

Weekly Cat Report

May 5, 2023



Executive Summary



Event	Affected Region(s)	Fatalities	Economic Loss (\$)	Page
Severe Convective Storm	United States	0	10s of millions	3
Severe Convective Storm	Spain	0	10s of millions	5
Flooding & Landslide	Rwanda, Uganda, Kenya	136+	Unknown	6
Severe Convective Storm	Vietnam	0	Millions	6
Flooding	Canada	2	Unknown	6
Flooding	United States	0	Unknown	6
Severe Convective Storm	Pakistan	12+	Negligible	6
Other	United States	7	Millions	6
Earthquake	China	0	Millions	7
Flooding	Italy	2	Millions	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

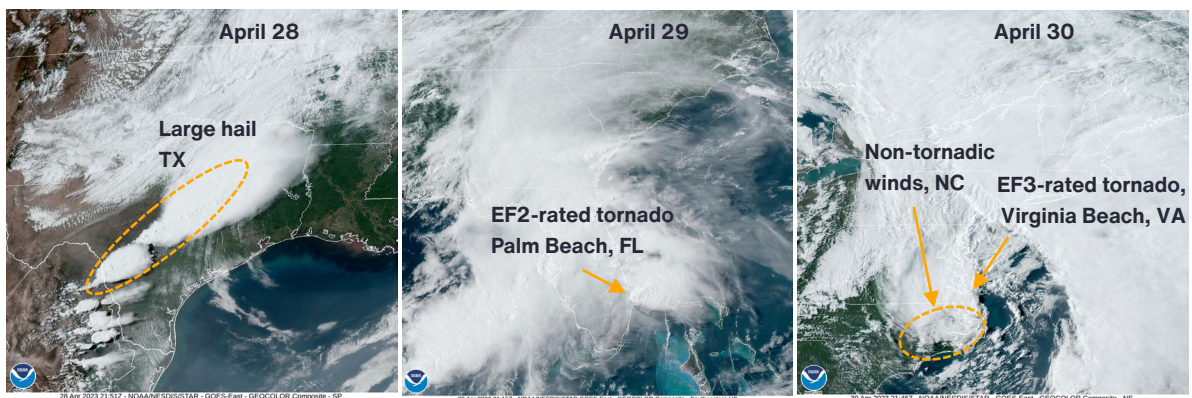
Overview

A convective storm outbreak, associated with a developing low-pressure system, produced large hail and multiple tornadoes, affecting several states in the United States on April 28-30. The storms caused considerable property and vehicular damage throughout the region. Total economic and insured losses from the event are expected to reach into the tens of millions USD.

Meteorological Recap

The storms occurred as a developing low-pressure system and associated cold front moved eastward across the region. Severe storm development was enhanced by a warm and moist airmass advected from the Gulf of Mexico. Primary hazards were large hail and tornadoes.

On April 28, the system was moving through western and central Texas, bringing large hailstones with size exceeding 3 inches (7.6 cm) in diameter, and damaging winds of locally up to 75 mph (120 kph). On April 29, hail and wind damage was incurred particularly in Florida as the frontal boundary stretched to south and east. Notably, two tornado touchdowns were reported in Charlotte and Palm Beach counties, where the tornado, rated as EF2 on Enhanced Fujita scale, produced estimated wind gusts of up to 130 mph (209 kph), according to the National Weather Service (NWS). Day after on April 30, a low-pressure system reached Carolinas and southern Virginia, bringing strong winds and heavy rain into the region. Virginia Beach experienced an EF3-rated tornado, reaching estimated wind gusts of up to 145 mph (230 kph).



Source: NOAA, GOES

Event Details

Storm impacts following this recent convective storm period were reported in Florida, New Jersey, New York, North Carolina, Pennsylvania, Texas, and Virginia.

Texas was the first state to be hit by large hail and high winds. Bell, Coryell, Hamilton, and Houston counties were the hardest affected, along with damage to buildings, vehicles, and local infrastructure. Wind gusts downed power lines and caused power outages to more than 165,000 customers.

A destructive EF2-intensity tornado struck Palm Beach Gardens in **Florida**, on April 29, generating notable property and vehicular damage on dozens of buildings, cars, and several boats, along with downed trees, and power lines. Thousands of customers lost power as the storm passed.

A state of emergency was issued after a strong EF3-rated tornado hit Virginia Beach, **Virginia**, on April 30. According to officials, the tornado touched down in the Great Neck area, damaging up to 100 homes and prompting the closure of several schools. To date, the public and residential damage in Virginia Beach alone is estimated at \$16 million.

Strong winds and localized heavy rainfall of up to 6 inches (150 mm) led to wind and flood warnings in several locations in **New Jersey** (particularly in Monmouth and Ocean counties), **New York**, **North Carolina** (Coastal Onslow, Hatteras Islands, Ocracoke, West and East Carteret counties), and **Pennsylvania** (Chester, Montgomery, and Philadelphia counties). As of this writing, no injuries or deaths have been reported as a result of the severe weather.



Property and vehicular damage in Palm Beach Gardens (left), and in Virginia Beach (right)

Source: NOAA's Damage Assessment Toolkit

Financial Loss

Due to the widespread nature of the outbreak and the severe structural and vehicular damage caused by large hailstones and high winds, aggregate economic and insured losses from the event were initially anticipated to be in the tens of millions USD.

Spain: Severe Convective Storm

Overview

Parts of northern Spain were badly hit by a hailstorm on April 29. The storm caused substantial agricultural damage to more than 50,000 hectares (123,500 acres) of crops, putting estimated economic losses from the event at the tens of millions EUR.

Meteorological Recap

After several days of well above-average temperatures, the region experienced localized severe storms. Notably, thunderstorm activity developed over the provinces of Burgos and Palencia, where isolated supercells moving south-eastwards produced large hail with size up to 4 cm (1.6 inches) in diameter and strong wind gusts. Although the storm did not produce such large hailstones, it resulted in considerable damage to crops as it moved over large agricultural area.

Hail Reports on April 29

Hail Diameter (cm)

■ 2 ■ 3 ■ 4



Source: ESWD

Graphics: Catastrophe Insight, Aon



Event Details

The regions of **Arlanza** and **Odra-Pisuerga** were the worst hit by the hailstorm. Some material damage, broken car windows, flooded roads and traffic disruptions were reported in dozens of towns across the region. In particular, the storms generated notable agricultural damage. There were parcels, where the harvest has been declared a total loss. According to the local agrarian association, more than 50,000 hectares (123,500 acres) were affected, resulting in losses of up to €60 million.

Financial Loss

Regarding an extensive agricultural area, which was hit by the event, initial economic and insured losses are estimated to reach into tens of millions EUR. Recent hailstorms caused additional damage in areas, where the harvest had already been reduced by frost or devastating drought (see previous Weekly Cat Report).

Natural Catastrophes: In Brief

Flooding & Landslide (Rwanda, Uganda, Kenya)

Severe flooding and landslides have struck several countries in Central Africa since late April. Rwanda, particularly Western and Northern Provinces, was hard hit by heavy rain on May 2-3, leaving no fewer than 130 dead and 77 injured. Dozens of houses collapsed and main roads in the area were impassable. At least six more fatalities and nine injuries were reported in Uganda between April 24 – May 2, along with property damage on tens of houses. Widespread flooding has affected thousands of people and caused damage also in the neighbouring western Kenya.

Severe Convective Storm (Vietnam)

Storms brought localized heavy rainfall and large hail to northern Vietnam on April 28-30. According to the ASEAN Disaster Information Network (ADINet), structural damage to more than 1,600 houses and agricultural losses to no less than 2,500 hectares (6,200 acres) of crops were incurred across the provinces of Cao Bang, Lao Cai, Yen Bai, Phu Tho, Dien Bien, Tuyen Quang, and Thai Nguyen.

Flooding (Canada)

Heavy rainfall caused rivers in the province of Quebec, Canada, to overflow their banks, causing some structural and property damage to roads, bridges, and several houses, particularly in the Charlevoix and Lanaudière regions. As of May 2, the municipalities of Baie-Saint-Paul, Saint-Côme and Sainte-Émélédé-l'Énergie were under a state of emergency. About 1,000 people were stranded due to flooding, two firefighters died during rescue operations. Thousands of Hydro-Québec customers were left without power.

Flooding (United States)

Multiple locations along the Mississippi River reached the major flooding level in early May as the river gradually rose following rapid snowmelt in Minnesota. Several gauging stations in southern Wisconsin, northern Illinois, and Iowa recorded the highest water levels in years. The extent of flooding and potential damage will be assessed in the coming days or weeks.

Severe Convective Storm (Pakistan)

Storms generated heavy rainfall, flash flooding and lightnings, resulting in casualties and minor material damage on several buildings in the provinces of Balochistan, south-western Pakistan, and in Khyber Pakhtunkhwa, north-western Pakistan, since April 29. According to authorities, at least 12 people died and three were injured due severe weather-related accidents.

Other (United States)

A dust storm triggered by strong winds disrupted traffic on a highway in Illinois, United States, on May 1. Seven people died and at least 37 people sustained injuries in multiple accidents, involving more than 70 vehicles.

Earthquake (China)

A magnitude-5.3 earthquake occurred in western Yunnan Province, southern China, on May 2. Its epicentre was located about 30 km (19 mi) from Baoshan city. As of this writing, at least 10 people were injured, along with damage on about 2,800 buildings throughout the province.

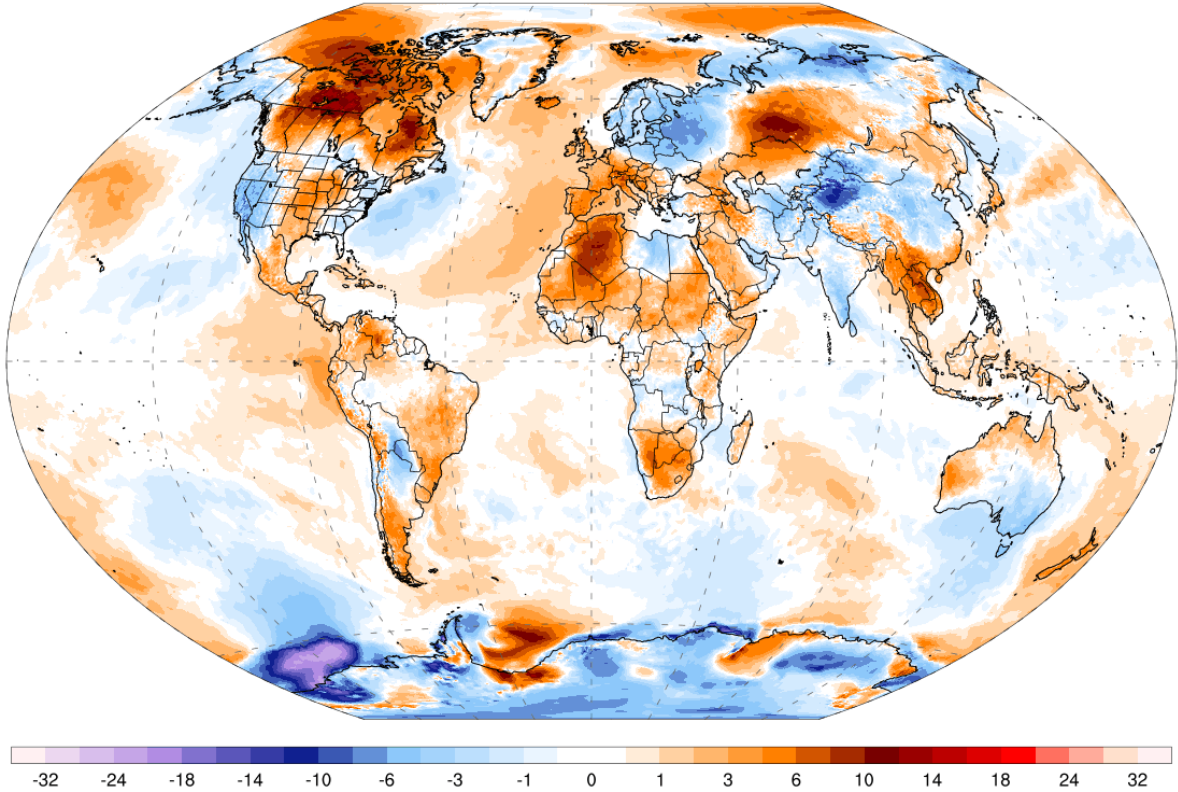
Flooding (Italy)

At least two people died in floodwaters and landslides prompted by torrential rain in the Emilia-Romagna Region, northern Italy, between April 30 – May 3. Dozens of homes were inundated, and hundreds of residents were evacuated, particularly in the provinces of Bologna, Ravenna, and Forlì-Cesena. Fire brigades carried out around 500 interventions due to flooding and multiple landslide events.

Global Temperature Anomaly Forecast

GFS 2m T Anomaly (°C) [CFSR 1979-2000 baseline]
Days 1-3 Avg | Fri, May 05, 2023

ClimateReanalyzer.org
Climate Change Institute | University of Maine

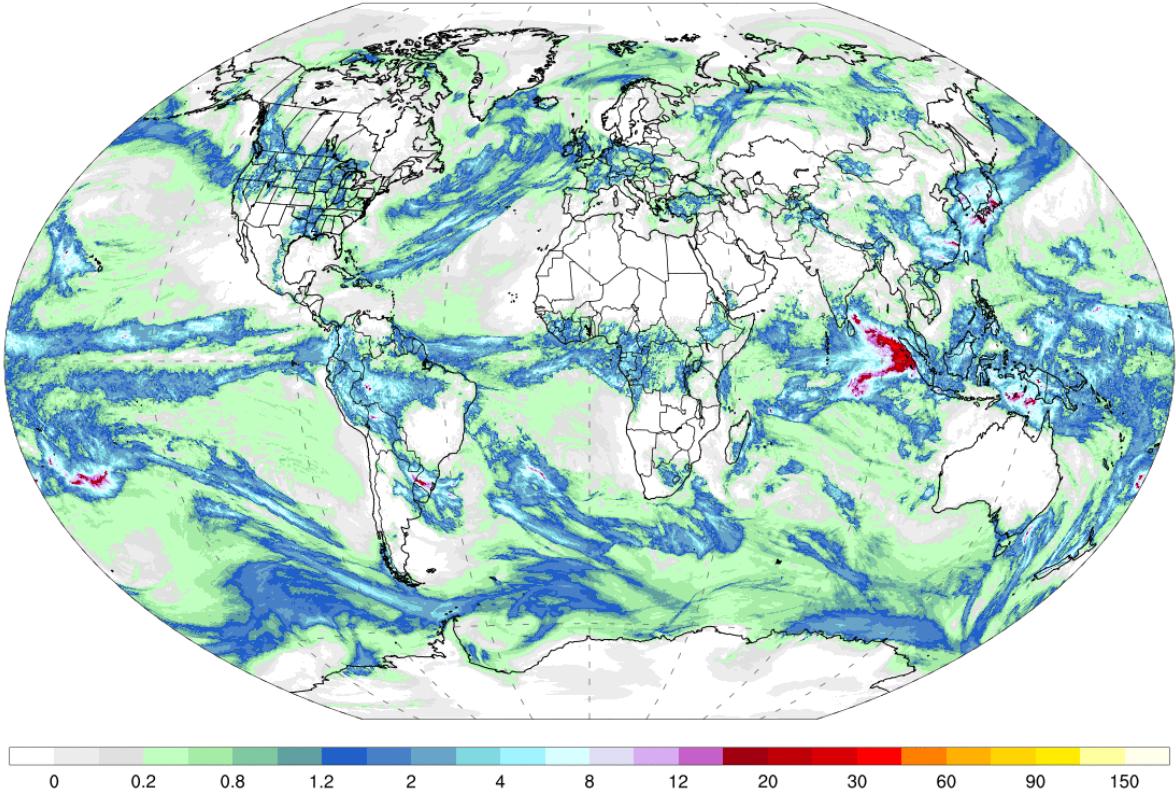


Source: Climate Reanalyzer, Climate Change Institute, University of Maine, USA

Global Precipitation Forecast

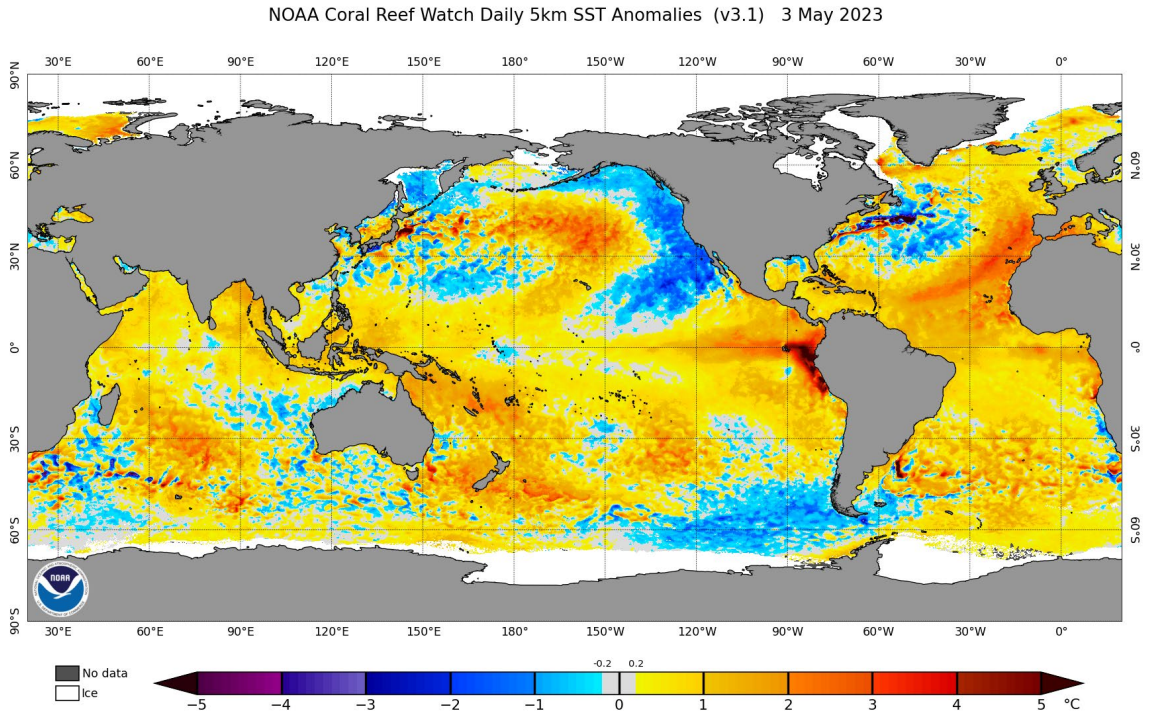
GFS Accumulated Precipitation (cm)
Days 1-3 Total | Fri, May 05, 2023

ClimateReanalyzer.org
Climate Change Institute | University of Maine



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

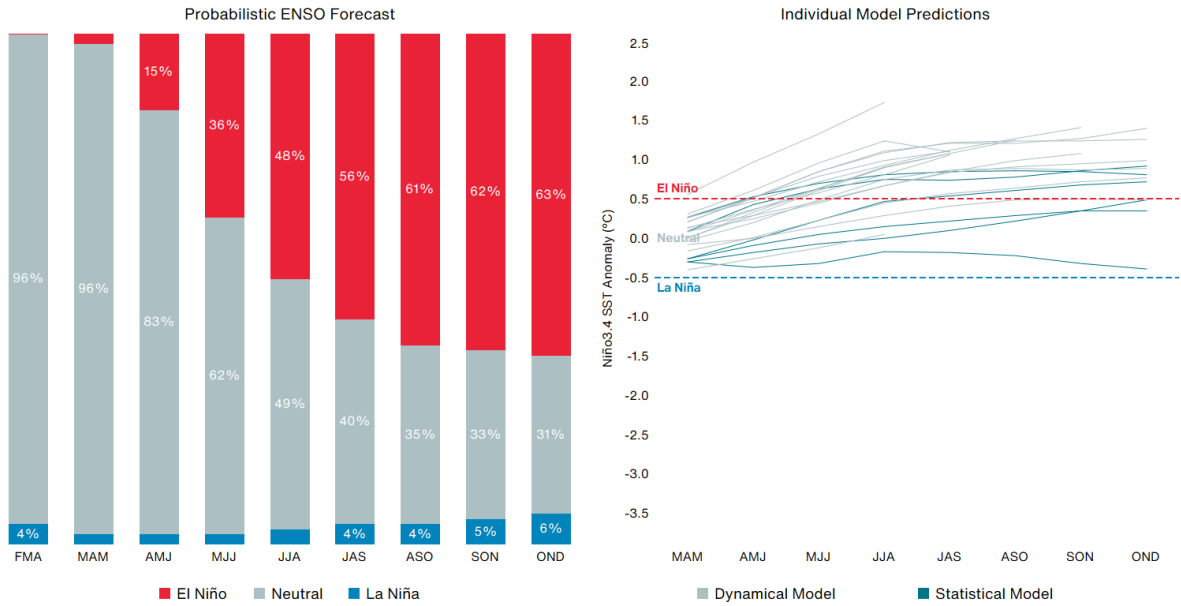
Weekly Sea Surface Temperature (SST) Maps (°C)



El Niño-Southern Oscillation (ENSO)

Probabilistic ENSO Model Projections: March 2023

Data: NOAA & Columbia University (IRI) | Graphic: Catatrophe Insight, Aon



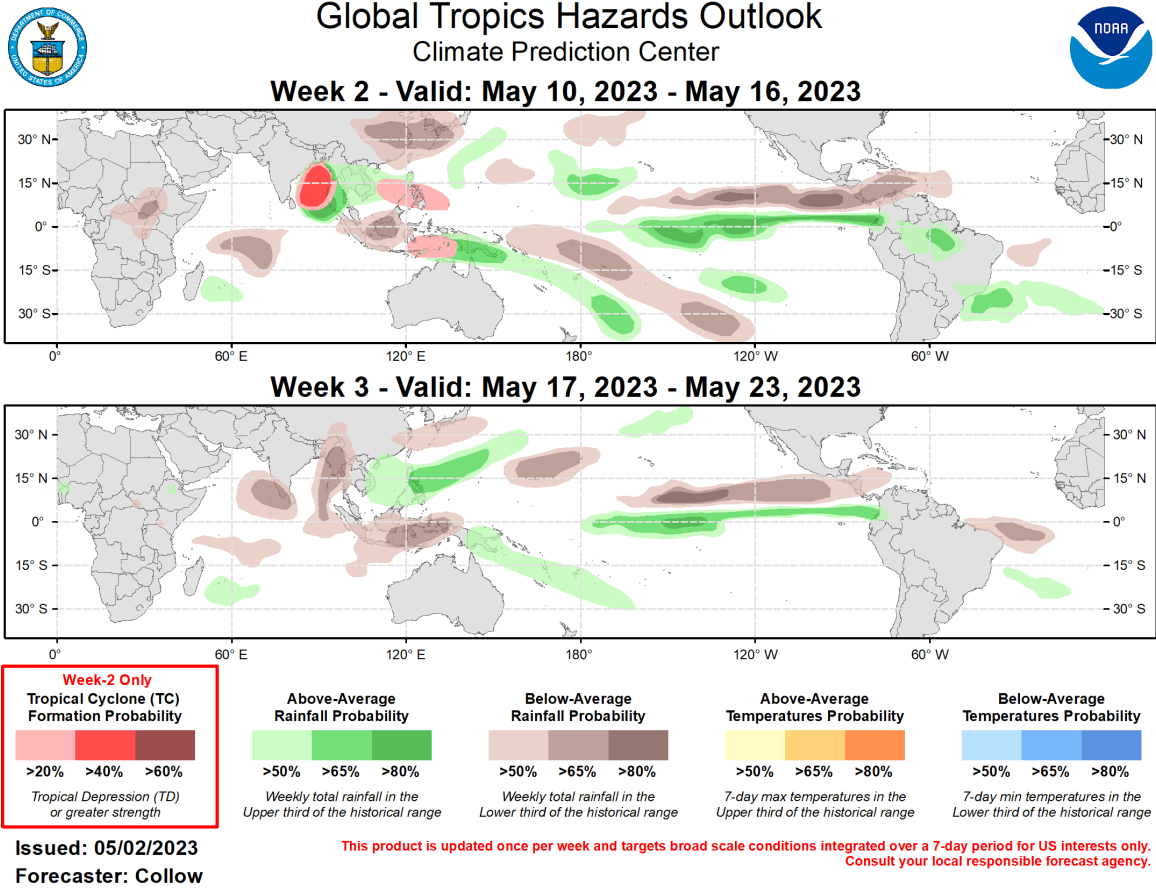
El Niño: Warm phase of an ENSO cycle. Sea surface temperatures of +0.5°C occur across the east-central equatorial Pacific.

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.

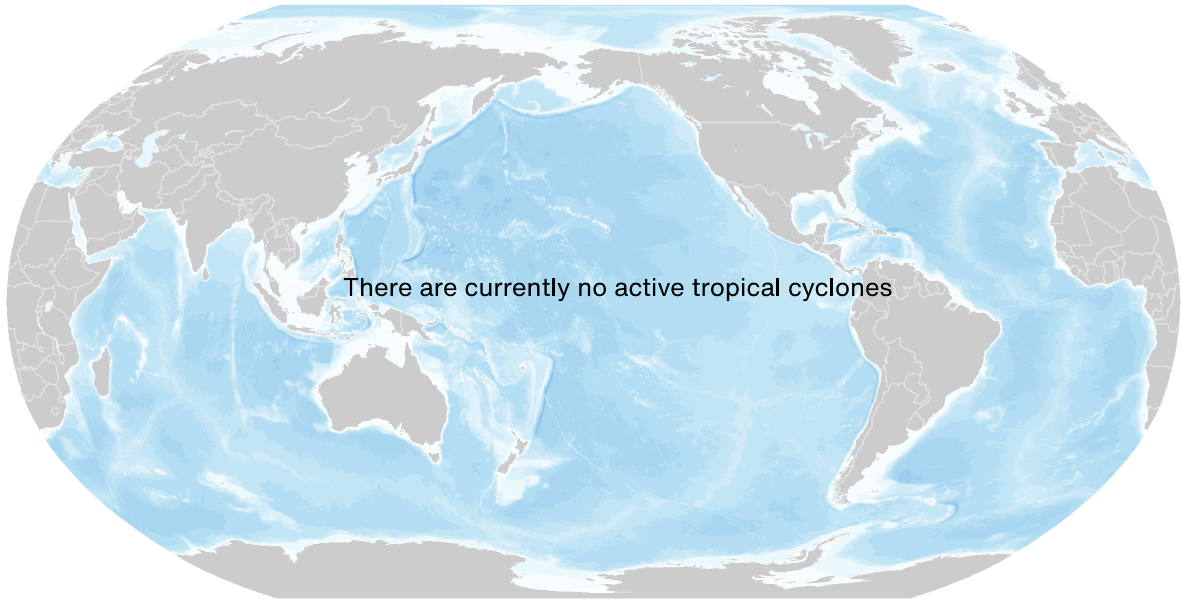
El Niño (La Niña) is a phenomenon in the equatorial Pacific Ocean characterized by a five consecutive 3-month running mean of sea surface temperature (SST) anomalies in the Niño 3.4 region that is above the threshold of +0.5°C (-0.5°C). This is known as the Oceanic Niño Index (ONI).

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

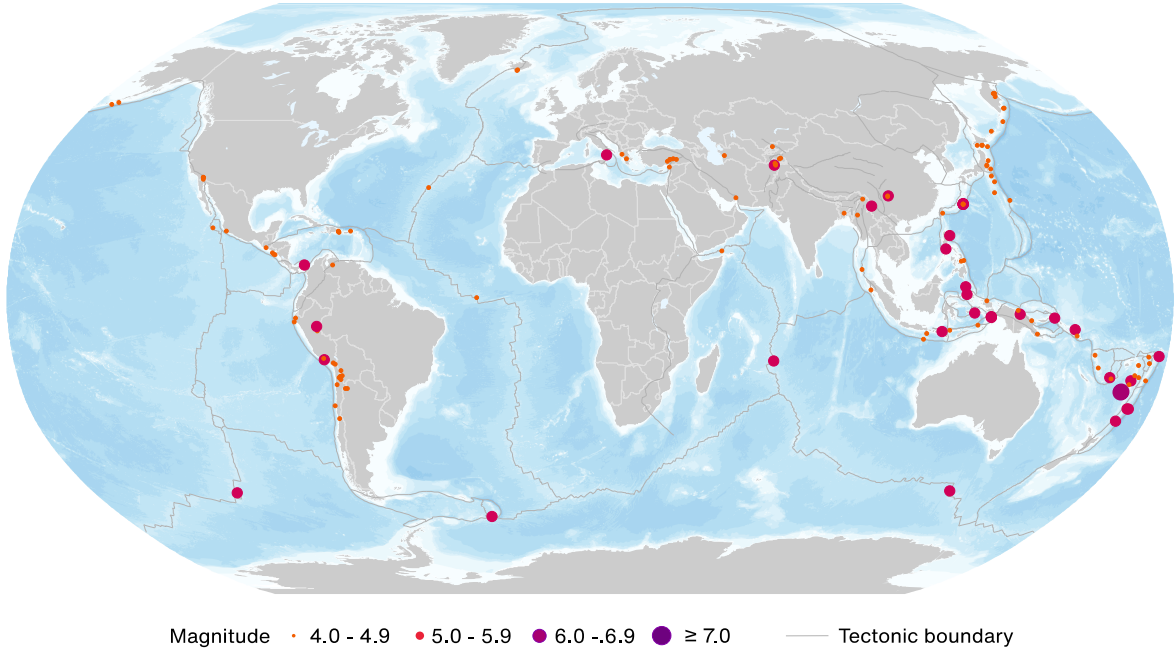
Storm Name	Location	Winds	Location from Nearest Land Area

* 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)

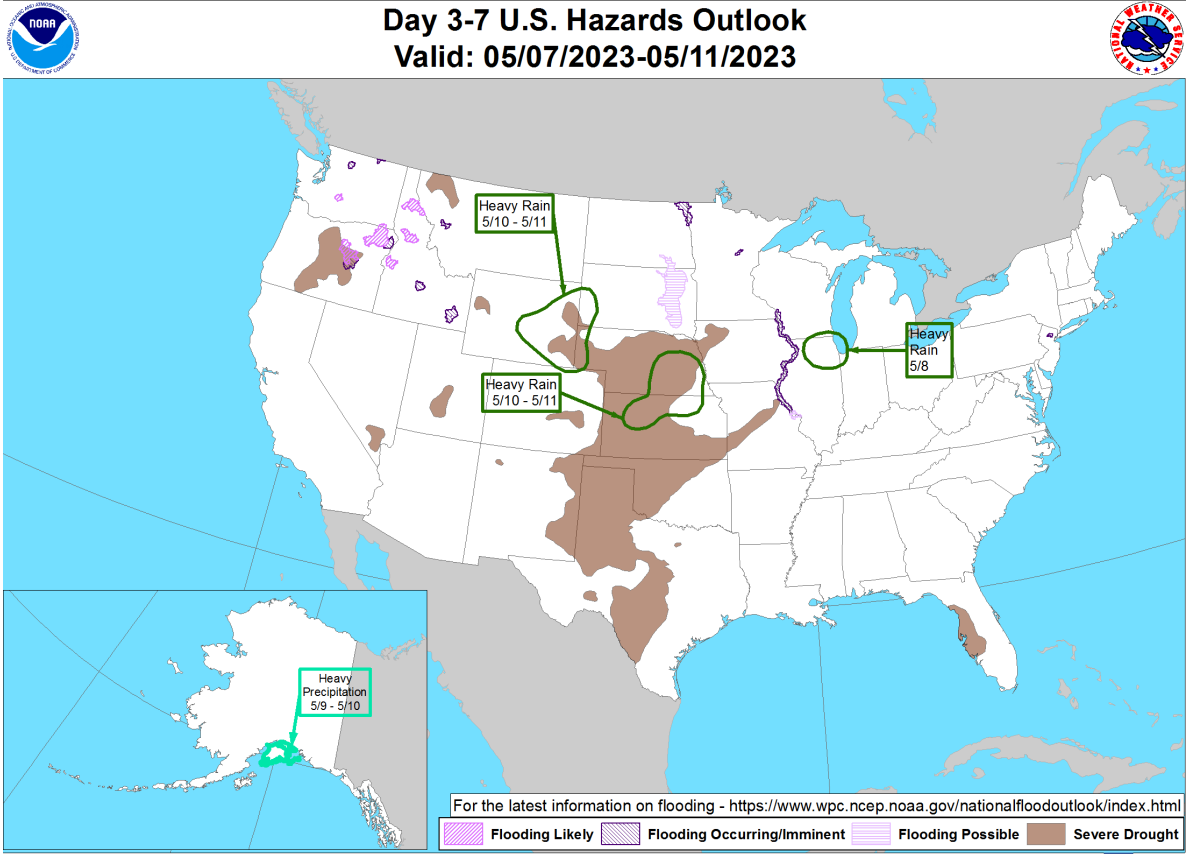
Global Earthquake Activity ($\geq M4.0$): April 29-May 5



Date (UTC)	Location	Magnitude	Epicenter
4/28/2023	25.17S, 178.49E	6.0	south of the Fiji Islands
4/28/2023	25.27S, 178.42E	6.6	south of the Fiji Islands

Source: United States Geological Survey

U.S. Hazard Outlook



Weather Prediction Center

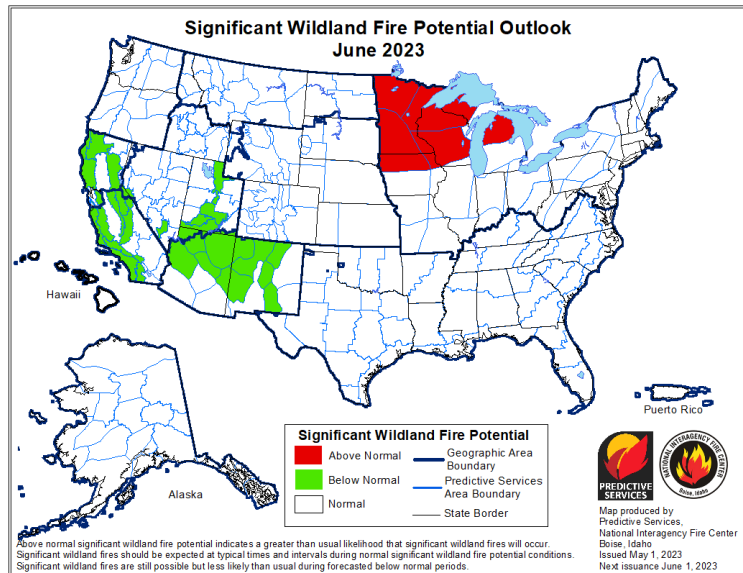
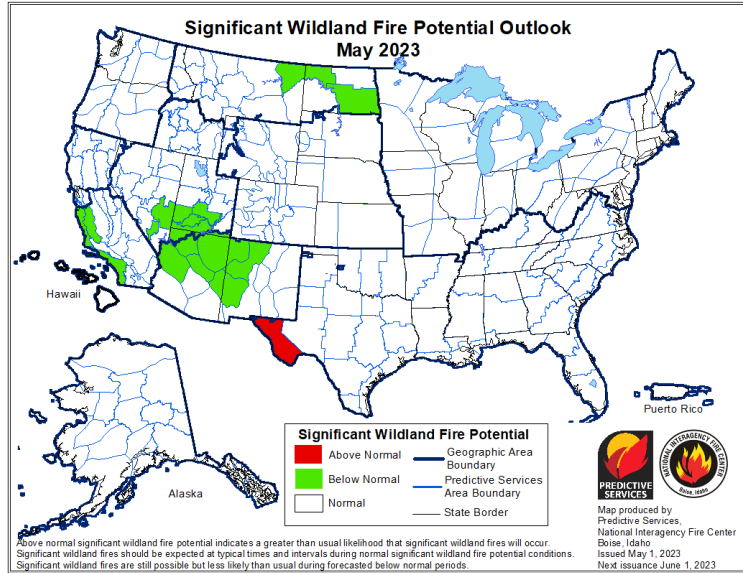
Made: 05/04/2023 3PM EDT

Source: Climate Prediction Center (NOAA)

Follow us: 

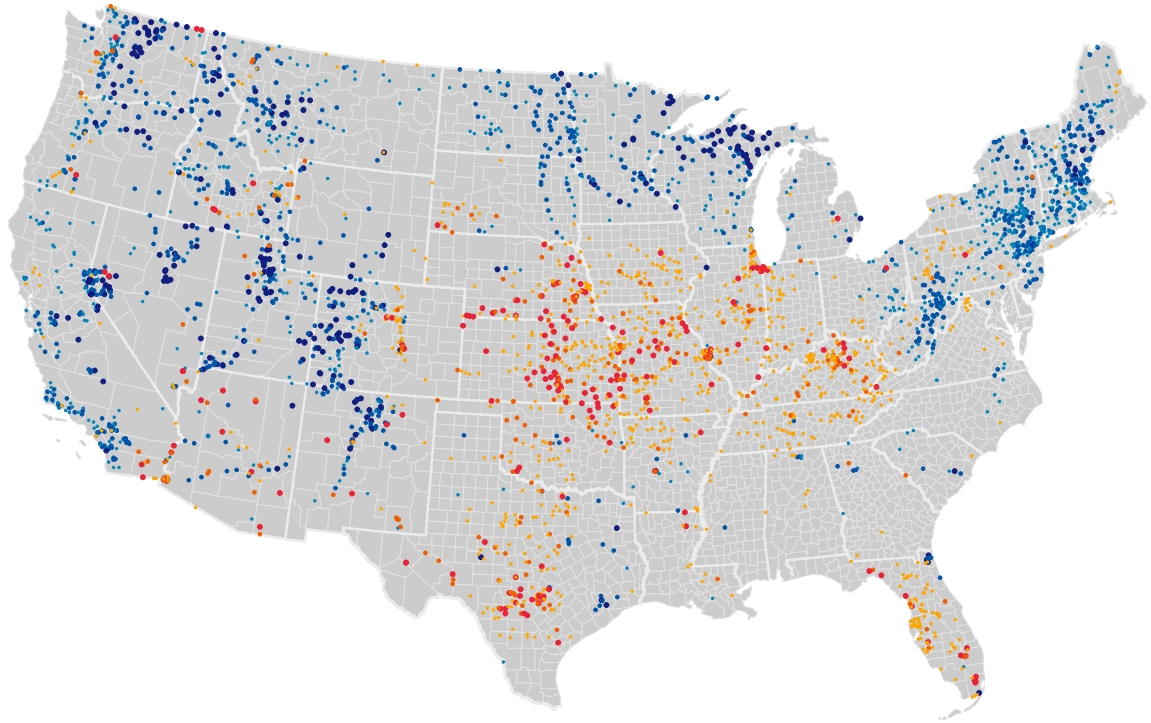
www.wpc.ncep.noaa.gov

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



Source: NIFC

U.S. Current Riverine Flood Risk



High Flows (Percentile)	• ≥ 99 / Above floodstage	Hydrological Drought	• Severe Drought
	• 95 - 99		• Moderate Drought
	• 90 - 95		• 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: Severe Convective Storm

The National Weather Service (NWS)

The Storm Prediction Center (SPC)

NOAA's Damage Assessment Toolkit

Up to 100 homes damaged and schools closed after tornado strikes Virginia Beach, *CNN*

Spain: Severe Convective Storm

The Spanish Meteorological Agency (AEMET)

The European Severe Database (ESWD)

The Burgo's Agrarian Association of Young Farmers (ASAJA)

Agroseguro

They calculate 50,000 hectares affected by the hail in Burgos, with losses of 60 million euros, *Burgos Conecta*

Natural Catastrophes: In Brief

The Rwanda Broadcasting Agency (RBA)

Ministry in Charge of Emergency Management (MINEMA)

Rwanda Meteorological Agency

The European Severe Database (ESWD)

Floodlist

ASEAN Disaster Information Network (ADINet)

Flooding forces hundreds of evacuations as Quebec towns declare states of emergency, *CBC News*

Highway reopens after more than 70 vehicles crashed in a dust storm, leaving at least 7 dead, *CNN*

Bad weather today in Emilia Romagna, two dead, *Il Resto del Carlino*

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