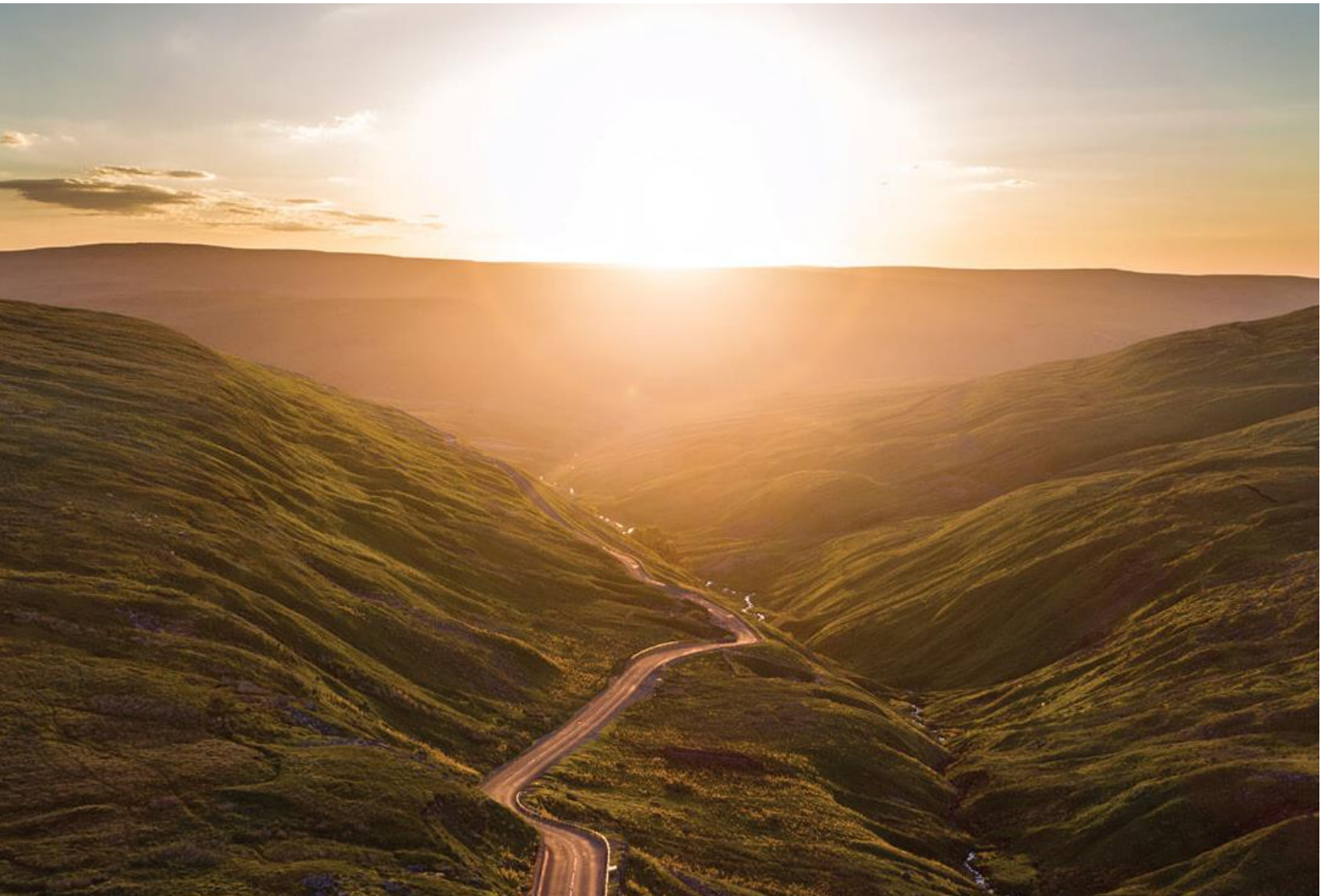
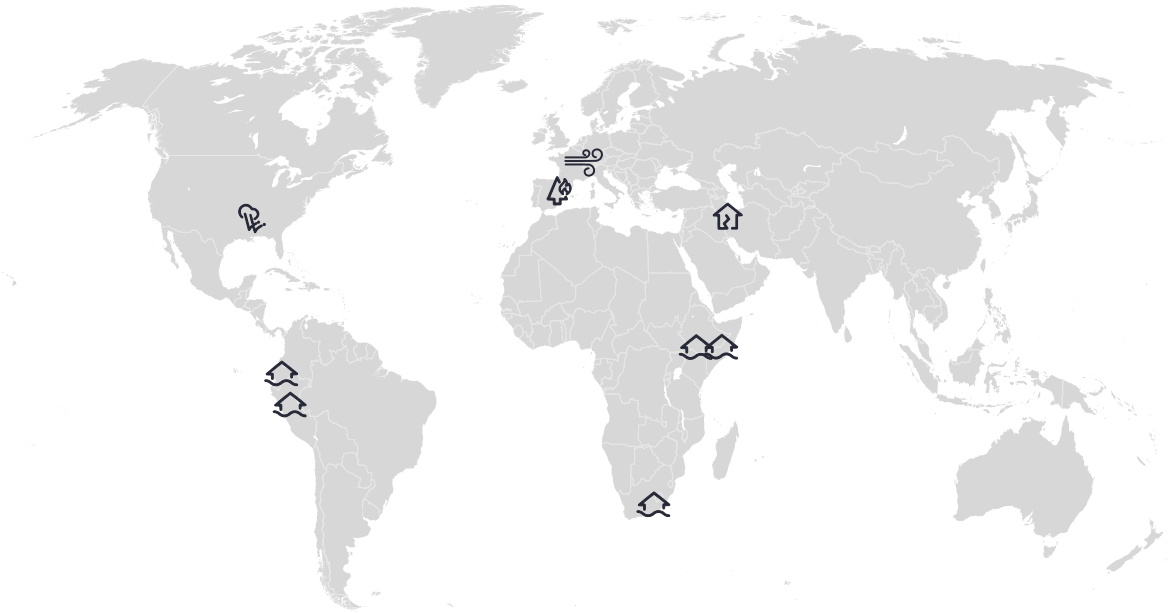
AON

Weekly Cat Report

March 31, 2023



Executive Summary



Event	Affected Region(s)	Fatalities	Economic Loss ($)	Page
Severe Convective Storm	United States	22+	100s of millions	3
Flooding	Somalia	20+	Unknown	7
Landslide	Ecuador	17+	Unknown	7
Flooding	South Africa	3+	Unknown	7
Flooding & Landslide (Update)	Peru	71+	Unknown	7
Earthquake	Iran	0	Negligible	7
Wildfires	Spain	0	Millions	7
Flooding	Kenya, Ethiopia	19	Millions	8
Windstorm Khusru	Western & Central Europe	0	Millions	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.

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

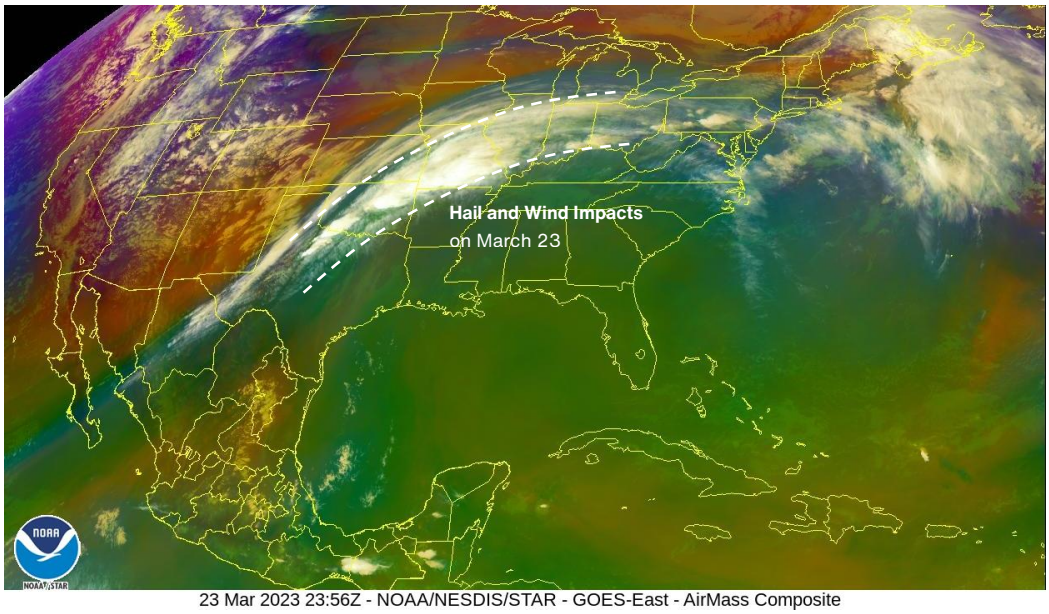
United States: Severe Convective Storm

Overview

A deadly outbreak of severe convective weather, which generated several killer tornadoes, affected multiple states in the lower Mississippi River Valley and the Southeast of the United States between March 23-27. Tornadoes claimed at least 22 lives, injured tens of others, and caused a significant material damage across the region. Additional damage was incurred due to widespread hail, non-tornadic winds and localized flooding as a result of isolated intense precipitation. Due to a widespread nature of the outbreak and severe structural damage as a result of multiple tornadoes, total economic and insured losses from the event were initially anticipated to reach into the hundreds of millions USD.

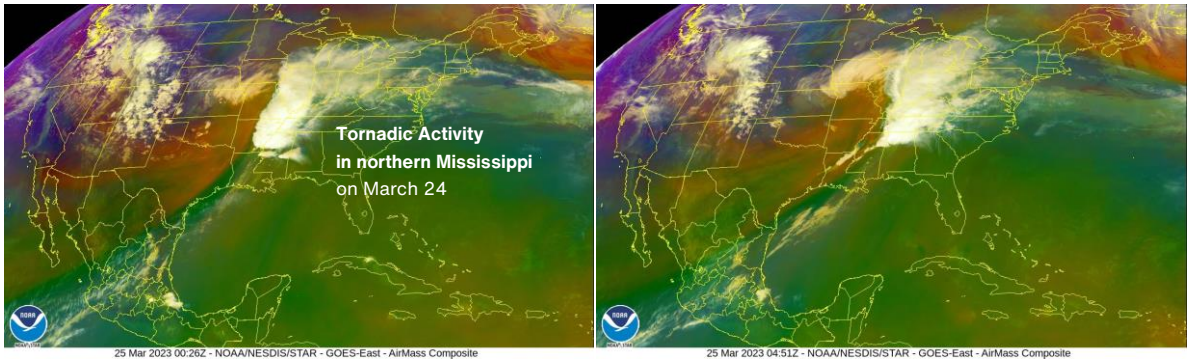
Meteorological Recap

Severe weather activity first ensued on March 23 in an environment of a slow-moving upper-level trough and a developing surface low and associated frontal system over the Lower Mississippi Valley. Impacts, mainly associated with large hail and strong winds, were observed in an extended corridor spanning from Texas through Oklahoma to southern Missouri and Illinois.

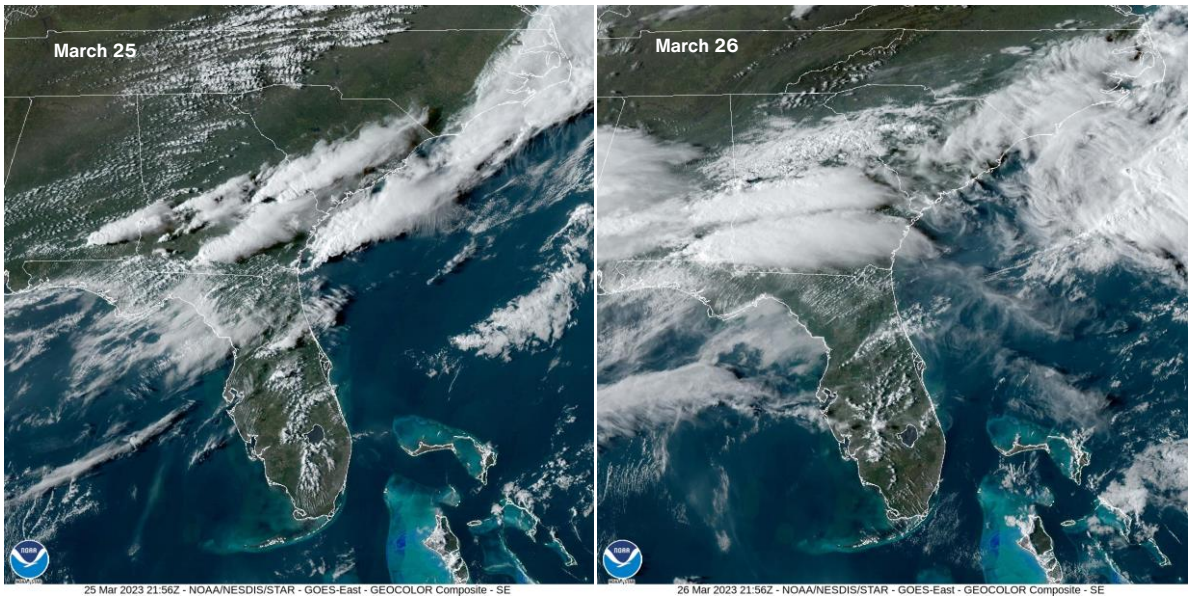


23 Mar 2023 23:56Z - NOAA/NESDIS/STAR - GOES-East - AirMass Composite

On March 24, the trough moved quickly eastward from the Western United States across the Southern Plains and Mid-Mississippi Valley and was accompanied by strong mid-level jet in the area between the trough and a pronounced area of high pressure over the Southeastern United States. Advection of warm air and ample moisture added to a mix of favorable conditions needed for thunderstorm development, as the low continued to rapidly deepen. The most severe storms developed across Mississippi, Alabama, and Tennessee. The most severe impacts were associated with tornadic activity and also with heavy rain, which led top localized flooding. The most significant tornado, rated EF-4, impacted the towns of Rolling Fork and Silver City in Mississippi, tracking 59.4 mi (96 km).

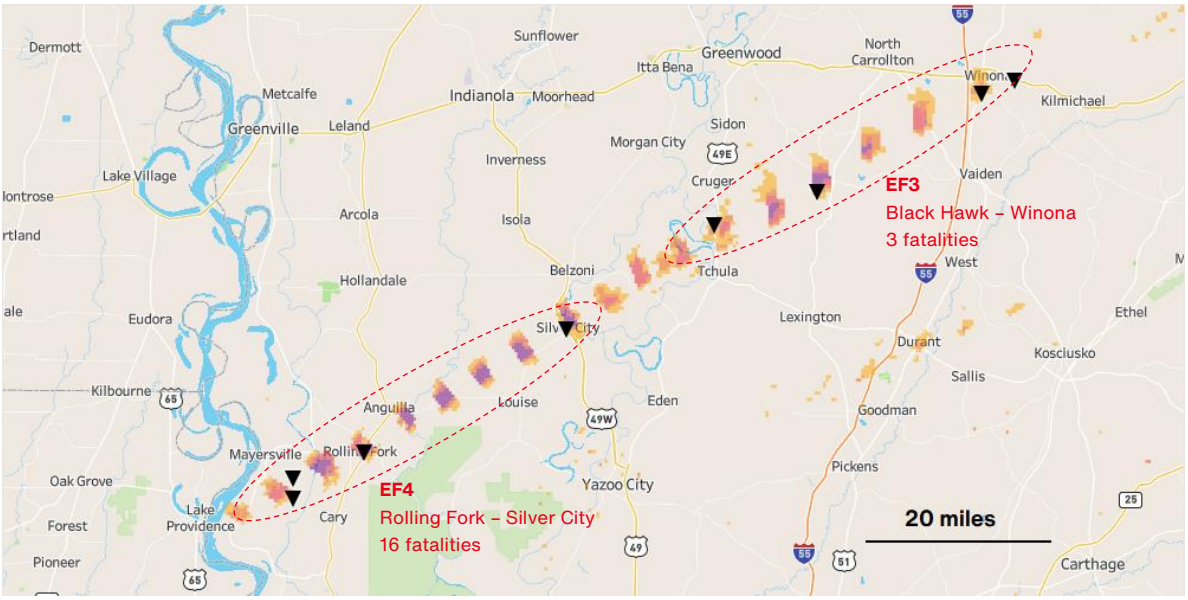


On March 25-26, the focus of the thunderstorm activity shifted further to the southeast and was channeled to an area that extended from Louisiana to Western Georgia and again produced a mix of large hail, heavy rain and strong winds, along with additional tornadic activity. At the same time, the governing low-pressure system moved towards the northeast and resulted in additional wind-related damage in parts of Ohio, Pennsylvania and West Virginia.



Event Details

Material damage related to the severe weather impacts was primarily reported from Mississippi, Alabama, Tennessee, Texas, and Georgia. Cities of **Rolling Fork**, Midnight and Silver City in Mississippi were the worst affected by long-tracked violent EF4-tornado that caused substantial material losses and left 16 people dead. Another intense EF3-tornadoes caused widespread material and tree damage across Black Hawk, Winona, Amory and Smithville communities in Mississippi, claiming several additional fatalities and injuries, totalling at 21 deaths in Sharkey (13), Humphreys (3), Carrol (3), and Monroe (2) counties. One person was killed in Alabama, according to an SPC's report.



Approximation of the tornado paths based on Rotation track data – overlaid with SPC tornado reports (black)
Data: NOAA, Graphic: Aon Catastrophe Insight

The town of Rolling Fork after the tornado impact
Source: Planet Labs

Ground Survey of tornado damage in Rolling Fork
Source: NOAA

As of March 30, Mississippi Emergency Management Agency (MSEMA) reported almost 2,000 damaged or destroyed houses, majority in Monroe (1,476) and Sharkey (255) Counties.

Additional damage on about 90 homes was incurred in Troup and Meriweather Counties in Georgia due to several tornadoes that occurred on March 25-26, the strongest one reached intensity of EF3 and injured at least five people.

Hundreds of thousands of customers experienced power outages due to severe weather outbreaks. On March 25, more than 700,000 customers were without power, particularly in Ohio, as the storms passed.

Financial Loss

The widespread impacts associated with this multi-day outbreak are likely to result in notable economic losses, as well as another costly event for the insurance industry. Aggregated effects of the storms were anticipated to reach into the hundreds of millions USD.

Natural Catastrophes: In Brief

Flooding (Somalia)

Severe flash flooding after heavy rainfall hit Jubaland State in southern Somalia. The district of Bardhere was one of the worst affected with at least 20 fatalities and two people injured, along with notable material and agricultural damage, according to local authorities (SoDMA). Floodwaters from Jubba River damaged hundreds of homes, destroyed several bridges, and caused widespread damage on crops.

Landslide (Ecuador)

Period of elevated precipitation continued to affect several provinces in Ecuador, resulting in multiple landslide events across the country. On March 26, a massive landslide destroyed 57 homes, damaged more than 160 and caused significant infrastructural damage in the community of Alausí in Chimborazo Province, central Ecuador. As of March 31, authorities (SGR) confirmed 17 fatalities and at least 37 injured, while 72 people remained missing at the time of this writing.

Flooding (South Africa)

Torrential rainfall and subsequent flooding have affected southern South Africa since March 23, particularly the Eastern Cape Province. As of March 28, at least three people died in the municipalities of Ingquza Hill and King Sabata. Material damage on homes and local infrastructure was incurred throughout the province and at least 500 people were evacuated.

Flooding & Landslide (Peru) - Update

The National Center for Estimation, Prevention and Disaster Risk Reduction of Peru (CENEPRED) updated the loss numbers related to ongoing rainy season on March 27. Based on their report, flooding and landslides triggered by heavy rainfall have resulted in no fewer than 71 fatalities, and damaged around 54,000 houses since January, particularly in the departments of Piura, Tumbes, Lambayeque, Ayacucho and Arequipa. 1,030 districts (54 percent of all districts across the country) have been under state of emergency within the rainy season.

Earthquake (Iran)

A magnitude-5.6 earthquake jolted northeastern Iran on March 24, claiming no fewer than 239 injured, according to local media. Earthquake occurred in Khoy County, West Azerbaijan Province, and had a low potential to cause significant economic losses, based on USGS's PAGER estimates.

Wildfires (Spain)

Eastern Spain, particularly Valencia region, has experienced first notable early wildfires of this year. Wildfires in Castellón and Teruel Provinces have already burned more than 4,500 hectares (11,100 acres) of forest, according to Copernicus Emergency Management Service. More than 1,500 people were forced to leave their homes due to fires as a preventive measure.

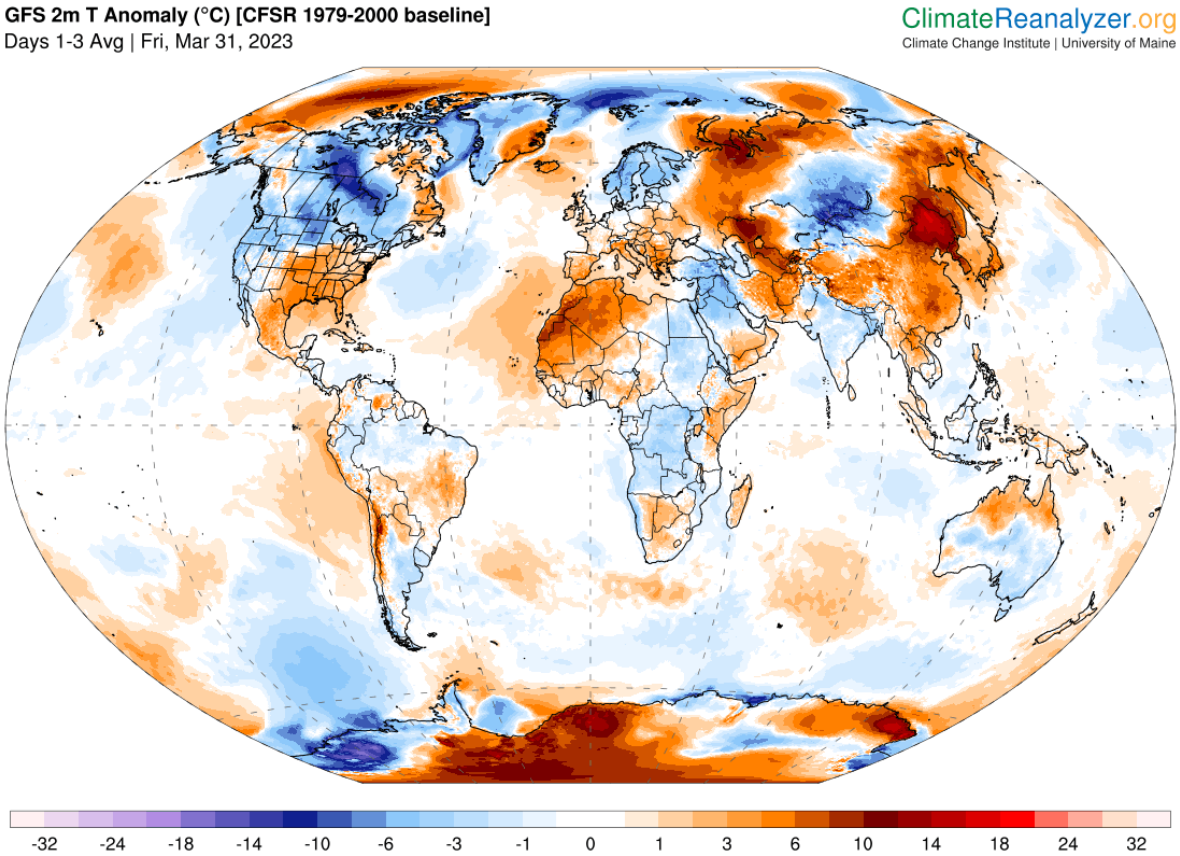
Flooding (Kenya, Ethiopia)

Heavy rainfall resulted in notable flooding in Kenya and Ethiopia over the past week. At least 12 people were killed and thousands were displaced in Kenya; the most affected areas were Nauru, West Pokot and Nairobi. Seven fatalities were reported from Ethiopia, and similarly thousands of homes were affected.

Windstorm Khusru (Western & Central Europe)

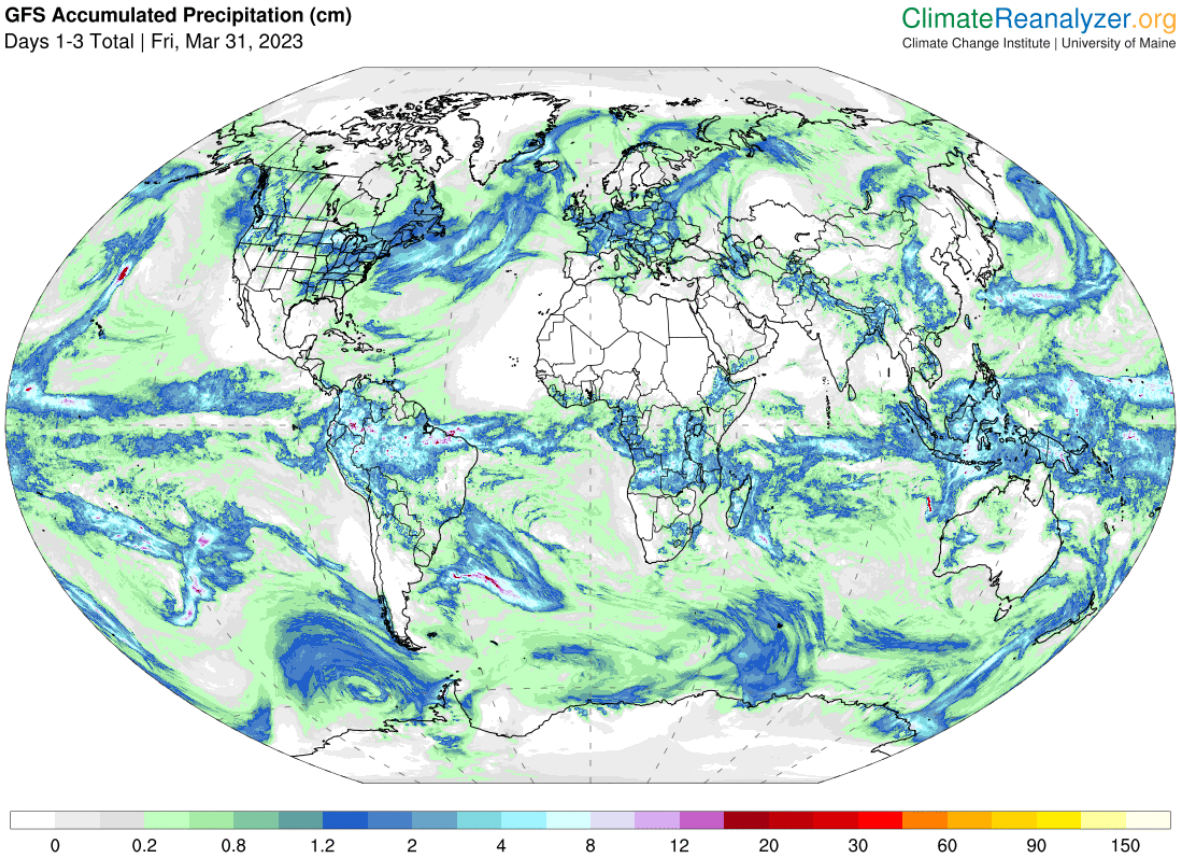
A minor windstorm event resulted in some wind-related damage across several European countries on March 26-27. Particularly strong winds were observed in southern France. Later on March 27, strong winds resulted in notable damage in Hungary and Slovakia. In Hungary, fire brigades intervened more than 500 times and the event generated thousands of insurance claims. Thousands of power outages were reported from Slovakia.

Global Temperature Anomaly Forecast



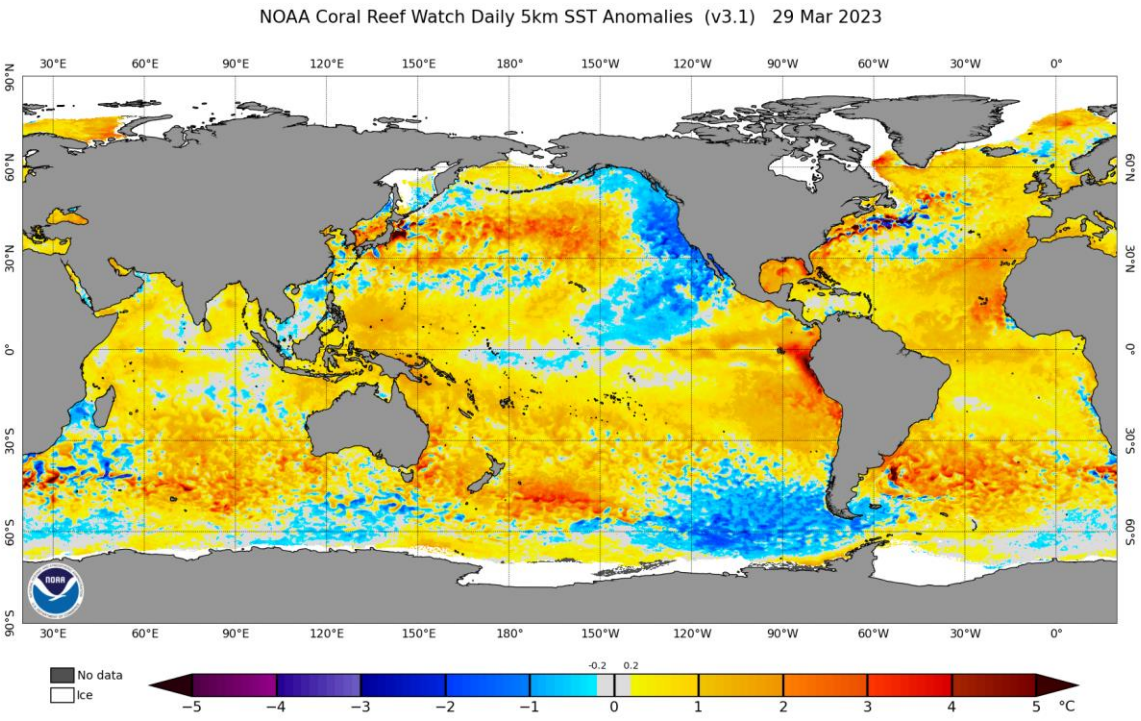
Source: Climate Reanalyzer, Climate Change Institute, University of Maine, USA

Global Precipitation Forecast

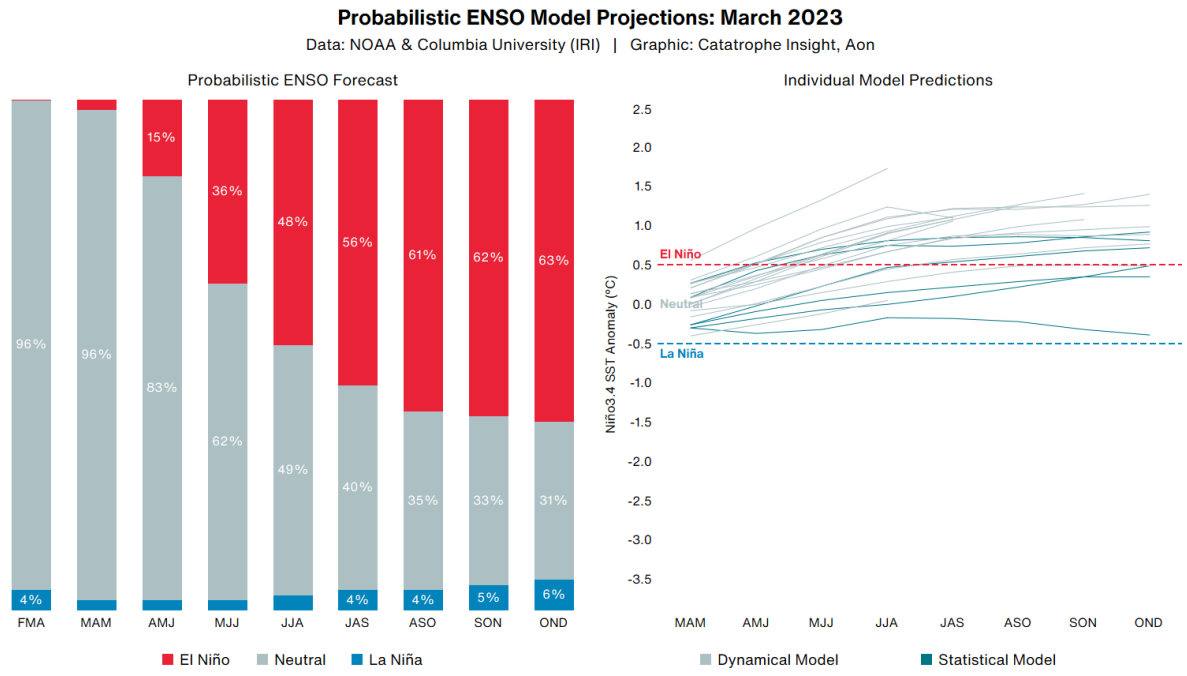


Source: Climate Reanalyzer, Climate Change Institute, University of Maine, USA

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



El Niño-Southern Oscillation (ENSO)



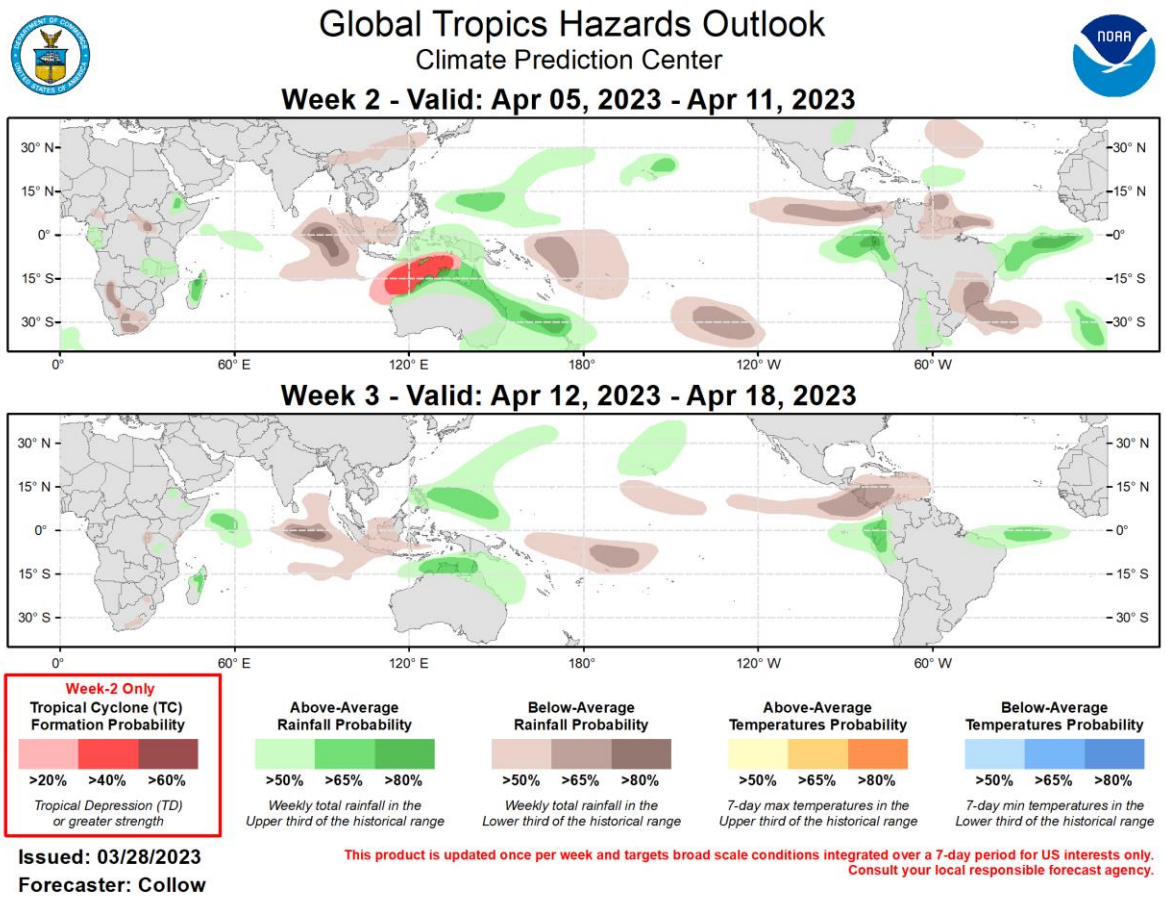
El Niño: *Warm phase of an ENSO cycle. Sea surface temperatures of +0.5°C occur across the east-central equatorial Pacific.*

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.*

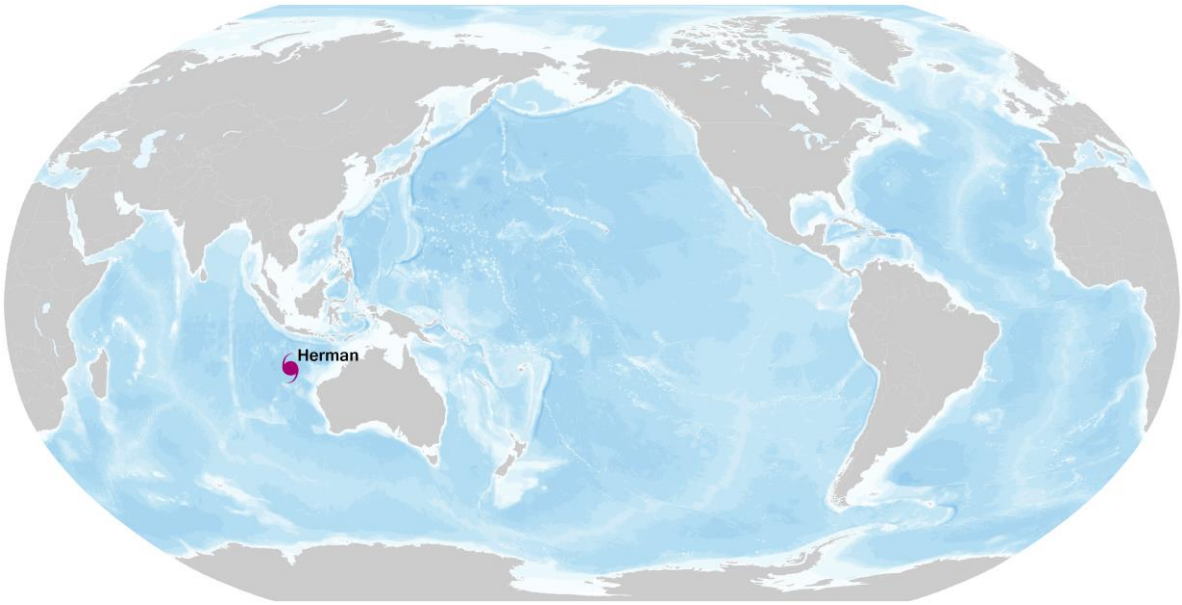
El Niño (La Niña) is a phenomenon in the equatorial Pacific Ocean characterized by a five consecutive 3-month running mean of sea surface temperature (SST) anomalies in the Niño 3.4 region that is above the threshold of +0.5°C (-0.5°C). This is known as the Oceanic Niño Index (ONI).

Global Tropics Outlook



Source: Climate Prediction Center (NOAA)

Current Tropical Cyclone Activity



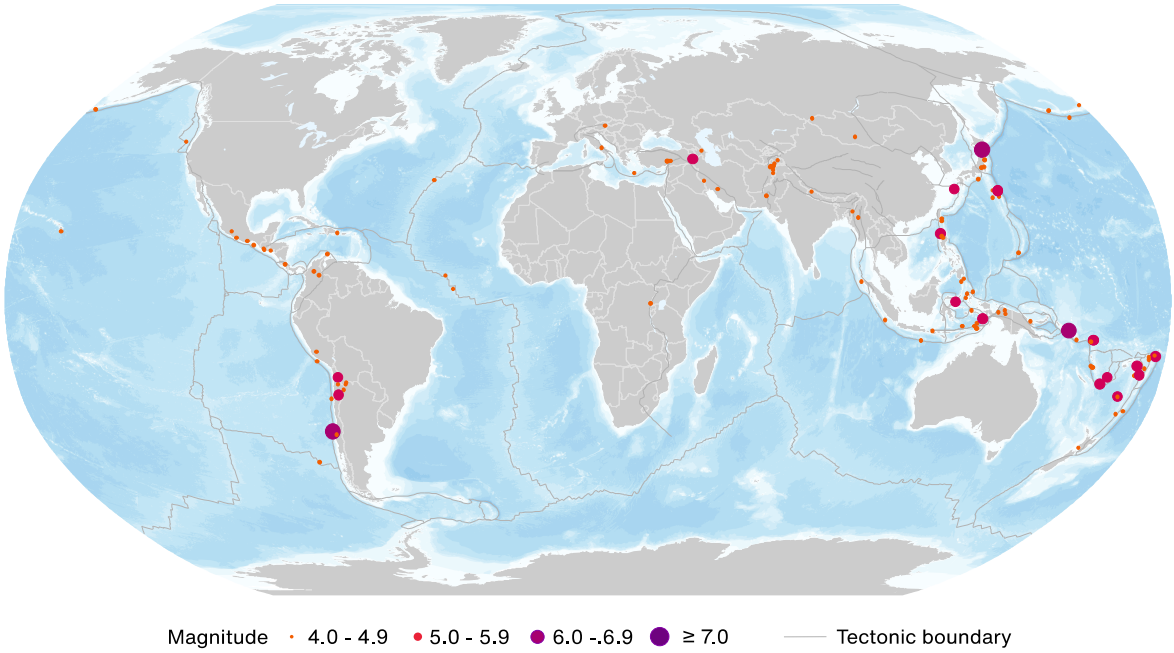
Tropical Depression Tropical Storm Category 1 Category 2 Category 3 Category 4 Category 5

Storm Name	Location	Winds	Location from Nearest Land Area
CY Herman	17.4S, 106.4E	145	715 miles (1150 km) S from Yogyakarta, Indonesia

* 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)

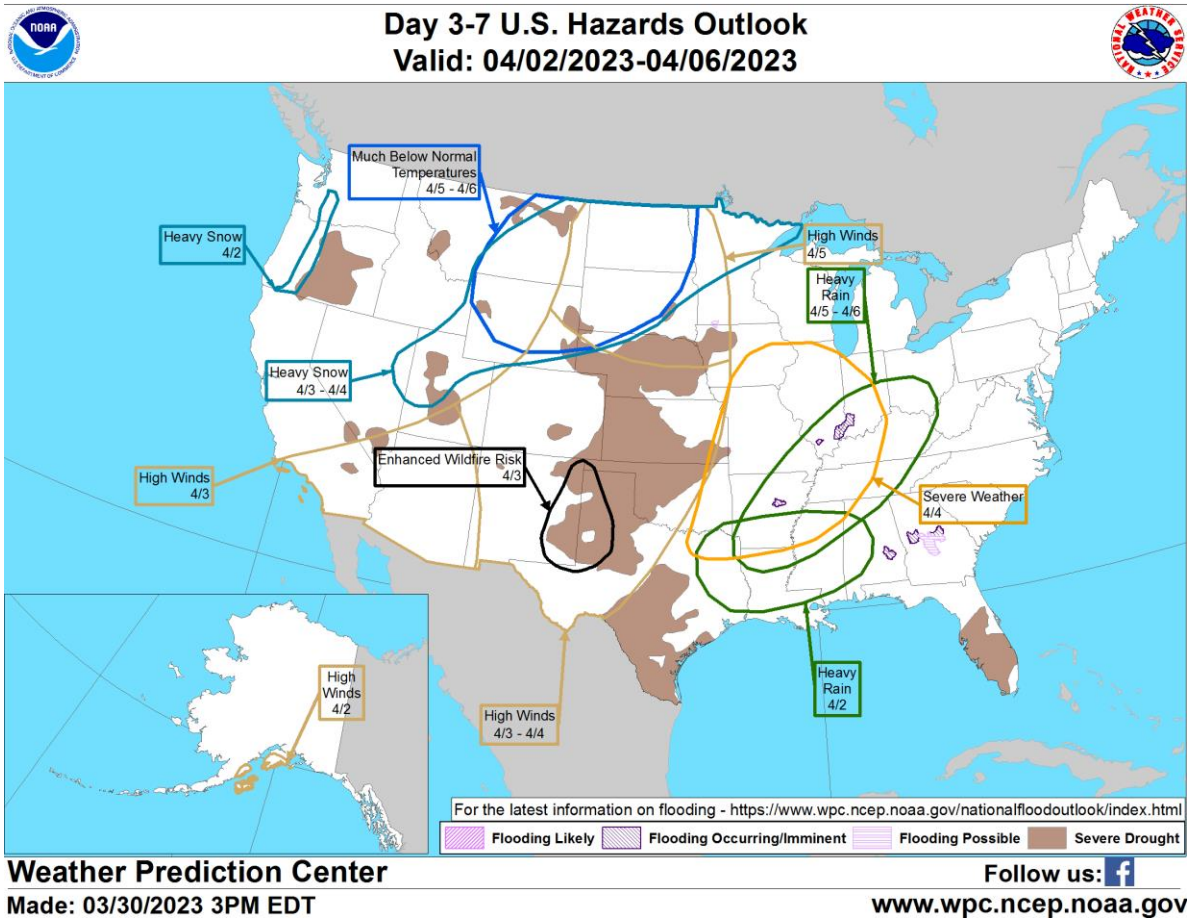
Global Earthquake Activity (≥M4.0): Mar 24-30



Date (UTC)	Location	Magnitude	Epicenter
3/27/2023	8.21S, 158.93E	6.1	73 km (45 miles) W of Buala, Solomon Islands
3/28/2023	41.15N, 142.81E	6	12 km (7 miles) ENE of Misawa, Japan
3/30/2023	35.66S, 73.54W	6.3	130 km (81 miles) NW of Concepcion, Chile

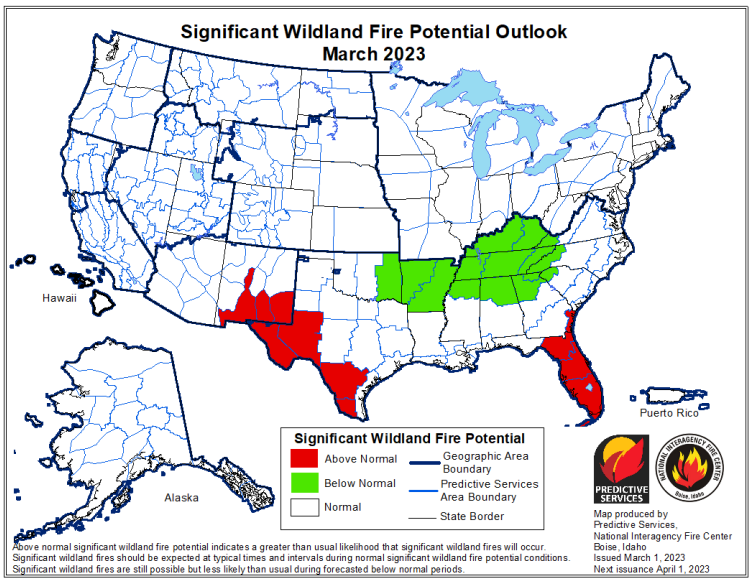
Source: United States Geological Survey

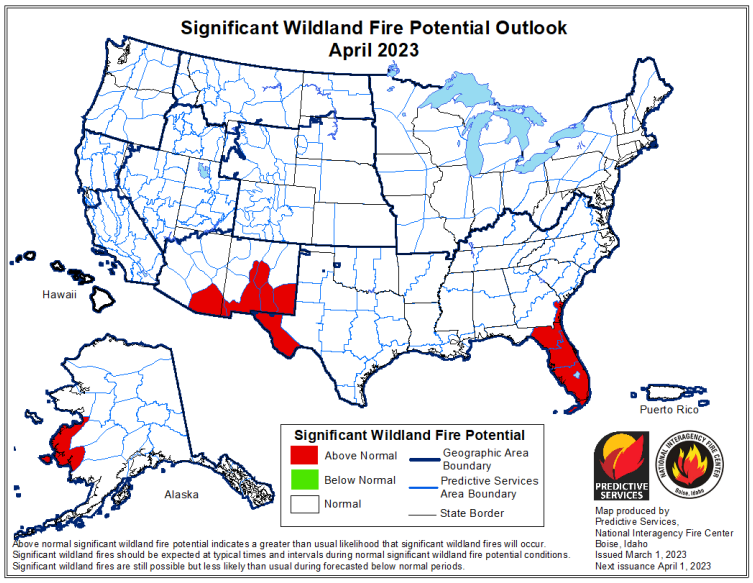
U.S. Hazard Outlook



Source: Climate Prediction Center (NOAA)

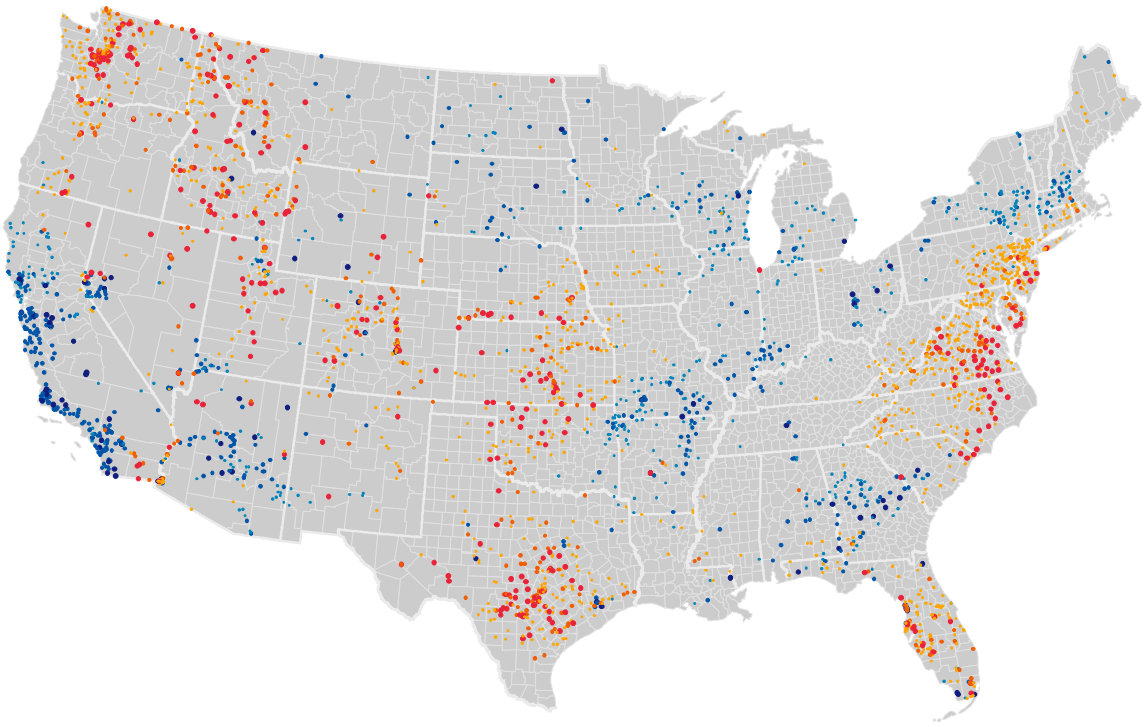
U.S. Wildfire: Significant Fire Risk Outlook & Activity





Source: NIFC

U.S. Current Riverine Flood Risk



A ≥99th 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 steam 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: Severe Convective Storm

Federal Emergency Management Agency (FEMA)
Mississippi Emergency Management Agency (MSEMA)
Storm Prediction Centre (SPC)
NOAA

Natural Catastrophes: In Brief

Floodlist
The Somali Disaster Management Agency (SoDMA)
The National Center for Estimation, Prevention and Disaster Risk Reduction (CENEPRED)
The Risk Management Secretariat of Ecuador (SGR)
The U.S. Geological Survey (USGS)
Copernicus Emergency Management Service (EMS)
Early wildfire in Spain's Valencia region forces 1,500 villagers to evacuate, *The Guardian*

Contacts

Michal Lörinc
Head of Catastrophe Insight
michal.lorinc@aon.com

Ondřej Hotový
Catastrophe Analyst
ondrej.hotovy@aon.com

About Aon

Aon plc (NYSE:AON) is a leading global professional services firm providing a broad range of risk, retirement and health solutions. Our 50,000 colleagues in 120 countries empower results for clients by using proprietary data and analytics to deliver insights that reduce volatility and improve performance.

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.

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.