024	5.87S, 112.36E	6.4	11 km (7 mi) N of Paciran, Indonesia
3/23/2024	4.14S, 143.16E	6.9	38 km (24 mi) ENE of Ambunti, Papua New Guinea
3/27/2024	21.07S, 173.75E	6.4	Vanuatu region
3/27/2024	20.90S, 173.80E	6.7	Vanuatu region

Source: United States Geological Survey

## U.S. Hazard Outlook

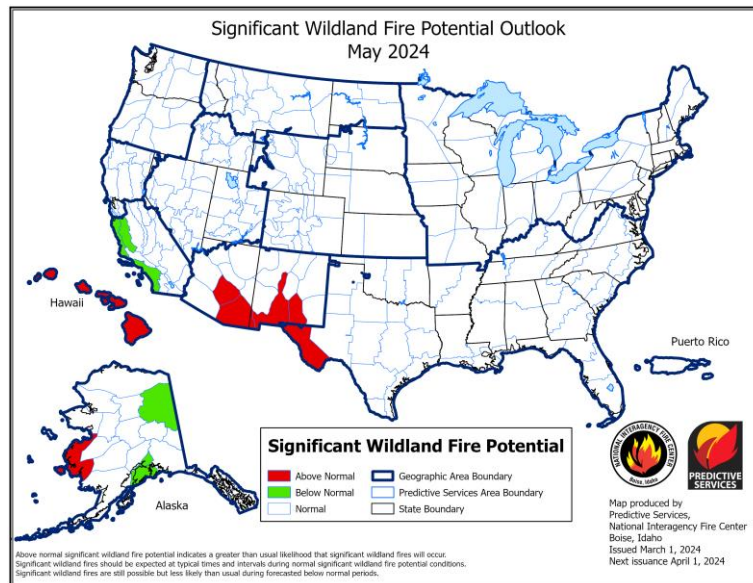
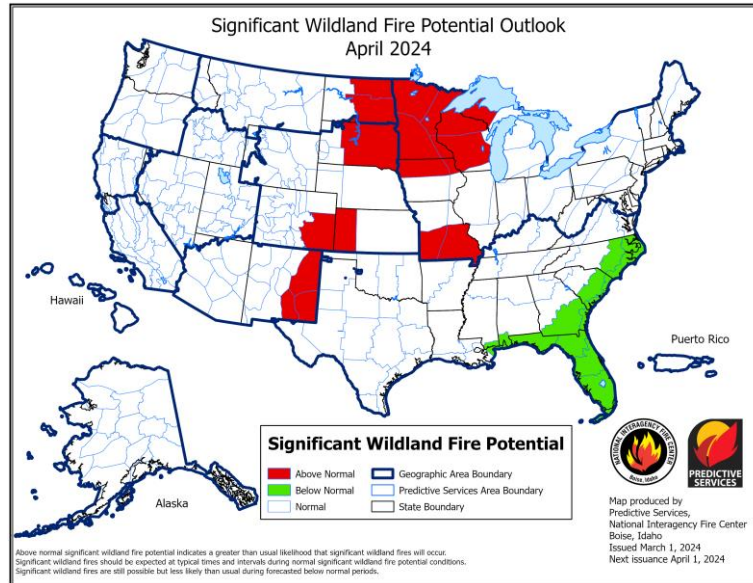


**Weather Prediction Center**  
Made: 03/28/2024 03:29 PM EDT

Follow us:   
[www.wpc.ncep.noaa.gov](http://www.wpc.ncep.noaa.gov)

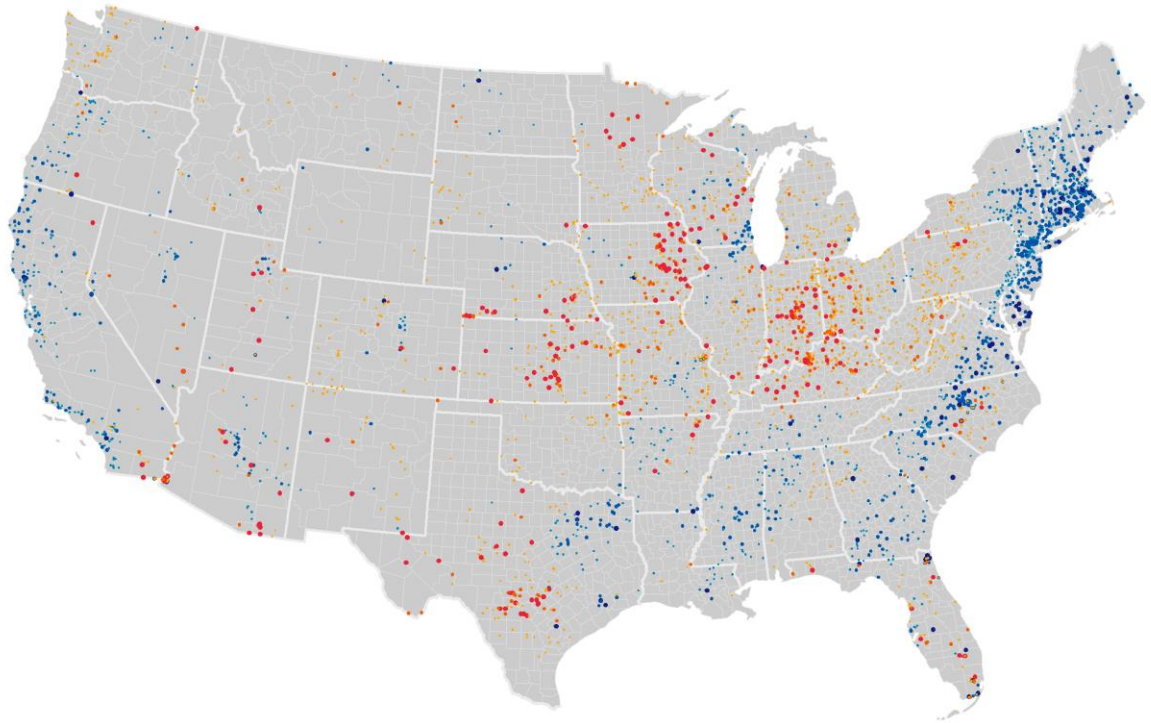
Source: Climate Prediction Center (NOAA)

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



Source: NIFC

## U.S. Current Riverine Flood Risk



- |                            |                           |                         |                    |
|----------------------------|---------------------------|-------------------------|--------------------|
| High Flows<br>(Percentile) | • ≥ 99 / Above floodstage | Hydrological<br>Drought | • Severe Drought   |
|                            | • 95 - 99                 |                         | • Moderate Drought |
|                            | • 90 - 95                 |                         | • Below Normal     |

*A ≥99<sup>th</sup> percentile indicates that estimated streamflow is greater than the 99<sup>th</sup> 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 5<sup>th</sup> percentile for this day of the year. Moderate drought indicates that estimated 7-day streamflow is between the 6<sup>th</sup> and 9<sup>th</sup> percentile for this day of the year and 'below normal' state is between 10<sup>th</sup> and 24<sup>th</sup> percentile.*

Source: United States Geological Survey



---

## Source Information

---

### **United States: Severe Convective Storm, Winter Weather, Flooding**

National Weather Service (NWS)

Storm Prediction Center (SPC)

Plymouth State University

Texas Power Grid Suffers Huge Outage After Thunderstorms Hit, *Newsweek*

Watch: Record rains send Miami concertgoers fleeing through ankle-deep floods, *Fox Weather*

New England and New York dig out as a new storm will bring snow to the Midwest, *NPR*

A river rescue as hail pounds SoCal. Meanwhile, a significant late-season storm is brewing, *Los Angeles Times*

LIVE UPDATES: Severe weather damages Valdosta neighborhoods overnight, *ABC27 Tallahassee*

Tornado warnings issued for Texas, Louisiana, and Arkansas amid severe weather, blizzard conditions, *ABC News*

Record snow falls in Minneapolis after historically warm winter, *The Washington Post*

### **Indonesia: Earthquake**

Indonesian Disaster Management Agency (BNPB)

USGS

### **Natural Catastrophes: In Brief**

InciWeb

Floodlist

National Disaster Management Authority of India (NDMA)

National Bureau of Risk and Disaster Management of Madagascar (BNGRC)

High Winds Fuel Wildfires in Virginia and Other Mid-Atlantic States, *The New York Times*

Rain helps contain still-burning wildfires in Virginia's Shenandoah Valley; state sending more aid, *AP News*

At least 27 dead as flooding ravages southeast Brazil, *CNN*

Kenya: Disruptions due to flooding ongoing across Nairobi as of March 25, *Crisis24*

Intense rainfall and hailstorms hit Cuba, leaving 260 000 customers without power, *The Watchers*

Severe convective weather caused hail in many places in Zhejiang, *ChinaNews*

Yiwu suddenly fell hail yesterday: more than 10,000 car insurance reports were reported, involving glass smashing through, car body dents, etc, *The Paper*

Hail fell in many places in Zhejiang, and more than 9,000 car insurance cases were reported, and the insurance industry will pay more than 100 million yuan, *Sing Tao News Corp*

Forest fires spread in Mexico, at least four dead, *Reuters*

India: Storm-related disruptions ongoing across parts of Tripura State as of March 26, *Crisis24*

## Contacts

---

**Michal Lörinc**

Head of Catastrophe Insight

[michal.lorinc@aon.com](mailto:michal.lorinc@aon.com)

**Ondřej Hotový**

Catastrophe Analyst

[ondrej.hotovy@aon.com](mailto:ondrej.hotovy@aon.com)

**Antonio Elizondo**

Senior Scientist

[antonio.elizondo@aon.com](mailto:antonio.elizondo@aon.com)

**Tomáš Čejka**

Catastrophe Analyst

[tomas.cejka@aon.com](mailto:tomas.cejka@aon.com)

## About Aon

---

Aon plc (NYSE: AON) exists to shape decisions for the better – to protect and enrich the lives of people around the world. Our colleagues provide our clients in over 120 countries with advice and solutions that give them the clarity and confidence to make better decisions to protect and grow their business. Follow Aon on [Twitter](#) and [LinkedIn](#).

Stay up-to-date by visiting the [Aon Newsroom](#) and sign up for News Alerts [here](#).

© Aon plc 2024. All rights reserved.

The information contained herein and the statements expressed are of a general nature and are not intended to address the circumstances of any particular individual or entity. Although we endeavor to provide accurate and timely information and use sources we consider reliable, there can be no guarantee that such information is accurate as of the date it is received or that it will continue to be accurate in the future. No one should act on such information without appropriate professional advice after a thorough examination of the particular situation.

Copyright © by Impact Forecasting®

No claim to original government works. The text and graphics of this publication are provided for informational purposes only.

While Impact Forecasting® has tried to provide accurate and timely information, inadvertent technical inaccuracies and typographical errors may exist, and Impact Forecasting® does not warrant that the information is accurate, complete or current. The data presented at this site is intended to convey only general information on current natural perils and must not be used to make

life-or-death decisions or decisions relating to the protection of property, as the data may not be accurate. Please listen to official information sources for current storm information. This data has no official status and should not be used for emergency response decision-making under any circumstances.

Cat Alerts use publicly available data from the internet and other sources. Impact Forecasting® summarizes this publicly available information for the convenience of those individuals who have contacted Impact Forecasting® and expressed an interest in natural catastrophes of various types. To find out more about Impact Forecasting or to sign up for the Cat Reports, visit Impact Forecasting's webpage at [impactforecasting.com](http://impactforecasting.com).

Copyright © by Aon plc. All rights reserved. No part of this document may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise. Impact Forecasting® is a wholly owned subsidiary of Aon plc.