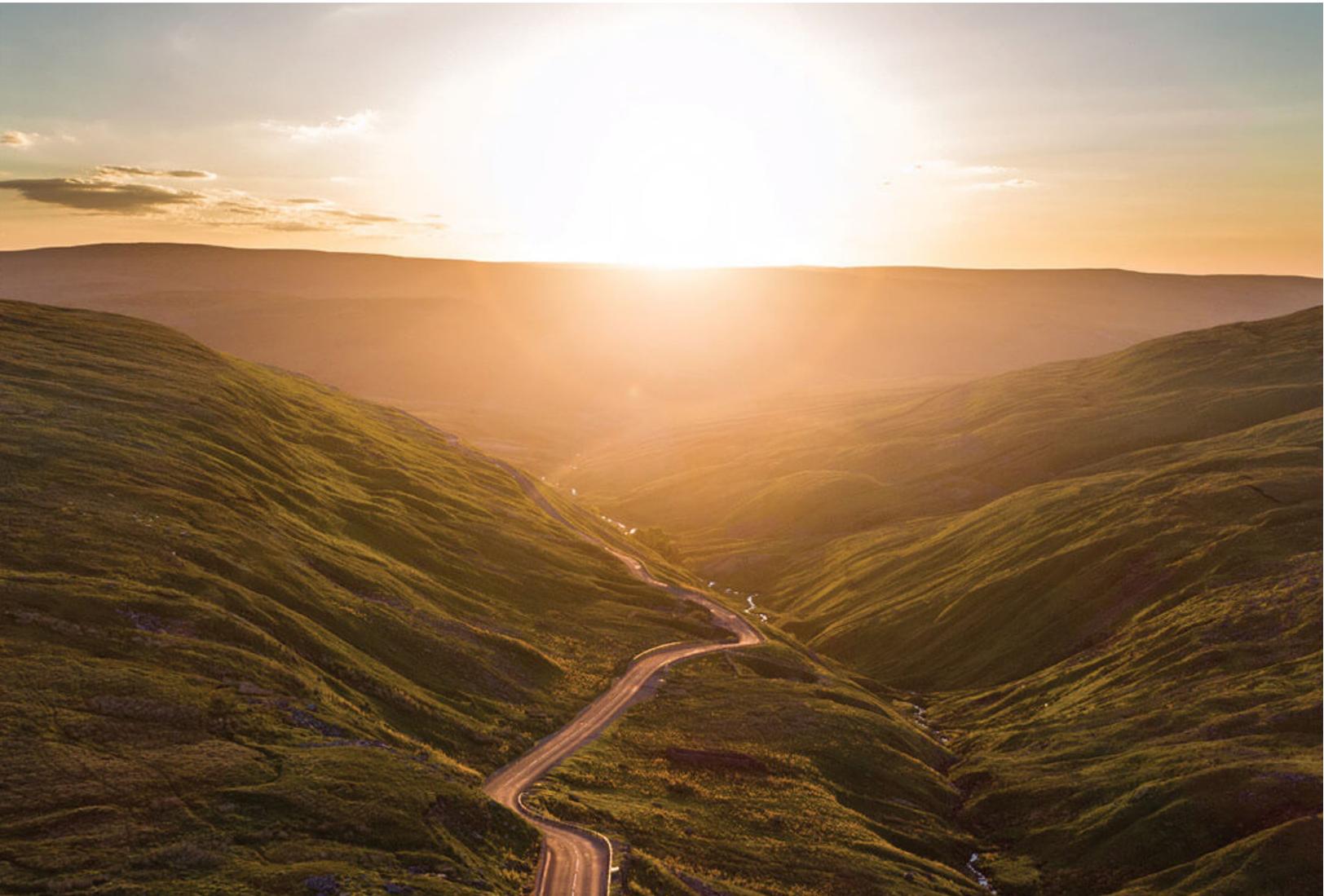
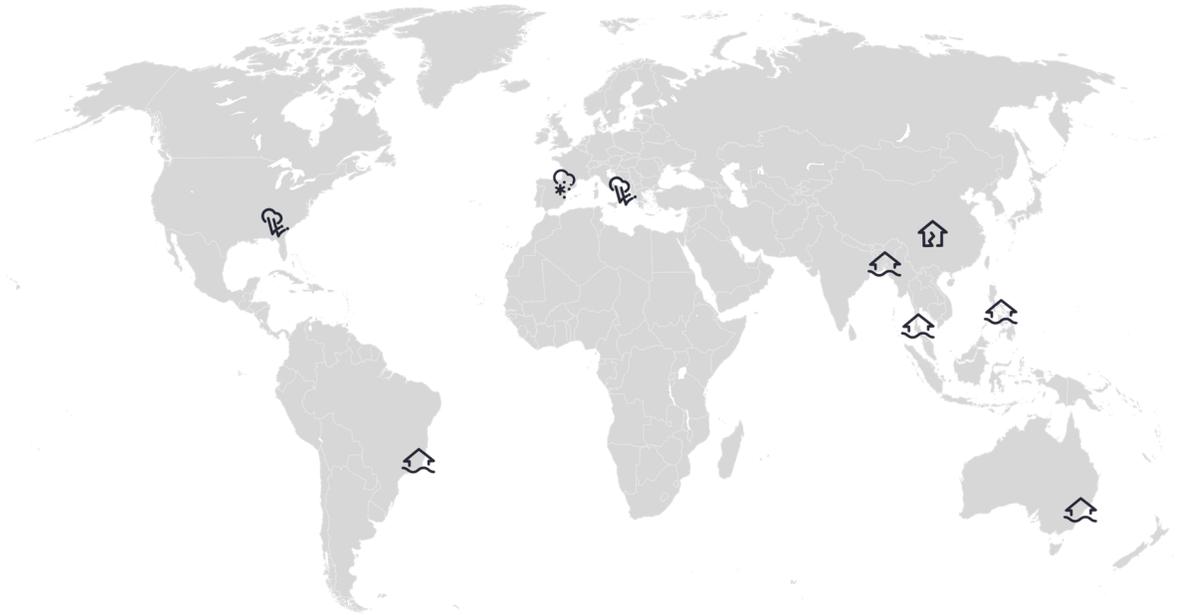


# **Weekly Cat Report**

April 8, 2022



## Executive Summary



Event	Affected Region(s)	Fatalities	Economic Loss (\$)	Page
<b>Severe Convective Storm</b>	United States	3+	100s of Millions+	3
<b>Winter Weather</b>	Europe	N/A	10s of Millions	7
<b>Flooding</b>	Brazil	18+	Millions	9
<b>Earthquake</b>	China	0	Millions	9
<b>Flooding</b>	Philippines	1+	Unknown	9
<b>Flooding</b>	Bangladesh	0	Negligible	9
<b>Flooding</b>	Australia	0	Millions	9
<b>Severe Convective Storm</b>	Southern Europe	0	Millions	10
<b>Flooding</b>	Thailand	1+	Unknown	10

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 multi-day outbreak of severe weather swept across the southern United States between April 4-7, spawning dozens of tornado touchdowns, and generating severe straight-line winds, very large hail, and instances of flash flooding. The most significant impacts spanned from northern Texas into the Southeast. A regional tornado outbreak unfolded across the Southeast on April 5, and included a rare Tornado Emergency for Allendale County in South Carolina. Golf ball sized and larger hailstones resulted in notable property and vehicle damages across southern Florida on April 4. At least three fatalities were confirmed. Total economic and insured losses were each individually expected to at least enter into the hundreds of millions (USD).

### Meteorological Recap

Following a record-breaking number of reported tornadoes in March, the first week of April continued an exceptionally active stretch of severe convective storms (SCS) across the southern United States.

#### April 2-4

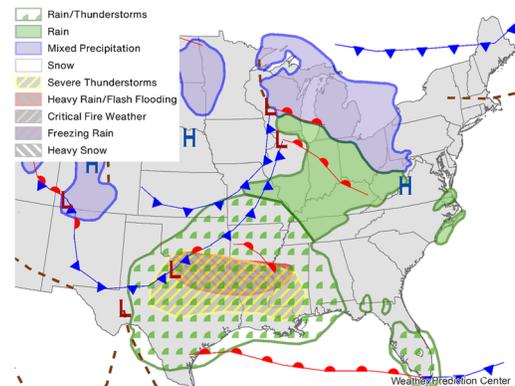
In Florida, severe thunderstorms which formed in the vicinity of a frontal boundary and sea breeze boundaries across southern portions of the state on April 4 resulted in multiple instances damaging golf ball size and larger hailstones. Days prior, on April 2, the central and northern Peninsula was affected by an intensifying cluster of showers and thunderstorms which evolved along a stalled frontal boundary and generated instances of hail, heavy rainfall, and strong straight-line winds.

#### April 4-6

Severe storms across the southern United States between April 4-6 were aided by favorable southerly flow, which advected warm and moist air northward, in tandem with a pair of upper-level disturbances approaching from the West. During this three-day period, the Storm Prediction Center (SPC) issued consecutive days of an Enhanced Risk (level 3 out of 5) for SCS in a corridor spanning from north-central Texas into the Southeast. Hazards included large hail, damaging winds, strong tornadoes, and locally heavy rainfall.

On April 4, the threat for severe weather was highest south and east of a weak area of low pressure that developed along a stalled frontal boundary in Northern Texas. Severe storms hastily organized into a mesoscale convective system (MCS) - which proceeded to move through northern Texas and into the Deep South by April 5.

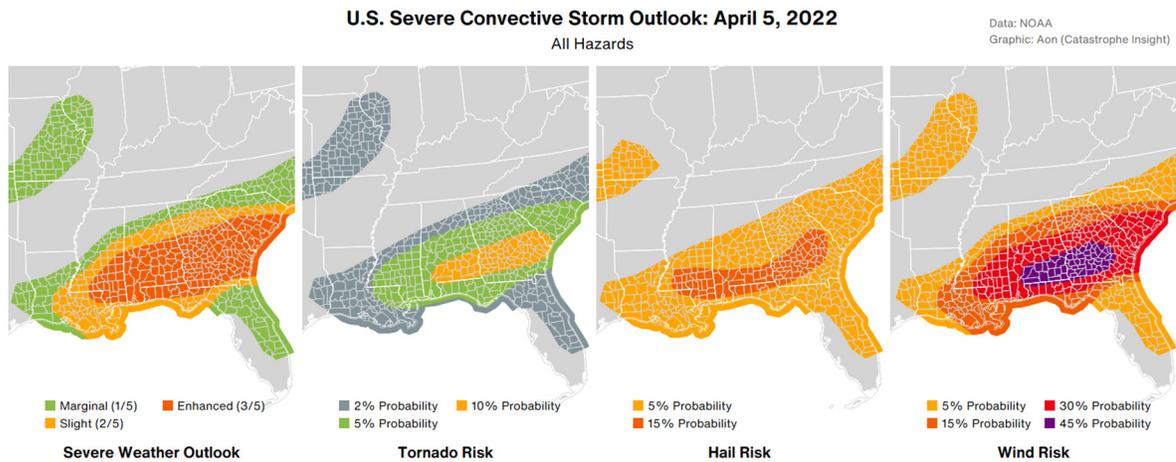
Throughout the day on April 5, bowing segments and discrete cells/supercells ahead of and within the MCS resulted in confirmed tornadoes in Mississippi, Alabama, Georgia, and South Carolina - including



**U.S. Surface Weather Analysis on April 4**  
Data: Weather Prediction Center

multiple Particularly Dangerous Situation (PDS) tornado warnings. Rainfall rates of 1 to 2 in (25 to 50 mm) per hour led to flash flooding in northeastern Louisiana, southern Mississippi, and Metro Atlanta.

A particularly bad situation unfolded across the Southeast, aided by increasing inland moisture, a strong low-level jet, and ample wind shear (change in wind speed and/or direction with height). In the late afternoon, a rare **Tornado Emergency** was issued in South Carolina for a confirmed tornado in Allendale County. A distinct tornadic debris signature (TDS) was present on Doppler radar imagery, which indicated debris were lofted at least 10,000 ft (3,050 m). In subsequent hours, further supercells prompted two additional tornado warnings for Allendale and neighboring Bamberg Counties. Concurrently, multiple embedded areas of rotation within the large squall-line/MCS traversing central and southern Georgia and South Carolina spawned additional tornadoes. As of this writing, at least 47 tornado reports were made across the Deep South and Southeast on April 5 alone. This marked the third week in a row featuring a notable tornado outbreak across the southern U.S.



### April 6-7

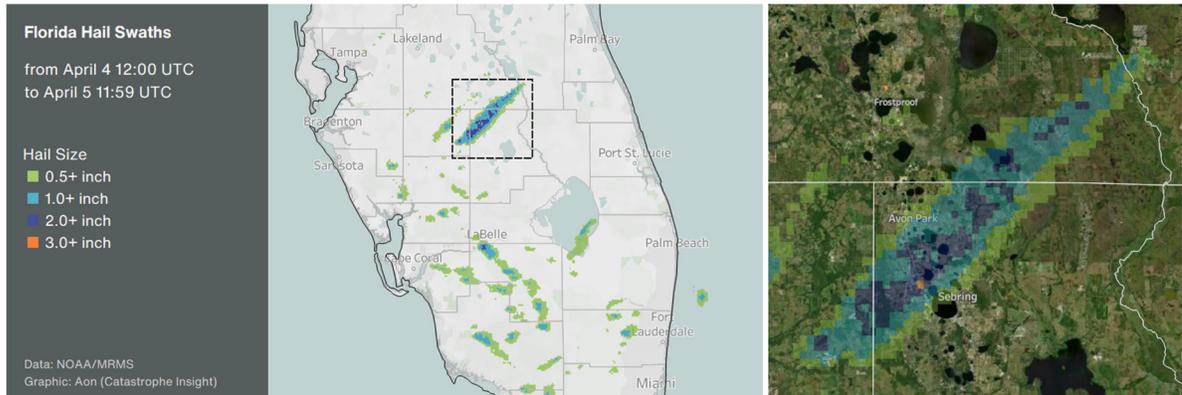
A renewed severe weather threat across the Southeast on April 6 was associated with a broad and amplifying upper-level trough and deep area of low pressure slowly meandering across the Upper Midwest. South of these features, a shortwave trough and cold front swept across the southern Appalachians and Southeast, where an Enhanced Risk (level 3 out of 5) for severe storms was indicated by the SPC.

By the afternoon, storm clusters and discrete cells evolved across parts of Alabama, Georgia, northern Florida, and South Carolina in the broad warm sector, while additional storm development was ongoing in the vicinity of the approaching cold front across the Tennessee Valley. Several storms impacted regions which were affected by severe weather the day prior. The primary hazards were large hail and heavy rainfall, although several storms exhibited low level rotation and produced tornadoes.

### Event Details

#### April 2-4

In **Florida**, hail approaching 2.0 in (5.1 cm) were reported in Hendry County near La Belle, while golf ball size hailstones, 1.75 in (4.4 cm), pelted localities in Highlands County on April 4. The severe storms and large hail resulted in notable damage to property, vehicles, and trees particularly in parts of Hendry, Highlands, and Glades Counties.



## April 4-5

The swarm of severe weather which spanned from north Texas to the Southeast coast between April 4-5 resulted in at least three fatalities and no less than 16 injuries. Tens of thousands of customers were left without electricity, and widespread damage to property and structures was incurred in Texas, Louisiana, Mississippi, Alabama, Georgia, and South Carolina. In several instances, damage survey assessments were delayed due to a renewed threat for SCS on April 6.

In **Texas**, at least 24,000 customers were left without electricity by the morning of April 5. Widespread damages to vegetation and property were reported in north-central and eastern Texas. At least three tornadoes struck near the Dallas Fort Worth Metroplex on April 4. These included an EF2 in Johnson County near Joshua, and an EF1 in Collin County near Blue Ridge. Both tornadoes resulted in damages to structures and roofs. In Smith County, a swath of straight-line wind damage near Whitehouse snapped and toppled trees at a mobile home park which caused one fatality. Maximum wind gusts in this location reached 100 mph (160 kph). An additional death from a fallen tree was reported in **Louisiana** in Webster Parish.

In **Mississippi**, hailstones topping 2.0 in (5.1 cm) fell in Rankin County in the morning hours of April 5. An EF2 tornado with wind speeds reaching 120 mph (193 kph) traversed portions of north Jefferson Davis and Covington Counties and resulted in uprooted and snapped trees and structural damage consisting of torn off roofs and siding. Preliminary data from the Mississippi Emergency Management Agency (MEMA), indicated the most extensive damages occurred in Covington, Jefferson Davis, Lauderdale, Newton, and Wayne Counties.



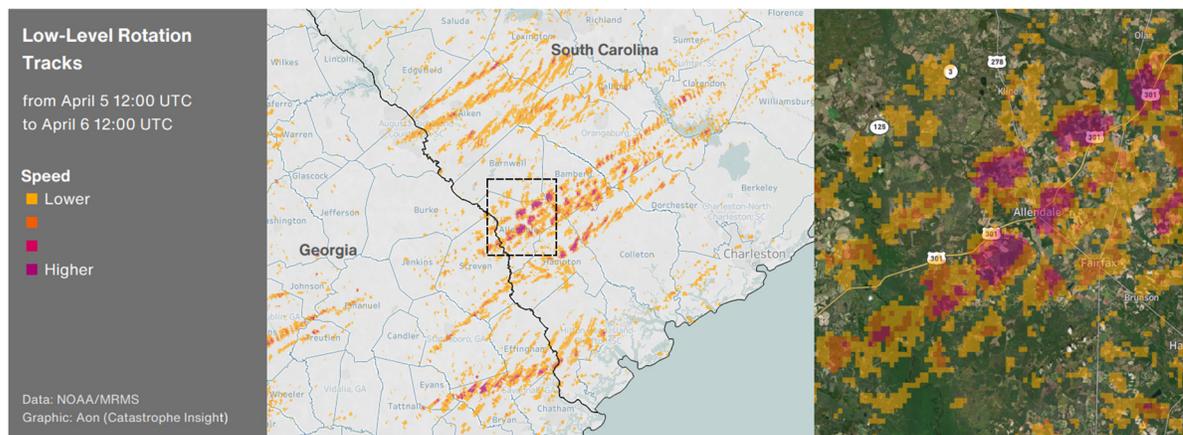
**Tornado damage in Pembroke (Bryan County, Georgia)**

Source: Bryan County Georgia government

In **Alabama**, baseball sized hail, 2.75 in (7 cm), pelted localities in Marengo County on April 5. Tornadoic wind damage was incurred throughout central portions of the state.

In **Georgia**, one person was killed and at least 12 were injured by a strong tornado which struck the Town of Pembroke in Bryan County on April 5, west of Savannah. Preliminary surveys found at least EF3 damages along the tornado's track. Extensive structural impacts were incurred in Pembroke and neighbouring Ellabell – where homes were destroyed. Damages included the County Courthouse. In the wake of the storms, a local State of Emergency was declared by Bryan County officials. The Governor subsequently declared a formal State of Emergency on April 6.

In **South Carolina**, a rare **Tornado Emergency** was issued for parts of **Allendale County** around 4:00 PM (local time). A Tornado Emergency indicates a large and catastrophic tornado was confirmed and deemed an immediate threat to property and life. Heavy damage was incurred in southern Allendale, and preliminary data from the South Carolina Emergency Management Division indicated at least six homes with minor damage, five with major damage and four destroyed. Three injuries were reported. Preliminary storm surveys identified damaged consistent with at least an EF3 tornado. As of this writing, damage surveys remained ongoing.



An EF2 tornado in parts Aiken and Lexington Counties, near Gilbert, obtained 130 mph (210 kph) wind speeds. Damages included a home pushed from its foundation, resulting in one injury. Another tornado producing EF2 damage was surveyed in Clarendon County near Manning. Several homes were impacted, including a pair of newer constructed homes with significant damage.

### April 6-7

In **Georgia**, hailstones reaching 1.75 in (4.4cm) were observed in parts of Lee, Houston, and Berkeley Counties on April 6. Several tornado touchdowns were confirmed. In **Florida**, a 78 mph (125 kph) wind gust was measured near Palm Beach.

Preliminary confirmed tornadoes (April 4-6): EF0 (4), EF1 (15), EF2 (5), EF3 (3), EF4 (0), EF5 (0).

### Financial Loss

The most recent stretch of severe weather between April 4-7 was anticipated to result in economic and insured losses individually each minimally reaching into the hundreds of millions (USD). This will add to what has already been a multi-billion-dollar insured loss for the peril since the start of 2022.

## Europe: Winter Weather

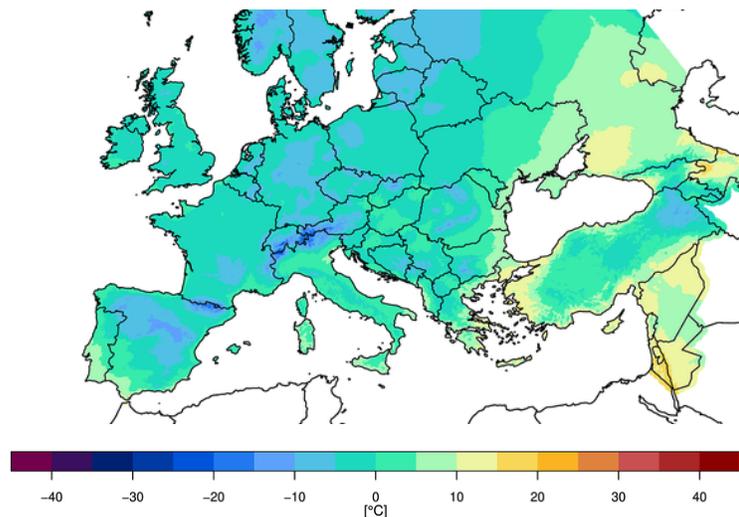
### Overview

Parts of Western and Central Europe were hit by an influx of cold, polar air between April 1-4. The frosts resulted in agricultural damage in Spain, France, and elsewhere. Although initial estimates suggest much lower impact compared to the significant cold blast seen in the spring of 2021, the event resulted in losses of at least tens of million EUR.

### Meteorological Recap

#### Daily minimum temperature on April 3

Source: DWD



Large parts of Western and Central Europe were affected by an influx of very cold, polar air from the northeast between April 1-4. This was aided by the overall synoptic setting featuring a large anticyclone located west of the British Isles and a long-wave trough that covered much of the eastern half of the continent. In this pattern, a strong north-easterly flow brought air of polar origin as far as the Iberian Peninsula and prompted very low minimum temperatures across several countries, breaking multiple April monthly records.

Several stations in France registered the coldest April temperatures since the start of the measurements 75 years ago. The situation concurrently resulted in late spring snowfall in parts of Germany, Poland and elsewhere.

The table below highlights stations where absolute April minimum temperature broke or reached the record, according to data provided by the National Meteorology Institutes (Meteo-France, AEMET).

Location	New record temperature (°C)	Previous record temperature (°C)	Year
Châteauroux (France)	-5.6 (21.9°F)	-4.2 (24.4°F)	1929
Cognac (France)	-4.4 (24.1°F)	-2.9 (26.8°F)	1975
Bourges (France)	-3.8 (25.2°F)	-3.7 (25.3°F)	1986
Rodez (France)	-6.2 (20.8°F)	-5.5 (22.1°F)	1991
Reus (Spain)	-2.5 (27.5°F)	1.0 (33.8°F)	1975
Pamplona (Spain)	-3.7 (25.3°F)	-2.8 (27.0°F)	1986
Ibiza (Spain)	3.4 (38.1°F)	3.4 (38.1°F)	1986

## Event Details

Initial damage estimates by agricultural associations in the affected countries suggested a noteworthy economic impact, although it might take several weeks to assess the final toll. Moreover, total frost impact on cultures will depend on any further potential cold outbreaks.

In Spain, initial estimates suggested damage to more than 35,000 ha (86,500 acres), particularly in Valencian Community, Castilla y León, Castilla-La Mancha, Catalonia, Aragón and La Rioja, and total losses exceeding €50 million (\$55 million). Agroseguro noted that losses will be potentially significant on fruit and almonds. However, damage to viticulture was not expected to be significant, except for Galicia.

Losses in France were not yet determined, but the government proactively announced an emergency aid fund of €20 million (\$22 million).



**Frost damage in Spain**  
Source: Agroseguro

## Financial Loss

The early April cold blast was likely to cause notable loss to the agricultural sector in several countries, including Spain and France, initially estimated in at least the tens of millions EUR. However, there is no indication that it caused such substantial economic toll as last year's spring frost outbreak.

## Natural Catastrophes: In Brief

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### **Flooding (Brazil)**

Extreme rainfall triggered renewed flash flooding and landslides across Brazil's Rio de Janeiro State on April 1-4. According to local authorities, at least 18 people died and six people remained missing after record rainfall topping 800 mm (31.5 in) in a 48-hour period resulted in multiple landslide and flooding events in several localities. Heavy-rainfall related events damaged multiple houses, leaving hundreds of people homeless and more than 30,000 people affected. Rio de Janeiro State experienced notable flooding and landslide events in February and March of this year which claimed at least 238 lives and resulted in non-negligible economic damage.

### **Earthquake (China)**

A magnitude-5.2 earthquake struck Xingwen County, Sichuan on the morning of April 6, at a shallow depth of 10 km (6.2 mi). The tremor occurred approximately 16 km (9.9 mi) from the county, and damaged at least 645 houses and seven roads. No casualties were incurred. Economic losses were anticipated to be in the millions (USD).

### **Flooding (Phillipines)**

A low-pressure system and the Intertropical Convergence Zone (ITCZ) currently lying south of the Philippines brought scattered thunderstorms to the Visayas and Mindanao archipelagos since April 4. Flooding was reported in the Mamasapano, Agusan del Sur, Davao de Oro and Sarangani provinces in Mindanao. At least one person died, and two others were missing. All classes in Davao de Oro were suspended on Wednesday. The Philippines' Disaster Response Operations Monitoring and Information Center (DROMIC) issued a situation report on April 6, noting that hundreds of houses were affected. Full damage assessments were still ongoing and detailed loss reports are expected in the coming weeks.

### **Flooding (Bangladesh)**

Heavy rainfall since April 2 caused flash flooding to the vast paddy fields in northeast Bangladesh. Cherrapunji recorded 1,018 mm (40.1 in) rainfall between April 2 and April 6. Floods hit districts in Sunamganj, Netrokona, Kishoreganj, and Sylhet, with more than 2,052 ha (5,070 acres) of rice fields submerged. The deluge came just weeks before the harvesting period, but the financial tolls were expected to be negligible.

### **Flooding (Australia)**

Torrential rainfall once again inundated parts of New South Wales' central and southern coast on April 6-7. Broad areas through the Sydney Metro and Illawarra districts received isolated overnight falls between 100-200 mm (3.9-7.9 in). Evacuation orders were issued for residents in Camden, Woronora, Chipping Norton, and Bonnet Bay. Overflow from a fuel pit, causing petrol to mix with floodwaters, led to the road closures in and around Kurnell Township. The Bureau of Meteorology forecast major flooding above the March 2022 and April 1988 levels to occur along the upper Nepean River.

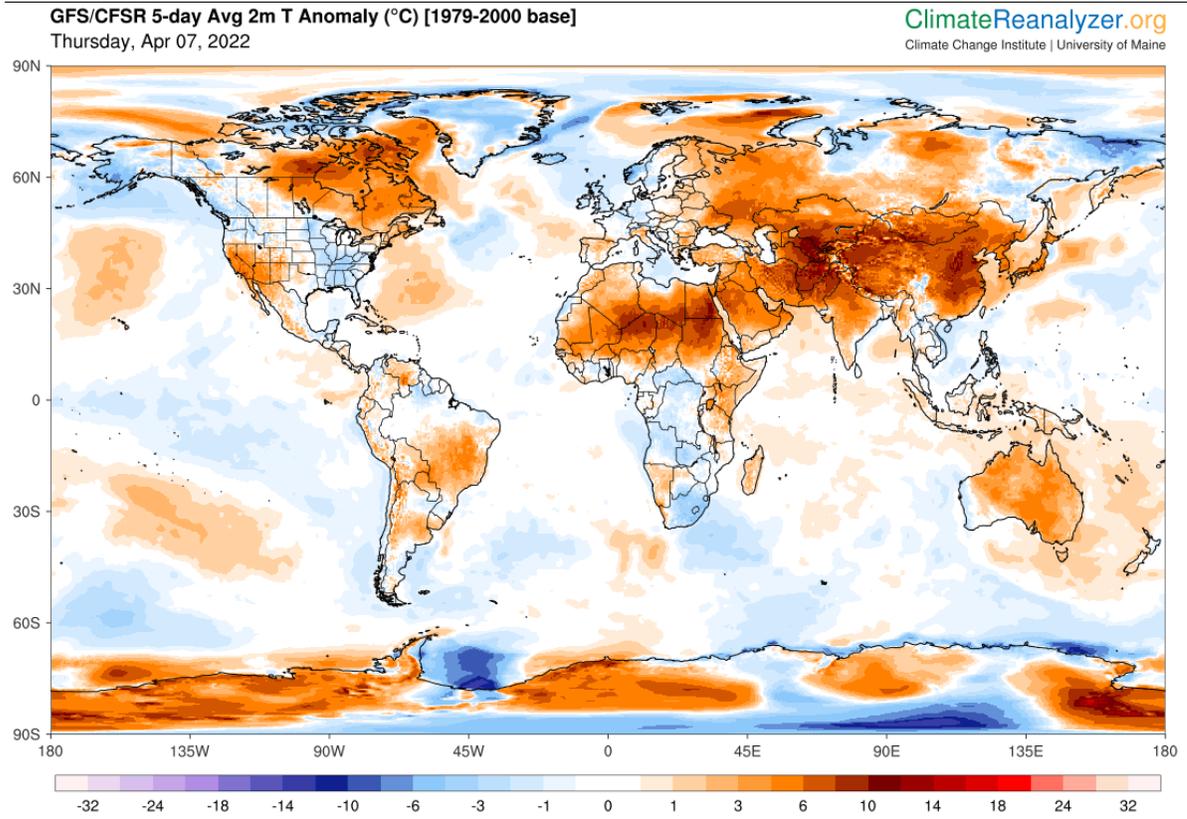
## **Severe Convective Storm (Southern Europe)**

A period of disturbed weather affected multiple countries in southern and south-eastern Europe on March 31 – April 2. This was attributed to the effects of several low-pressure systems, particularly a low named Ciril (named by a group of Central Mediterranean countries), with an alternative name Katarina (used by FU Berlin). Strong winds and heavy rain affected parts of eastern coastal Spain, Italy, Montenegro, Albania and eventually resulted in wind-related damage in Bulgaria and Romania. Even though the impacts were relatively minor, their extensive spatial distribution was noteworthy.

## **Flooding (Thailand)**

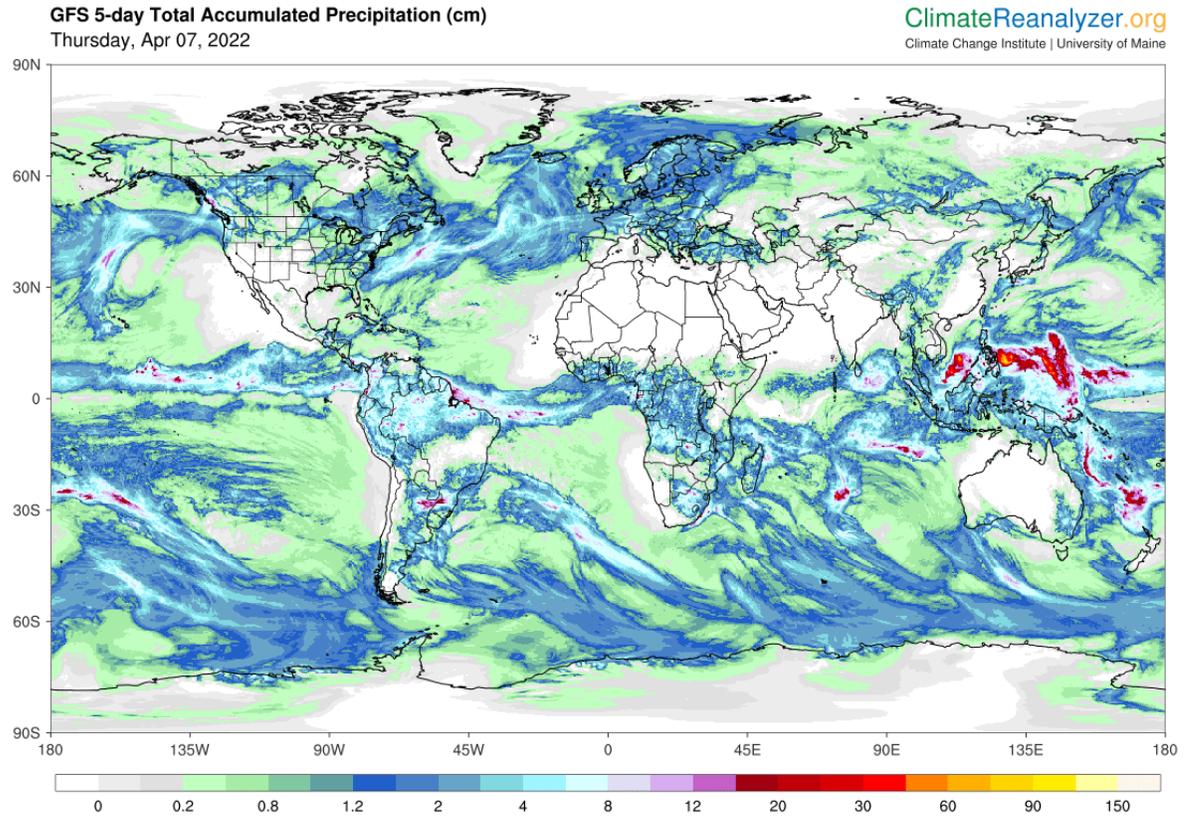
Incessant rains caused widespread flooding over southern Thailand between April 3-5. More than 21,000 households across the provinces of Chumphon, Nakhon Si Thammarat, Narathiwat, Phatthalung and Surat Thani were affected. Another 3,170 ha (7,833 acres) of farmland were inundated in Nakhon Si Thammarat, and a man was drowned in flooded rice fields. Local officials had been deployed to survey the flood damages at the residences.

## Global Temperature Anomaly Forecast



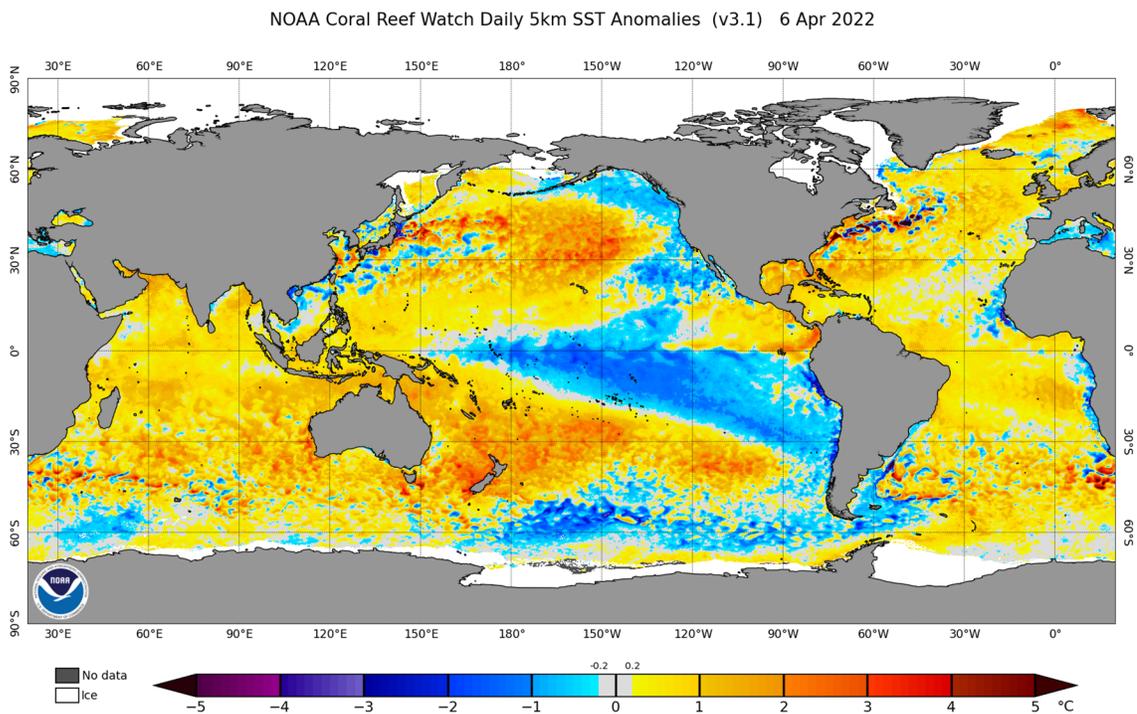
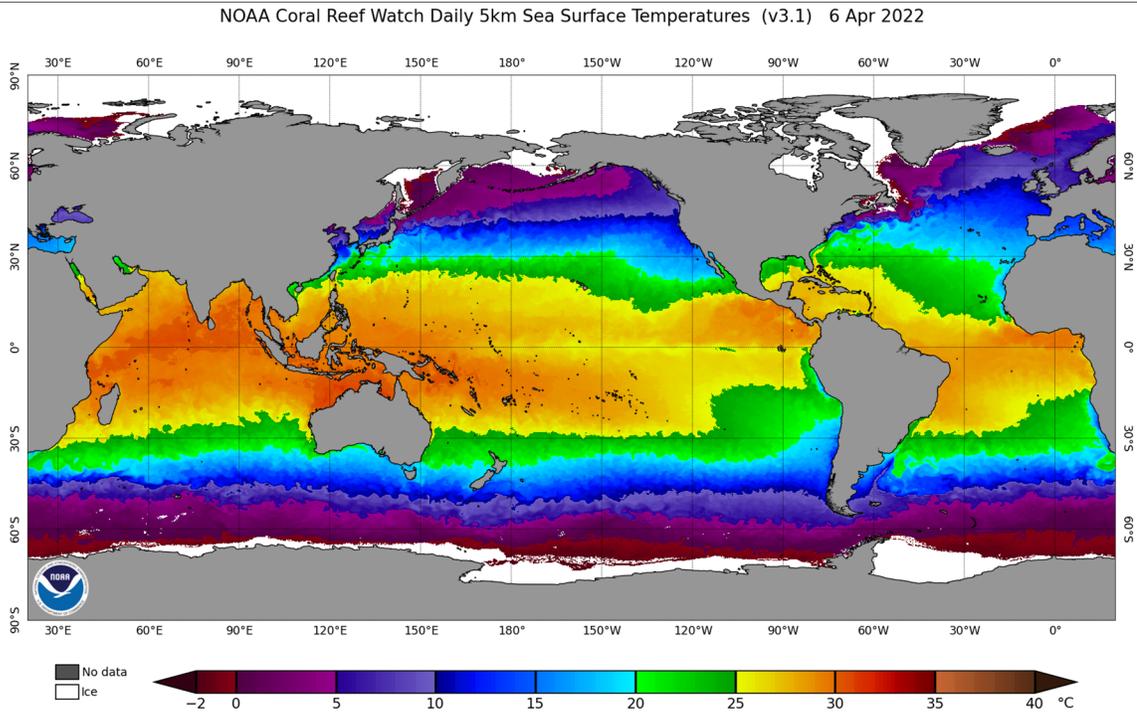
Source: Climate Reanalyzer, Climate Change Institute, University of Maine, USA

## Global Precipitation Anomaly Forecast



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

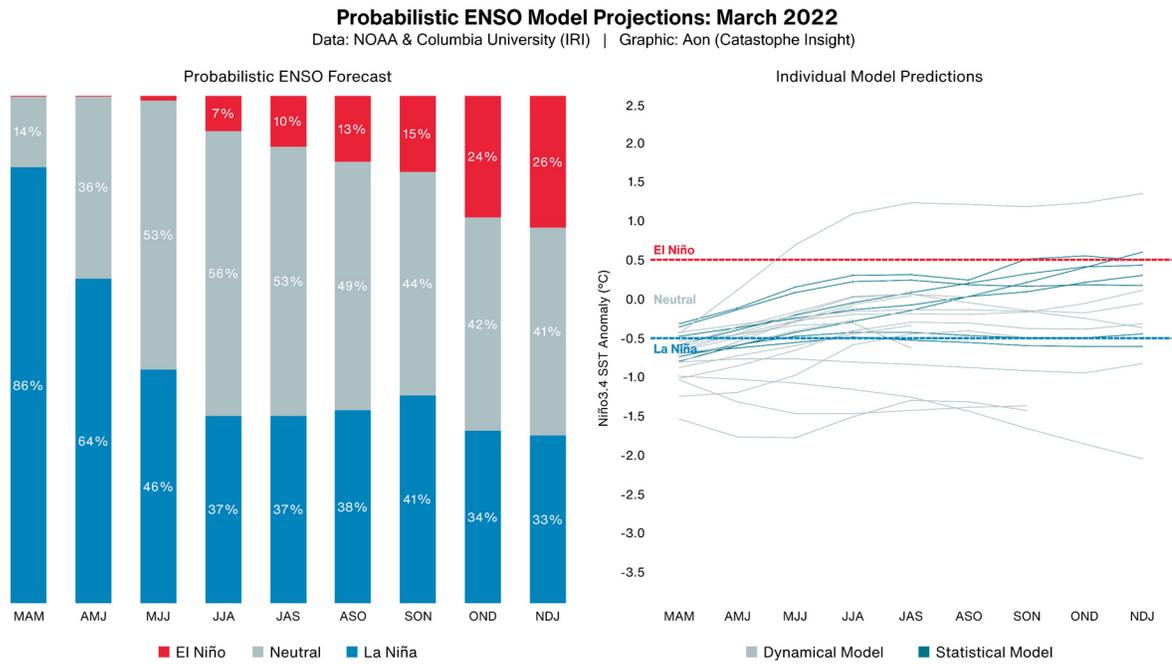
## Weekly Sea Surface Temperature (SST) Maps (°C)



# El Niño-Southern Oscillation (ENSO)

## Overview

La Niña conditions are likely to continue into the Northern Hemisphere summer. NOAA cites a 53 percent chance of La Niña conditions persisting during the June-August timeframe, and a 40-50 percent chance of transitioning to ENSO neutral conditions into the late summer and early fall.



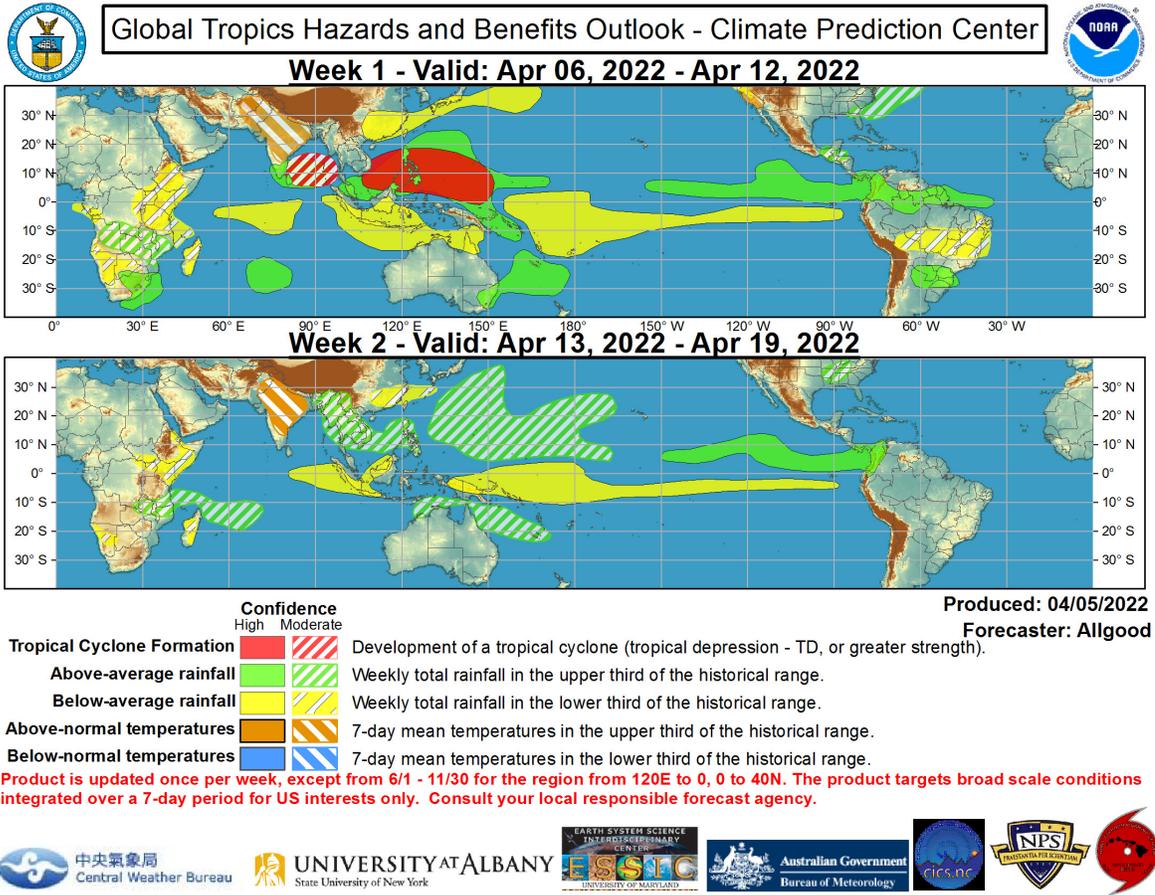
**El Niño:** Warm phase of an ENSO cycle. Sea surface temperatures of +0.5°C occur across the east-central equatorial Pacific.

**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.

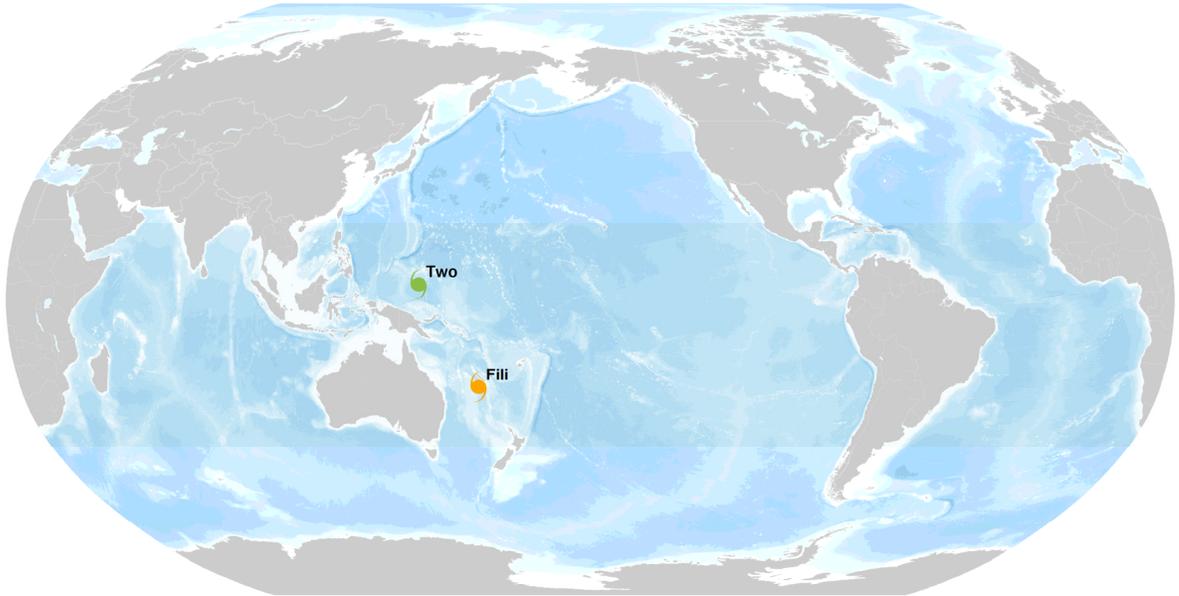
El Niño (La Niña) is a phenomenon in the equatorial Pacific Ocean characterized by a five consecutive 3-month running mean of sea surface temperature (SST) anomalies in the Niño 3.4 region that is above the threshold of +0.5°C (-0.5°C). This is known as the Oceanic Niño Index (ONI).

## 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

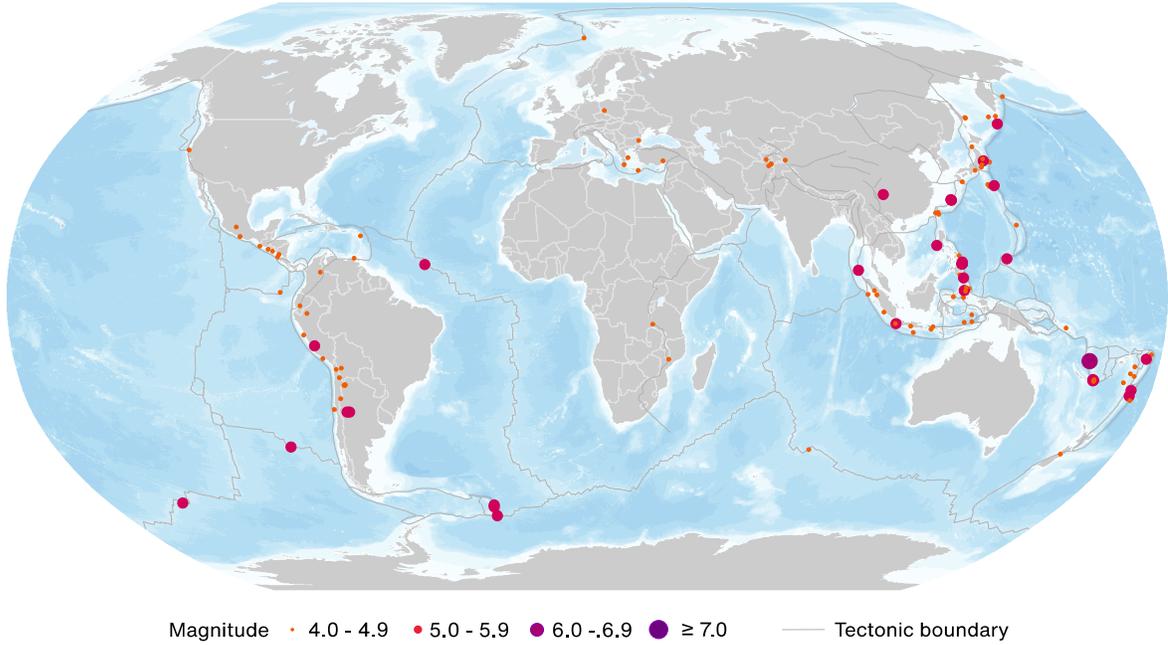
Storm Name	Location	Winds	Location from Nearest Land Area
CY Fili	23.9S, 164.8E	50 mph	155 mi (245 km) SW from Noumea, French Republic
TY Two	4.2N, 147.1E	35 mph	430 mi (690 km) N from Lorengau, PNG

\* 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)

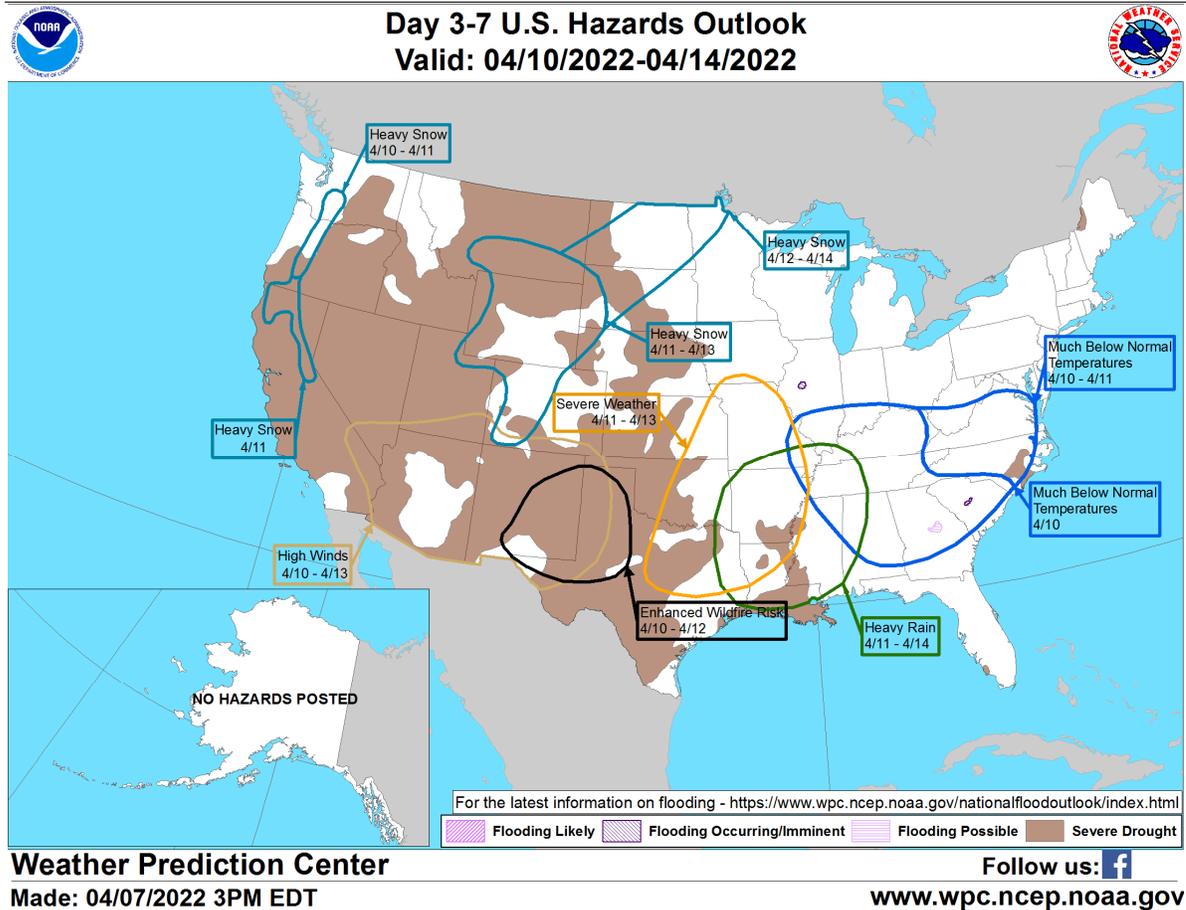
## Global Earthquake Activity ( $\geq M4.0$ ): April 1 - 7



Date (UTC)	Location	Magnitude	Epicenter
4/4/2022	17.49S, 167.87E	6.0	54 km (34 mi) WNW of Port-Vila, Vanuatu

Source: United States Geological Survey

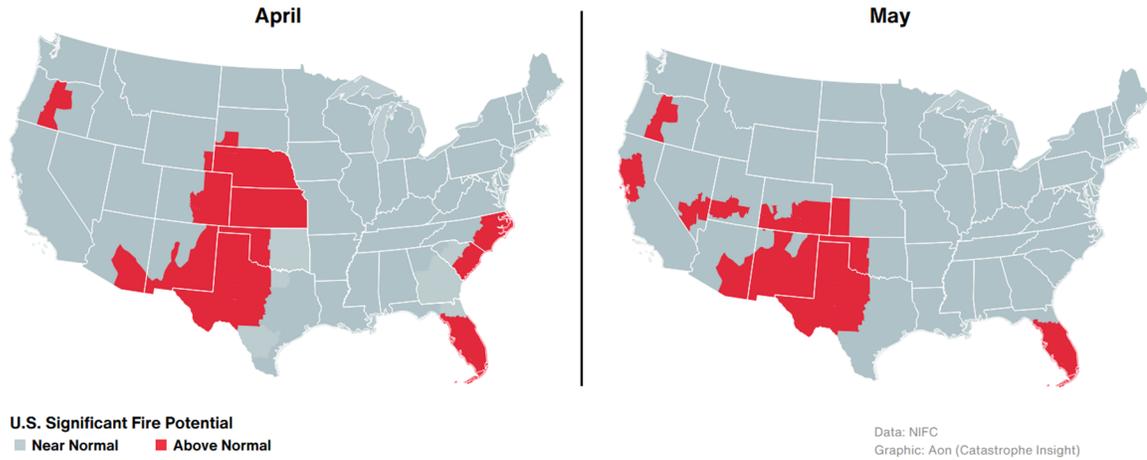
## U.S. Hazard Outlook



- An active weather pattern featuring a deep Western upper-level trough will impact the United States over the medium range forecast. This will bring strong winds around the base of the trough across the Southwest and Southern Plains on April 10-13. An enhanced wildfire risk is expected in parts of New Mexico and Texas.
- Confidence is increasing that plentiful moisture ahead of the trough will aid in heavy rainfall and severe convective storms across the Plains and Lower and Middle Mississippi Valley between April 11-14.
- On the cold side of the system, heavy snowfall is likely across the Cascades and Sierra Nevada on April 10-11. As the system evolves, impactful snowfall is expected across the Rockies and Northern Plains between April 11-14.
- Much below normal temperatures will remain over the Tennessee and Ohio Valleys and Southeast through April 10-11, before warmer weather arrives.

Source: Weather Prediction Center (NOAA)

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



### Annual YTD Wildfire Comparison: April 7

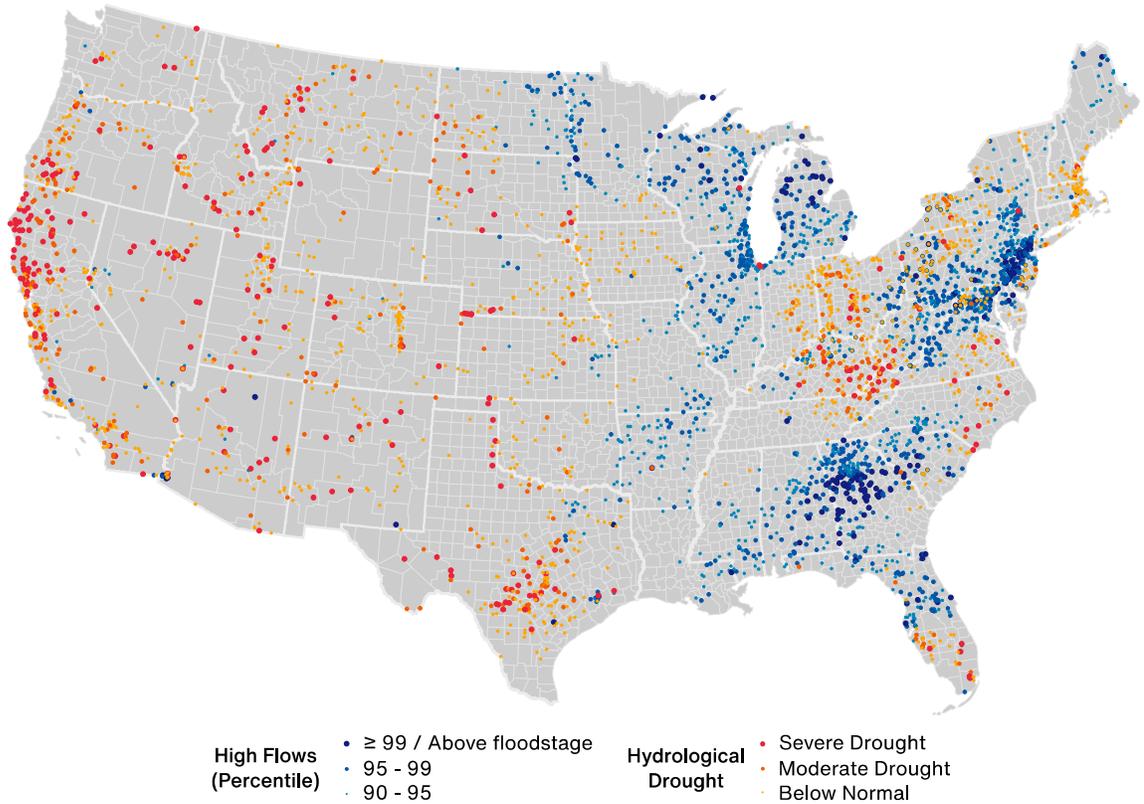
Year	Number of Fires	Acres Burned	Acres Burned Per Fire
2018	13,036	536,605	41.16
2019	7,310	178,957	24.48
2020	8,059	189,203	23.48
2021	12,947	402,850	31.12
2022	17,184	828,478	48.21
<b>10-Year Average (2012-2021)</b>	<b>10,912</b>	<b>503,285</b>	<b>46.12</b>

### Top 5 Most Acres Burned by State: April 7

State	Number of Fires	Acres Burned	Acres Burned Per Fire
Texas	3,187	457,795	143.64
Oklahoma	858	119,631	139.43
Mississippi	1,158	40,767	35.20
Kansas	33	35,043	1,061.91
New Mexico	86	27,966	325.19

Source: National Interagency Fire Center

## U.S. Current Riverine Flood Risk



A  $\geq 99^{\text{th}}$  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.

### Top 5 Rivers / Creeks: Highest Percentile for Water Height

Location	Current Stage (ft)	Percentile
Ocmulgee River at Macon, Georgia	24.62	98.92
Aroostook River at Washburn, Maine	13.30	98.90
Neshanic River at Reaville, New Jersey	6.11	98.89
Chester Creek near Chester, Pennsylvania	5.27	98.88
Tobesofkee Creek near Macon, Georgia	17.17	98.82

Source: United States Geological Survey

## Source Information

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### **United States: Severe Convective Storm**

U.S. National Weather Service

U.S. Storm Prediction Center

U.S. Weather Prediction Center

Poweroutage.us

Mississippi Emergency Management Agency (MEMA)

Georgia EM&HS

South Carolina Emergency Management Division

Storms Kill One Person in Texas as Damage is Reported in Alabama, Mississippi, *The Weather Channel*

Deadly storms tear across Southeast, unleash damaging tornadoes, *The Washington Post*

### **Europe: Winter Weather**

Meteofrance

Deutscher Wetterdienst

AVA-ASAJA

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

No casualties reported after 5.1-magnitude quake in China, *Xinhuanet*

Philippines' Disaster Response Operations Monitoring and Information Center (DROMIC)

Flash floods in Boro-producing areas bode ill for days ahead, *Prothom Alo*

Evacuation orders issued in Sydney as torrential rain causes flash flooding, *ABC News*

European Severe Weather Database

Floodlist

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