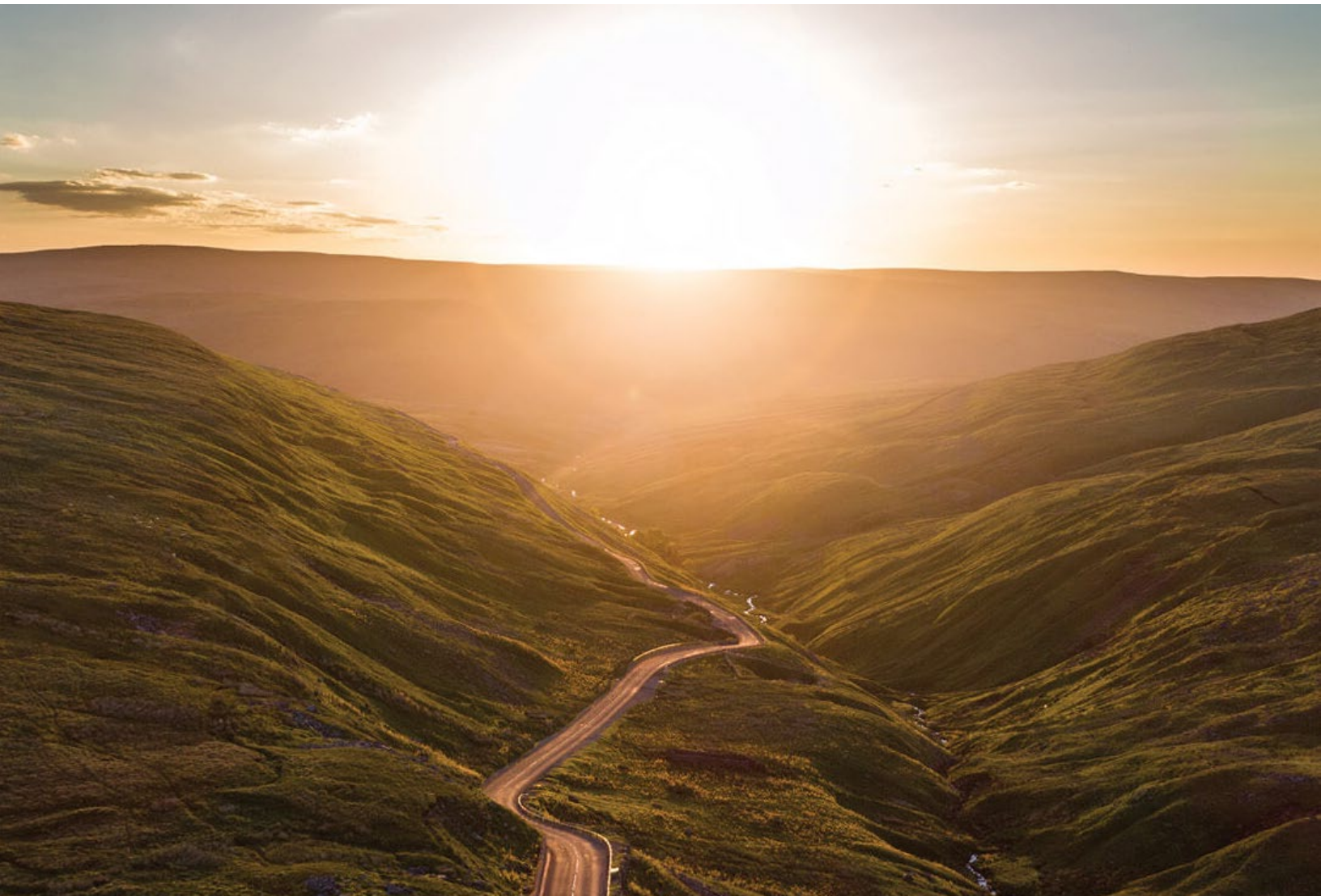
Weekly Cat Report

January 5, 2024



Executive Summary

Event	Affected Region(s)	Fatalities	Economic Loss ($)	Page
Earthquake	Japan	94+	Billions	3
Flooding & Windstorms	Western & Central Europe	3	100s of millions	6
Tropical Storm Alvaro	Madagascar	0	Negligible	9
Winter Weather	Northern Europe	0	Negligible	9
Flooding	South Africa	31	Unknown	9
Flooding	Indonesia	0	Unknown	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

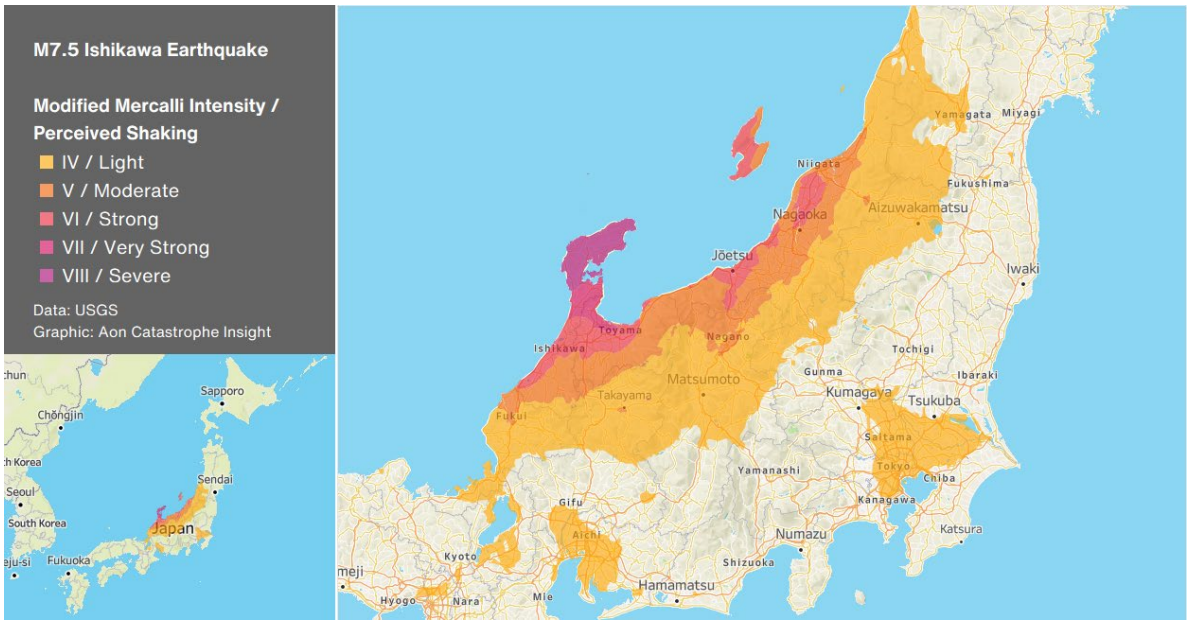
Japan: Earthquake

Overview

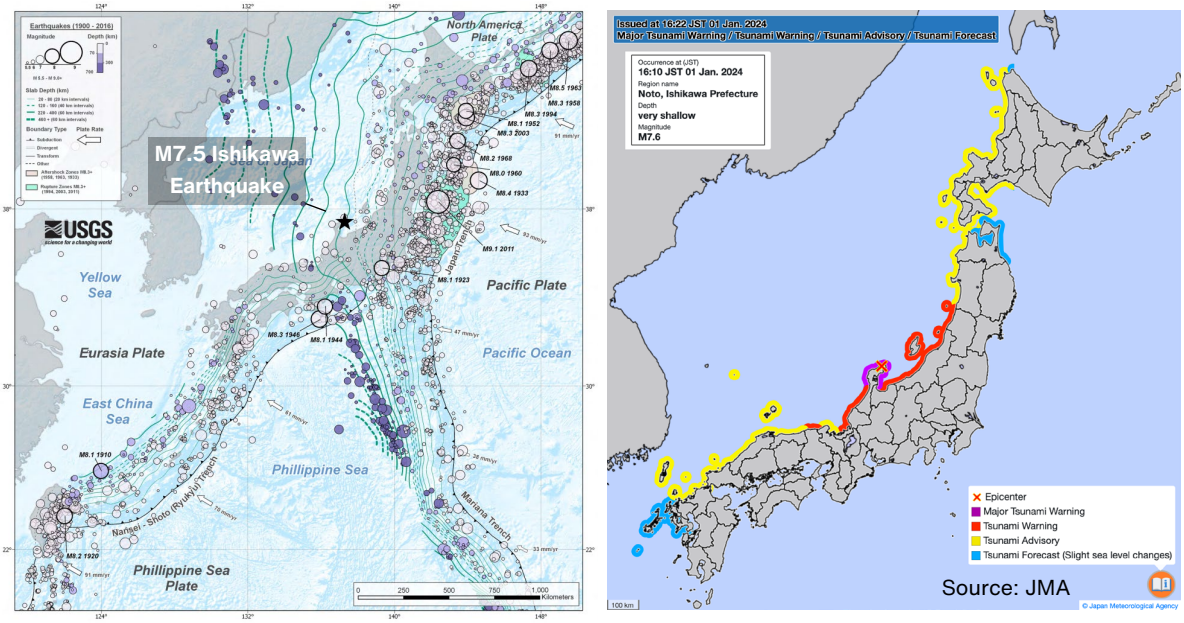
On the first day of 2024, central Japan was struck by a strong 7.5 magnitude earthquake with an epicenter in Ishikawa Prefecture. As of this writing, 94 people were killed and hundreds of others were injured. Tremors caused significant structural damage across the affected region. Damage assessments and relief operations remain ongoing, however, total economic losses are anticipated to reach billions of USD. The earthquake will likely become a notable event for the local insurance sector.

Seismological Recap

At 16:10 local JST time (7:10 AM UTC) on January 1, a very shallow earthquake at a depth of 10 km (6.2 miles) jolted central Japan. An epicenter was located in the northernmost part of the Noto Peninsula, near the town of Suzu. A maximum magnitude of 7.5 and a maximum intensity of 9 on the Modified Mercalli Intensity Scale (MMI) was reported by USGS. The Japan Meteorological Agency (JMA) reported a magnitude of 7.6 and an intensity of 7, the highest level on the Japanese seismic intensity scale, the first occurrence since 2018. The main shock was followed by a series of more than 400 aftershocks, some of which had a magnitude above 5. The largest aftershock of the magnitude of 6.2 (M6.1 by JMA) followed 8 minutes after the main shock.



Seismographs recorded unusually high values in coastal areas of western Japan, including Ishikawa, Niigata, and Toyama prefectures, and some even in Russia's Far East and North Korea. A major tsunami warning of up to 3-5 m (up to 16 ft) has been issued for the nearest regions and a tsunami warning of 1 m (3.3 ft) for the entire west coast. Afterward, 4 m (14 ft) waves were reported to have hit the exposed coastal locations.



The Ishikawa earthquake occurred as a result of shallow reverse faulting in the Earth's crust. Focal mechanism solutions for the earthquake indicate faulting occurred on a moderately dipping reverse fault striking to the southwest or northeast, according to USGS. Japan is a seismically active region, with most of the strongest earthquakes occurring off the east coast, where the Pacific plate subducts beneath Japan. The recent earthquake occurred on the west coast of Japan where crustal deformation created by the broader plate motions is accommodated in shallow faults. Shallow earthquakes cause more damage than intermediate- and deep-focus ones since the energy generated by the shallow events is released closer to the surface and therefore produces stronger shaking relative to earthquakes located deeper within the Earth.

While earthquakes are common in Japan, the west coast region sees lower rates of seismicity. Still, 30 M6.0+ earthquakes have occurred within 250 km (155 miles) of the recent epicenter since 1990. The last stronger M6.2 quake on the Noto Peninsula occurred on May 5, 2023, killed one person and damaged more than 3,000 buildings.

Event Details

Almost 1 million people in the region felt very strong or severe shaking (equivalents of intensity 7 and 8 on the MMI scale). The very limited area felt even violent shaking, equivalent to intensity 9 on MMI. Extensive damage was caused on the Noto Peninsula, particularly in the towns of Wajima, Suzu, and Noto, where 55, 23, and 6 deaths were reported, respectively.

While there are two nuclear plants in the vicinity of earthquake, both were inactive and were not adversely affected, according to the operators. Additionally, more than 36,000 households experienced power outages.

A tsunami of up to 1-4 m (14 ft) that was induced by the quake and caused additional material damage. Tsunami warnings forced evacuations of more than 60,000 people.

As of this writing, at least 94 people died, more than 400 were injured, and dozens of others remain missing. Most of the fatalities were reported across Ishikawa Prefecture, particularly in Wajima.

Earthquake damage in Wajima
Source: Ministry of Defense

Financial Loss

As damage assessments remain ongoing across the affected region, it is still too early to determine the total financial loss from the earthquake. USGS initially put a red alert for economic losses using the PAGER methodology, with a high potential (64 percent likelihood) of losses reaching into the billions of USD. The event will likely generate significant payouts for local insurers.

Western & Central Europe: Flooding & Windstorms

Overview

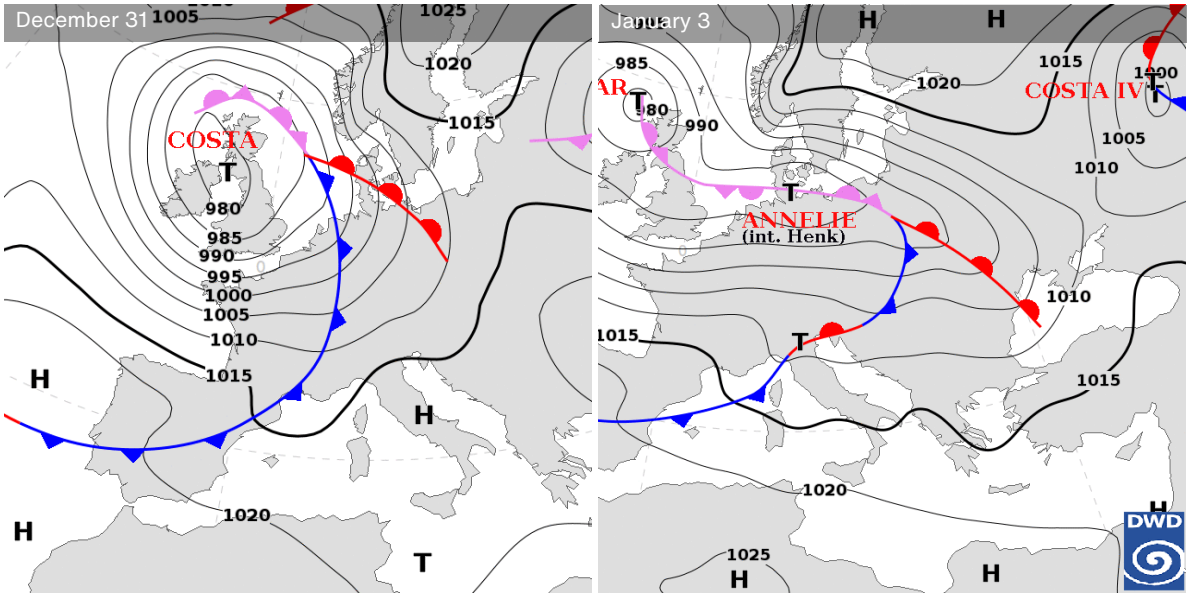
A cyclonic pattern established over Europe, resulting in a prolonged period of mild, rainy, and wintry weather over large portions of Western and Central Europe. Flooding triggered by incessant rainfall affected particularly northern France and Germany. Strong wind gusts associated with successive low-pressure areas caused some additional material damage across the region. Severe weather left at least three people dead and injured several others. Total aggregated losses are expected to be in the hundreds of millions of EUR.

Meteorological Recap

Most of Europe has been affected by a cyclonic weather pattern that continued to bring heavy rainfall and intense winds associated with successive low-pressure systems. On December 31, low **Geraldine**, named by Météo-France on December 30 (alternatively Costa by FU Berlin), started to affect Western Europe. Yellow wind warnings were in effect for much of Ireland, the United Kingdom, and France.

Another low-pressure area, named **Henk** by UK's Met Office or Annelie by FU Berlin, impacted Western and Central Europe between January 2-4 with higher intensity. This low generated strong wind gusts up to 110 kph (70 mph) locally. The maximum wind speed of 151 kph (94 mph) was recorded at The Needles on the Isle of Wight, United Kingdom.

Both lows and associated fronts brought a significant amount of rain into many parts of Western and Central Europe. Several rivers started to overflow their banks, notably in northern France, northern Germany, and Belgium. Increased water levels were reported elsewhere; e.g. in Luxembourg, Czechia, or Slovakia. Rivers responded relatively fast as the region experienced above-average precipitation rates and floods throughout November and December (see Weekly Cat Report from November 17).



Event Details

The **United Kingdom** faced notable disruptions related to storm Henk, with closed roads, canceled public transport, and almost 40,000 customers without power. The storm left one person dead due to a fallen tree.

Widespread impacts particularly due to flooding were reported across northern **France,** which was already impacted significantly in late 2023. Red flood warnings were issued for the departments of Nord and Pas-de-Calais, where almost 500 people were evacuated, and approximately 10,000 people have experienced power outages.

Flooding in Pas-de-Calais Department
Source: Pas-de-Calais Fire Department

In total, about 190 cities and towns have been affected across the region, forcing local authorities to request international help. Local firefighters carried out hundreds of flood-related interventions. Departments of Finistère, Nord, Meurthe-et-Moselle, Ardennes, Meuse, and Moselle were under orange-level flood warnings. One fatality was reported in the Loire-Atlantique Department.

Widespread riverine flooding has occurred across **Germany**. The federal state of Lower Saxony was the most affected, difficult situation also remained in parts of Schleswig-Holstein, Thuringia or northern Bayern. In Lower Saxony, some of the most affected communities were located along the Weser, Aller, Leine, Hunte, Hase, Fuhse, Schunter and Oker rivers. According to the Copernicus Rapid Mapping system, thousands of hectares of land were flooded and almost 25,000 people have been affected. Some insurers started reporting thousands of claims related to the event as of January 5.

Data: Copernicus EMS; Graphics: Aon Catastrophe Insight

Some infrastructural damage from floods was incurred in **Belgium**, along with one wind-related fatality. Red flood warnings were in effect elsewhere, e.g. in Luxembourg, Czechia, and Slovakia, however, floods did not result in significant material damage in those countries.

Financial Loss

Wind-related impacts from Geraldine and Henk were expected to result in economic and insured losses in the lower hundreds of millions of EUR. However, a potentially higher impact was likely due to renewed flooding, notably in Germany, France, and elsewhere. As of this writing, insurers in Germany reported thousands of flood-related claims; the total impact from the event will be determined in the coming weeks, as water levels decrease.

Natural Catastrophes: In Brief

Tropical Storm Alvaro (Madagascar)

Alvaro made landfall over the southwestern-central coast of Madagascar on January 1, then crossed southern-central Madagascar on January 2. Thousands of people were affected, and hundreds of others were forced to leave their homes, particularly in the regions of Haute Matsiatra, Atsimo-Andrefana, and Menabe, according to the National Bureau of Risk and Disaster Management (BNGRC). The storm caused some material damage to several houses, including schools.

Winter Weather (Northern Europe)

Nordic regions, including northern Sweden and Finland, have experienced prolonged period of cold weather. In recent days, several weather stations have seen their lowest January temperatures on record. A severe cold snap and heavy snowfall caused widespread disruption across Scandinavia, closing schools and halting train and ferry services.

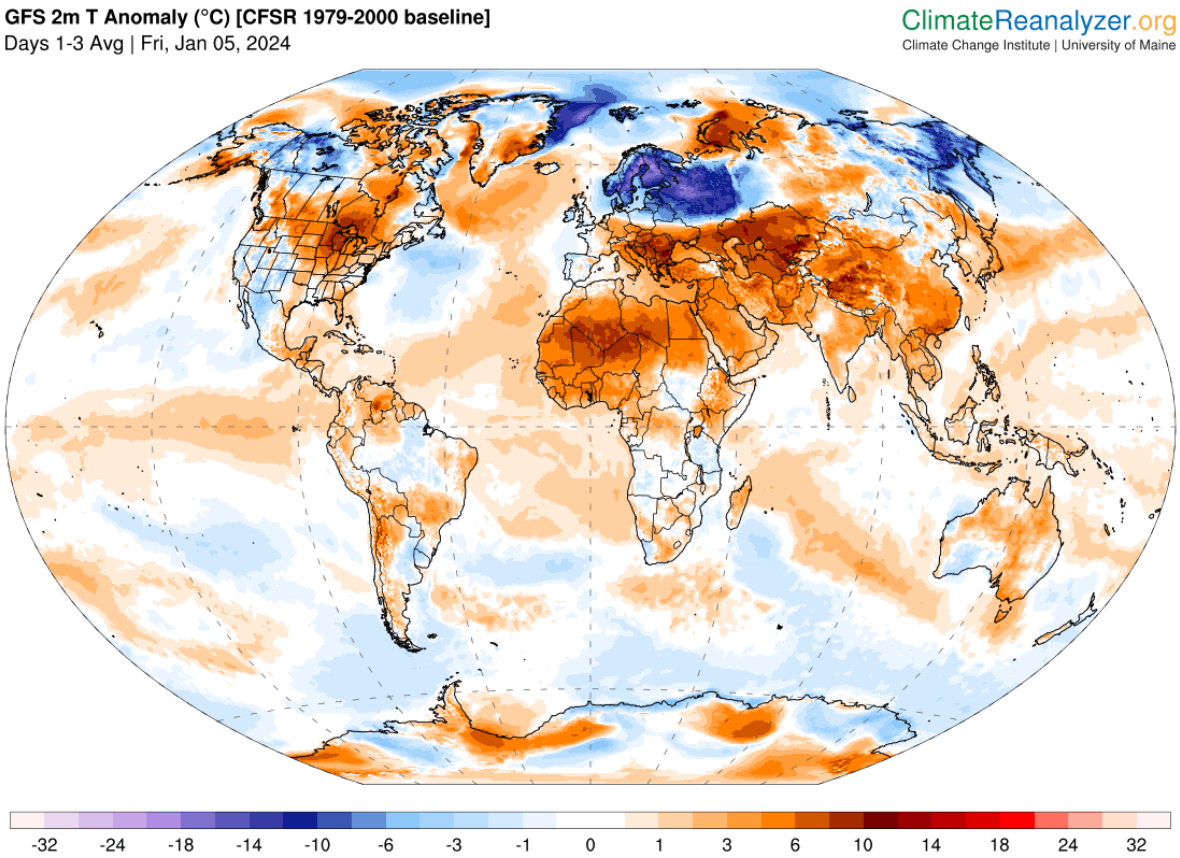
Flooding (South Africa)

South Africa's KwaZulu-Natal Province has experienced heavy rainfall and floods since late December. A number of fatalities rose to 31, and several people are still missing. No fewer than 140 houses have been destroyed or damaged.

Flooding (Indonesia)

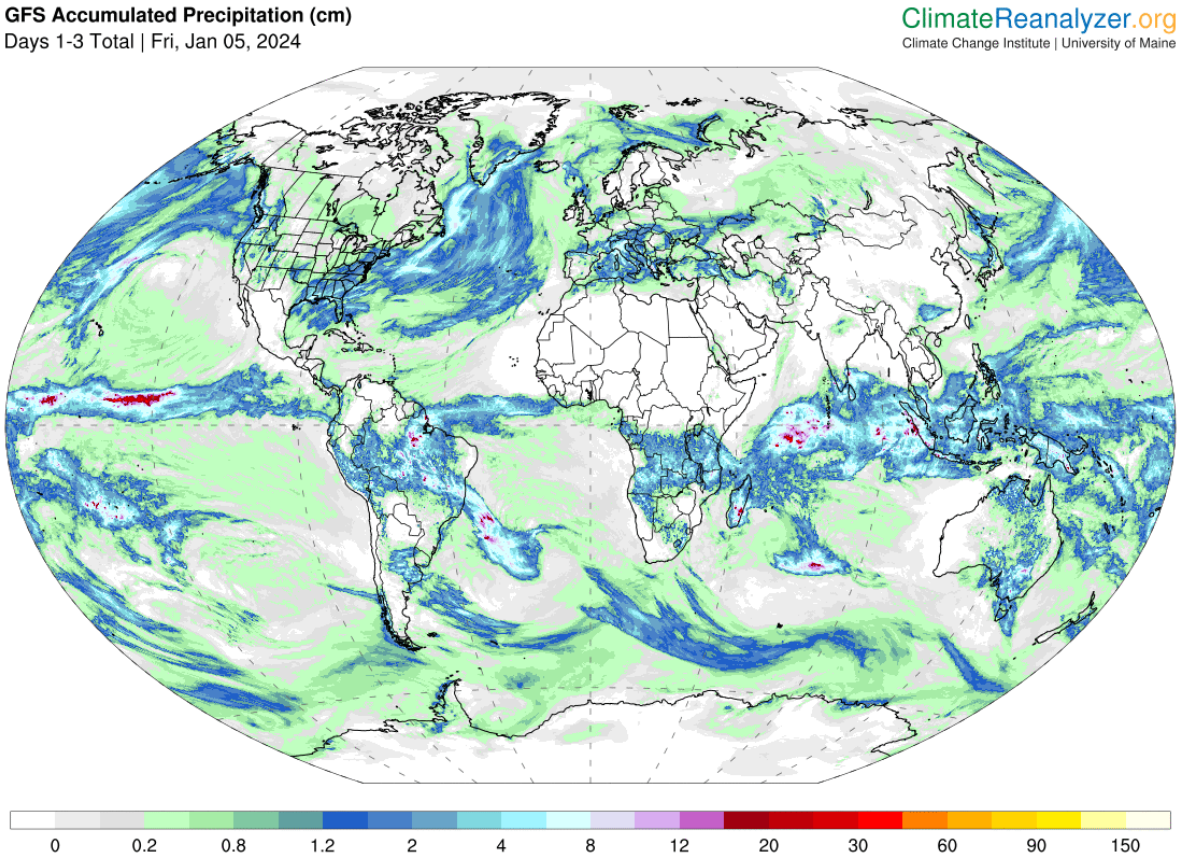
Jambi Province, central Sumatra in Indonesia, has been impacted by heavy rainfall that triggered flooding since December 30. According to the local disaster authorities (BNPB), more than 13,000 people across the region have been affected. Floods inundated almost 3,600 houses from whom no fever than 100 suffered various levels of damage.

Global Temperature Anomaly Forecast



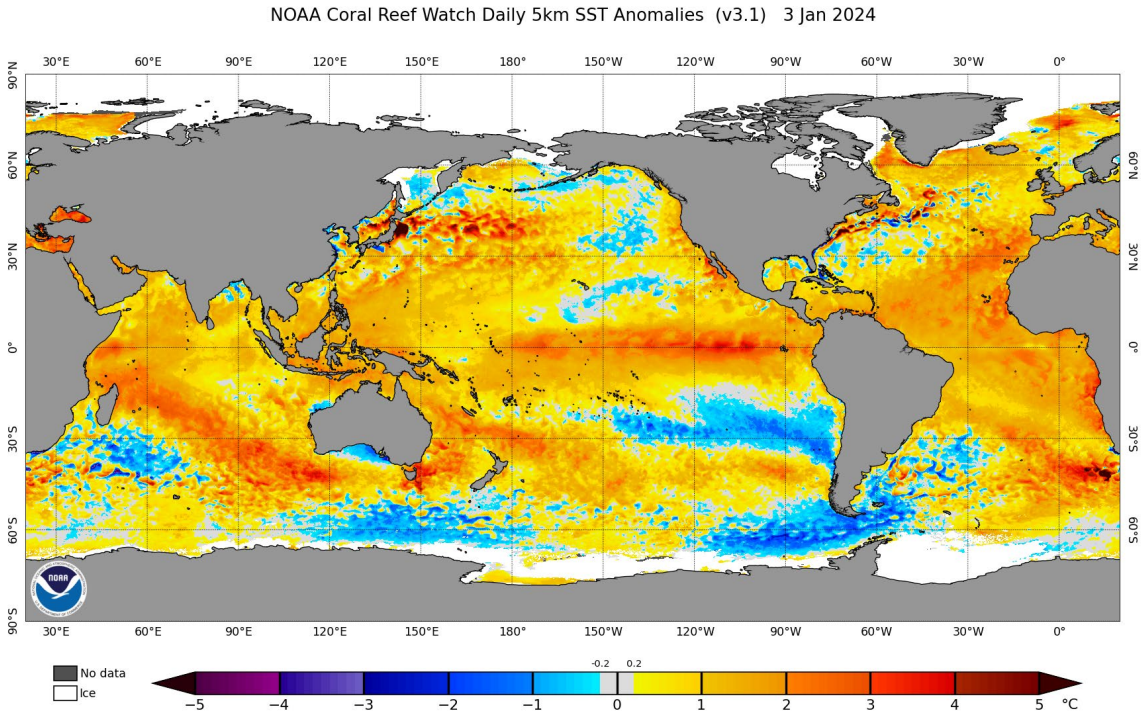
Source: Climate Reanalyzer, Climate Change Institute, University of Maine, USA

Global Precipitation Forecast

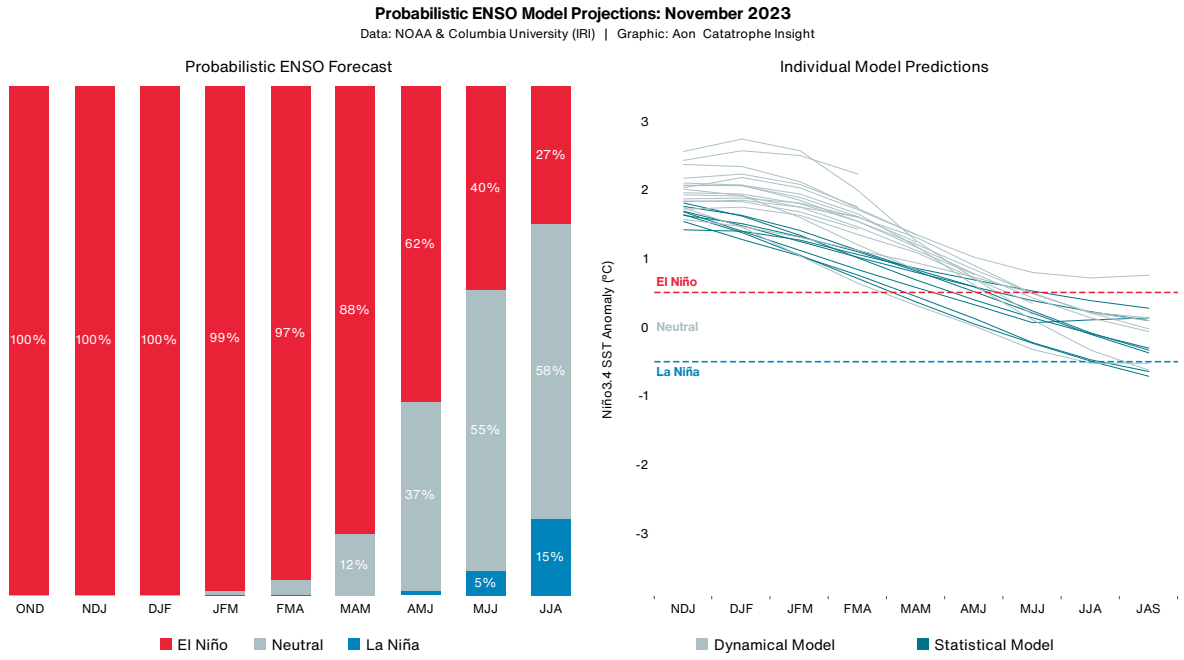


Source: Climate Reanalyzer, Climate Change Institute, University of Maine, USA

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



El Niño-Southern Oscillation (ENSO)



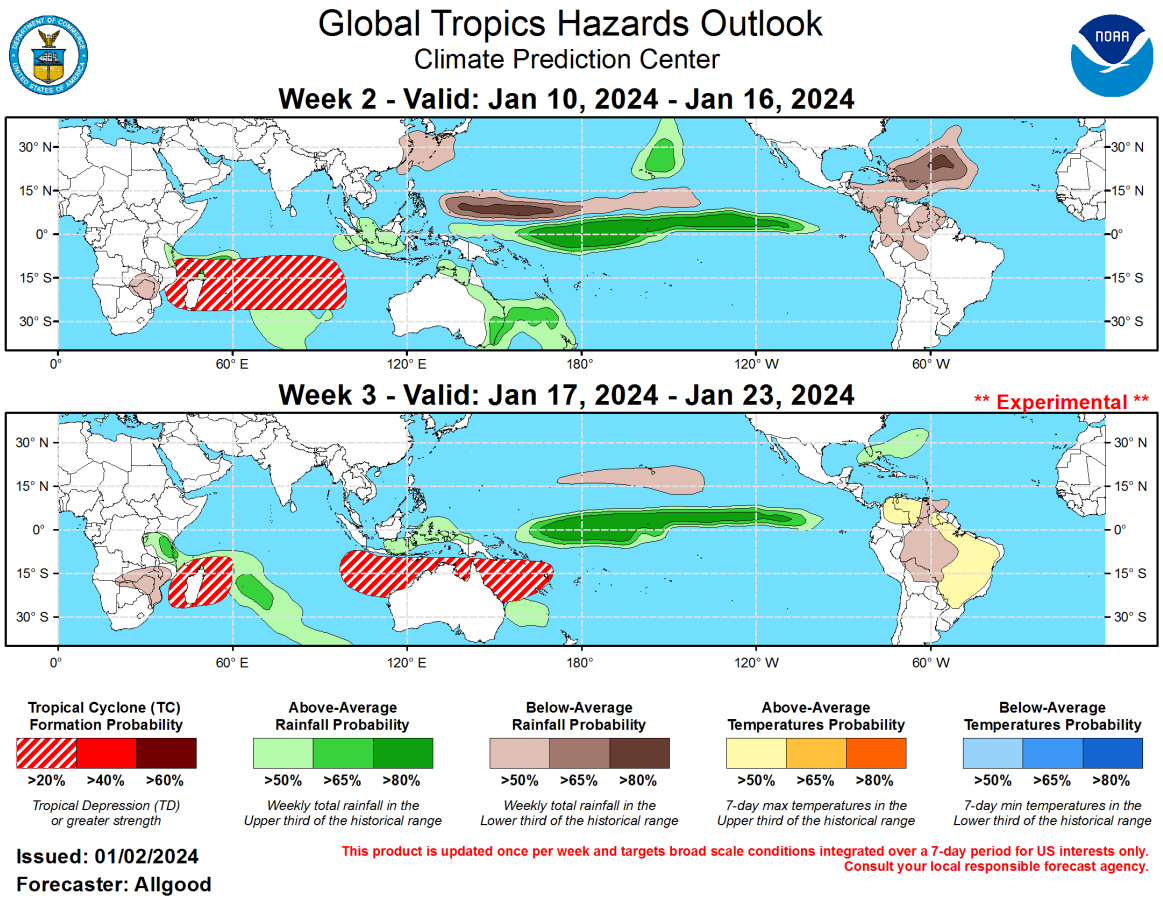
El Niño: *Warm phase of an ENSO cycle. Sea surface temperatures of +0.5°C occur across the east-central equatorial Pacific.*

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.*

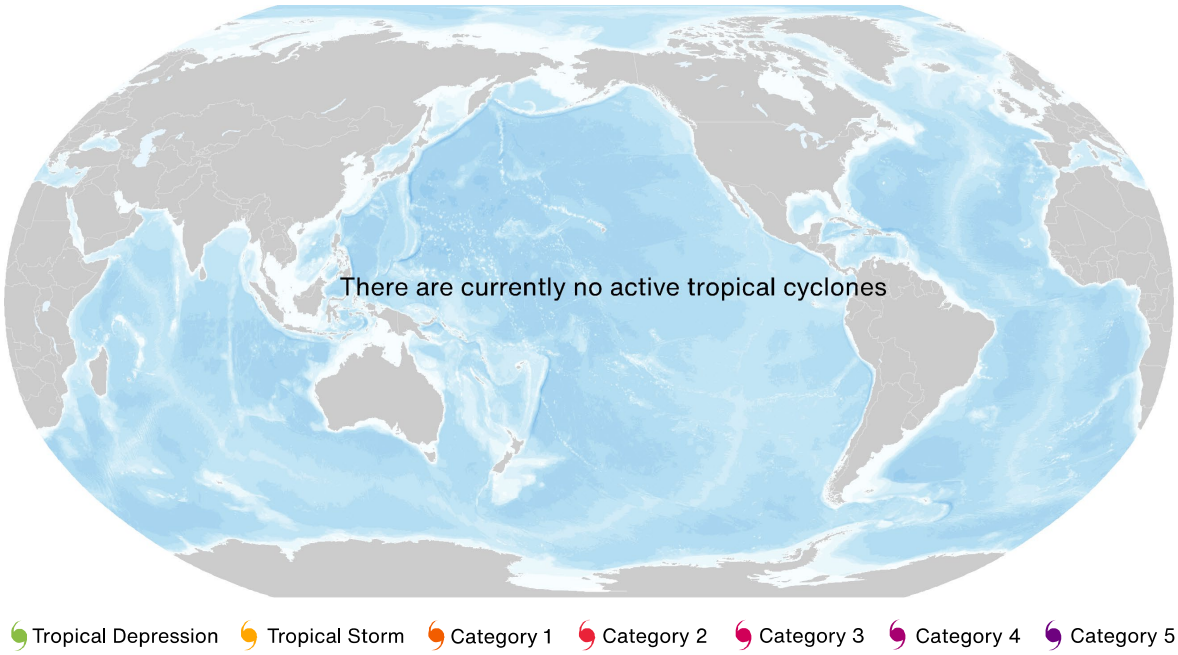
El Niño (La Niña) is a phenomenon in the equatorial Pacific Ocean characterized by a five consecutive 3-month running mean of sea surface temperature (SST) anomalies in the Niño 3.4 region that is above the threshold of +0.5°C (-0.5°C). This is known as the Oceanic Niño Index (ONI).

Global Tropics Outlook



Source: Climate Prediction Center (NOAA)

Current Tropical Cyclone Activity

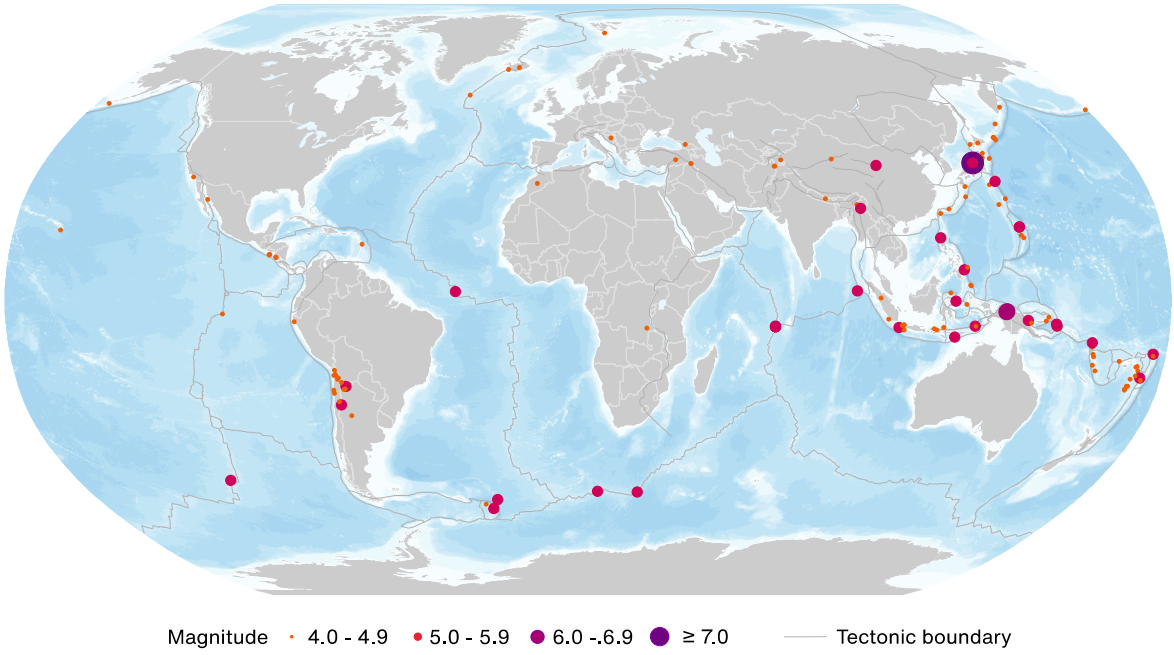


Name	Location	Winds	Center

* 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)

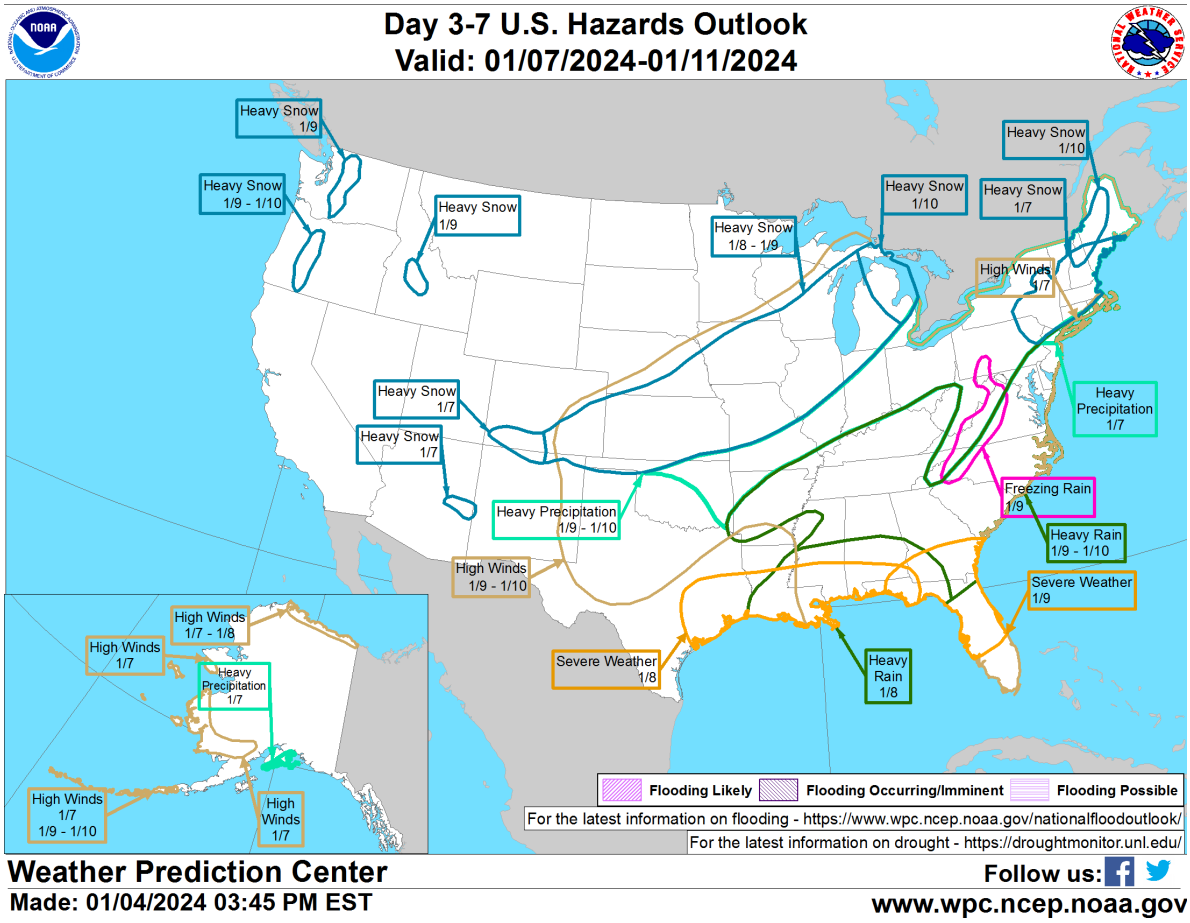
Global Earthquake Activity (≥M4.0): Dec 29-Jan 4



Date (UTC)	Location	Mag	Epicenter
12/30/2023	3.21S, 139.29E	6.5	16 km (10 mi) WSW of Abepura, Indonesia
12/30/2023	2.96S, 139.35E	6.3	14 km (9 mi) WSW of Abepura, Indonesia
1/1/2024	37.50N, 137.24E	7.5	42 km (26 mi) NE of Anamizu, Japan
1/1/2024	37.20N, 136.87E	6.2	4 km (2 mi) SSW of Anamizu, Japan

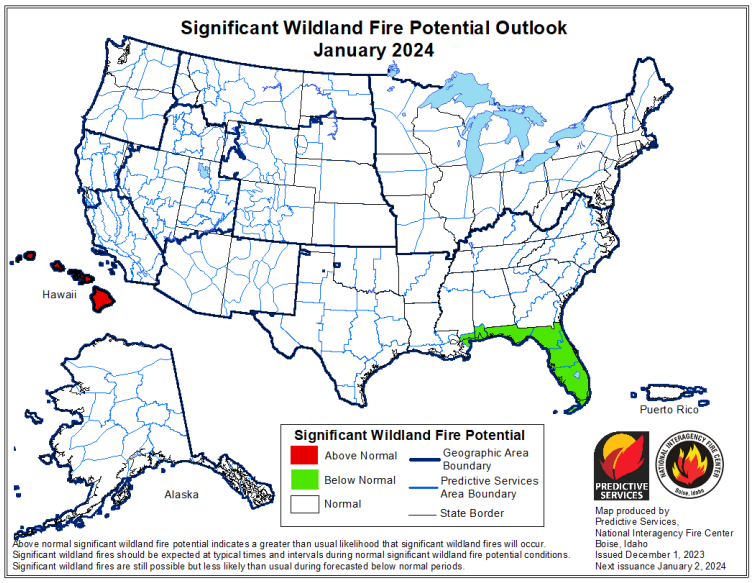
Source: United States Geological Survey

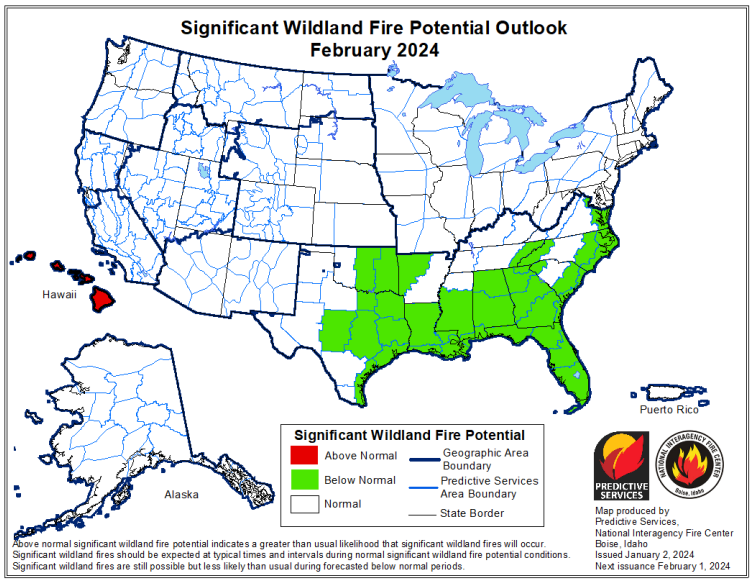
U.S. Hazard Outlook



Source: Climate Prediction Center (NOAA)

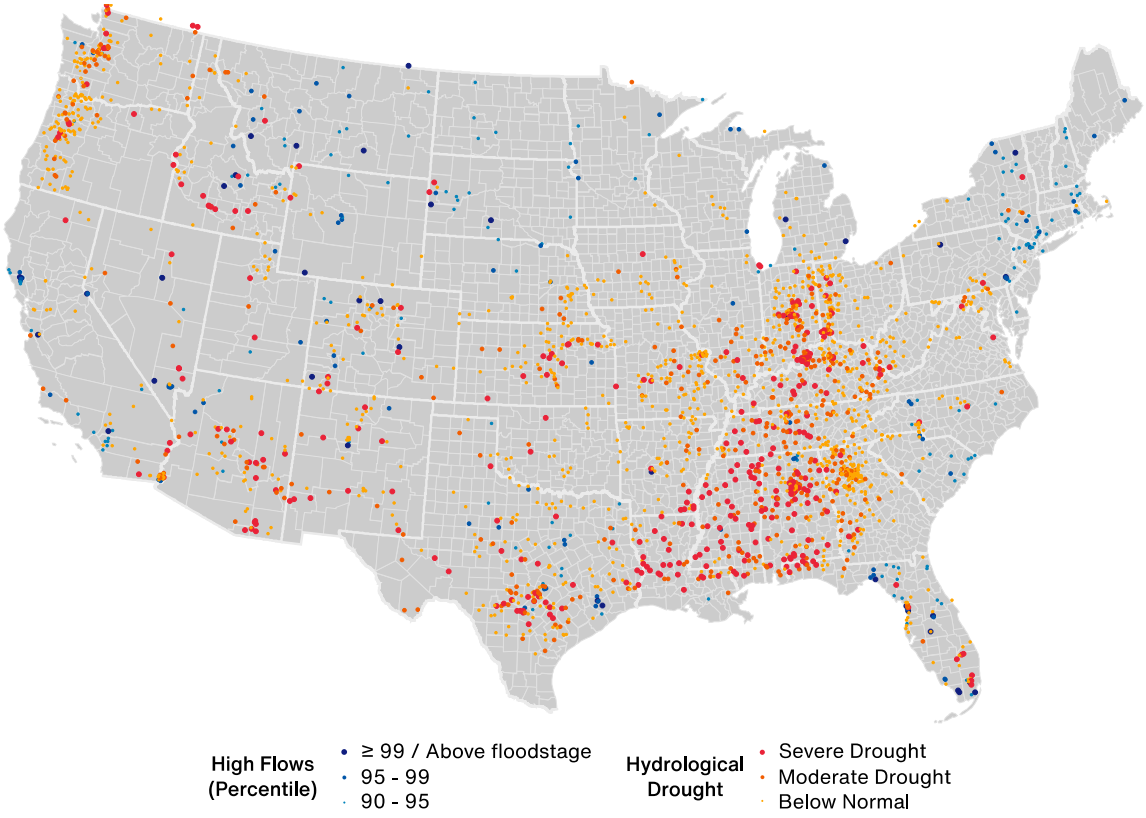
U.S. Wildfire: Significant Fire Risk Outlook & Activity





Source: NIFC

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

Japan: Earthquake

USGS
JMA

Western & Central Europe: Flooding & Windstorms

DWD
Copernicus EMS Rapid Mapping

Natural Catastrophes: In Brief

The National Bureau of Risk and Disaster Management (BNGRC)
Indonesian BNPB

Contacts

Michal Lörinc
Head of Catastrophe Insight
michal.lorinc@aon.com

Ondřej Hotový
Catastrophe Analyst
ondrej.hotovy@aon.com

Antonio Elizondo
Senior Scientist
antonio.elizondo@aon.com

Tomáš Čejka
Catastrophe Analyst
tomas.cejka@aon.com

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