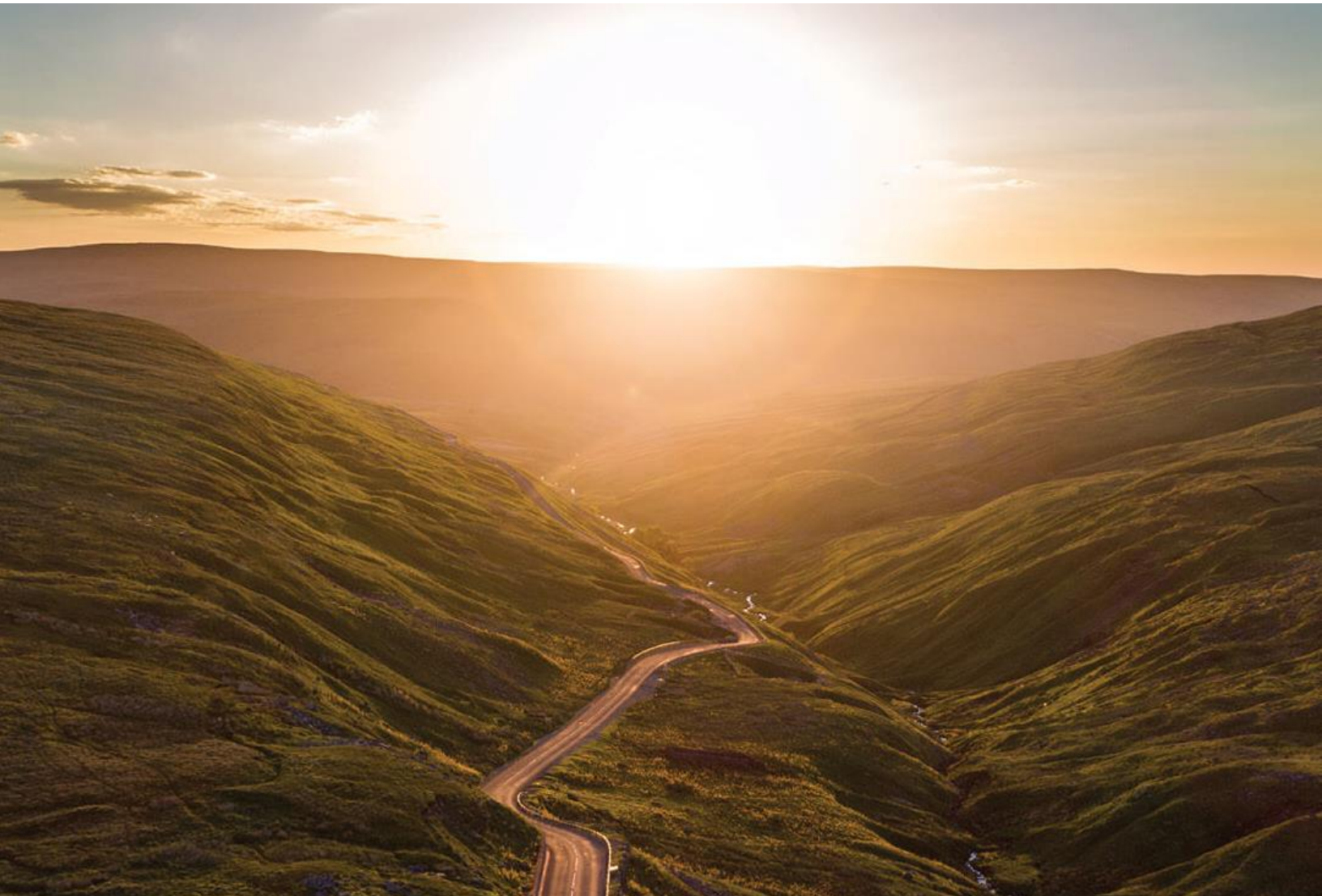


AON

Weekly Cat Report

April 19, 2024



Executive Summary



Event	Affected Region(s)	Fatalities	Economic Loss (\$)	Page
Flooding & SCS	Southwestern Asia	166+	100s of millions	3
SCS & Flooding	United States	0	100s of millions	6
Flooding & Landslide	Tanzania, Kenya, Uganda	71+	Unknown	8
Landslide	Indonesia	20	Negligible	9
Landslide	DRC	15	Negligible	9
Wildfire	Spain	0	Unknown	9
Earthquake	Japan	0	Negligible	9
Windstorm Renata / Yupadee	Western & Central Europe	0	Millions	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>

Southwestern Asia: Flooding & Severe Convective Storm

Overview

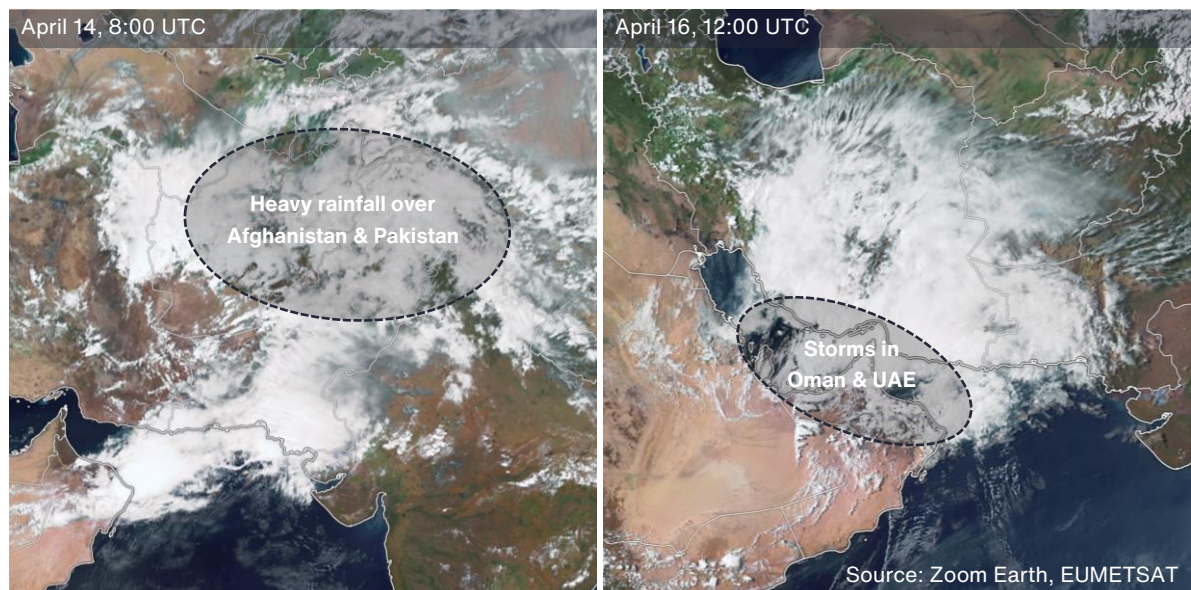
Severe weather has affected large portions of Southwestern Asia in recent days with the impacts reported in Afghanistan, Pakistan, Oman, the United Arab Emirates (UAE), and elsewhere across the region. Hazards have resulted from incessant and heavy rainfall, storms, and widespread flooding that have already claimed at least 166 fatalities, and hundreds of injuries, and caused notable material losses to thousands of buildings, local infrastructure, and agriculture, putting an aggregate economic loss into the hundreds of millions of USD.

Meteorological Recap

A deepening slow-moving trough brought elevated rainfall accumulation over the entire region of Southwestern Asia. Multiday rainfall totals exceeded 200 mm (7.9 inches) of rain in Afghanistan and Pakistan between April 8 and 15. Some locations in Pakistan's Khyber Pakhtunkhwa Province saw more than **500 mm (19.7 inches)** of rain in 7 days which resulted in widespread and severe flash flooding in many locations in the country.

On April 14-17, the same low-pressure system generated extreme rainfall over the eastern Arabian Peninsula. Many locations in the UAE and Oman recorded more than 200 mm (7.9 inches) of rain in 3 days (see Table below). According to the UAE's National Center for Meteorology (NCM), the highest 24-hour rainfall total of **254.8 mm (10.03 inches)** was recorded at the Khatam Al Shaklah station. A national daily precipitation record is held by Shuwaib station, where 287.6 mm (11.32 inches) was seen on March 9, 2016. The city of Dubai received **142 mm (5.59 inches)** of rain just in one day, an equivalent to a year's worth of rain and the heaviest rainfall since records began in 1949, according to the NCM.

Extreme rainfall accumulation, close to the amount of rain that usually falls in an entire year, was recorded elsewhere in this generally arid region.



The highest event rainfall totals (April 14-17) in UAE
 Source: National Center for Meteorology

Location	Event Rainfall Total (mm / in)
Khatam Al Shaklah	259.5 / 10.22
Kalba	239.5 / 9.43
Al Marmoom	219.4 / 8.64
Wadi Al Tuwa	205.6 / 8.09
Margham	200.6 / 7.90

Event Details

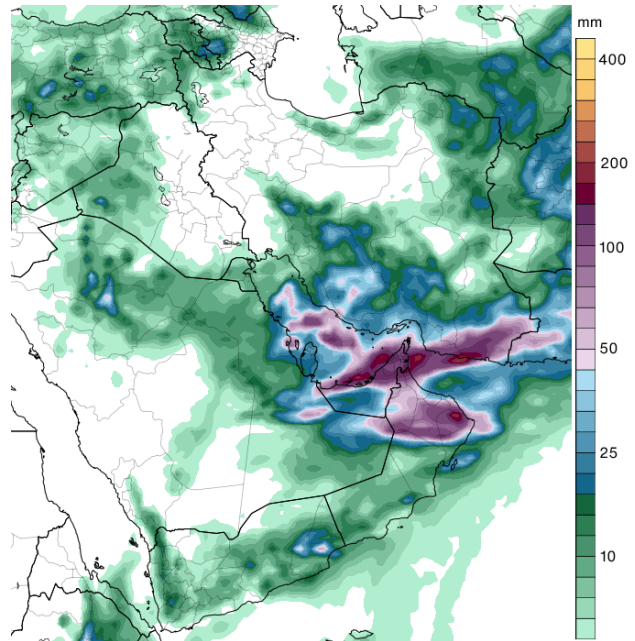
In the **United Arab Emirates (UAE)**, the city of Dubai was particularly hit by torrential rainfall on April 15-16. The Dubai International Airport, one of the busiest in the world, was completely flooded and unable to dispatch all flights. In total, more than 1,200 flights were canceled over these two days. Dozens of aircraft were submerged by floodwater with the potential to result in notable material losses.

Dubai transport services were severely impacted, dozens of cars, private houses, and malls were inundated within the city center. Many locations in the country experienced power outages and a lack of water supplies. Local authorities (NCEMA) reported at least 4 flood-related deaths with several people remaining missing.

Heavy rainfall triggered deadly flash flooding across northern **Oman** between April 14-16. As of April 17, the National Committee for Emergency Management reported at least 20 fatalities and more than 1,200 rescued people, several people remain missing. Most of the operations were located in the Ash Sharqiyah North Governorate, where dozens of people remained stranded in their damaged vehicles. Severe weather-related material losses and major disruptions were reported also in the governorates of Musandam, Al Buraimi, Al Dhahirah, Al Dakhiliyah, and Muscat.

According to the latest report from the National Disaster Management Authority (NDMA) and regional disaster authorities, an additional 71 people have lost their lives due to flash flooding and lightning in **Pakistan** in recent days, along with structural damage to thousands of houses. At least 67 people have been injured. Most of the losses occurred in the Provinces of Punjab, Balochistan, Sindh, and Khyber Pakhtunkhwa which reports no fewer than 32 fatalities, 41 injured, and 2,600 damaged houses alone. A state of emergency has been declared for the entire country.

In **Afghanistan**, floods have affected more than 23,000 people across the country's provinces of Badghis, Uruzgan, Farah, Paktia, Zabul, Helmand, Herat, Kunar, Kabul, Badakhshan, Ghor, Kandahar, Takhar, and Parwan. Media and local emergency authorities have reported at least 70 dead and no fewer than 56 others injured as of April 17. More than 2,600 houses were destroyed or suffered various



5-day accumulated precipitation modeled by GFS

Source: Tropical Tidbits

levels of damage. Notable losses to agriculture have been also incurred, including hundreds of livestock and about 95,000 acres (38,400 hectares) of cropland that have been lost due to flooding.

Thunderstorms, intense rainfall, and flash flooding have locally affected other countries across the region, including Saudi Arabia, Qatar, Iran, Bahrain, Kuwait, and Yemen, where one flood-related death was confirmed.

Financial Loss

Given the ongoing damage assessment and the notable damage caused over a large area, it is still too early to determine the estimated economic impact across the affected region. However, initial assessments from the area suggest a significant impact on property, infrastructure, and agriculture, that will likely run to at least hundreds of millions of USD. Insured losses will be notably lower due to relatively low insurance penetration.

United States: Severe Convective Storm & Flooding

Overview

Persistent severe weather and heavy rainfall from three weather systems brought impacts primarily to the north-central and northeast United States on April 11-18. Notable flooding was seen once again over the Ohio River Valley, including near Pittsburgh. Continuous severe storms caused widespread property damage and power outages over an area stretching from Nebraska to Pennsylvania. Total economic and insured losses could reach into the hundreds of millions USD.

Meteorological Recap

April 11-12

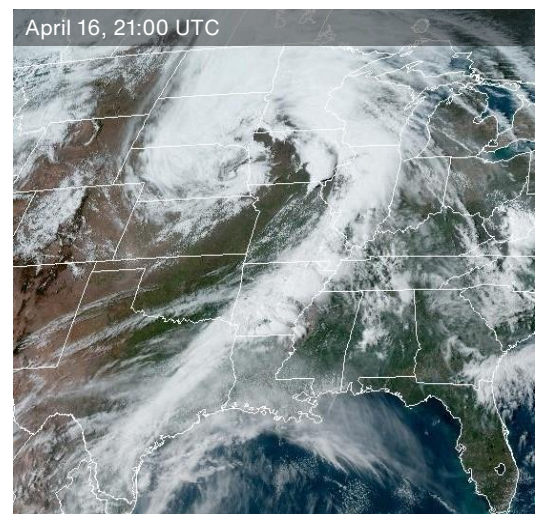
As the storm system from last week continued into the eastern U.S. (see previous Weekly Cat Report), very heavy rain fell over parts of the Mid-Atlantic and Midwest on April 11-12. The Ohio River Valley was particularly hit hard for the second time in two weeks, including much of Pennsylvania, West Virginia, and Ohio. Flash flood emergencies were issued by the NWS for the towns of Oakdale (PA) and Coraopolis (PA). Notably, Pittsburgh (PA) has now recorded 7.63 inches (194 mm) of rain since the start of this month, which makes April 2024 already the 3rd wettest April on record for the city. Pittsburgh has now also set a new record for the wettest start to spring (dated March 1 to April 12) since 1871, according to the NWS (see table on the right).

Year	Total Precipitation (in / mm)
2024	10.54 / 268
1967	7.42 / 189
1936	7.40 / 188
1945	7.16 / 182
1956	7.12 / 181
1942	7.03 / 179
1980	6.85 / 174
2007	6.84 / 174

More heavy rain and severe storms were seen throughout the eastern U.S., including in North Carolina where winds reached up to 63 mph (101 kph).

April 14-18

Multiple waves of severe weather impacted the north-central and northeast U.S. on April 14-18. Along multiple frontal boundaries and ahead of two slow-moving, low-pressure systems, persistent severe storms centered over an area spanning from Nebraska to Pennsylvania. Over this 5-day period, the Storm Prediction Center received approximately 750 storm reports, including reports of hailstones up to 2.75 inches (7 cm) and gusts over 75 mph (120 kph). Remarkably, SPC also received 38 tornado reports, 24 of which were submitted on April 16 alone. The strongest twister seen was rated EF-2 with peak winds of 130 mph (209 kph). This powerful tornado moved for 42 miles (68 km) across southeast Iowa through the towns of Houghton and New London.



Event Details



Flooding in West Virginia (left) and tornado damage in Des Moines County (right)

Source: City of South Charleston, WV (left); NOAA DAT (right)

Many communities within the Ohio River Valley were flooded due to storms packed with heavy rainfall, especially in Allegheny (PA) and Kanawha (WV) Counties. Numerous vehicles and buildings were damaged by flood waters, and officials carried out at least two dozen rescues around the Pittsburgh (PA) metro area. More storms within the eastern U.S. brought strong winds and hail impacts, leading to 120,000 power outages.

Intense wind gusts and several tornadoes caused sporadic damage in multiple states across the Great Plains and Midwest, including Iowa, Kansas, Missouri, and Ohio. Some of the worst tornado-related damage occurred within the towns of Houghton (IA), New London (IA), and Bucyrus (OH). At least 2 people were injured, many homes and businesses had their roofs ripped off, and multiple vehicles were flipped over and damaged.

Financial Loss

Due to widespread severe weather damage, as well as an additional round of flooding along the Ohio River, economic and insured losses could reach into the hundreds of millions USD.

Tanzania, Kenya, Uganda: Flooding & Landslide

Overview

A rainy season accompanied by severe flooding and landslide events has left at least 71 people dead in Tanzania and Kenya in recent days. As the rainy season is still ongoing over the region of central-east Africa, total material and human losses are expected to rise in the upcoming weeks.

Meteorological Recap

The region typically experiences increased rainfall during its main rainy season lasting from late March to May. This year's season is expected to be amplified due to the naturally occurring El Niño phenomenon. Further heavy rainfall resulting in widespread flooding is likely.

Event Details

Heavy rainfall has led to severe flooding and multiple landslide events across **Tanzania** over the past two weeks, with the regions of Coast, Rukwa, Arusha, Pwani, and Morogoro worst affected. At least 58 people have been killed in flood-related events in April, and 126,000 more have been affected, according to media, ERCC, and IFRC. A state of emergency has been declared in the districts of Rufiji and Kibiti (Pwani region) and in Kilombero district (Morogoro Region) as over 10,000 families have been displaced and more than 8,000 homes have been damaged.

Seasonal flooding has already left 13 people dead and affected more than 20,000 others in various parts of **Kenya**, according to the local disaster authorities. Casualties and widespread damage due to flooding and landslide events have been reported in many counties, including Nairobi, Marsabit, Turkana, Tana River, Garissa, Kirinyaga, Muranga, Kiambu, Meru, Kisumu, and Kitui.

Bukiisa Sub County in **Uganda** has also experienced severe flooding, which resulted in some material losses.



Flooding in Bukiisa Sub, Uganda (left) and Pwani, Tanzania (right)

Source: IFRC Africa

Natural Catastrophes: In Brief

Landslide (Indonesia)

A deadly landslide occurred in Tana Toraja Regency on April 13 following heavy rainfall that severely affected the Indonesian South Sulawesi Island. According to the National Board for Disaster Management (BNPB), at least 20 people died and 2 others suffered injuries. Most of the victims were found in Manggau Village, where also several houses were destroyed.

Landslide (Democratic Republic of the Congo)

At least 15 people were killed and dozens remain missing after a landslide that occurred in Dibaya Lubwe commune in Kwilu province, southwestern DRC, on April 13. A cascade of clay and debris collapsed down to the banks of the Kasai River, where boats were docking. A final death toll is expected to be notably higher.

Wildfire (Spain)

Forest fires have been raging throughout the Valencian Community in eastern Spain since April 13, prompting hundreds of evacuations and causing forestry and agricultural damage. According to the European Forest Fire Information System (EFFIS), an area of almost 800 hectares (2,000 acres) has been burned. Three firefighters were slightly injured during the operations.

Earthquake (Japan)

A 6.3-magnitude earthquake occurred on April 17 close to the southwestern coast of Shikoku Island, southern Japan. Based on the USGS estimates, up to 156,000 people were exposed to strong shaking. Six people were reported injured in the prefectures of Ehime, Oita, and Kochi. An earthquake is not expected to cause notable damage.

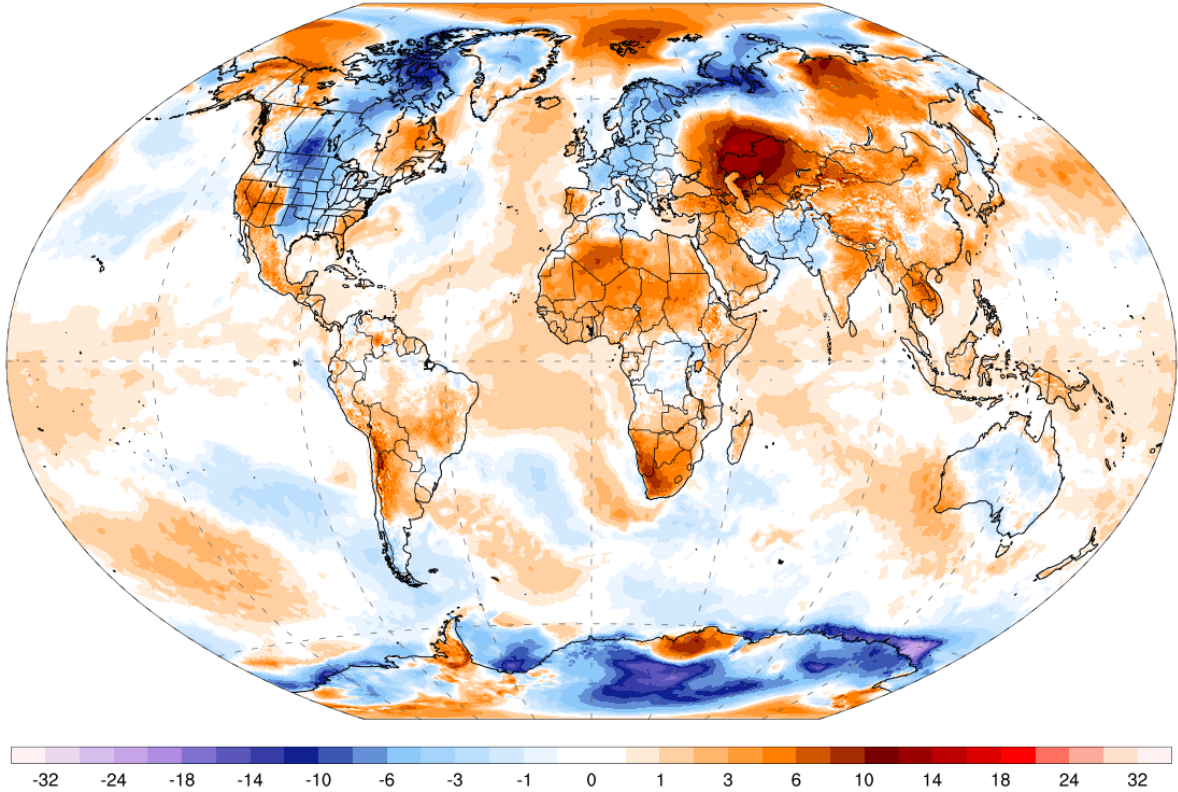
Windstorm Renata / Yupadee (Western & Central Europe)

Strong wind gusts up to 100 kph (60 mph) associated with a low-pressure system, internationally named Renata (Yupadee by FU Berlin), resulted in relatively minor and localized material damage and traffic disruptions across Western and Central Europe on April 15-16, particularly in northern France.

Global Temperature Anomaly Forecast

GFS 2m T Anomaly (°C) [CFSR 1979-2000 baseline]
Days 1-3 Avg | Fri, Apr 19, 2024

ClimateReanalyzer.org
Climate Change Institute | University of Maine

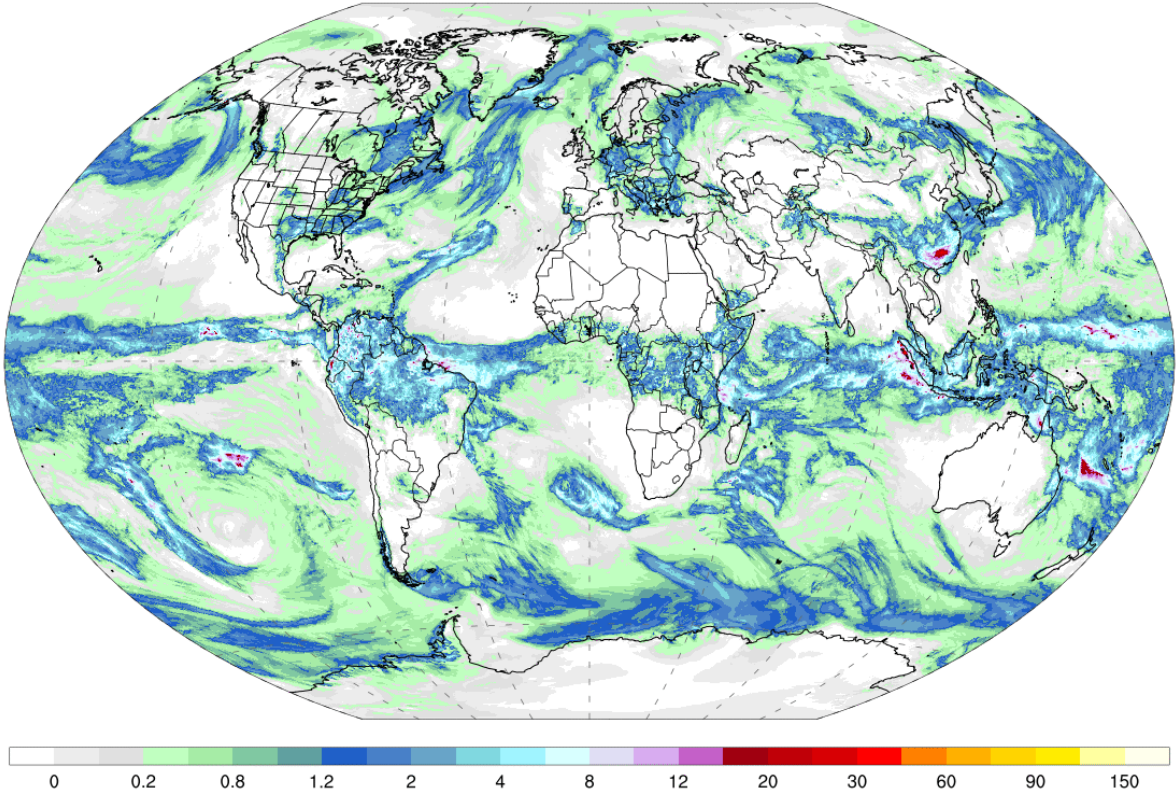


Source: Climate Reanalyzer, Climate Change Institute, University of Maine, USA

Global Precipitation Forecast

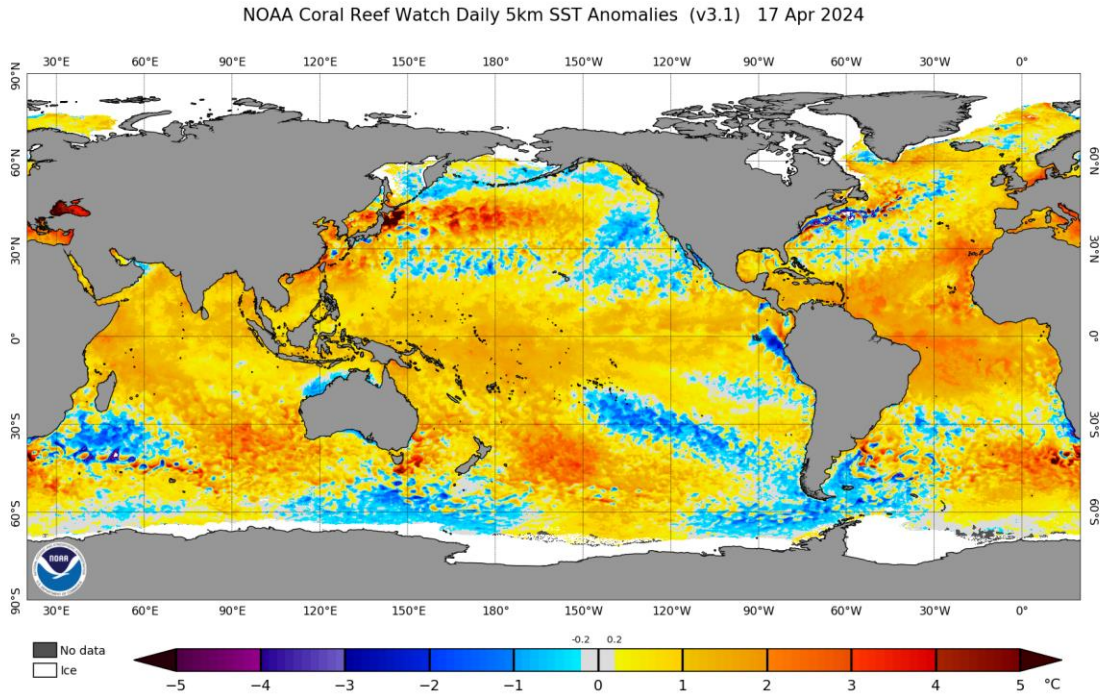
GFS Accumulated Precipitation (cm)
Days 1-3 Total | Fri, Apr 19, 2024

ClimateReanalyzer.org
Climate Change Institute | University of Maine



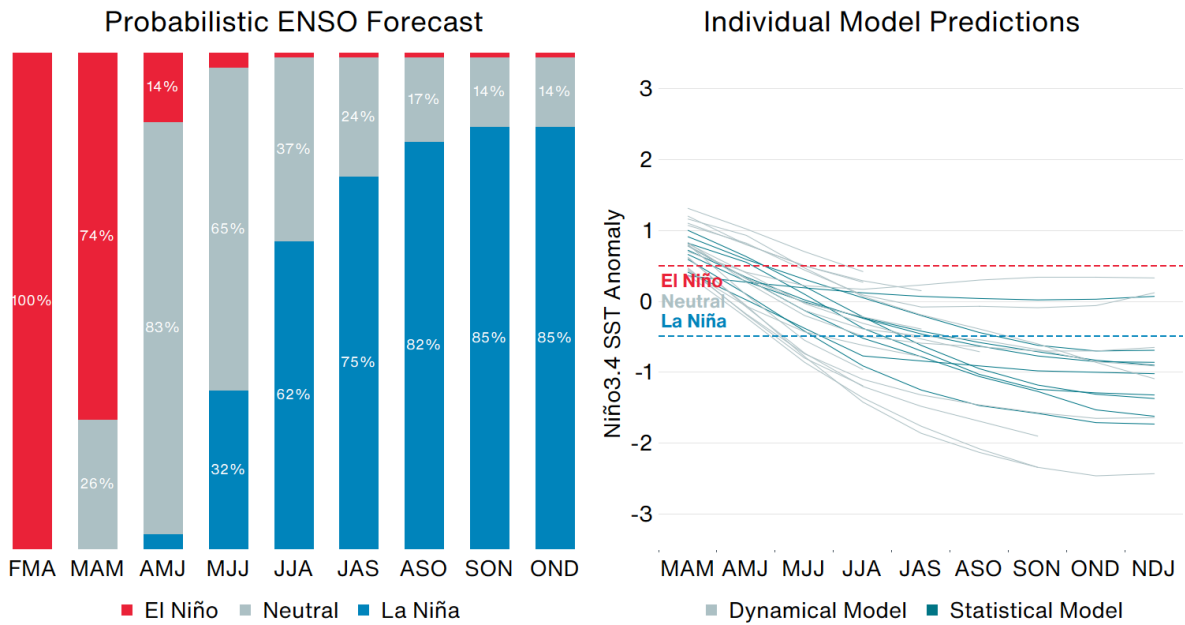
Source: Climate Reanalyzer, Climate Change Institute, University of Maine, USA

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



El Niño-Southern Oscillation (ENSO)

Probabilistic ENSO Model Projections: March 2024



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

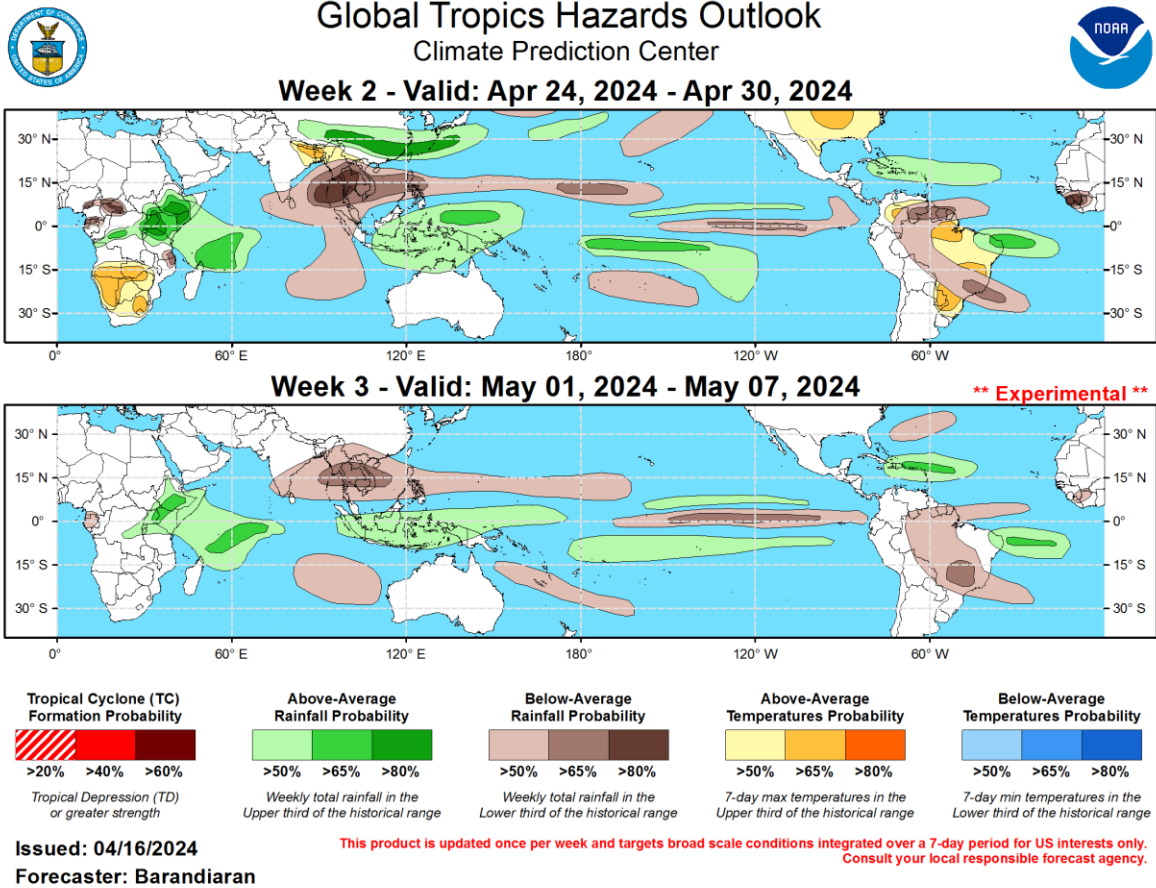
La Niña: Cool phase of an ENSO cycle. Sea surface temperatures of -0.5°C occur across the east-central equatorial Pacific.

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).

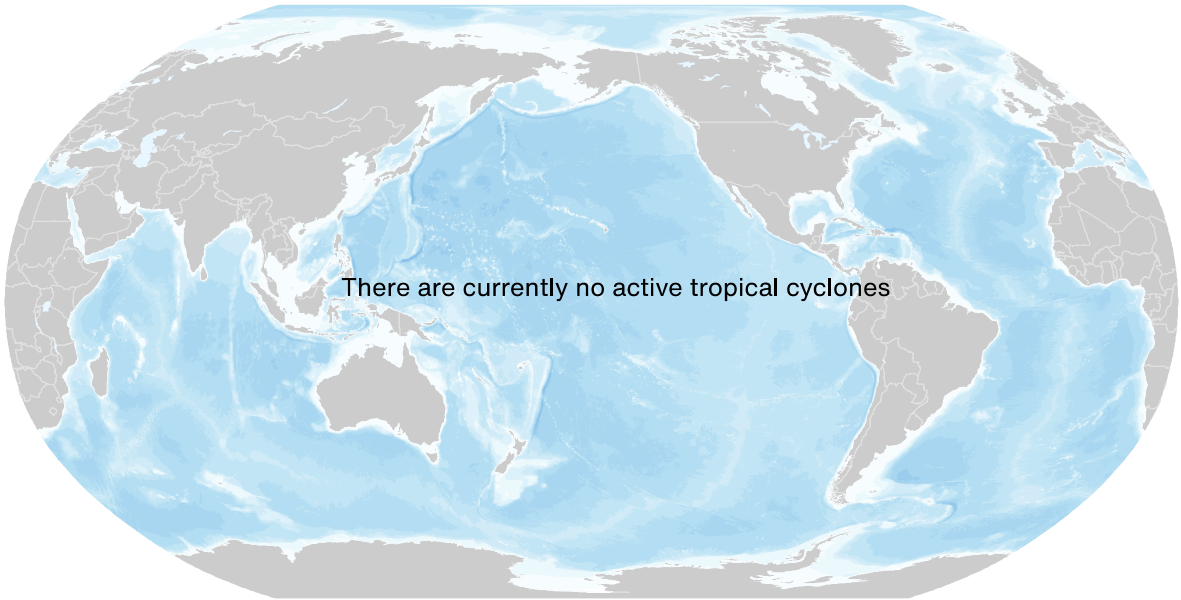
Source: NOAA, Columbia University | Graphic: Aon Catastrophe Insight

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

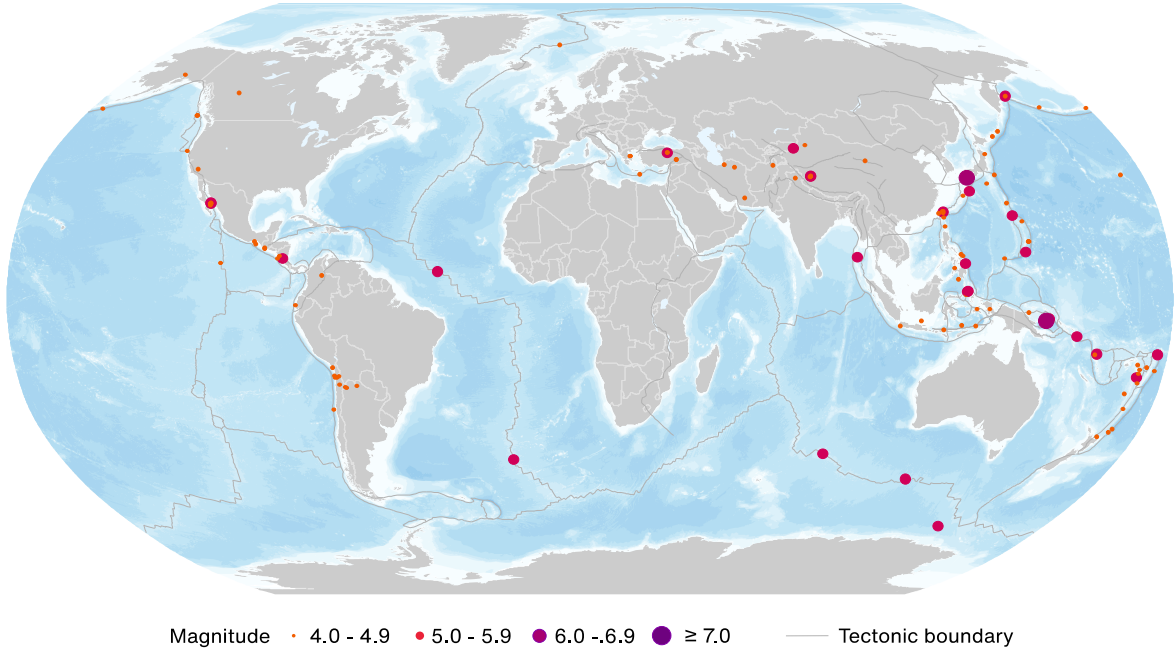
Name	Location	Winds	Center

* 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)

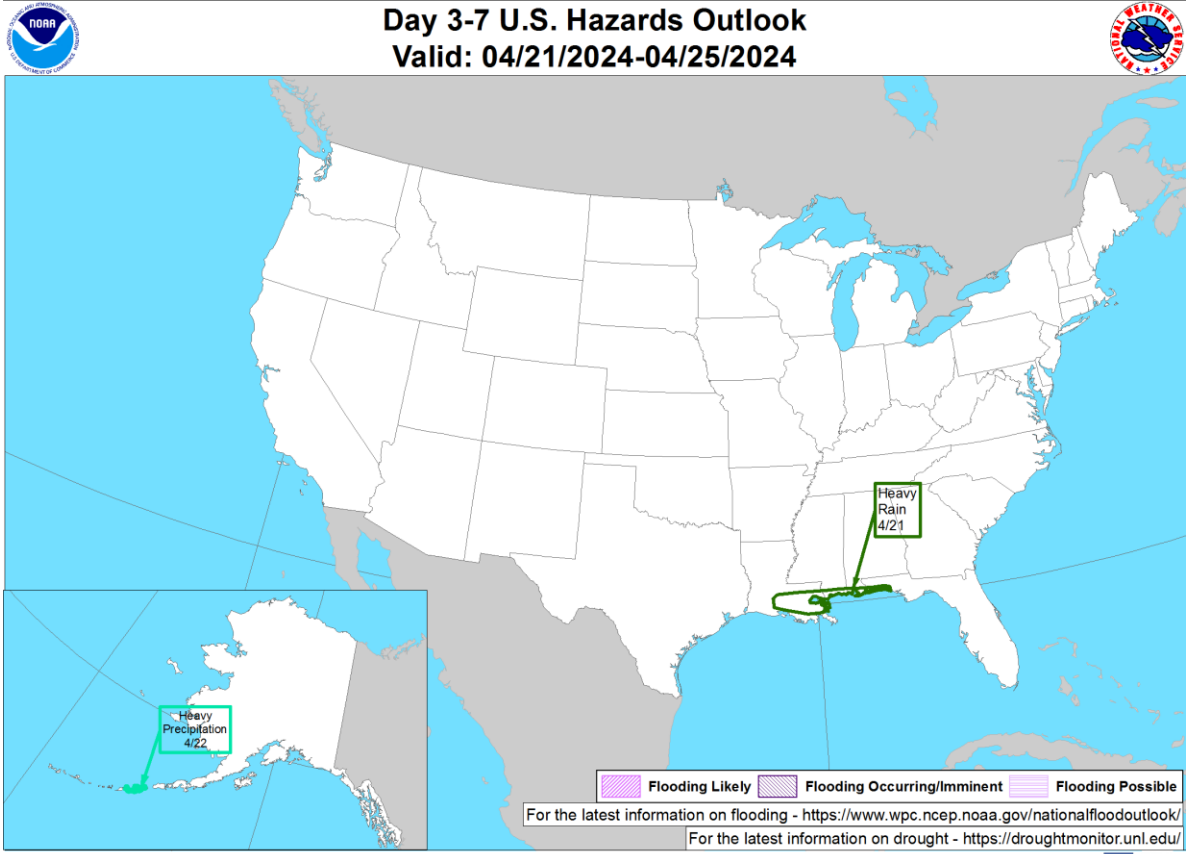
Global Earthquake Activity ($\geq M4.0$): April 12-18



Date (UTC)	Location	Magnitude	Epicenter
4/14/2024	5.82S, 151.10E	6.5	11 km (7 mi) ESE of Kimbe, Papua New Guinea
4/17/2024	33.16N, 132.39E	6.3	17 km (11 mi) WSW of Uwajima, Japan

Source: United States Geological Survey

U.S. Hazard Outlook

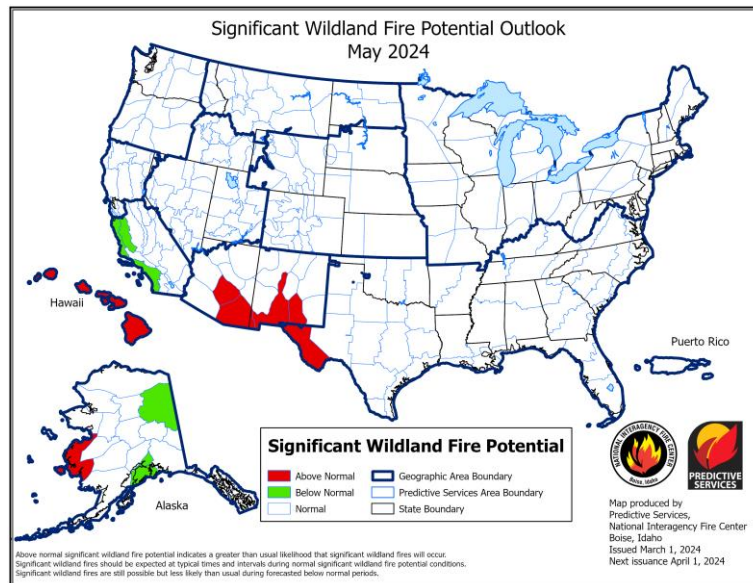
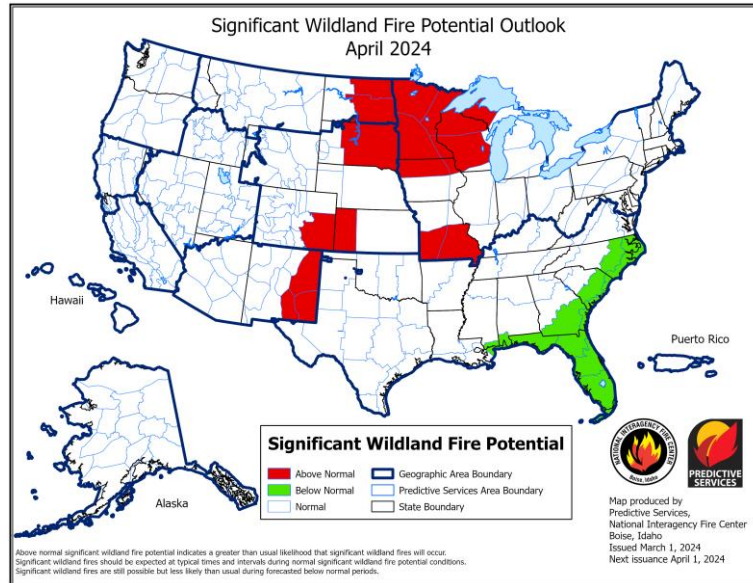


Weather Prediction Center
Made: 04/18/2024 03:31 PM EDT

Follow us:  
www.wpc.ncep.noaa.gov

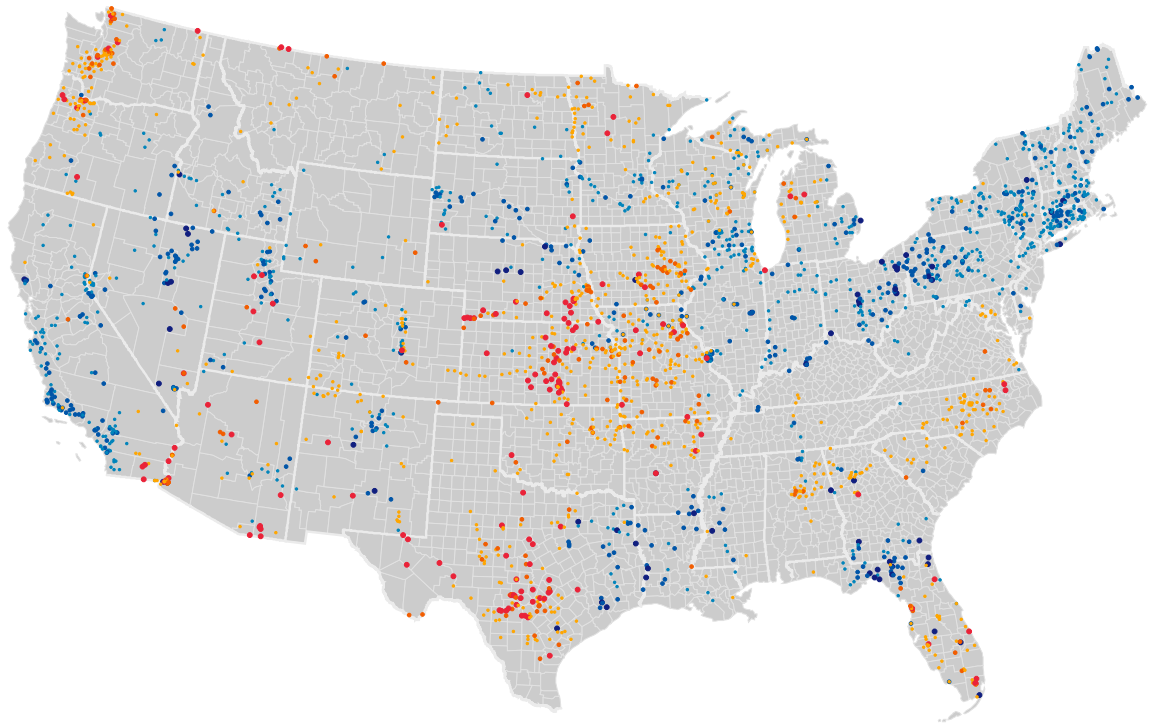
Source: Climate Prediction Center (NOAA)

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



Source: NIFC

U.S. Current Riverine Flood Risk



High Flows (Percentile)

- ≥ 99 / Above floodstage
- 95 - 99
- 90 - 95

Hydrological Drought

- Severe Drought
- Moderate Drought
- 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

Southwestern Asia: Flooding & Severe Convective Storm

UAE's National Emergency Crisis and Disaster Management Authority (NCEMA)

Pakistan's National Disaster Management Authority (NDMA)

Oman's National Committee for Emergency Management

UAE's National Center for Meteorology (NCM)

Chaos in Dubai as UAE records heaviest rainfall in 75 years, *CNN*

Urban flooding emergency declared in Balochistan, *Dawn*

United States: Severe Convective Storm & Flooding

City of South Charleston, West Virginia

NOAA Damage Assessment Toolkit (DAT)

National Weather Service (NWS)

Weather Prediction Center (WPC)

Storm Prediction Center (SPC)

Flooding deluged towns in Pennsylvania and West Virginia, prompting rescues and calls to get to higher ground, *CNN*

'We've done a pretty good job here of breaking records!': So far, rainfall in April is the heaviest since 1901, *Pittsburgh Post-Gazette*

Storm damage reported statewide, 2 tornadoes confirmed in N.C. Thursday, *Spectrum 1 News*

Severe thunderstorms pound Northeast with golf ball-sized hail, gusty winds on Sunday, *Fox Weather*

Tornadoes cause damage in Kansas and Iowa as severe storms hit Midwest, *CBS News*

Tanzania, Kenya, Uganda: Flooding & Landslide

African International Federation of Red Cross (IFRC)

Tanzania: Heavy rains cause flooding nationwide as of mid-April, *Crisis24*

Emergency Response Coordination Centre (ERCC)

Natural Catastrophes: In Brief

The Indonesian National Board for Disaster Management (BNPB)

DR Congo landslide kills at least 12, more than 50 still missing, *Reuters*

European Forest Fire Information System (EFFIS)

U.S. Geological Survey (USGS)

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