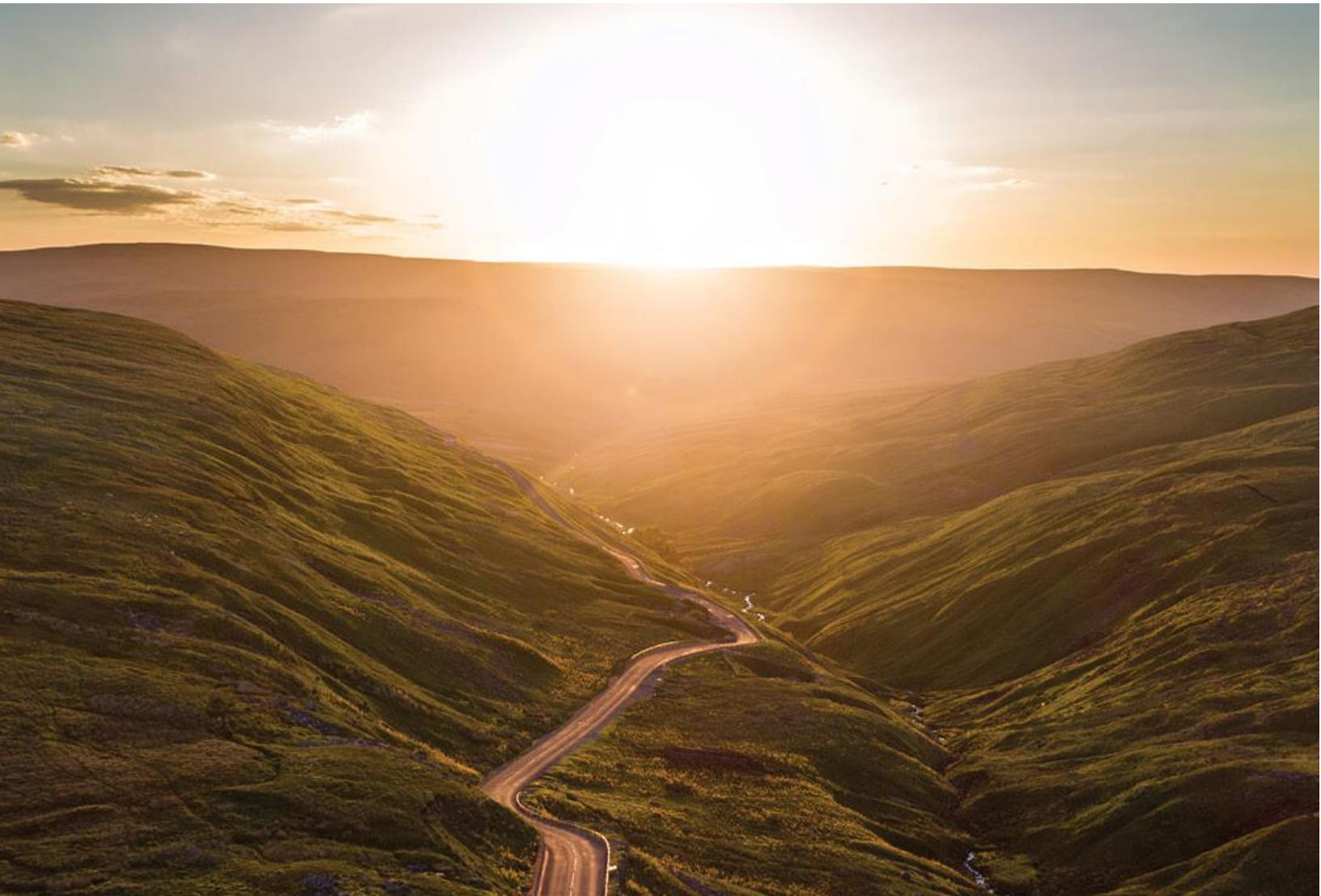
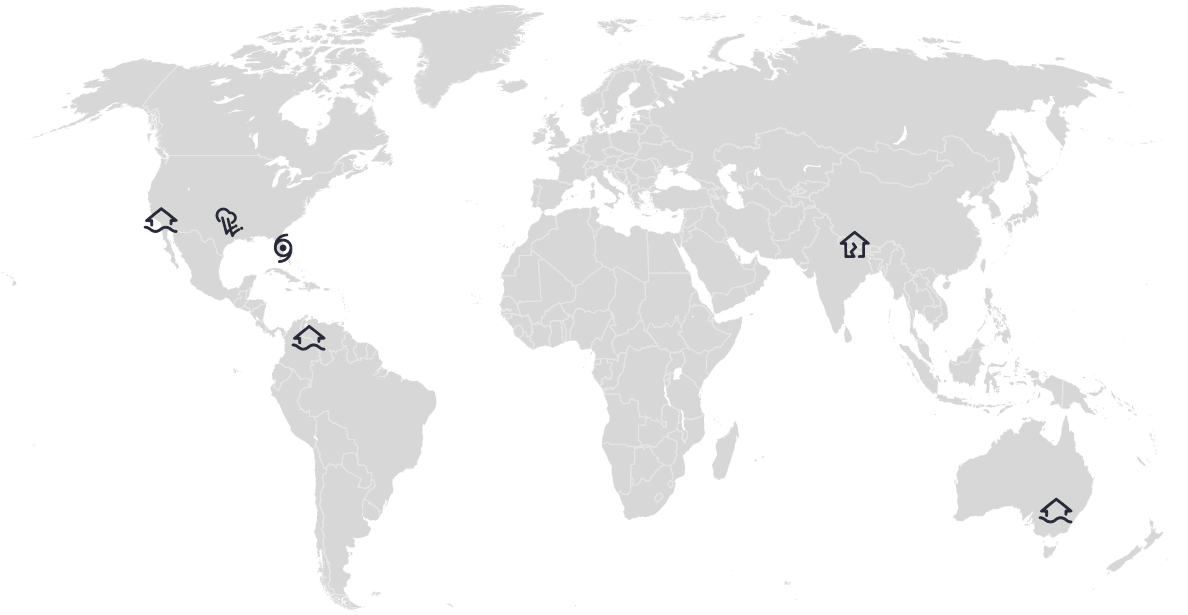
Weekly Cat Report

November 11, 2022



Executive Summary



Event	Affected Region(s)	Fatalities	Economic Loss ($)	Page
Hurricane Nicole	United States, Bahamas	4+	100s of millions	3
Flooding	Australia	0	10s of millions	7
Severe Convective Storm	United States	2+	10s of millions	9
Flooding	United States	1+	Millions	9
Flooding & Landslides	Venezuela, Colombia	7+	Unknown	9
Earthquake	Nepal	6+	Negligible	9

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.

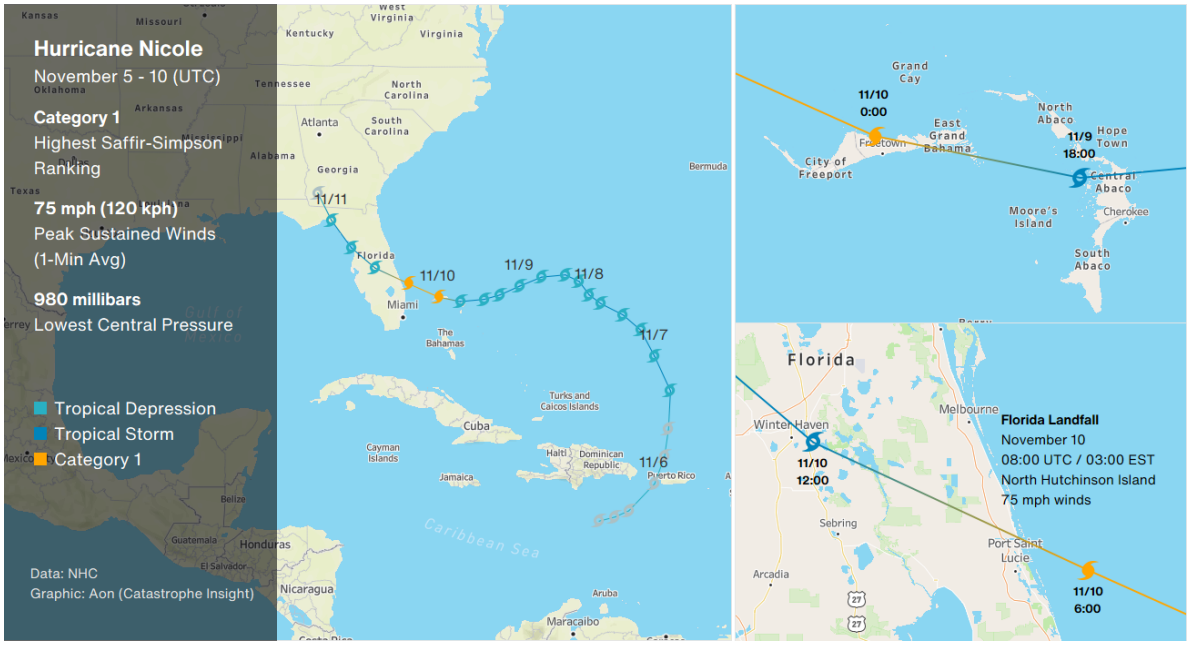
Along with this report, we continue to welcome users to access current and historical natural catastrophe data and event analysis on Impact Forecasting's Catastrophe Insight website: http://catastropheinsight.aon.com .

United States, Bahamas: Hurricane Nicole

Overview

Hurricane Nicole made landfall in Florida on November 10 as a Category 1 storm with sustained wind speeds of 75 mph (120 kph), shortly after affecting Bahamas. The storm resulted in notable and widespread damage across the state due to strong winds, significant storm surge and instances of inland flooding. Nicole currently ranks as the second latest U.S. hurricane landfall on record, and fourth strongest U.S. landfall in the month of November. At least four people were killed in Florida, in addition to material damage that will likely reach into the hundreds of millions USD. Nicole currently weakened to a tropical depression as it tracks further north through Georgia and the Carolinas.

Meteorological Recap

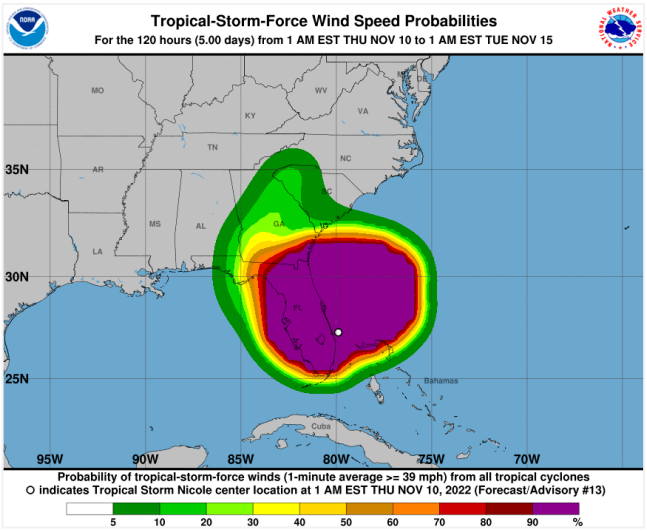


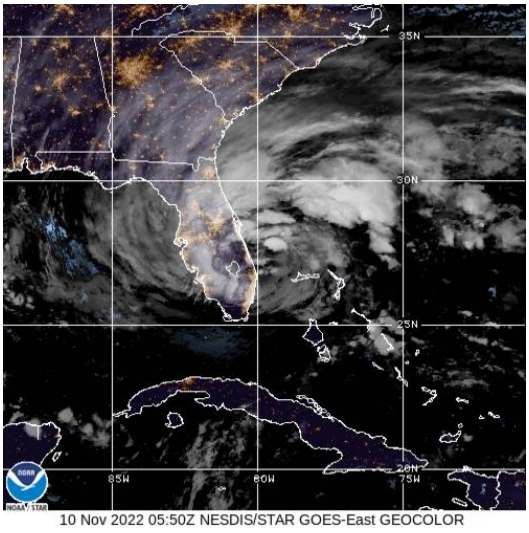
A non-tropical low-pressure system that showed potential for further development and would later become Hurricane Nicole was first observed on November 4 in the Caribbean Sea. The disturbance later became organized and started to show subtropical characteristics, as it moved over relatively warm waters of western Atlantic, north of the Greater Antilles. It was officially classified as Subtropical Storm Nicole on November 7 and on the following day Nicole transitioned into a Tropical Storm.

Nicole made its Bahamas landfall at the Great Abaco Island on 16:55 UTC as a tropical storm with sustained wind speeds of 70 mph (110 kph). As it tracked further west, it strengthened to a Category 1 hurricane and made a second Bahamas landfall with sustained winds of 75 mph (120 kph) on the Great Bahama Island.

Retaining its hurricane status, Nicole made its Florida landfall at approximately 08:00 UTC (03:00 EST) on November 10 on the North Hutchinson Island, just south of Vero Beach with 75 mph (120 kph) winds and a minimal central pressure of 981 mbar. Nicole was a very large storm, with tropical storm-force winds extending as much as 450 miles (720 km) from the center shortly after landfall, particularly to the north.

Tracking further inland, the storm quickly weakened. However, hazards associated with Nicole continue after its landfall, particularly in a form of heavy rainfall in much of the Florida peninsula and southern Georgia, which resulted in a possibility of localized urban flooding across the state. Elevated potential for flooding was expected to continue further north in several states through Ohio.





Nicole's large extent shortly before landfall – tropical storm-force wind extent and satellite imagery
Source: NOAA, NASA

November landfalls are relatively rare in the Atlantic Ocean basin, yet there were several such occurrences in the past. Below is the table of the strongest tropical cyclone landfalls in the U.S. mainland.

November U.S. Tropical Cyclone Landfalls (Data: NOAA)

Rank	Storm	U.S. Landfall Date	Landfall Intensity (mph)	Landfall Category
1-2	**Unnamed**	Nov 4, 1935	100	Cat 2
1-2	**Hurricane Kate**	Nov 21, 1985	100	Cat 2
3	**Unnamed**	Nov 2, 1861	80	Cat 1
4	**Hurricane Nicole**	Nov 10, 2022	75	Cat 1
5-7	**Tropical Storm Keith**	Nov 23, 1988	65	TS
5-7	**Hurricane Mitch**	Nov 5, 1998	65	TS
5-7	**Hurricane Eta**	Nov 29, 2020	65	TS

Nicole generated notable rainfall accumulations across Florida, in addition to strong wind gusts. Preliminary top 10 reading for both parameters, as provided by the National Weather Service, is provided in the table below:

Location	County	Rainfall (inch)
Winter Springs	Seminole	6.63
Union Park	Orange	5.87
Sanford	Seminole	5.62
Deltona	Volusia	5.08
Lake Mary	Seminole	4.90
Cape Canaveral	Brevard	4.85
Casselberry	Seminole	4.83
Maitland	Seminole	4.50
Union Park	Orange	4.47
Daytona Beach	Volusia	4.43

Location	County	Gust (mph)
Port St John	Brevard	75
Haulover Canal	Brevard	73
Melbourne	Brevard	72
Daytona Beach	Volusia	70
Patrick AFB	Brevard	68
Sebastian	Indian River	67
Orlando	Orange	66
Orlando Sanford	Seminole	64
Cape Canaveral	Brevard	62
Playalinda Beach	Brevard	61

Event Details

Notable coastal flooding was reported across much of **Bahamas**, including the Grand Bahama, Eleuthera, Bimini, Andros and Abaco. The Bahamas Department of Meteorology observed a nearly 4 ft (1.2 m) storm surge north of Treasure Cay, Abaco.

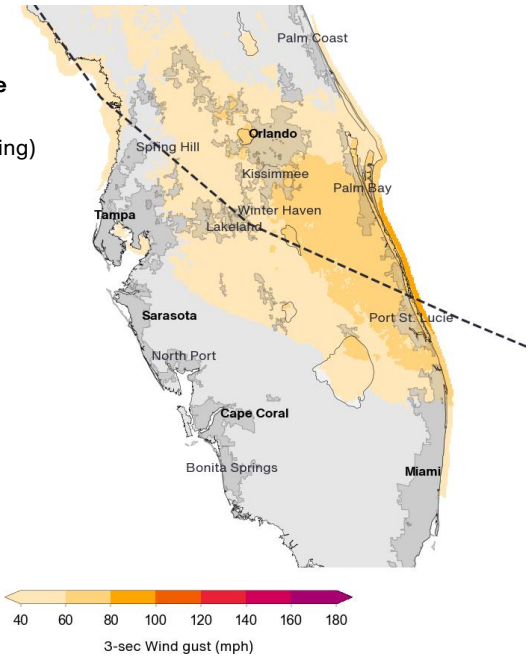
In the **United States**, a state of emergency was declared in Florida on November 7. The storm resulted in disruptions of traffic and power supply; major airports including Orlando International Airport, Palm Beach and Daytona Beach suspended operations in wake of the hurricane. Thousands of utility workers were mobilized to restore potential power outages, as Nicole resulted in more than 308,000 power outages on November 10.

Example of coastal damage in Flagler County
Source: Flagler County Sheriff's Office, Flagler Beach Police Department

Nicole's impact was widespread as a result of a very extensive tropical storm-force wind field. In addition to wind-related property damage, Nicole generated relatively significant storm surge and coastal flooding, which affected multiple counties on the eastern coast of Florida and to some extent also communities further north in Georgia and South Carolina. Multiple buildings and stretches of local infrastructure along the east coast of Florida were destroyed due to beach erosion and many more were threatened and evacuated.

At least four people were killed in Orange County.

Nicole's Modelled wind footprint of Nicole
Data: Aon
(Impact Forecasting)



Financial Loss

Impact of Hurricane Nicole comes only six weeks after the destructing landfall of Hurricane Ian and will put further strain on local insurers, yet the overall impact will be nowhere close to the devastation caused by Ian. Overall economic impact due to wind, flood and surge damage is anticipated to reach into the hundreds of millions USD.

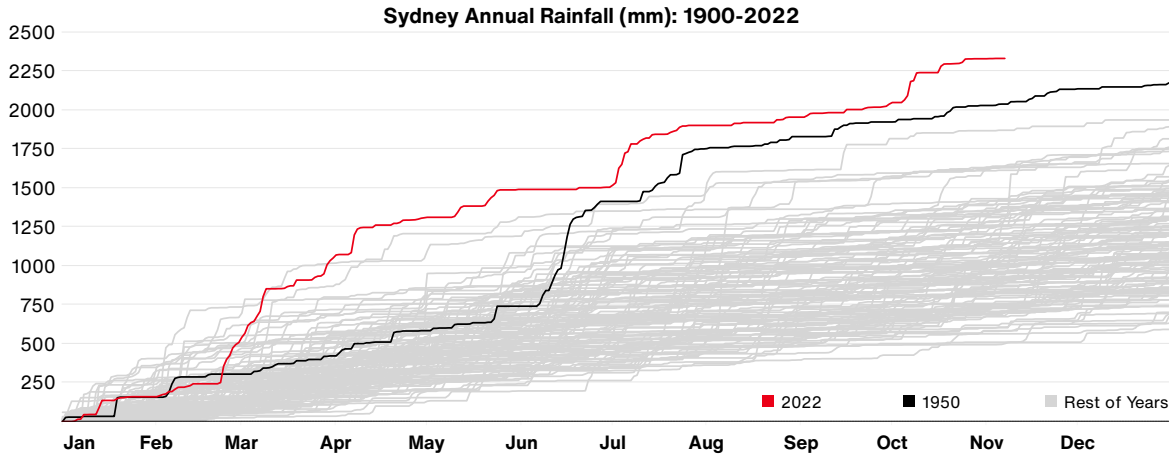
Australia: Flooding

Overview

Rainfall over the past several days and weeks resulted in renewed and prolonged flooding in parts of southeastern Australia, particularly in New South Wales. Widespread riverine flooding caused notable property damage along the Lachlan River, Murrumbidgee River and Barwon-Darling River. Total economic losses from current flooding are expected to be lower than losses caused by February-March or October flooding.

Meteorological Recap

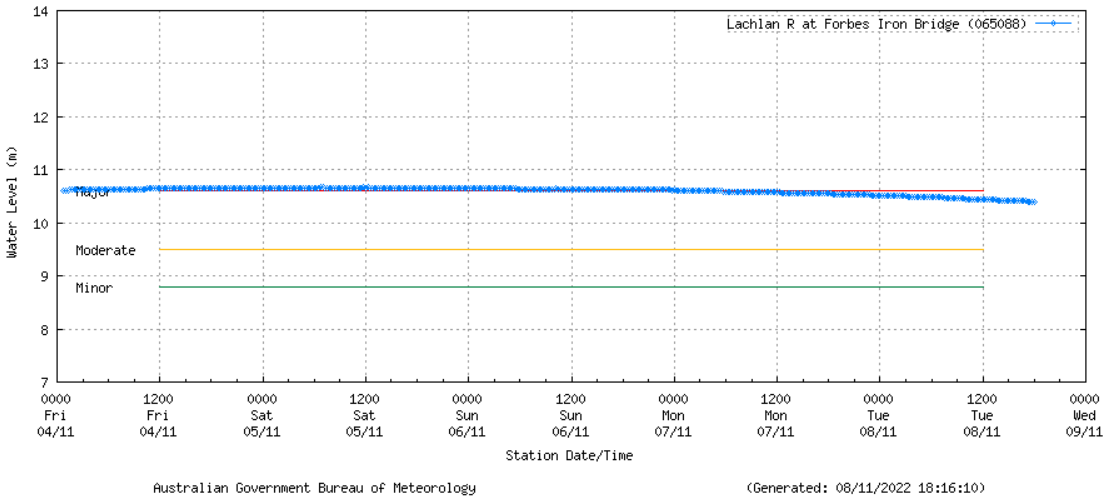
Above average rainfall in the month of October, prompted by persisting La Niña conditions, enhanced the flood risk in many parts of southeastern Australia. In New South Wales, area-average October rainfall of 142 mm (5.6 in) was the highest since 1900, highly exceeding the previous record of 109 mm (4.3 in) set in October 1950. Cold fronts during week of November 1-7 brought localized weekly rainfall over 100 mm (3.9 in), according to Bureau of Meteorology (BoM). Despite no significant rain, several major flood warnings were in place as soils have been already saturated after the wettest year on record. For instance, see below the record-breaking accumulated rainfall in Sydney year-to-day.



Data: Bureau of Meteorology
Graphic: Aon (Catastrophe Insight)

Blend of Sydney Botanical Garden, Observational Hill, & Centennial Park historical data

Relatively minor amount of rain caused several rivers to overflow its banks. Major flooding warnings were issued for **Lachlan River**, **Murrumbidgee River** and **Barwon-Darling River** and their tributaries. In Forbes, the Lachlan River peaked at 10.67 meters (35 ft) at midday of November 5, just 13 centimeters (5.1 in) below the historic flooding level set in June 1952 (see below). The flood water was expected to linger for days or week in some areas. As of November 9, major flooding warnings were in place at 23 river profiles across the state, minor flooding warnings were reported at 18 profiles, followed by very slow water receding.



Event Details

23 emergency warnings were issued since November 4 across **New South Wales**. Among the worst affected areas was town of **Forbes** where widespread riverine flooding of the Lachlan River caused notable material damage, although precipitation here was not so high. According to officials, hundreds of homes and business suffered from flood damage. More than 1,000 people were forced to leave their homes located in low-lying areas. Local Emergency Service has received more than 300 calls for help. Several roads around the town were destroyed or inundated and remain closed. Additional damage was caused downstream the river, affecting communities of **Bedgerabong**, **Jemalong** and **Corrinella**.

Flooding in Forbes, New South Wales
Source: NSW Fire Service

Major flooding with record breaking water levels of Murrumbidgee River caused damage in **Wagga Wagga** Town where residents remain under evacuation orders. Many communities along the Barwon-Darling River were completely isolated.

State Emergency Service (NSW SES) reported 1,147 buildings to be damaged across the state. As of November 9, more than 32,200 calls and 13,000 requests for assistance were responded, additional 494 flood rescues were activated during the current floods. No fatalities and injured were reported.

Financial Loss

Damage assessments and claims filing remain ongoing throughout affected areas with lingering floodwaters. Another widespread rain over the weekend may renew riverine flooding in parts of New South Wales. To date, CAT 223 has incurred claims of A$228 million ($150 million).

Natural Catastrophes: In Brief

Severe Convective Storm (United States)

A notable severe storm outbreak struck parts of Texas, Arkansas and Oklahoma on November 4-5. Storms generated strong winds, heavy rainfall and multiple tornado events that resulted in notable material and structural damage on hundreds of houses. In particular, an EF3-rated tornado impacted the McCurtain County in Oklahoma. At least two people were killed, while several were injured. Power was cut to no fewer than 112,000 customers across the region were lost as the storms passed. Total losses were expected to be in the tens of millions (USD).

Flooding (United States)

Southern California was drenched by record heavy rain on November 6-8, with highest rainfall of 9.1 in (232.2 mm) observed in Lytle Creek. Transport services were disrupted in Hesperia and across San Bernardino County. Ten people were swept away in Ontario floodwaters, with one confirmed fatality and two missing at the time of this writing. Economic losses were anticipated to be at least in the millions (USD).

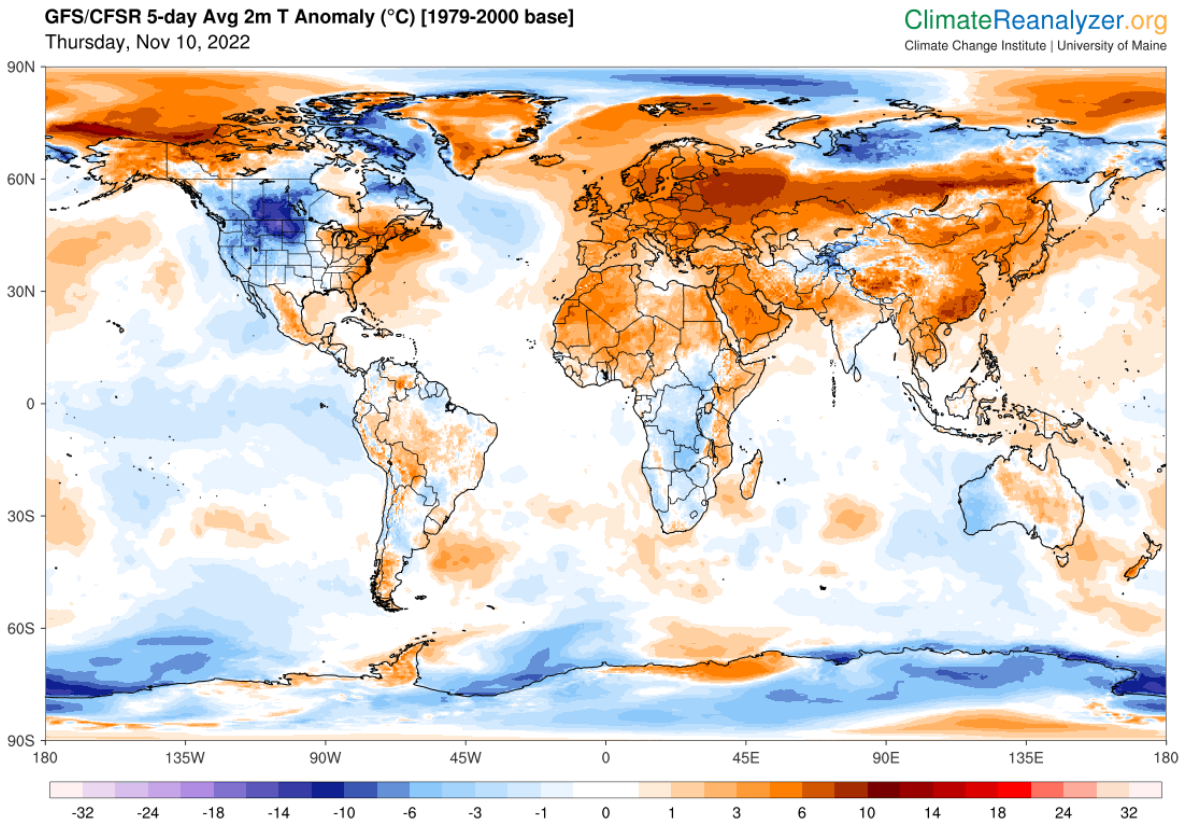
Flooding & Landslides (Venezuela, Colombia)

Flooding and landslides triggered by incessant heavy rains continued to affect several states in Venezuela and northern Colombia. Over the past week, material and infrastructural damages occurred particularly in Anzoátegui State, north-eastern Venezuela, where at least seven people died in flood and landslide related accidents. No fewer than 200 houses were destroyed across the state. In northern Colombia, 84 homes were destroyed and a further 585 homes were damaged. Eleven people were injured from collapsed structure in the city of Cartagena.

Earthquake (Nepal)

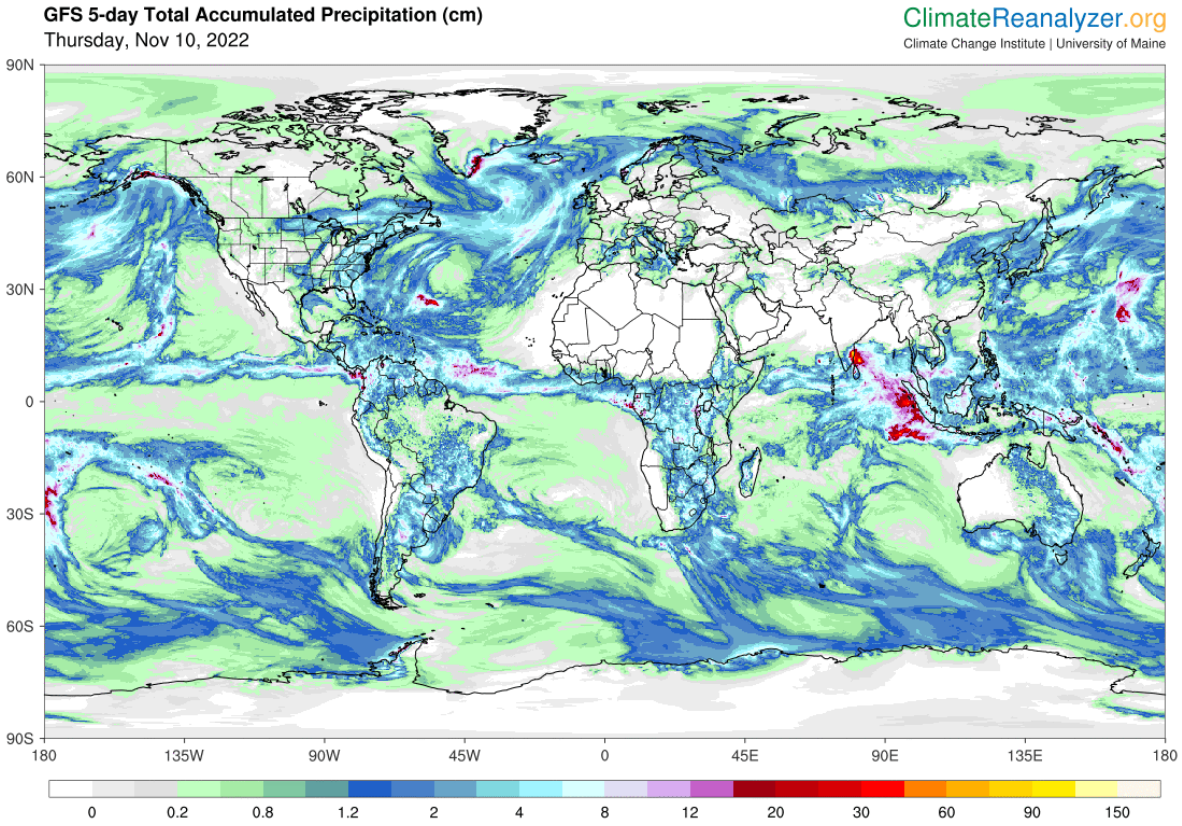
A shallow magnitude-5.7 quake rocked Nepal in the early hours of November 9, destroying dozens of houses in the western district of Doti. Six people were killed and at least five sustained serious injuries. Tremors could be felt far out in New Delhi when the earthquake struck. Thankfully, the epicenter was in a relatively sparse region close to the Nepal-Indian border, and economic losses were largely expected to be negligible.

Global Temperature Anomaly Forecast



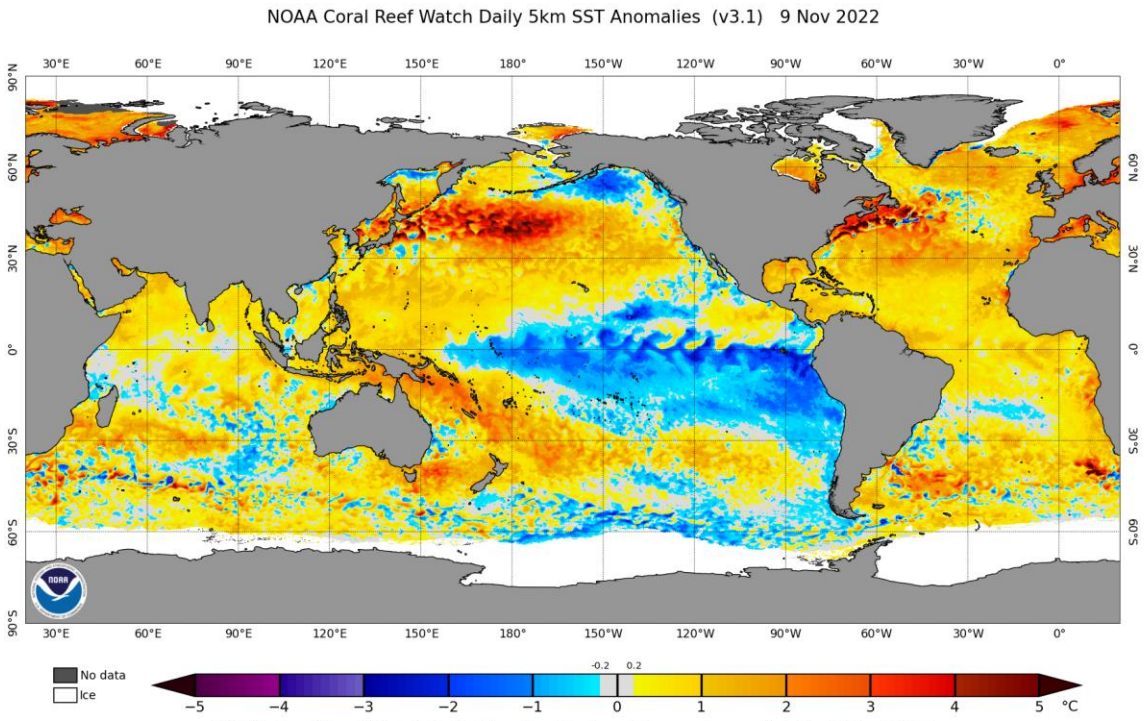
Source: Climate Reanalyzer, Climate Change Institute, University of Maine, USA

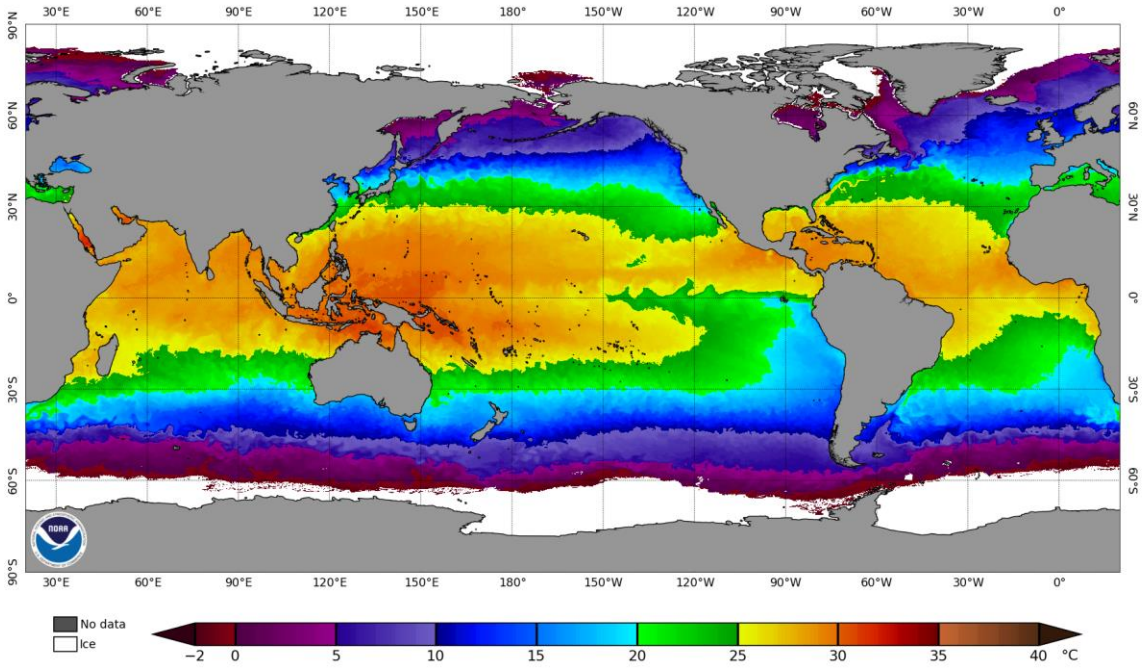
Global Precipitation Forecast



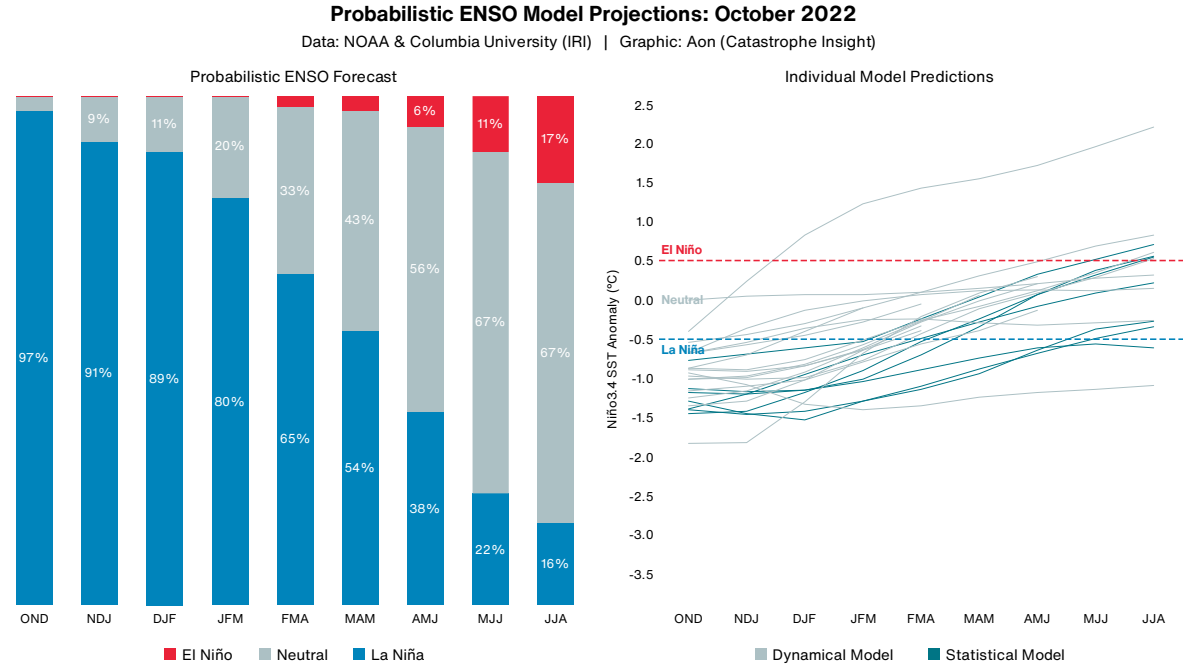
Source: Climate Reanalyzer, Climate Change Institute, University of Maine, USA

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





El Niño-Southern Oscillation (ENSO)



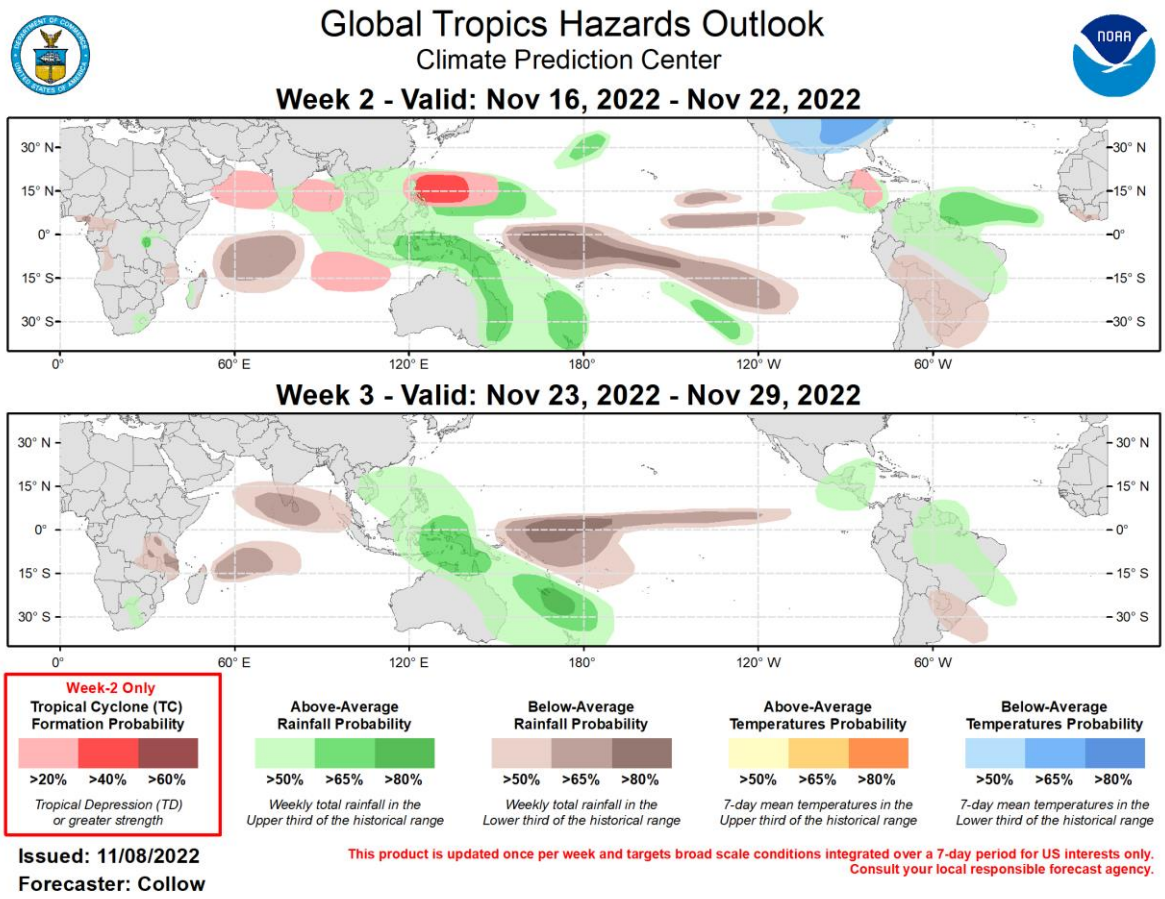
El Niño: *Warm phase of an ENSO cycle. Sea surface temperatures of +0.5°C occur across the east-central equatorial Pacific.*

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.*

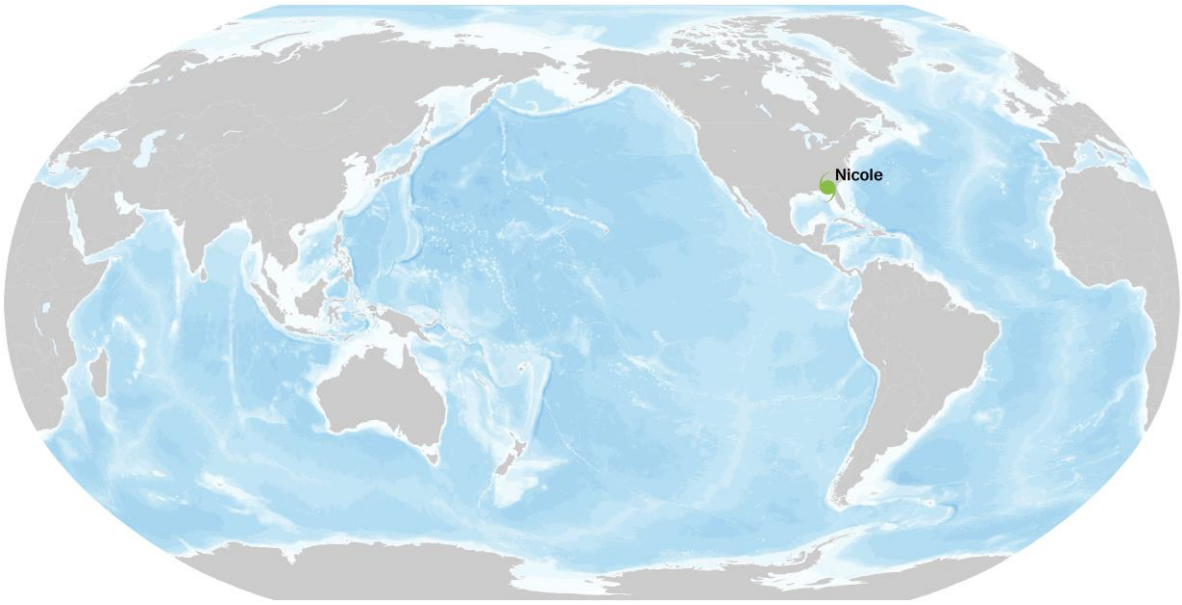
El Niño (La Niña) is a phenomenon in the equatorial Pacific Ocean characterized by a five consecutive 3-month running mean of sea surface temperature (SST) anomalies in the Niño 3.4 region that is above the threshold of +0.5°C (-0.5°C). This is known as the Oceanic Niño Index (ONI).

Global Tropics Outlook



Source: Climate Prediction Center (NOAA)

Current Tropical Cyclone Activity



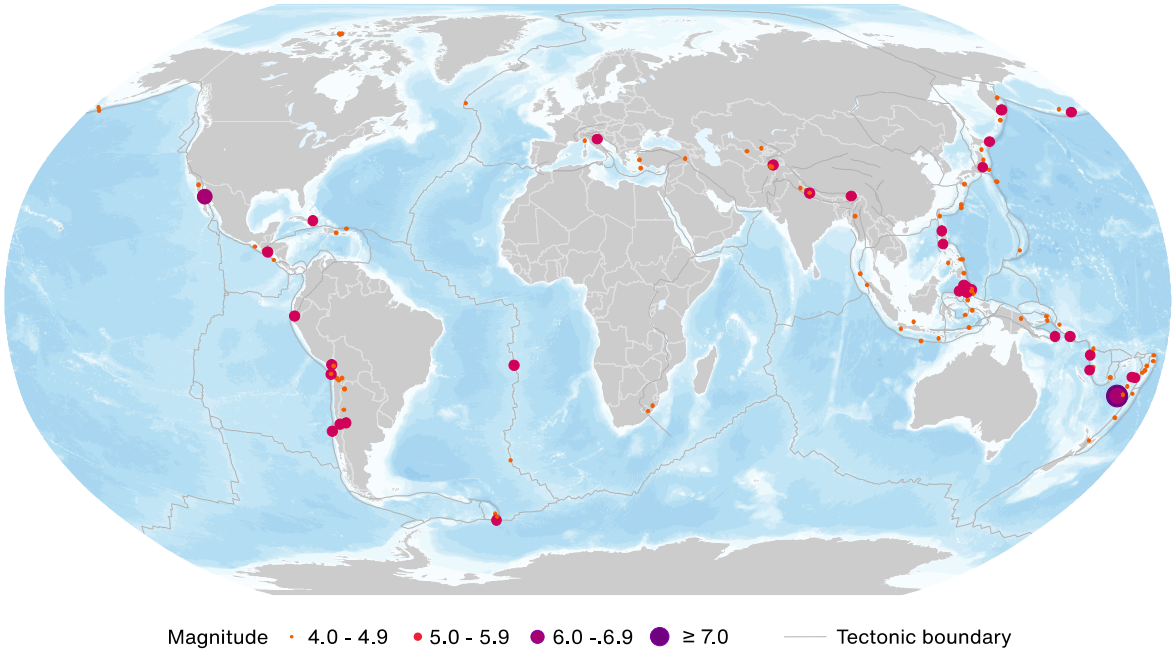
Tropical Depression Tropical Storm Category 1 Category 2 Category 3 Category 4 Category 5

Storm Name	Location	Winds	Location from Nearest Land Area
TD Nicole	31.3N, 84.5W	35	60 mi (95 km) N from Tallahassee, United States

* 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)

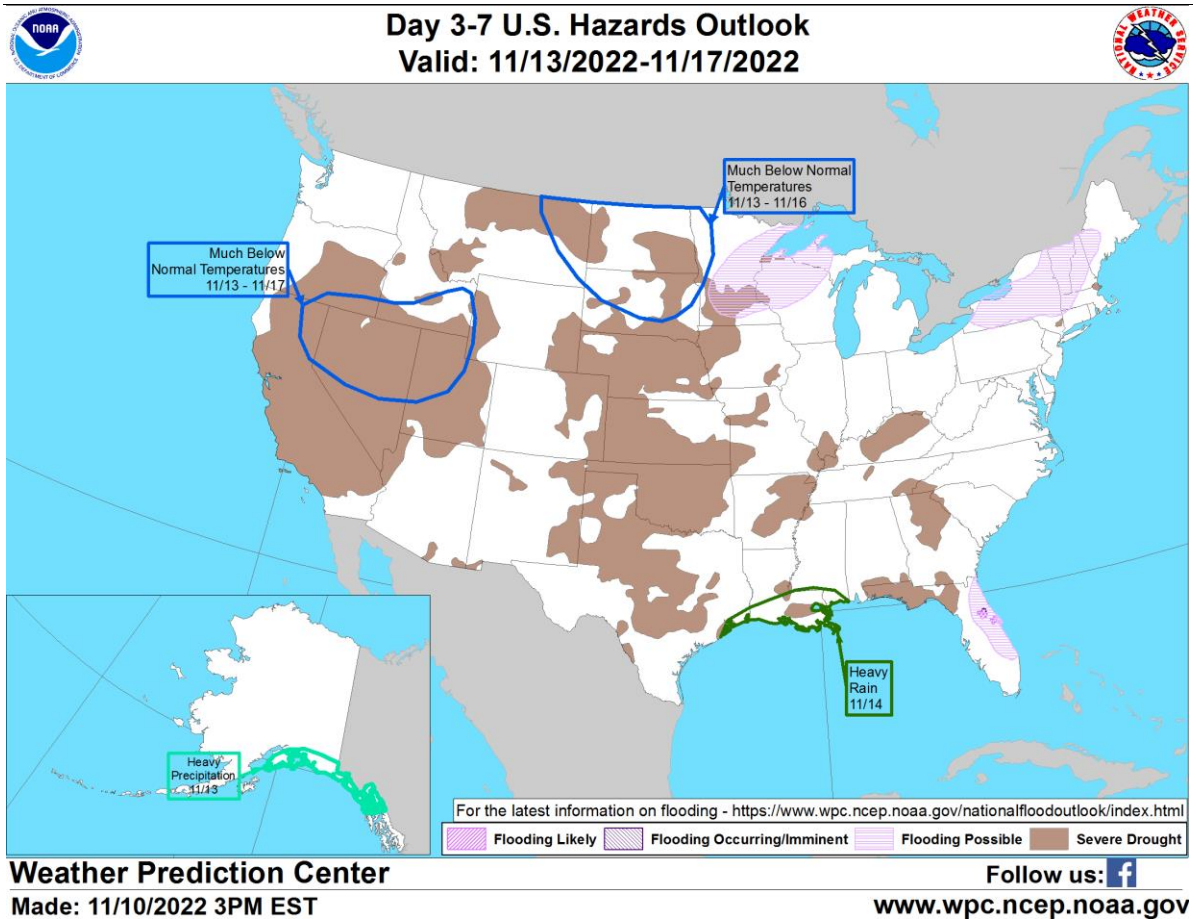
Global Earthquake Activity (≥M4.0): Nov 4 – Nov 10



Date (UTC)	Location	Magnitude	Epicenter
11/4/22	28.17N, 112.30W	6.1	80 km (50 mi) SSW of Bahía de Kino, Mexico
11/9/22	26.04S, 178.58E	6.7	south of the Fiji Islands
11/9/22	25.97S, 178.36E	6.8	south of the Fiji Islands
11/9/22	26.04S, 178.38E	7.0	south of the Fiji Islands
11/9/22	25.64S, 178.42E	6.5	south of the Fiji Islands
11/9/22	25.59S, 178.28E	6.6	south of the Fiji Islands

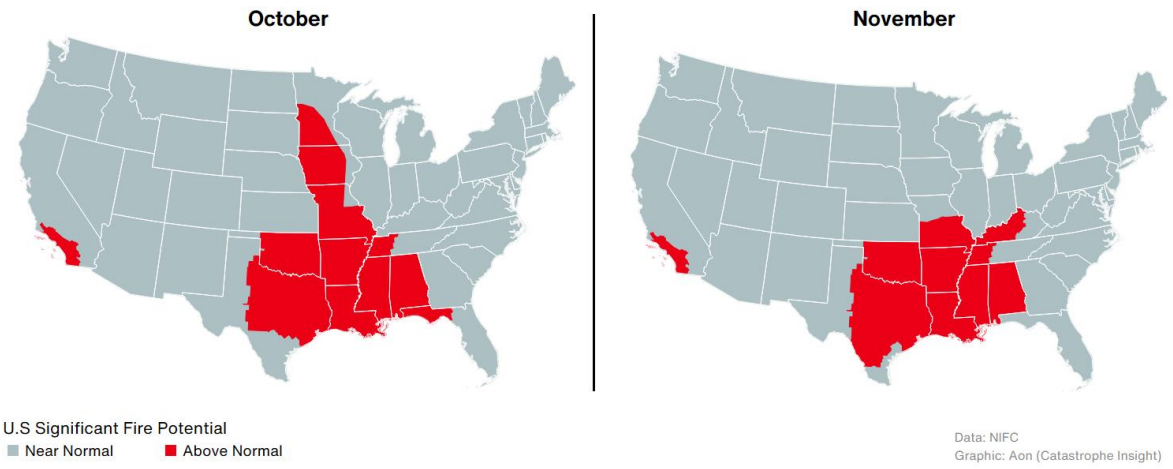
Source: United States Geological Survey

U.S. Hazard Outlook



Source: Climate Prediction Center (NOAA)

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



Annual YTD Wildfire Comparison: November 7

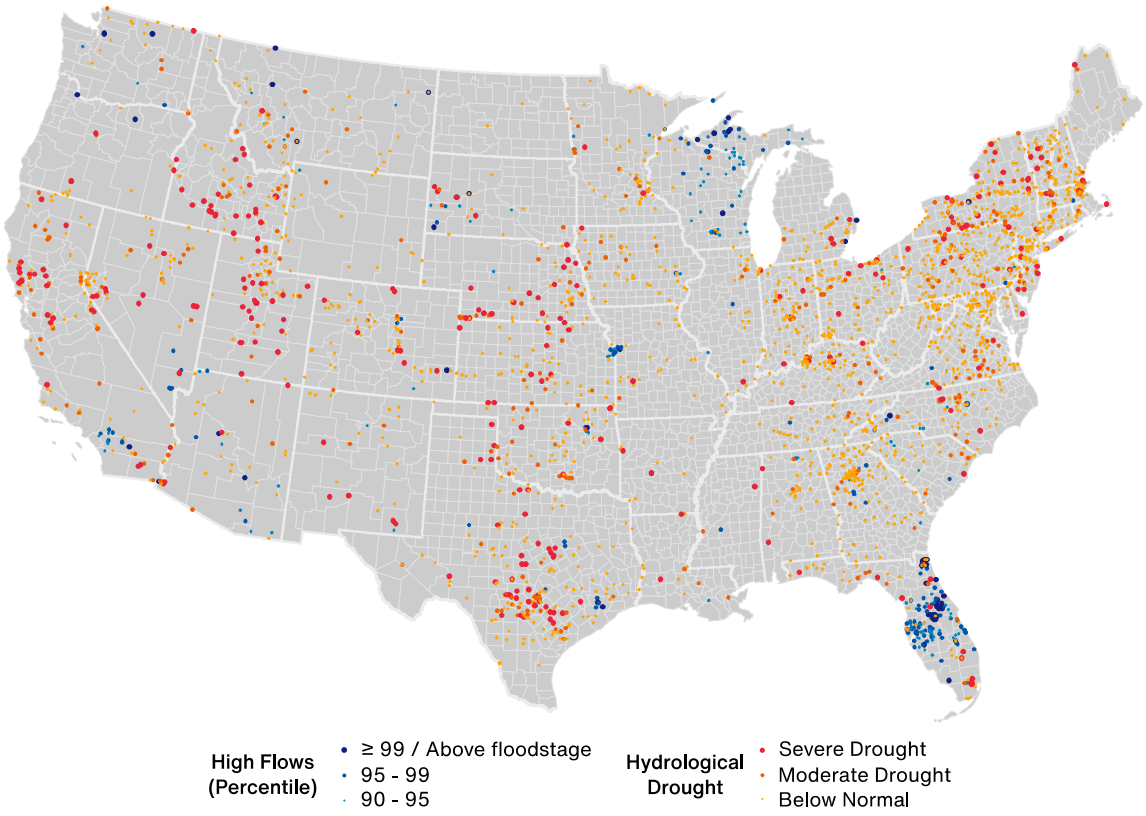
Year	Number of Fires	Acres Burned	Acres Burned Per Fire
2018	51,390	8,271,312	161
2019	45,420	4,574,688	101
2020	49,100	8,719,152	178
2021	48,804	6,532,204	134
2022	60,647	7,227,371	119
10-Year Average (2012-2021)	49,303	6,795,763	138

Top 5 Most Acres Burned by State: November 7

State	Number of Fires	Acres Burned	Acres Burned Per Fire
Alaska	595	3,110,976	5229
New Mexico	727	859,004	1182
Texas	11,213	662,883	59
Oregon	1,943	443,494	228
Idaho	1,043	401,132	385

Source: National Interagency Fire Center

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, Bahamas: Hurricane Nicole

National Hurricane Center
Bahamas Department of Meteorology
Bahamas National Emergency Management Agency

Australia: Flooding

Bureau of Meteorology (BoM)
New South Wales Emergency Service (NSW SES)
Flood waters continue to rise in NSW town of Forbes with peak expected Saturday night, *The Guardian*
NSW flood: Forbes surveys damage from near-record flood as central west NSW towns brace for inundation, *ABC News*

Natural Catastrophes: In Brief

Tornado outbreak – Destructive tornadoes hit Texas and Oklahoma, leaving more than 100 000 customers without power, *The Watchers*
At least 2 dead after tornadoes tear through 2 states, *ABC News*
1 dead, 5 rescued, 4 unaccounted for in southern California after being swept downstream in flood, *Fox Weather*
Floods and Landslides in Anzoategui Leave 7 Dead, Dozens Displaced, *Floodlist*
United States Geological Survey

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