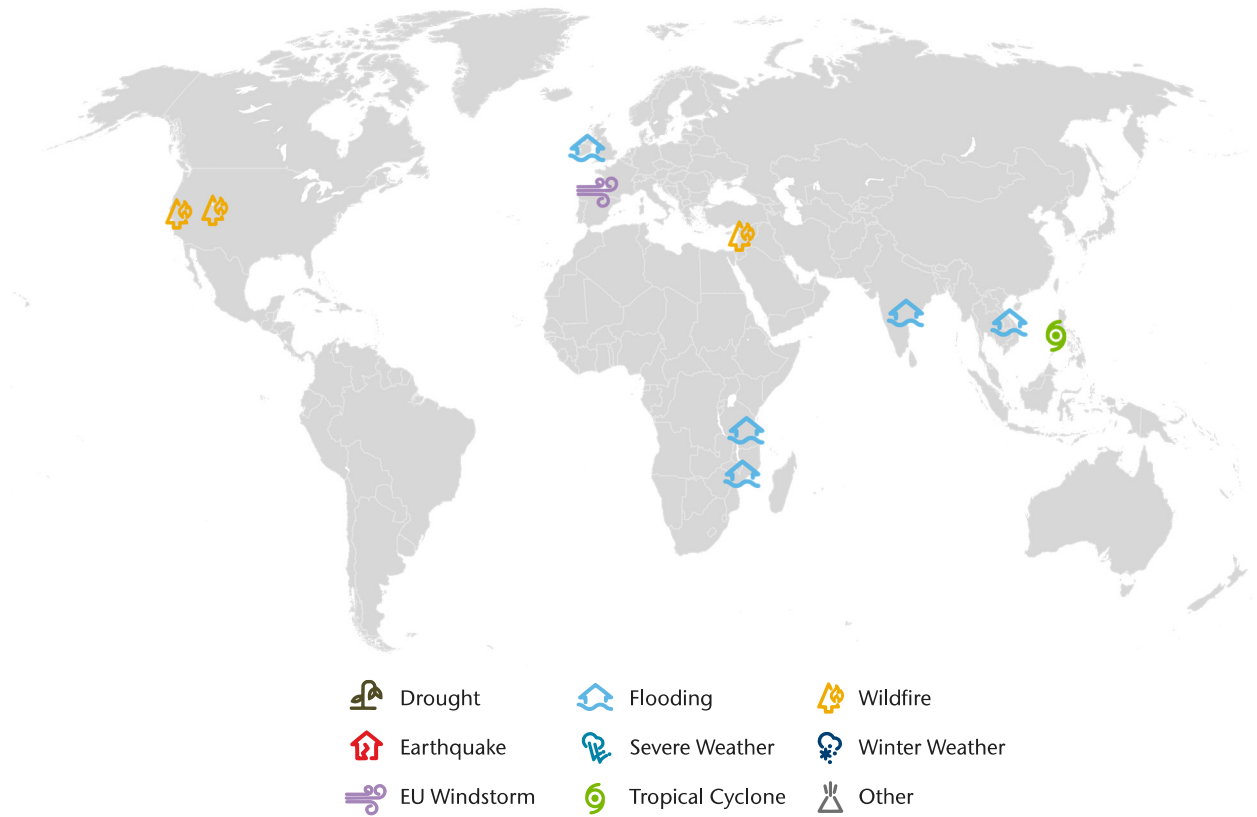




Weekly Cat Report

October 23, 2020

This Week's Natural Disaster Events



Event	Impacted Areas	Fatalities	Damaged Structures and/or Filed Claims	Preliminary Economic Loss (USD)*	Page
Wildfires	United States	41+	Thousands	Billions	3
Flooding	Southeast Asia, India	290+	250,000+	Billions	5
Flooding	Ireland	0	Hundreds	Millions	9
Windstorm Barbara	France, Portugal, Spain	1	Thousands	10s of millions	9
Flooding	Tanzania	12	Hundreds	Unknown	11
TS Saudel	Philippines	0	Dozens	2.5+ million	11
Wildfire	Syria	3+	Hundreds	Unknown	11
Flooding	Mozambique	22+	2,800+	Unknown	11

**Please note that these estimates are preliminary and subject to change. In some instances, initial estimates may be significantly adjusted as losses develop over time. This data is provided as an initial view of the potential financial impact from a recently completed or ongoing event based on early available assessments.*

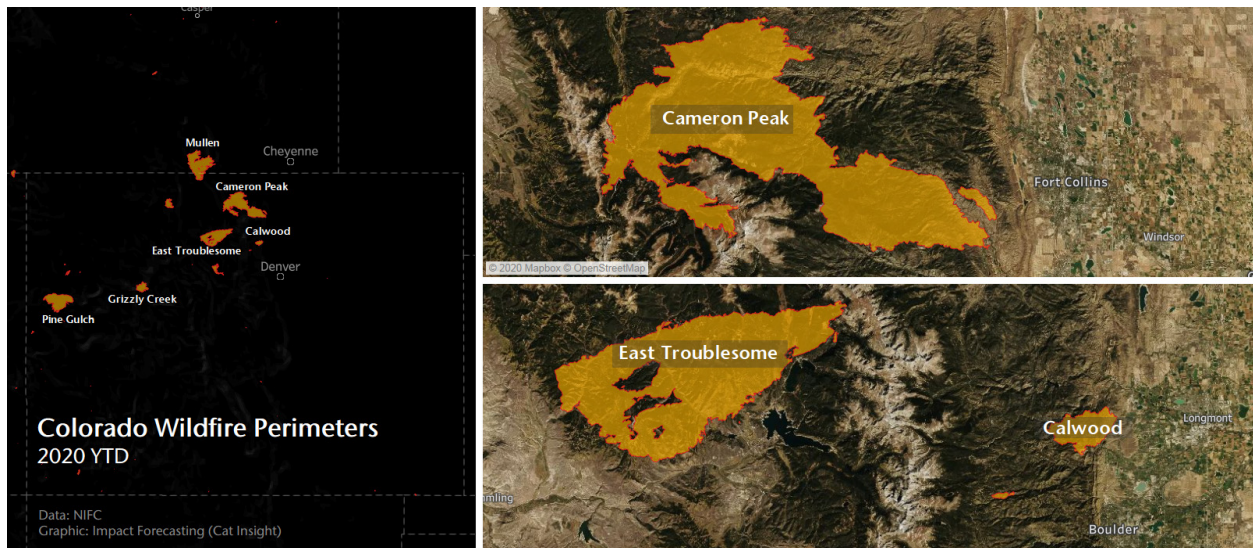
Along with this report, we continue to welcome users to access current and historical natural catastrophe data and event analysis on Impact Forecasting's Catastrophe Insight website: <http://catastropheinsight.aon.com>

Late season wildfires impact the U.S. state of Colorado

Exceptionally dry conditions across expanses of the western United States, accompanied by frequent heat waves, lightning strikes, and downslope and offshore wind events have resulted in a historically active wildfire season since mid-August. Periods of critical fire weather conditions across Colorado's northern Front Range and foothill communities between October 16-19 and October 21-22 led to a notable expansion of ongoing fires, while several new large fires were ignited. Three of the top four largest fires in the state's modern record have occurred since July 31.

Meteorological Recap

A nearly persistent high-pressure ridge anchored across portions of the southwestern United States throughout the first half of October prolonged a historic stretch of abnormally dry conditions, particularly among regions spanning from the Central and Southern Plain states toward California, including the southern Rockies and Great Basin. These dry conditions led to heightened fire weather concerns, and a significantly active fire season for many locations across the West.



In Colorado, data from the United States Drought Monitor (USDM) indicated the entirety of the state was experiencing drought conditions as of October 20, while 78 percent of Colorado was impacted by extreme (level 4 out of 5) or exceptional (level 5 out of 5) drought. Strong downslope winds between October 16-19, periodically enhancing dry and warm conditions across portions of the northern Front Range and foothill communities, prompted the National Weather Service (NWS) to issue Red Flag Warnings, signaling critical fire weather conditions. Wind gusts of 45 to 60 mph (72 to 96 kph) were common among the high valleys and foothills, while gusts approaching and exceeding 80 mph (130 kph) occurred at higher elevations. A 98 mph (158 kph) wind gust was measured at Berthoud Pass (Grand County) at an elevation of 11,704 feet (3,567 meters) on October 17. The gusty winds aided in producing several new wildfires across the Front Range, while inhibiting efforts to contain the blazes. Air Quality Alerts, triggered by the dense wildfire smoke, were issued for north-central Colorado, and included Fort Collins and the Denver-Boulder metropolitan region. A second period of critical fire weather conditions, primarily impacting the foothills and higher elevations, occurred between October 21-22. These conditions led to an explosive expansion of fire activity in Grand County.

Event Details

The large extent of the fires in Colorado prompted officials to temporarily close all national forest lands in Larimer, Boulder, Clear Creek, Jefferson, and Gilpin counties on October 21, in addition to Rocky Mountain National Park (RMNP).

The **Cameron Peak Fire**, which currently ranks as the largest wildfire in modern record for the state of Colorado, has expanded to 206,977 acres (83,760 hectares). The fire was initially sparked on August 13 in the Arapaho and Roosevelt National Forests (Larimer County). In October, extreme weather induced fire behavior rapidly pushed the blaze eastward toward more populated regions, where structural damage was noted among several communities west of Fort Collins. Preliminary reports from the Larimer County Sheriff's office indicated 190 structures were impacted in the past week, of which approximately 60 were believed to be residences. A majority of the damage was observed in Redstone Canyon along Otter Road, while several structures were burned in the Buckhorn and Poudre Springs areas, in addition to Glen Haven. This recent damage supplements the 99 structures previously affected to varying degrees by the Cameron Peak Fire.



Securing fire lines at Cameron Peak Fire
Source: InciWeb

The **East Troublesome Fire** ignited north of Hot Sulphur Spring (Grand County) on October 14 and has burned 125,602 acres (50,829 hectares) - becoming the 4th largest wildfire in the state's modern record. This also means that three of Colorado's four largest fires on record have occurred since July 31. Satellite data revealed a rapid increase in intensity of the East Troublesome Fire throughout the afternoon and evening on October 21, aided by strong winds, low humidity, and beetle-killed pine. These conditions rapidly propagated the blaze substantially east of Highway 125 and toward Highway 34, forcing the evacuation of households near Lake Granby – including Grand Lake and Lake Estes. Personnel from the National Interagency Fire Center (NIFC) reported a growth of 20 miles (32 kilometers) equating to an expansion of at least 100,000 acres (40,468 hectares) between October 21-22. Multiple structures were impacted. Data from the Colorado Climate Center on October 21, revealed that a weather station in Grand Lake recorded 0.97 inches (25 millimeters) of precipitation since July 1, compared to an average of 7.07 inches (180 millimeters) throughout the same period.

The **CalWood Fire**, which initiated northwest of Jamestown (Boulder County) on October 17, has affected 10,073 acres (4,076 hectares). No less than 3,000 people have been evacuated. As of this writing, the Boulder County Office of Emergency Management reported 26 homes destroyed by the fire. The burned structures were located on the east side of the ridge spanning north-northwest of Boulder, near Highway 36. The **Left-hand Canyon Fire** (Boulder Canyon), burning southwest of the CalWood Fire, has affected 460 acres (186 hectares).

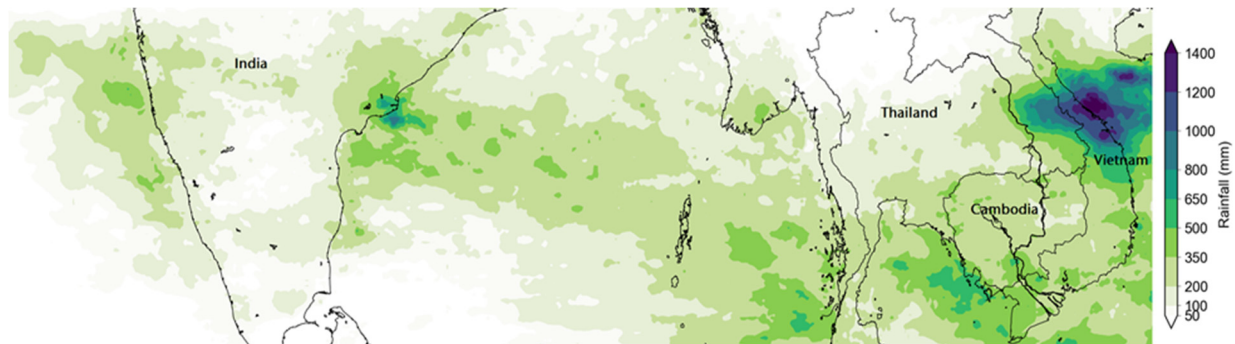
Financial Loss

This is a rapidly evolving situation, as multiple wildfires continue to burn across the state while damage assessments are ongoing. Preliminary total economic and insured losses in Colorado were anticipated to reach well into the millions (USD).

Update: Flooding in South Asia

Unabated seasonal rainfall during the month of October combined with multiple tropical storms to affect several Southeast Asian countries. Heavy flooding prompted catastrophic flash floods and landslides, resulting in at least 151 fatalities in Vietnam (114), Cambodia (34), and Thailand (3). In addition to more than 200,000 homes and structures being damaged, large swaths of cropland and public infrastructure were left inundated. In India, multiple low-pressure systems and their remnants affected parts of India on October 10-21. As many as 140 people were confirmed dead and dozens of others were injured, per India's Ministry of Home Affairs. Approximately 20,000 houses, businesses, roads and a vast area of cropland was affected. The total combined economic cost from the recent rains was anticipated to add additional billions of dollars (USD) to the year's overall annual total.

Meteorological Recap



Satellite estimate of precipitation (Oct 1-21); Data: GPM; Graphic: Impact Forecasting (Cat Insight)

Since early October, persistent, heavy monsoon rains triggered catastrophic flash floods and landslides across the Southeast Asian countries. The flooding situation worsened after tropical storms "Linfa" and "Nangka" made landfall in Vietnam on October 11 and 14, respectively. More than 1,000 millimeters (40 inches) of precipitation was recorded in the central Vietnamese provinces; with locally much higher amounts. Multiple low-pressure systems and their remnants affected parts of India since early October. These systems produced heavy precipitation and severe thunderstorms, which led to casualties and notable damage to private and public properties.

A more complete meteorological recap of these floods in Asia can be found in previous Weekly Cat Reports.

Event Details

Southeast Asia



Flooding in Quang Tri province, Vietnam

Source: Ho Cau/ VNA

Since early October, unabated rains affected parts of **Vietnam**, causing widespread damage and casualties. Tropical Storms Linfa and Nangka, which made landfall in central and northern parts of Vietnam further aided in the enhancement of the flooding situation. The combined rainstorms from these events triggered catastrophic flash floods in central and northern Vietnamese provinces. Among the worst affected included Ha Tinh, Quang Binh, Quang Tri, Thua Thien - Hue, Quang Nam, and Kon Tum. No fewer than 800,000 residents were critically affected due to heavy

flooding. Thousands of emergencies were reported and no less than 200,000 residents were evacuated to safety by the disaster management officials. Massive power outages were reported and communication in large areas were knocked out. Water levels at more than 1,250 locations along the major rivers and lakes surpassed the flood stage, causing widespread inundation to homes, crops, and other local infrastructure.

According to the data provided by the Vietnam Disaster Management Authority, as many as 114 people were killed and 21 others were missing. As many as 180,000 homes were flooded, damaged or destroyed. Approximately 700,000 cattle and livestock were washed away. More than 300 kilometers (190 miles) of highways and rural roads were damaged in the provinces of Nghe An, Ha Tinh, Quang Binh, and Quang Tri either due to flooding or due to debris flow. In addition, nearly 8,000 hectares (20,000 acres) of cropland, multiple bridges, electricity substations, and other local infrastructure were severely damaged or destroyed. With another tropical system "Saudei" forecast to make landfall in Vietnam next week, there were concerns of additional flood-related impacts.

Heavy rains along the tropical convergence zone since early October triggered catastrophic flash floods in 19 of the 25 **Cambodian** provinces along with the autonomous municipality and capital region of Phnom Penh. According to the National Committee for Disaster Management and media reports, no less than 34 people were confirmed dead. As many as 310,000 residents were directly affected while around 40,000 people were evacuated to safety by the disaster management officials. Approximately 75,000 homes and thousands of other structures were inundated or sustained damage to varying degrees. More than 300,000 hectares (850,000 acres) of rice and other crops were inundated, while hundreds of road segments, bridges, and local businesses had been damaged in rain-related incidents.



Flooding in Pursat Province, Cambodia

Source: Ministry of Water Resources, Cambodia

More than 33 provinces of **Thailand** had been affected by recent flooding caused by the seasonal rains combined with the rains associated with tropical storms Linfa and Nangka. No fewer than three people were killed, per the information provided by the Department of Disaster Prevention and Mitigation, Thailand. A total of 65,000 households had been affected and thousands of residents were evacuated by the officials. Severe losses were inflicted on the local and agricultural infrastructure.

Tropical Storm Nangka brought damaging winds and heavy rainfall over island province of Hainan in southern **China**. According to the media reports, at least two people were killed, and four others were missing after a boat capsized in the Qiongzhou Strait in Hainan province.

South Asia

According to the India Meteorological Department, a deep depression which formed in the southeastern Bay of Bengal and adjoining northern Andaman Sea, moved inland and affected the southern and central parts of **India**; Telangana, Andhra Pradesh, and Karnataka states were severely hit. Heavy precipitation associated with the remnants of the system combined with another low-pressure area in Arabian Sea further affected the states of Maharashtra, Goa, and Gujrat located along the western coast of India. According to the latest information provided by the Disaster Management Division, Ministry of Home Affairs of India and local media reports, no fewer than 140 people were killed in Telangana (70), Maharashtra (48), Andhra Pradesh (14), Karnataka (5), Gujrat (3). Approximately 200,000 residents from more than 1,000 villages across the affected states were evacuated by the officials of National Disaster Management Agency.



Flooding in Maharashtra
Source: Press Trust of India

According to the Karnataka State Natural Disaster Monitoring Centre (KSNDMC), heavy to very heavy precipitation accumulation was recorded in all the districts, particularly over the northern districts of Bidar and Kalaburgi where approximately 400-500 percent excess rainfall were recorded last week. No fewer than 15,000 houses and 400,000 hectares (1 million acres) of agricultural land were damaged in the states of Karnataka alone. In addition, no less than 3,000 houses were damaged or destroyed and roughly 125,000 hectares (300,000 acres) of cropland were inundated in Andhra Pradesh. Additionally, tens of thousands of houses, businesses, roads, and bridges were damaged in Telangana. According to the media reports, hundreds of thousands of hectares

of cropland were inundated in Maharashtra's Pune, Aurangabad and Konkan divisions. Further losses to local infrastructure and agriculture were noted from the states of Gujrat, Chhattisgarh, and Madhya Pradesh.

Financial Loss

The total aggregate economic cost across the Asian continent during the period from October 5 to 21 was anticipated to add several billions (USD) to the annual toll for 2020. The combined losses across Asia this year, including major flood events in China, India, Japan, South Korea, and Vietnam, was expected to exceed USD45 billion.

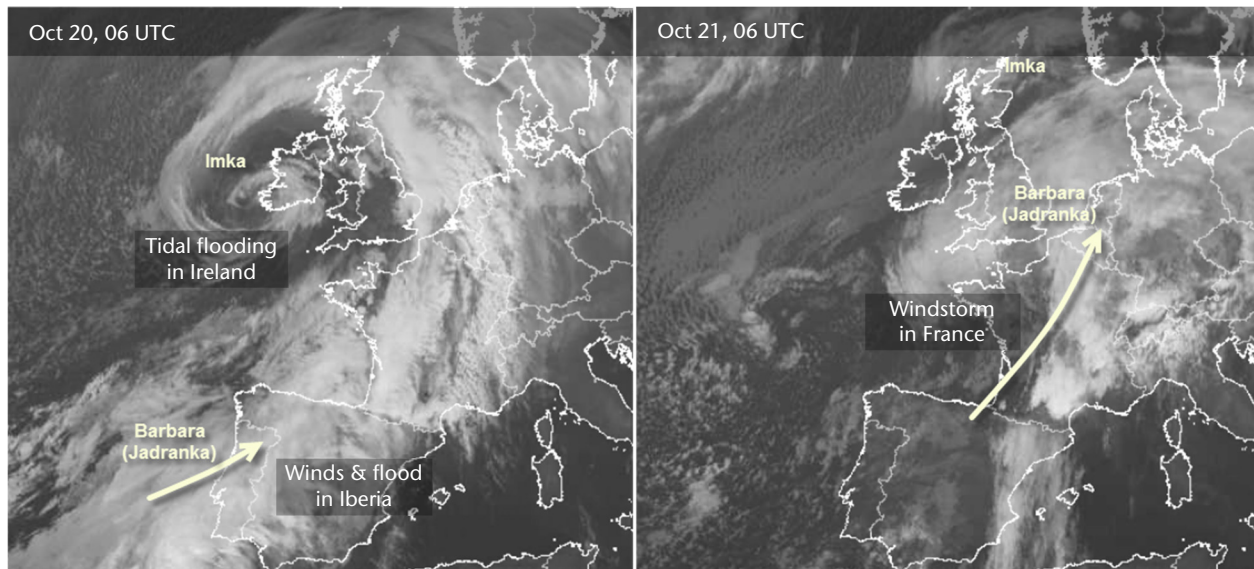
According to the initial damage details, the governments of Andhra Pradesh estimated the agricultural losses at INR45 billion (USD610 million). Government of Telangana cited total combined losses at INR50 billion (USD680 million). In addition, agricultural losses in the Vijayapura district due to overnight rains and hailstorms on October 19 were to exceed INR2 billion (USD23 million), per the government of Karnataka. Given the extensive damage footprints elsewhere in India, particularly in the states of Maharashtra and Gujrat, the total combined losses in India were projected to exceed USD2 billion for this most recent timeframe alone.

Total economic losses attributed to the flooding in Vietnam since the beginning of October were already confirmed at above USD600 million. A preliminary report from Quang Tri province cited that total damage was to approach VND12 trillion (USD520 million) there alone, while approximately VND2 trillion (USD86 million) worth damage was reported from the provinces of Thua Thien – Hue and Quang Binh. The total economic losses in Cambodia were expected to be well into the millions; however, the economic losses in Thailand and Pakistan were anticipated to be minimal. Given the continued low insurance take up rates in most of the affected countries, a significant proportion of these economic losses were anticipated to be uninsured.

Active cyclonic pattern leads to losses in Western Europe

Parts of Western Europe were affected by two low-pressure systems, Imka and Windstorm Barbara (also known as Jadranka) on October 19-21. High tides coupled with strong winds in southern Ireland resulted in notable tidal flooding. The most significant impacts of storm Barbara were felt in France, additional flood- and wind- related damage occurred in Portugal and Spain. Total economic losses were expected to reach into the tens of millions EUR.

Event Details



Notable tidal flooding occurred along the coastline of the Cork County in **Ireland** on October 19, and especially in the morning of October 20, including in Cork and Bantry as strong southeasterly winds coincided with high tide. This situation was influenced by the approach of a deep Atlantic cyclone (named “Imke” by the FU Berlin), as its central pressure fell to approximately 975 millibars. The worst situation was in Cork - local government noted around 100 damaged buildings and dozens of cars that were flooded in the Cork City center, with economic losses running into the millions of EUR. A large portion of the losses were sustained by local businesses.

Portugal was affected by a low-pressure system on October 19-21 that would later develop to Windstorm Barabara (the low was named “Jadranka” in the FU Berlin naming system). Emergency services responded to more than 1,550 weather-related incidents. Many instances of damage were caused by flooding, while local media and disaster management agencies also reported structural damage due to strong winds, with several roofs blown from buildings and a number of trees toppled across the country. According to data from National Emergency and Civil Protection Authority, Faro was the most affected district with 238 emergencies, followed by Lisbon (155), Setubal (154) and Porto Alegre (108).

Localized damage also occurred in **Spain**. Highest gusts were measured at peaks of the Pyrenees, including Cogulla (177 kph) and Cap de Vaqueira (167 kph). The highest observed value in populated areas was in Enciso in La Rioja with 139 kph (86 mph) and El Maíllo in Salamanca with 136 kph (85 mph). The highest 24-hour rainfall accumulations were recorded on October 20 in the Sierra de Gredos mountain range in provinces of Ávila and Cáceres and locally exceeded 300 millimeters (11.8 inches).

The most notable impacts of storm Barbara were found in **France**. Peaks of the Pyrenees mountains recorded gusts exceeding 200 kph (124 mph), including Iraty with 216 kph (134 mph) and Pic du Midi 212 kph (132 mph). Strong winds in the populated areas were observed on a relatively limited extent, although significant gusts were recorded in Toulouse region and the department of Haute-Garonne, and also in the Massif Central region. In total, 12 departments were placed under the medium, orange wind warning. One person was killed in Saône-et-Loire by a fallen tree, and 76,000 customers were left without power at the peak of the storm according to Enedis, major energy provider.

Financial Loss

Both low-pressure systems resulted in notable, yet relatively minor weather-related impacts. The cost of the coastal flooding in Ireland was preliminarily estimated at millions of EUR. Wind-related impacts of Barbara will likely result in notable payouts for insurers, but were spatially mostly limited to southern and southeastern French departments. Additional effects were felt in southern and central Portugal and northern Spain.

Natural Catastrophes: In Brief

Flooding (Tanzania)

At least 12 people were killed in an urban flash flood that affected Dar es Salaam, the largest city of Tanzania due to heavy rains on October 13-15, as the Msimbazi River overflowed its banks. Among the worst affected districts were Ilala and Kinondoni. The event resulted in notable disruption in several areas, including the central business district. Economic impacts were not yet determined.

Tropical Storm Saudel (Philippines)

Tropical Storm Saudel, colloquially known as "Pepito" in Philippines, swept across Luzon Island located in the northern Philippines archipelago on October 20. In anticipation of the storm, approximately 700 residents of 185 households were evacuated from the low-lying coastal areas. Approximately 25,000 people were directly affected in the storm-related incidents. According to the National Disaster Risk Reduction and Management Council, at least 28 road segments and 10 bridges were either damaged or destroyed. Further losses were inflicted on the private and public infrastructure and agricultural land. According to the initial estimates, agricultural and infrastructural losses were noted at PHP122 million (USD2.5 million); Damage to property is not included in this figure.

Wildfire (Syria)

Weeks of hot and dry weather combined with heatwaves continued to ignite wildfires in Syria, causing at least three casualties. During the period from September 1 to October 15, approximately 30,000 hectares (85,000 acres) of combined agricultural and forest land was burned in the governates of Hama, Homs, Idleb, Latakia, and Tartous. Hundreds of houses and other structures were damaged or destroyed.

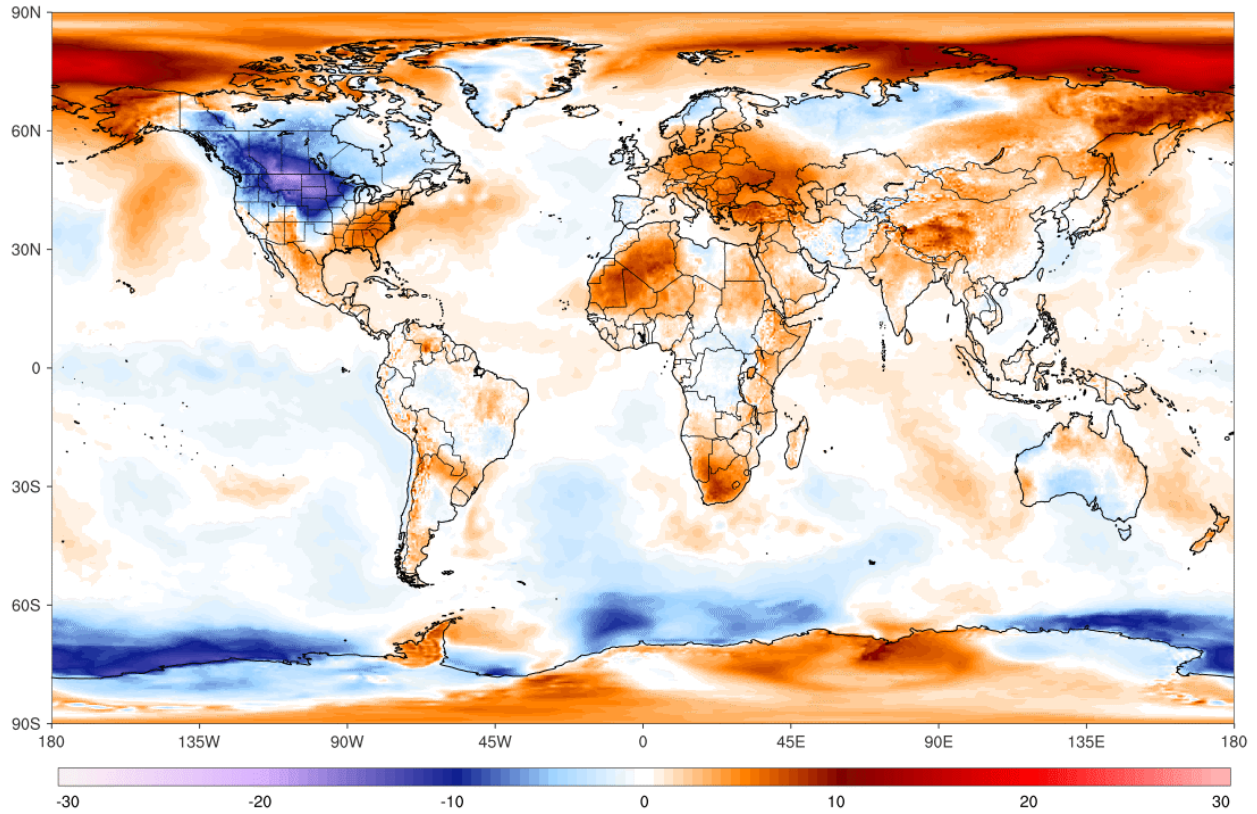
Flooding (Mozambique)

At least 22 people were killed and 12 were injured due to flooding in Mozambique since the start of the current rainy season on October 1, according to the country's government. Notable flooding was reported from Niassa, Nampula, Zambezia and Manica provinces and in Maputo city. More than 16,500 people were affected in total, 922 houses were completely destroyed, and more than 1,900 were damaged.

Global Temperature Anomaly Forecast

GFS/CFSR 5-day Avg 2m T Anomaly (°C) [1979-2000 base]
Thursday, Oct 22, 2020

ClimateReanalyzer.org
Climate Change Institute | University of Maine

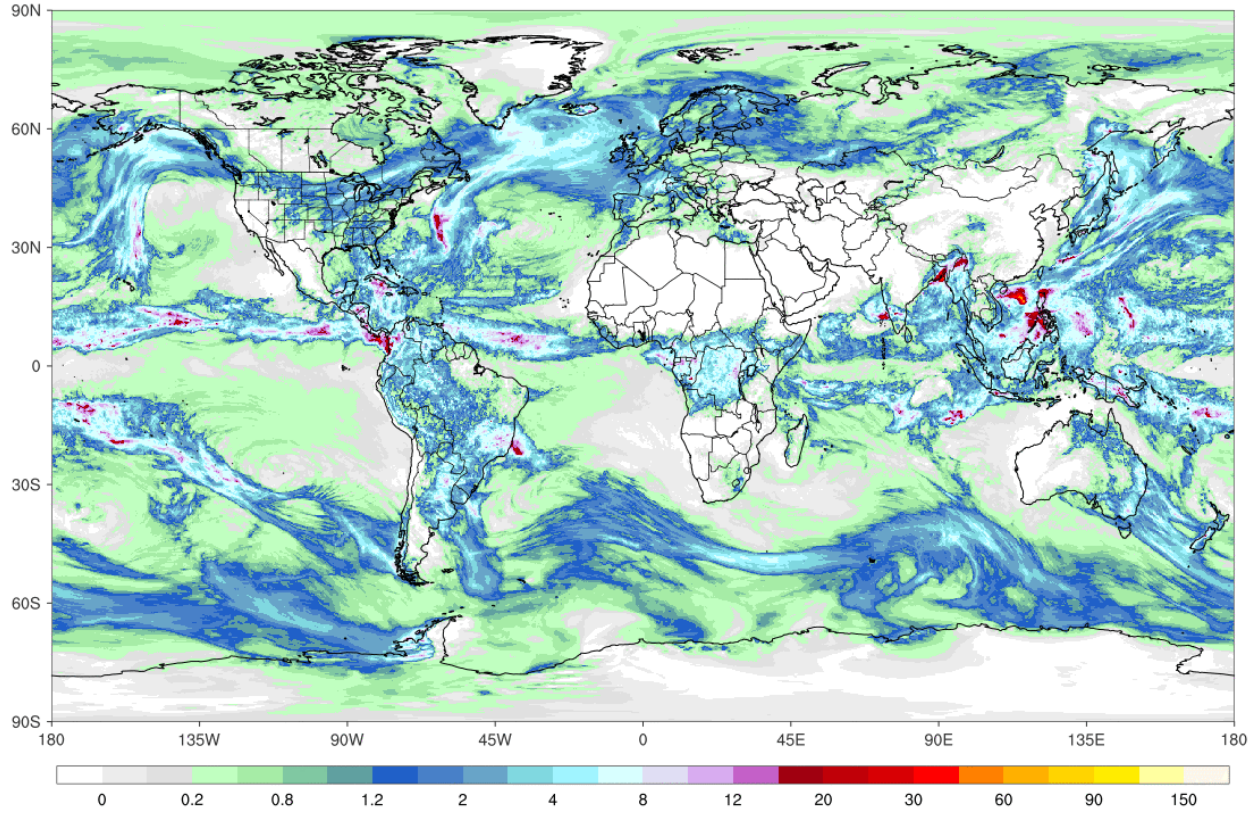


Source: Climate Reanalyzer, Climate Change Institute, University of Maine, USA

Global Precipitation Forecast

GFS 5-day Total Accumulated Precipitation (cm)
Thursday, Oct 22, 2020

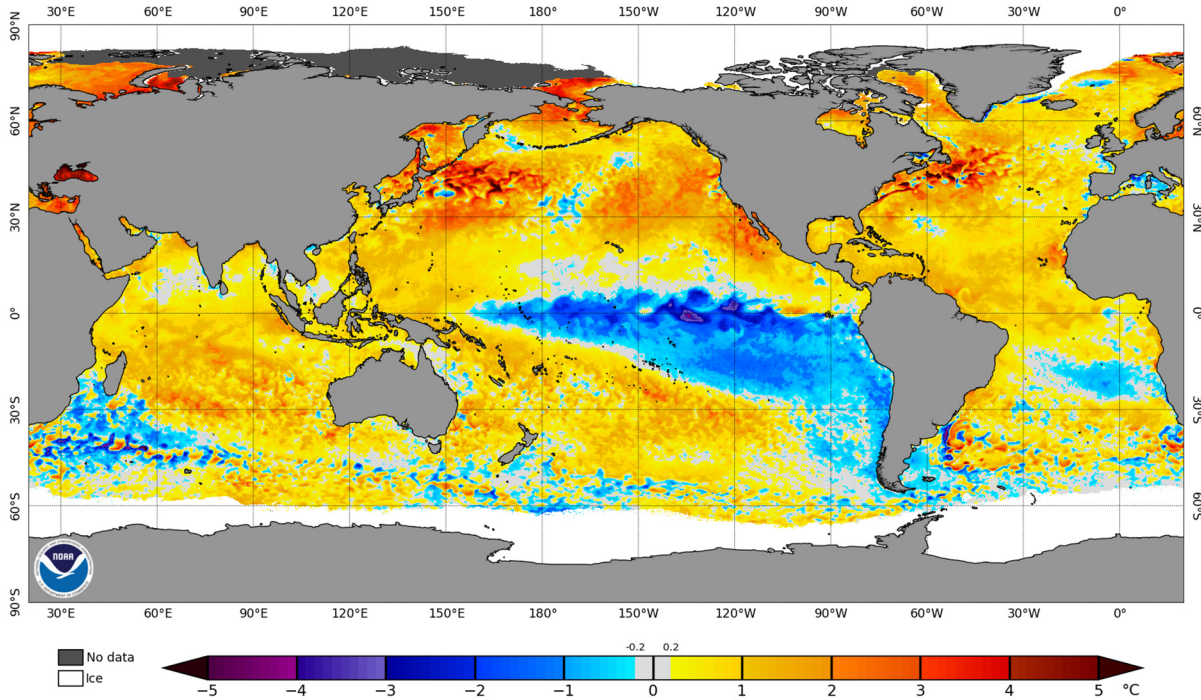
ClimateReanalyzer.org
Climate Change Institute | University of Maine



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

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

NOAA Coral Reef Watch Daily 5km SST Anomalies (v3.1) 21 Oct 2020



The SST anomalies are produced by subtracting the long-term mean SST (for that location in that time of year) from the current value. This product with a spatial resolution of 0.5 degree (50 kilometers) is based on NOAA/NESDIS operational daily global 5 kilometer Geo-polar Blended Night-only SST Analysis. The analysis uses satellite data produced by AVHRR radiometer.

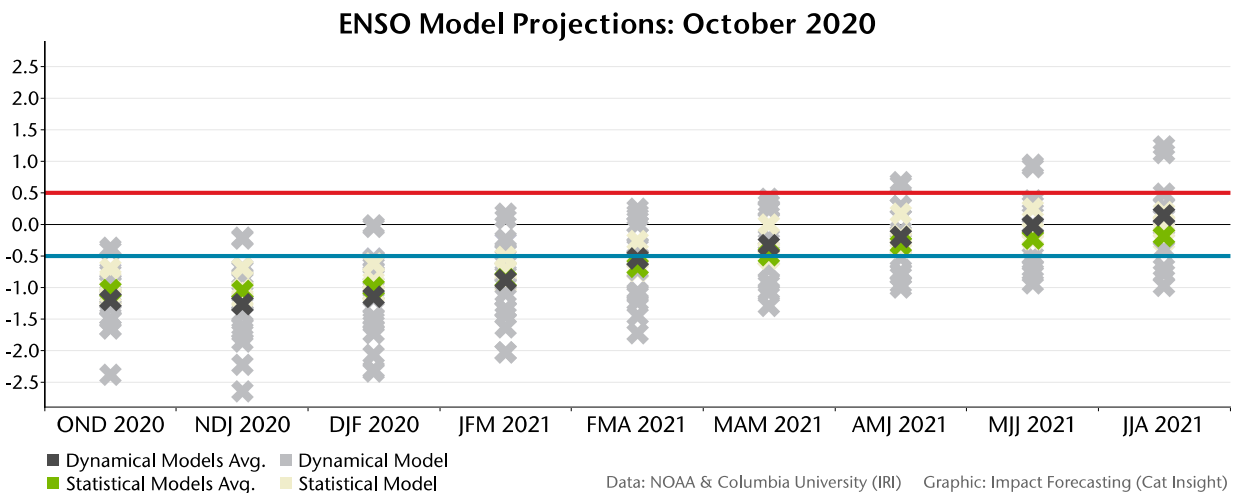
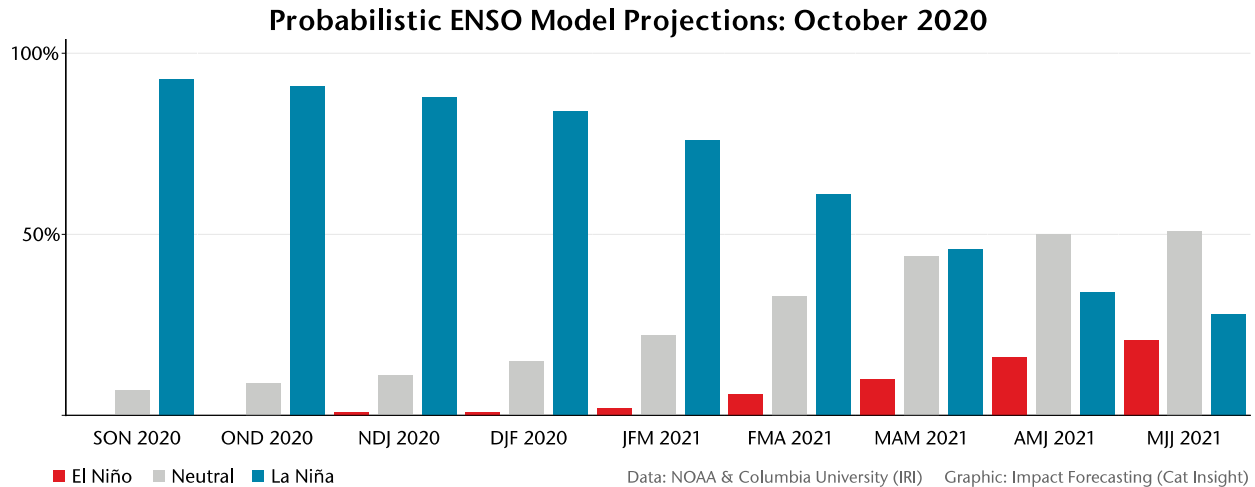
Select Current Global SSTs and Anomalies

Location of Buoy	Temp (°C)	Departure from Last Year (°C)
Eastern Pacific Ocean (1,020 miles SW of San Salvador, El Salvador)	25.6	+0.6
Niño3.4 region (2°N latitude, 155°W longitude)	23.4	-3.2
Western Pacific Ocean (700 miles NNW of Honiara, Solomon Islands)	29.9	-0.9

Sources: ESRL, NOAA, NEIS, National Data Buoy Center

El Niño-Southern Oscillation (ENSO)

La Niña conditions are currently present, though NOAA has officially issued a **La Niña Advisory**. NOAA notes an 85 percent chance that La Niña conditions will persist through boreal (Northern Hemisphere) winter of 2020 / 2021, and a 60 percent chance that these conditions will linger into the spring months.



El Niño refers to the above-average sea-surface temperatures (+0.5°C) that periodically develop across the east-central equatorial Pacific. It represents the warm phase of the ENSO cycle.

La Niña refers to the periodic cooling of sea-surface temperatures (-0.5°C) across the east-central equatorial Pacific. It represents the cold phase of the ENSO cycle.

El Niño and La Niña episodes typically last nine to 12 months, but some prolonged events may last for years. While their frequency can be quite irregular, El Niño and La Niña events occur on average every two to seven years. Typically, El Niño occurs more frequently than La Niña.

ENSO-neutral refers to those periods when neither El Niño nor La Niña conditions are present. These periods often coincide with the transition between El Niño and La Niña events. During ENSO-neutral periods the ocean temperatures, tropical rainfall patterns, and atmospheric winds over the equatorial Pacific Ocean are near the long-term average.

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).

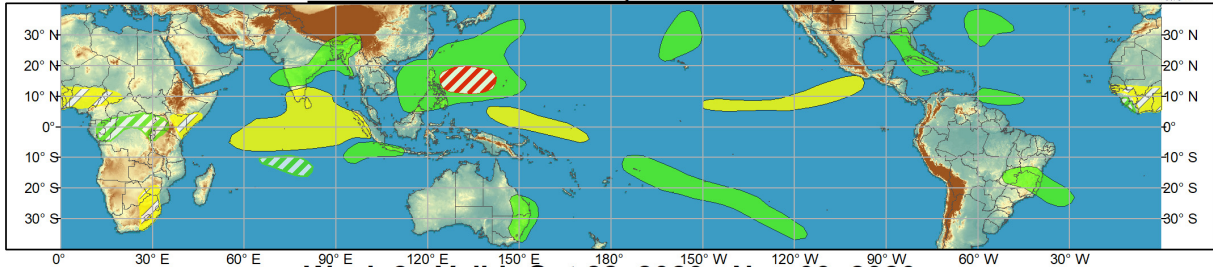
Global Tropics Outlook



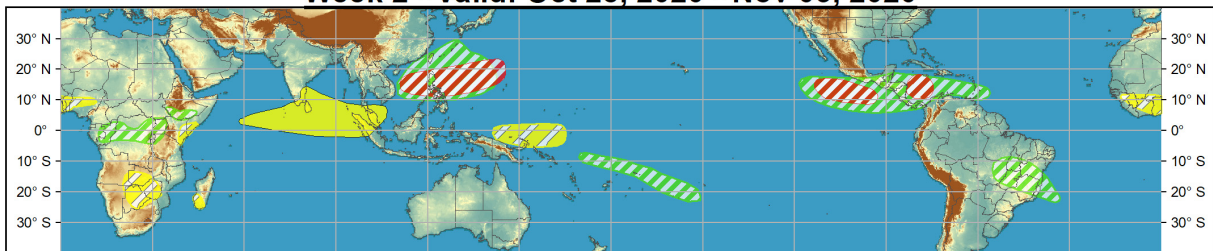
Global Tropics Hazards and Benefits Outlook - Climate Prediction Center



Week 1 - Valid: Oct 21, 2020 - Oct 27, 2020



Week 2 - Valid: Oct 28, 2020 - Nov 03, 2020



Confidence
High Moderate

- Tropical Cyclone Formation** Development of a tropical cyclone (tropical depression - TD, or greater strength).
- Above-average rainfall** Weekly total rainfall in the upper third of the historical range.
- Below-average rainfall** Weekly total rainfall in the lower third of the historical range.
- Above-normal temperatures** 7-day mean temperatures in the upper third of the historical range.
- Below-normal temperatures** 7-day mean temperatures in the lower third of the historical range.

Product is updated once per week, except from 6/1 - 11/30 for the region from 120E to 0, 0 to 40N. The product targets broad scale conditions integrated over a 7-day period for US interests only. Consult your local responsible forecast agency.

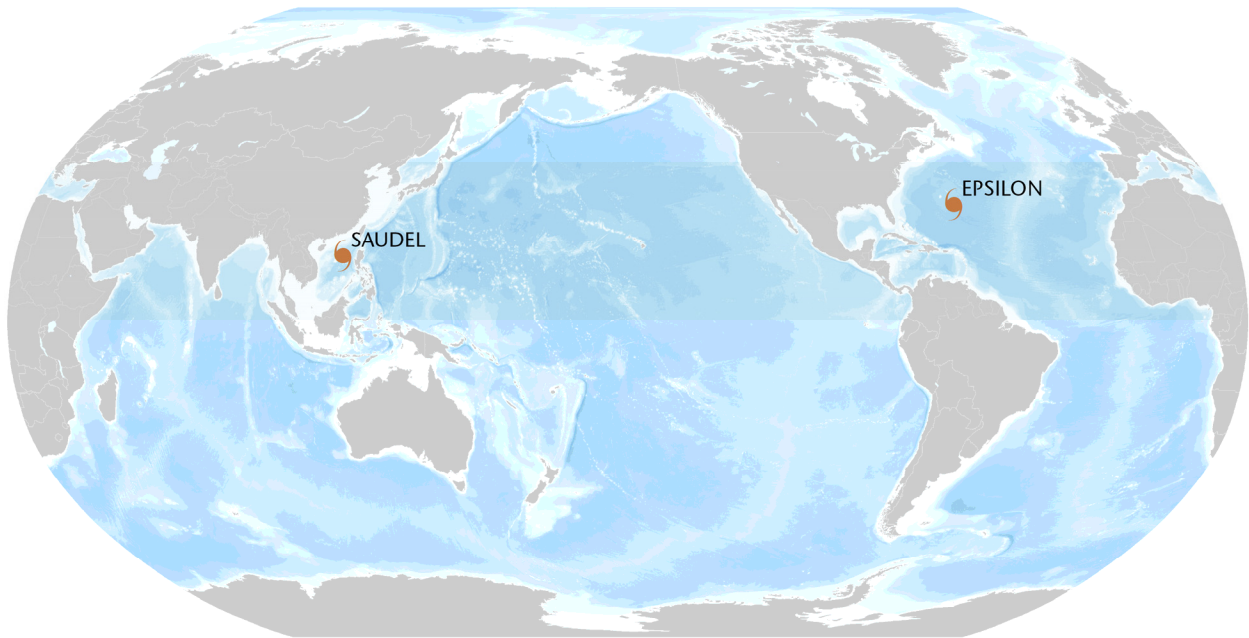
Produced: 10/20/2020

Forecaster: Novella



Source: Climate Prediction Center

Current Tropical Systems



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

Location and Intensity Information

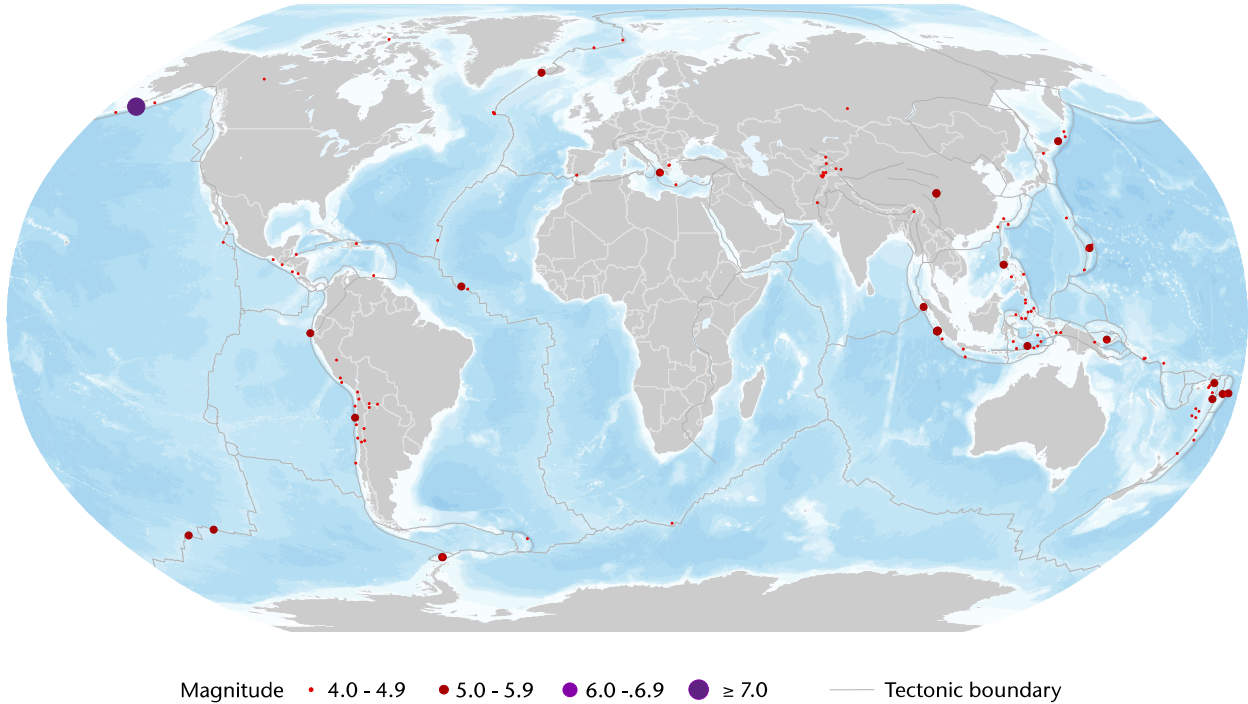
Name*	Location	Winds	Storm Reference from Land	Motion**
HU Epsilon	31.9°N, 61.4°W	85 mph	200 miles (325 kilometers) E of Bermuda	NNW at 9 mph
TY Saudel	17.7°N, 115.4°E	85 mph	330 miles (530 kilometers) SSE of Hong Kong	WNW at 7 mph

* TD = Tropical Depression, TS = Tropical Storm, HU = Hurricane, TY = Typhoon, STY = Super Typhoon, CY = Cyclone

** N = North, S = South, E = East, W = West, NW = Northwest, NE = Northeast, SE = Southeast, SW = Southwest

Sources: National Hurricane Center, Joint Typhoon Warning Center, Central Pacific Hurricane Center

Global Earthquake Activity ($\geq M4.0$): October 16 – 22



Significant EQ Location and Magnitude ($\geq M6.0$) Information

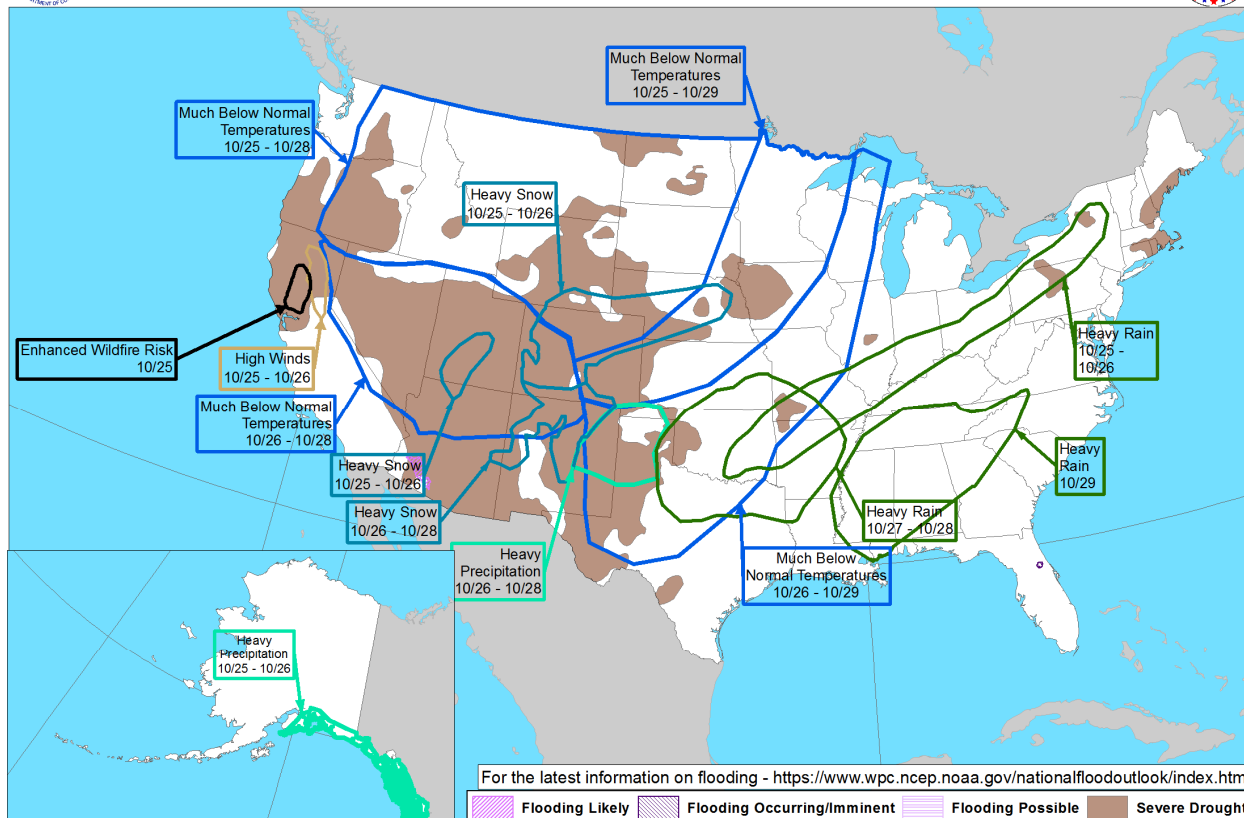
Date (UTC)	Location	Magnitude	Depth	Epicenter
10/19/2020	54.61°N, 159.66°W	7.6	33 km	97 kilometers (60 miles) SSE of Sand Point, Alaska

Source: United States Geological Survey

U.S. Weather Threat Outlook



Day 3-7 U.S. Hazards Outlook Valid: 10/25/2020-10/29/2020



Weather Prediction Center

Made: 10/22/2020 3PM EDT

Follow us:

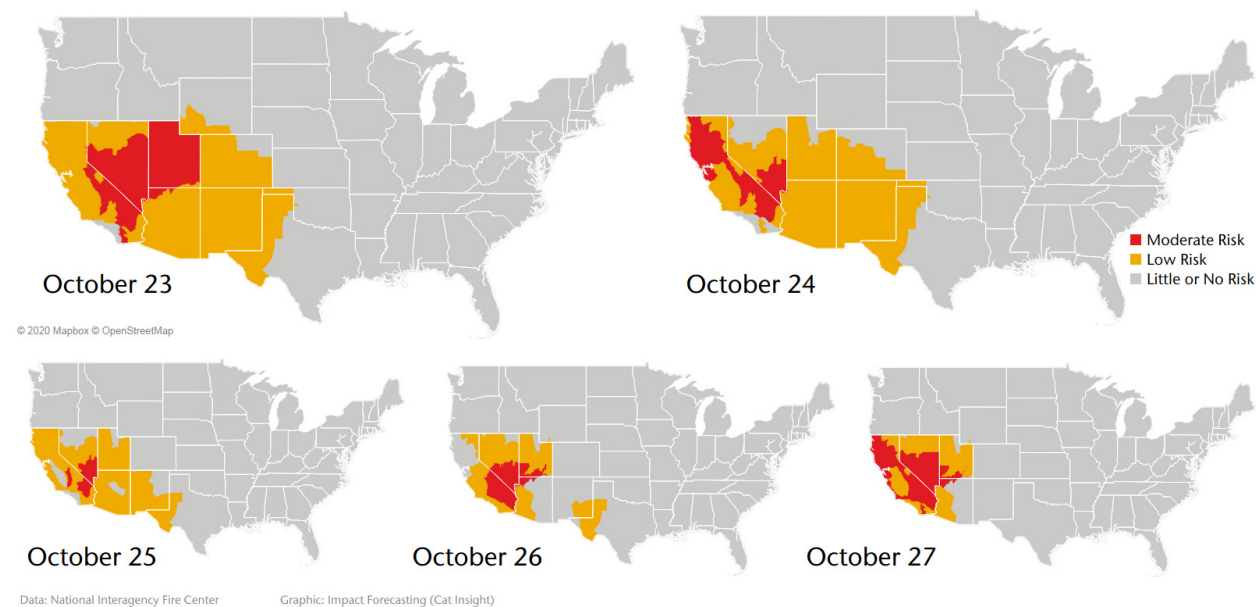
www.wpc.ncep.noaa.gov

Potential Threats

- A highly amplified flow pattern, featuring a southward digging upper level trough will usher an Arctic outbreak across much of the west-central United States between October 25-29. Near record breaking low temperatures will be common throughout the Northwest, Rockies, and the Great Plains before expanding into the Midwest.
- A weather disturbance will bring heavy snowfall to portions of the Intermountain West between October 25-26.
- A cut-off low anticipated to meander across the southern tier of the country, will generate mixed precipitation and heavy rainfall in regions of the Southern Plains between October 26-28, before spreading heavy rains eastward into the lower Mississippi Valley and Southeast by October 29.
- Heavy rain stretching from the mid-Mississippi Valley into the Northeast is anticipated between October 25-26, associated with a series of stalled frontal boundaries.

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

The National Interagency Fire Center has highlighted an extended, yet lowered risk of elevated wildfire conditions across parts of the West and Desert Southwest during the rest of October. Elevated fire conditions will persist in California, the Rockies and the Desert Southwest as above normal temperatures and a lack of precipitation / moisture lingers. However, anticipated snowfall in Colorado should begin to ease the ongoing fires in the state.



Annual YTD Wildfire Comparison: October 22

Year	Number of Fires	Acres Burned	Acres Burned Per Fire
2016	50,093	4,995,898	99.73
2017	52,010	8,820,787	169.60
2018	50,309	8,160,102	162.20
2019	43,921	4,470,579	101.79
2020	46,535	8,427,589	181.10
10-Year Average (2010-2019)	50,818	6,345,377	124.86

Source: National Interagency Fire Center

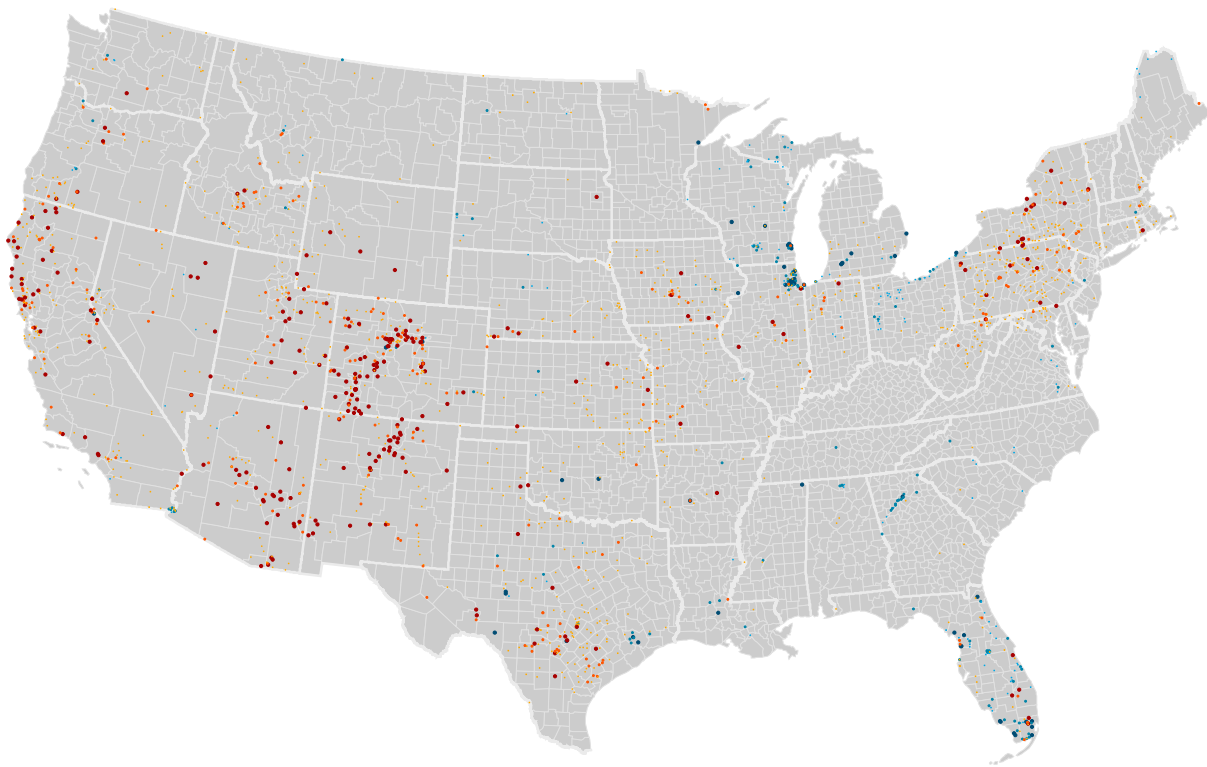
Top 5 Most Acres Burned by State: October 22

State	Number of Fires	Acres Burned	Acres Burned Per Fire
California	9,044	3,136,694	346.83
Arizona	2,228	934,958	419.64
Washington	1,590	780,845	491.10
Oregon	1,827	723,519	396.01
Colorado	1,016	459,696	452.46

Source: National Interagency Fire Center

Note: There is often a multi-day lag between NIFC and the California Department of Forestry and Fire Protection (CAL FIRE)

Current U.S. Streamflow Status



- | | | | |
|----------------------------|--------------------------------|-------------------------|--------------------|
| 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.

Top 5 Rivers Currently Nearing or Exceeding Flood Stage

Location	Current Stage (ft)	Flood Percentile
Loramie Creek at Lockington, Ohio	9.36	99.01
Stillwater River at Englewood, Ohio	8.33	98.96
Econfina Creek near Bennett, Florida	7.17	98.77
Black River at Elyria, Ohio	6.43	98.70
Salt Creek at Western Springs, Illinois	6.64	98.68

Source: United States Geological Survey

Source Information

Late season wildfires impact the U.S. state of Colorado

U.S. National Weather Service

U.S. Drought Monitor (USDM)

California Department of Forestry and Fire Protection (Cal Fire)

InciWeb

Firefighters Get 10% Containment On East Troublesome Fire In Grand County, CBS 4 Denver

Boulder wildfires update: Not much overnight growth for CalWood, Lefthand Canyon fires, The Denver Post

Colorado wildfire erupts amid deepening drought, forcing evacuations in Boulder County, The Washington Post

Cameron Peak Fire activity increases, firefighters 'actively engaged', The Coloradoan

Estimated 30-50 structures burned in Cameron Peak Fire's latest run, The Coloradoan

Cameron Peak Fire reaches 70th day; about 190 structures believed harmed since last week, Loveland Reporter-Herald

Update: Flooding in South Asia

Vietnam Disaster Management Authority

ASEAN Coordinating Centre for Humanitarian Assistance on Disaster Management

Ministry of Emergency Management, China

Disaster Management Division, Ministry of Home Affairs, India

India Meteorological Department

Karnataka State Natural Disaster Monitoring Centre (KSNDMC)

National Committee for Disaster Management, Cambodia

Ước tính thiệt hại ban đầu do mưa lũ gây ra hơn 650 tỷ đồng, Quang Binh Online

Mưa lũ kéo dài, Thừa Thiên – Huế thiệt hại khoảng 1.126 tỷ đồng, Info Net

Flood death toll in Cambodia rises to 34: PM, Xinhua

2 dead, 4 missing after boat capsizes in south China, Xinhua

Floods across Thailand kill 3, affect thousands of households, The Thaiger

Telangana floods: Death toll goes up to 70, government on alert with fresh spell forecast, Deccan Herald

Rs 2,770 crore loss to agriculture, horticulture crops, The Indian Express

Andhra Pradesh: Rains, floods damage crops in over one lakh hectares; At least 14 dead, Deccan Herald

Maharashtra: After criticism, CM Uddhav Thackeray starts touring flood-affected areas, Hindustan Times

Active cyclonic pattern leads to loses in Western Europe

Barbara Depression has caused more than 1,550 occurrences since it started. Observador

Government to assist businesses affected by Cork floods. RTE

Meteofrance

AEMET

Natural Catastrophes: In Brief

Joint Typhoon Warning Centre

Japan Meteorological Agency

The Philippine Atmospheric, Geophysical and Astronomical Services Administration

National Disaster Risk Reduction and Management Council, Philippines

Reliefweb

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