

# **Weekly Cat Report**

January 14, 2022



## Executive Summary



Event	Affected Region(s)	Fatalities	Economic Loss (USD)		Page
Earthquake		China	0	100s of millions	3
Winter Weather		Pakistan	23	10s of millions	5
Severe Weather		Australia	2	10s of millions	5
Flooding		South Africa	10	Millions	5
Severe Weather		United States	0	Millions	5
Flooding		Indonesia	10	Millions	6
Earthquake		Indonesia	0	Negligible	6
Flooding		Brazil	32+	400+ million	6
Earthquake		Cyprus	0	Negligible	6
Tropical Cyclone		Fiji	1	Millions	7
Flooding		France	1	Millions	7
Heatwave		Argentina	N/A	N/A	7

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.

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>

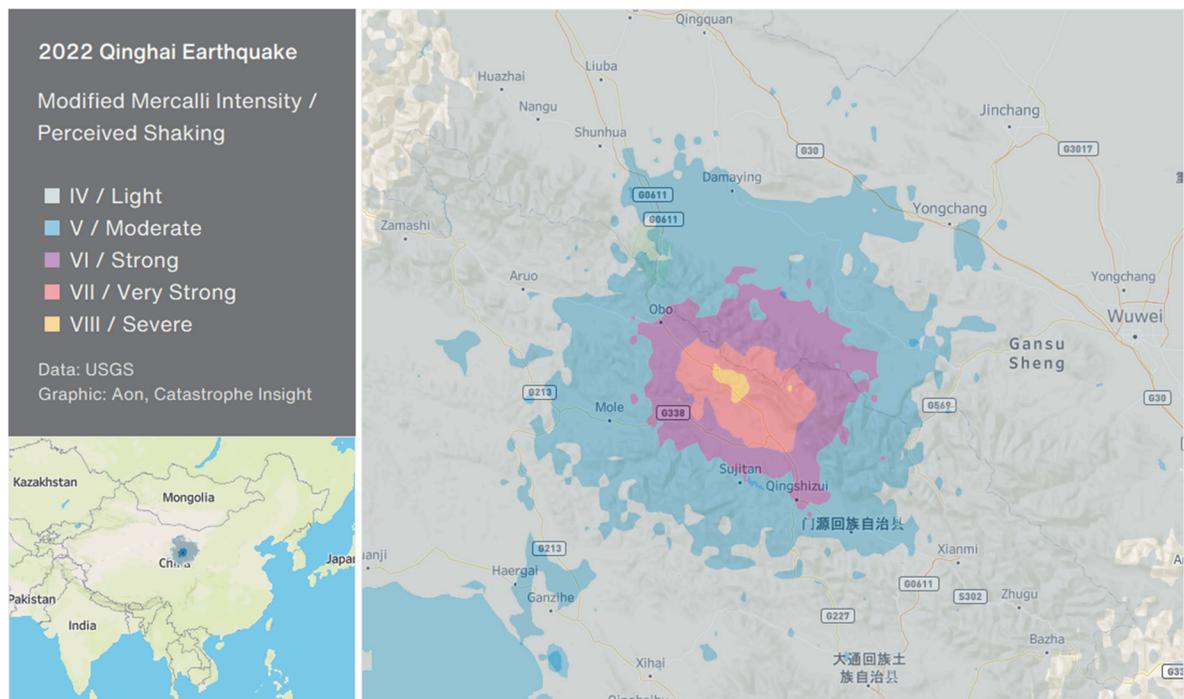
## China: Earthquake

### Overview

A magnitude-6.6 earthquake struck China's Qinghai Province at a depth of 13 kilometers (8 miles) in the early hours of January 8. Tremors could be felt as far out in Gansu province and Ningxia autonomous region. Nine people were injured, and more than 8,000 homes were damaged or destroyed based on preliminary reports from Haibei, Qinghai, and Zhangye, Gansu. A portion of the Great Wall of China in Gansu collapsed. Economic damage was expected to be in the hundreds of millions (USD).

### Seismological Recap

A strong magnitude-6.6 earthquake struck the Menyuan Hui Autonomous County, northern Qinghai province, at 1:45 AM (local time) on January 8. The epicenter was approximately 140 kilometers (87 miles) from the provincial capital Xining, and only 13 kilometers (8 miles) above the hypocenter. Based on moment tensor analysis from USGS, the earthquake occurred as vertical fractures moved almost horizontally to each other in what is known as a strike-slip fault. While strong shaking (intensity VI or higher on the Modified Mercalli Intensity scale) was confined to the sparsely populated mountainous regions, light to moderate shaking was felt as far away as Yinchuan City in Ningxia. The earthquake damaged several tunnels of the Lanzhou-Urumqi high speed rail line, including the Menyuan stop, which experienced strong shaking. Subsequent magnitude-5.1 and magnitude-4.5 aftershocks were observed around the same locality within subsequent hours. The Qinghai Provincial government activated a Level II emergency response (the second highest in China's four tier earthquake response system).



## Event Details

Close to 5,000 firefighters and at least 1,100 rescue vehicles were deployed during the emergency response. Nine injuries were confirmed in **Qinghai**. The tremor damaged more than 4,000 houses in Haibei prefecture, of which 217 were destroyed. The Qinghai Provincial Emergency Management Department reported damage to sections of 15 kilometers (9.3 miles) of water supply pipelines, 11.3 kilometers (7 miles) of roadways, 4 kilometers (2.5 miles) of heating pipes, 3 bridges, and other infrastructure.



**Long belt of surface rupture near the earthquake origin**

Source: Qinghai Earthquake Agency

While no casualties were reported in **Gansu**, at least 4,830 houses suffered from fractural damages in Zhangye city. At least 14 water supply pipelines, 898 roads and 4 bridges were impaired. A small portion of the Great Wall of China collapsed in Shandan County. The tremor caused cracks in over 350 agricultural properties in Jinchang city.

In **Ningxia**, shaking could be felt in Yinchuan, the provincial capital, 400 kilometers (250 miles) from the epicenter. Many residents were awakened by the night-time tremors and posted on social media. The Ningxia Earthquake Agency dispatched a 10-men team to render assistance.

## Financial Loss

The United States Geological Survey (USGS) estimated the highest probability of economic losses to be in the hundreds of millions (USD) based on the PAGER methodology. In Zhangye alone, authorities estimated the losses to be in the billions (CNY). Earthquake of such magnitude in China have historically resulted in economic losses minimally reaching into the hundreds of millions (USD).

## Natural Catastrophes: In Brief

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### **Winter Weather (Pakistan)**

A blizzard hit a resort town of Murree in Pakistan on the night of January 7. The snowstorm fell trees and blocked roads, preventing thousands of vehicles to exit the crowded tourist destination. At least 23 people froze while trapped in their cars, including 11 children. The thick snow of 4 feet (1.4 meters), fallen trees and congested vehicles made rescue work difficult. Economic losses were not determined.

### **Severe Weather / TC Tiffany / Heatwave (Australia)**

Major flooding hit eastern Queensland, Australia after prolonged intense rain on January 8 brought by the remnant of Tropical Cyclone Seth. Australia's Bureau of Meteorology (BoM) reported that some regions recorded more than 25.6 inches (650 millimeters) of rain in 24 hours. Two deaths related to flooding had been reported. Hundreds of people were forced to leave their homes. Total economic losses were expected to be in the tens of millions (USD). Severe weather occurred further north in Queensland during the following days after Tropical Cyclone Tiffany strengthened into a hurricane and made landfall in a sparsely populated area on January 10. Strong winds and torrential rain were reported across the Cape York Peninsula, where several people were injured. Tiffany moved west afterwards, towards the Northern Territory, where daily rainfall up to 6 inches (150 millimeters) led to flooding in low-lying areas. Damage from Tiffany was limited. An extreme heat wave gripped the state of Western Australia since January 11. The Town of Onslow reached a high temperature of 50.7°C (123°F) on January 13, matching the hottest day on Australian record which was last reached in Southern Australia in 1960.

### **Flooding (South Africa)**

Heavy rains caused flash flooding in parts of Eastern Cape Province of South Africa on January 8-9. Hundreds of people were displaced, and at least 10 lost their lives. Several roads were inundated, while dozens of houses were severely damaged. As of this writing, the government and local authorities were still quantifying the total losses, which were minimally anticipated to reach into the millions (USD). Additional losses occurred in North West and KwaZulu-Natal Provinces.

### **Severe Weather (United States)**

Severe weather across the Southern Plains and Southeast on January 8-9 resulted from interactions between warm southerly flow out of the Gulf of Mexico and an approaching cold frontal boundary. Hazards included strong winds, large hail, and isolated tornadoes. In Louisiana, a nearly half-mile (0.8 kilometer) wide EF2 tornado impacted rural Sabine Parish on January 9. The tornado left six people injured, and dozens of homes were damaged or destroyed. Survey teams indicated the tornado snapped or uprooted at least 1,000 trees. Further east, hailstones reaching 2.5 inches (6.4 centimeters) were reported in Monroe County, Alabama. Total economic losses were expected to be in the millions (USD).

## **Flooding (Indonesia)**

Scattered heavy rainfall in the Java Sea caused flooding on multiple islands in Indonesia. Papua and East Java were the worst hit with eight and two fatalities reported. Papua, which started to receive heavy rain the night of January 6, had 1,300 houses submerged in water 2 to 3 meters (6 to 10 feet) deep. Another 440 houses were inundated in East Java. One injury and 747 impacted houses were reported in West Java. Kalimantan and Sulawesi saw a combined total of at least 300 flooded homes. Economic losses from the flooding were estimated to be negligible.

## **Earthquake (Indonesia)**

A magnitude-5.6 earthquake rocked North Maluku, Indonesia on January 10 at a depth of 10 kilometers (6 miles). Two people were injured and nearly 60 houses were damaged from the tremor. Although the Regional Disaster Management Agency (BPDB) of North Halmahera Regency issued a damage report, economic losses from this earthquake were expected to be negligible based on the PAGER methodology from USGS.

## **Flooding (Brazil)**

Continued heavy rain, associated with La Niña, impacted areas in Brazil in the beginning of January – particularly the state of Minas Gerais. These rains followed recent flooding episodes which hit central and northern Brazil in November and December (reported in previous Weekly Cat Reports). According to state Civil Protection authorities, 145 municipalities declared an emergency due to floods, landslides, and damage to infrastructure, while no fewer than 17,000 people were displaced. On January 8, a cliff wall collapsed onto tourist boats in Furnas Lake (state of Minas Gerais), leaving 10 people dead, 3 missing and 32 injured. The incessant rains may have contributed to the incident, however as of this writing Civil Protection did not include these deaths as investigations were ongoing. The Emergency Response Coordination Centre (ERCC) reported that at least 32 people died, 520 people were injured, and more than 119,000 people displaced due to heavy rains since November across Bahia and Minas Gerais. Brazilian authorities continue to investigate additional deaths as the total death toll is likely to increase. Total economic losses since November were expected to exceed USD400 million.

## **Earthquake (Cyprus)**

A strong magnitude-6.6 earthquake struck Cyprus on January 11 at a depth of 25 kilometers (15 miles), 132 kilometers (82 miles) west of Nicosia. The earthquake was strongly felt throughout Cyprus, despite its epicenter in the Eastern Mediterranean. The probability that this tremor caused severe damages remained low according to the preliminary PAGER assessment presented by USGS, which estimated nearly 75,000 people were exposed to moderate shaking. As of this writing, no fatalities or injuries had reported.

## **Cyclone Cody (Fiji)**

Heavy rain and severe weather related to the passage of Tropical Cyclone Cody caused flooding in Fiji on January 8-11. At least 350 millimeters (14 inches) of rain in 24 hours have been recorded in some areas. Fiji's National Disaster Management Bureau (NDMO) reported that 4,096 people were displaced across 156 evacuation centers. One fatality was reported in Viti Levu, Fiji's largest island. Economic losses were anticipated to be negligible.

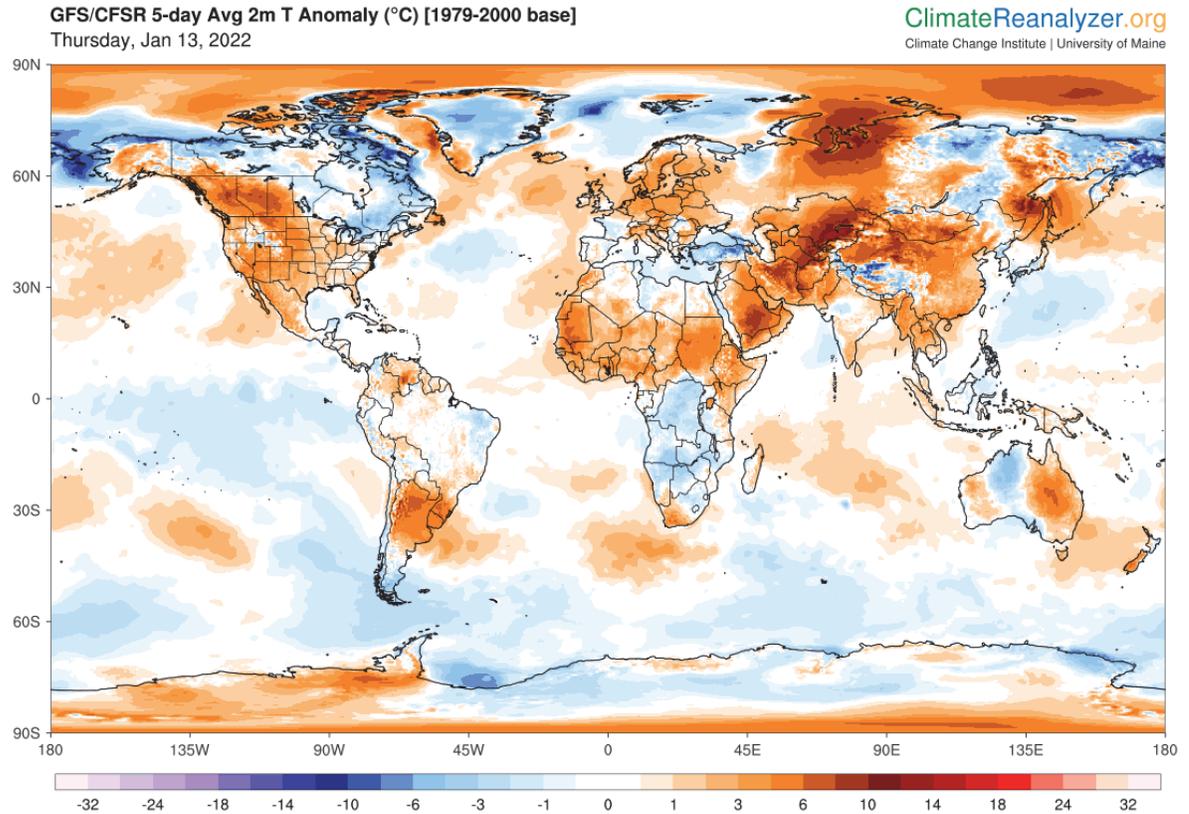
## **Flooding (France)**

Prolonged rainfall resulted in flooding in southwestern France on January 10-11. Areas of Toulouse and Haute-Garonne Department saw rainfall accumulations approach 200 millimeters (8 inches), and near-record river levels. Hundreds of people were evacuated from inundated houses and schools, and several roads have been closed. One fatality was reported near Toulouse. Authorities warned of an increased avalanche risk in montane areas in response to locally heavy snowfall. Total economic losses were expected to be in the millions (USD).

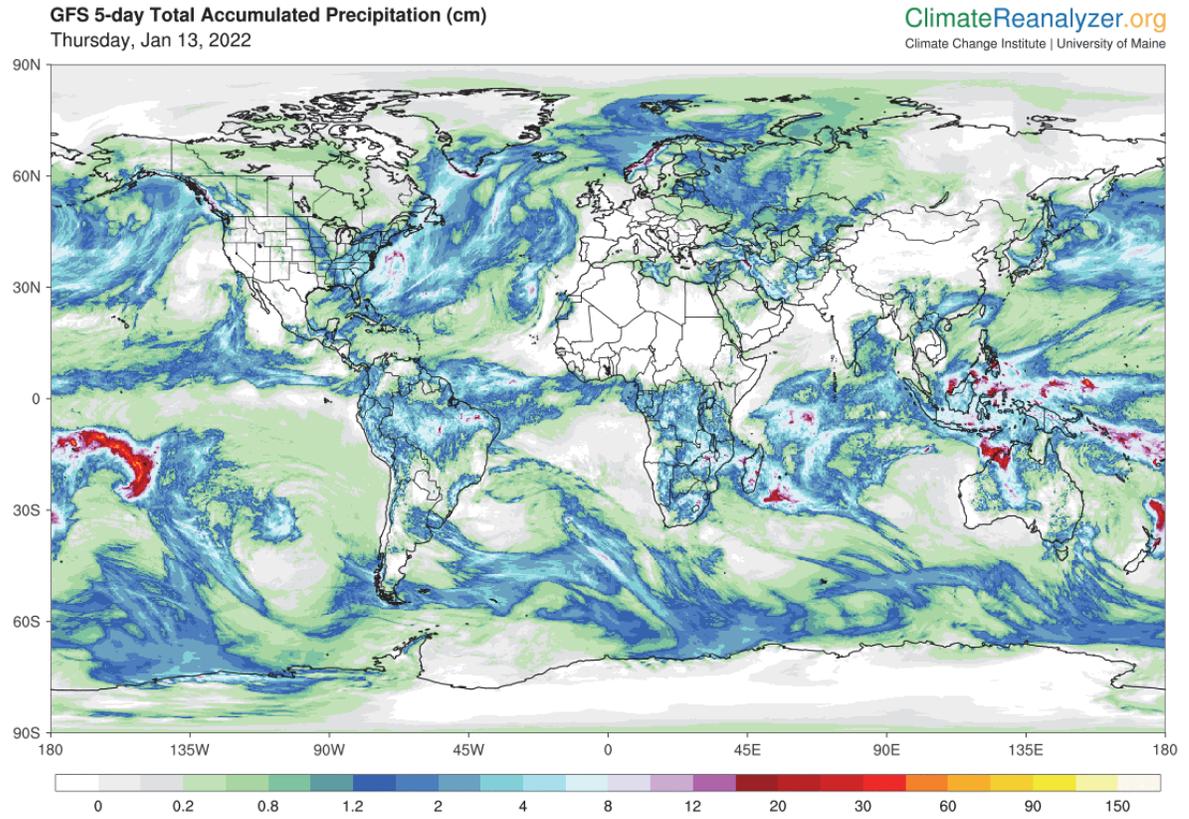
## **Heatwave (Argentina)**

Amid ongoing drought, a significant heatwave which affected the central and northern Argentinian provinces enhanced stress on vegetation and agriculture during the past week. On January 11, a maximum temperature of 41.1°C (106°F) was reported in the capital of Buenos Aires – the second highest temperature on record since 1906. Overwhelming demand on the power grid resulted in no fewer than 740,000 power outages across the greater Buenos Aires region. The power outages also temporarily impacted regional water filtration systems.

## Global Temperature Anomaly Forecast

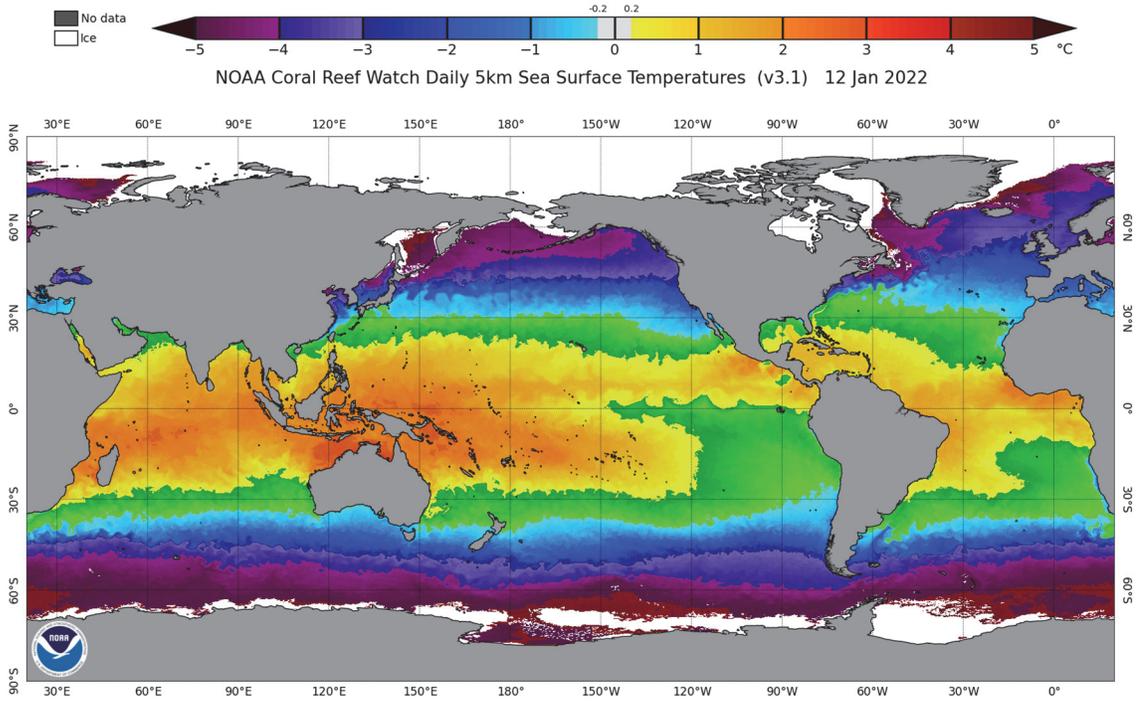
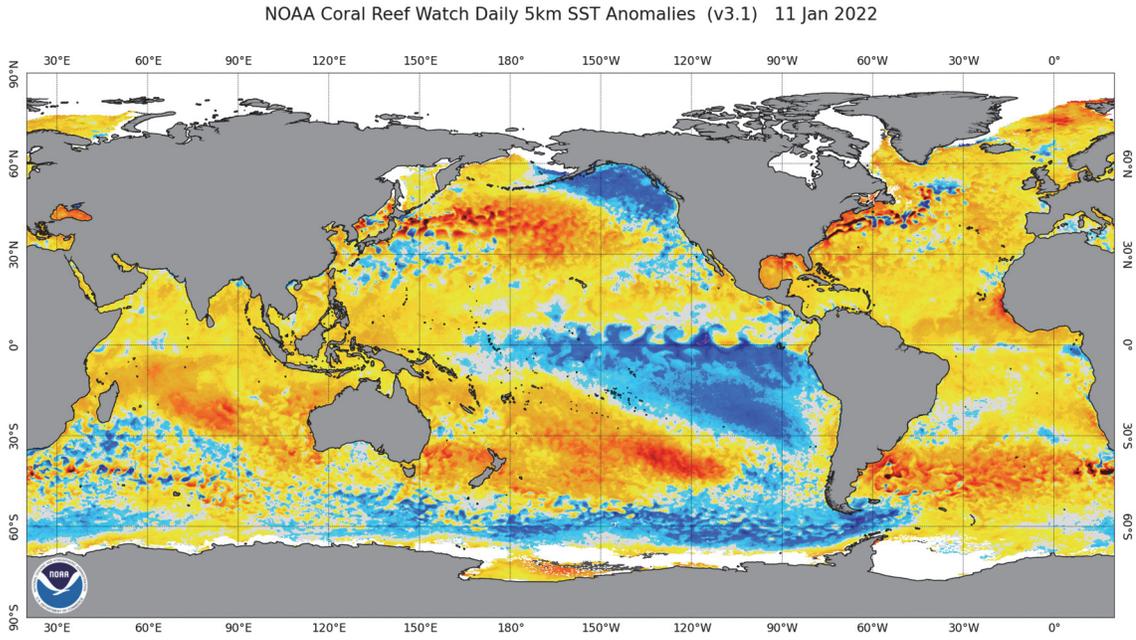


## Global Precipitation Anomaly Forecast



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

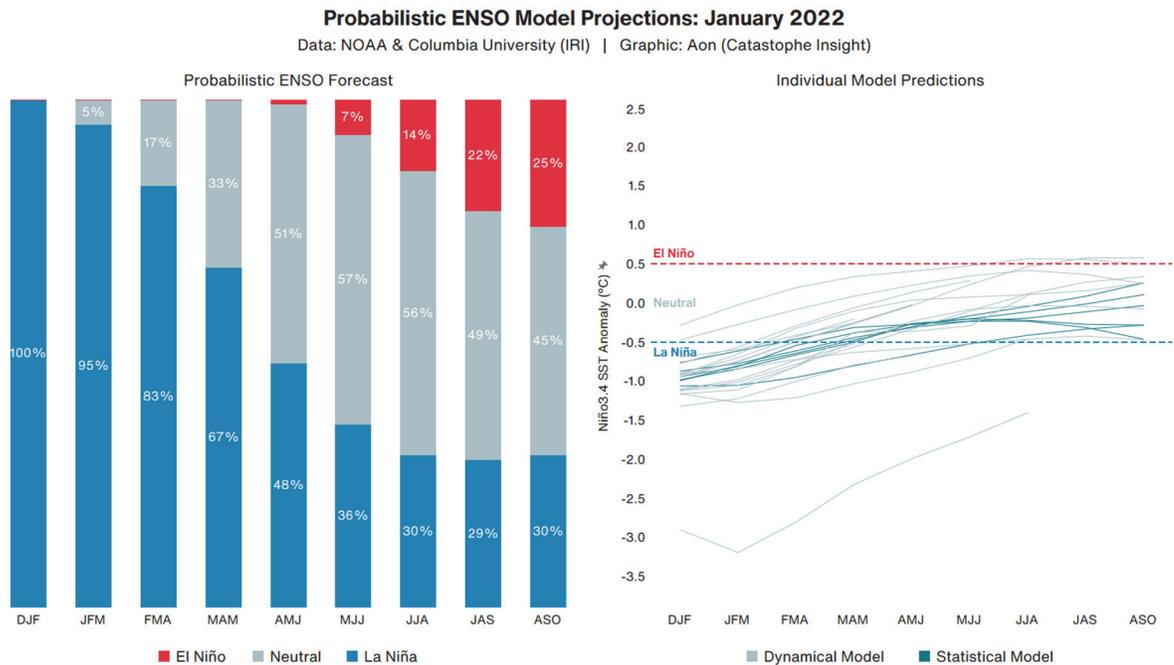
## Weekly Sea Surface Temperature (SST) Maps (°C)



# El Niño-Southern Oscillation (ENSO)

## Overview

La Niña conditions have returned in the Central and Eastern Pacific Ocean, and NOAA has issued a “La Niña Advisory”. NOAA cites a 95 percent chance of La Niña conditions persisting through the Northern Hemisphere winter months, and a 60 percent chance of lasting through the spring (April to June). The agency also anticipates the possibility of a moderate strength La Niña at its peak before transitioning back to ENSO-neutral conditions by the Northern Hemisphere Spring of 2022.



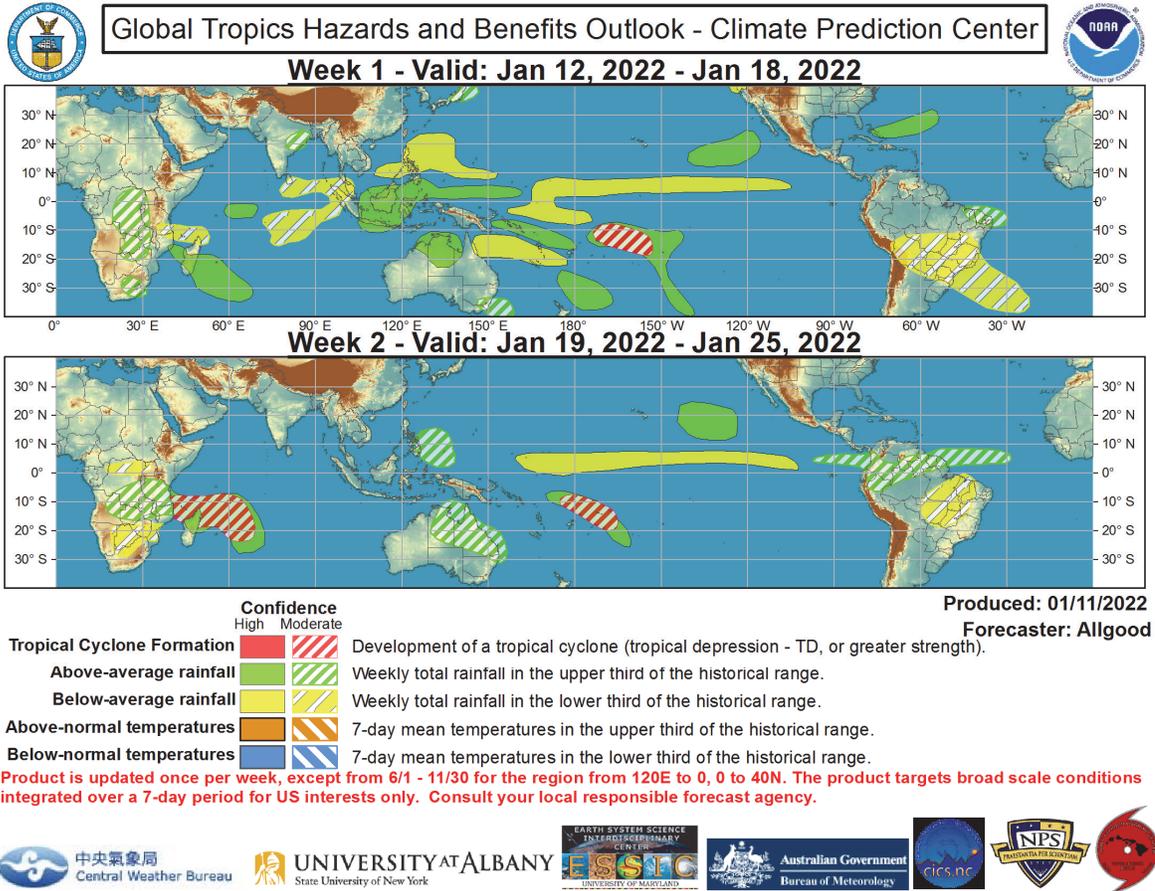
**El Niño:** Warm phase of an ENSO cycle. Sea surface temperatures of +0.5°C occur across the east-central equatorial Pacific.

**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.

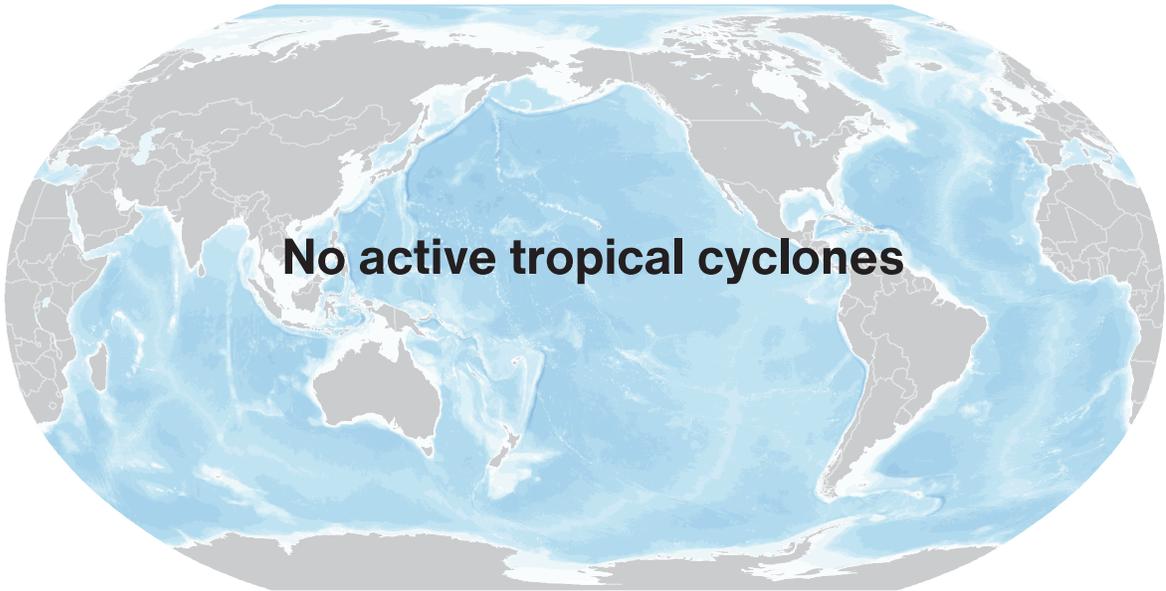
El Niño (La Niña) is a phenomenon in the equatorial Pacific Ocean characterized by a five consecutive 3-month running mean of sea surface temperature (SST) anomalies in the Niño 3.4 region that is above the threshold of +0.5°C (-0.5°C). This is known as the Oceanic Niño Index (ONI).

## 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

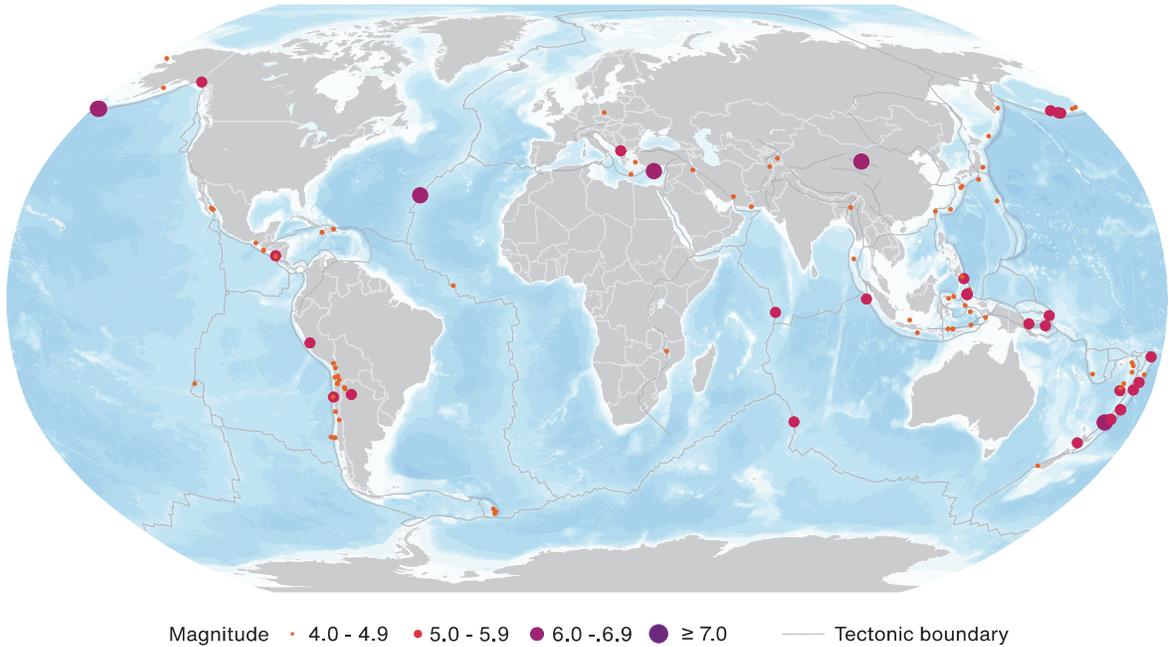
Storm Name	Location	Winds	Location from Nearest Land Area

\* TD: 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)

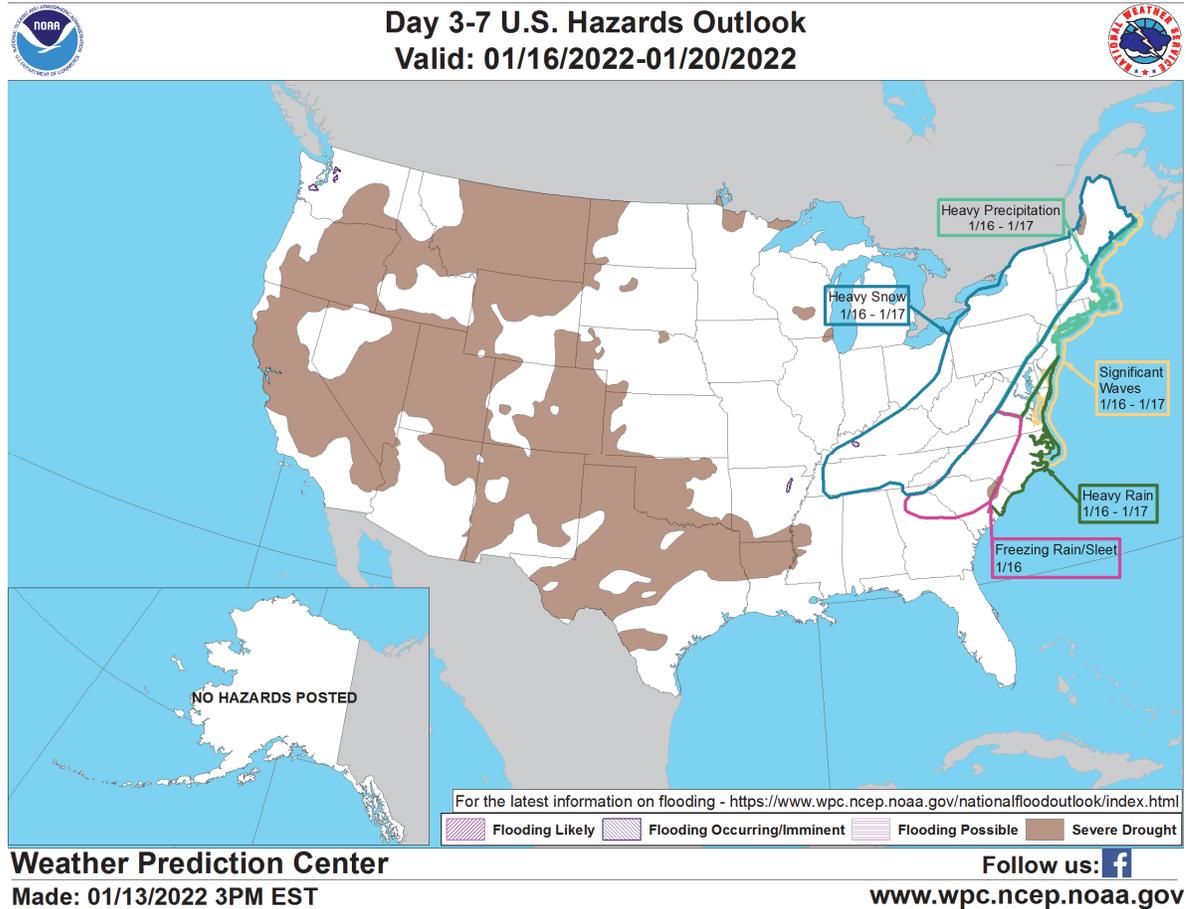
## Global Earthquake Activity ( $\geq M4.0$ ): January 7-13



Date (UTC)	Location	Magnitude	Epicenter
01/07/2022	37.82N, 101.28E	6.6	northern Qinghai, China
01/10/2022	33.80S, 179.55E	6.2	south of the Kermadec Islands
01/10/2022	28.49N, 43.64W	6.0	northern Mid-Atlantic Ridge
01/11/2022	35.15N, 31.91E	6.6	48 kilometers (30 miles) WNW of Pális, Cyprus
01/11/2022	52.66N, 167.92W	6.8	71 kilometers (44 miles) ESE of Nikolski, Alaska
01/11/2022	52.60N, 168.16W	6.6	60 kilometers (37 miles) SE of Nikolski, Alaska

Source: United States Geological Survey

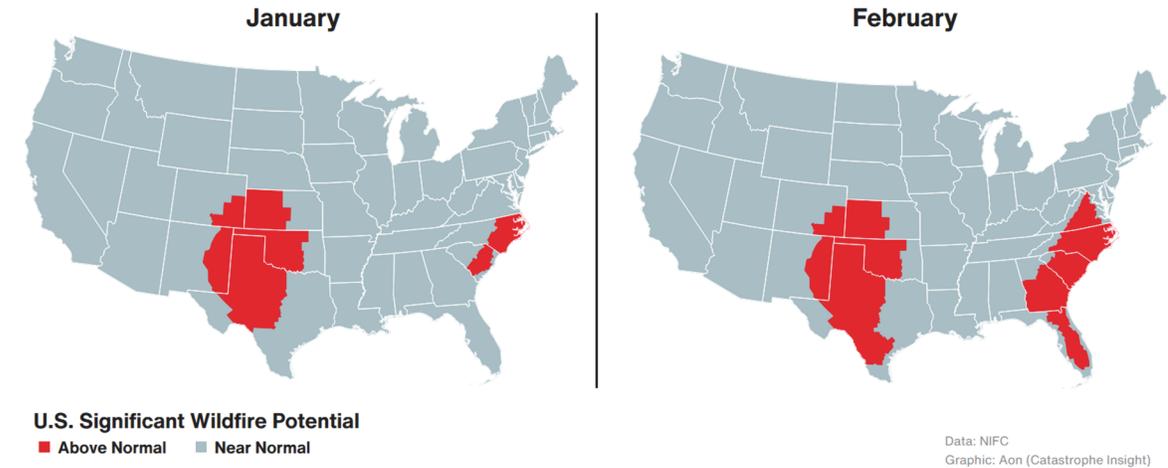
## U.S. Hazard Outlook



- The most significant hazard in the medium range is a high impact winter storm which will affect regions of the Tennessee Valley, Southeast, Mid-Atlantic, and Northeast between January 16-17.
- On the northern and western side of the storm, heavy and accumulating snow is likely from the Mid-South, through the Appalachians, and into the Northeast – particularly in interior New England.
- A surge of warmer low-level temperatures will generate wintry/mixed precipitation in southern New England and the Mid-Atlantic. The potential for freezing rain exists in the interior Southeast. In the warm sector, heavy rain is expected in coastal regions of the Southeast and Mid-Atlantic.
- Strong onshore flow and high winds will create significant waves and dangerous surf along the Mid-Atlantic and New England coasts.

Source: Weather Prediction Center (NOAA)

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



### Annual YTD Wildfire Comparison: January 7\*

Year	Number of Fires	Acres Burned	Acres Burned Per Fire
2018	268	2,038	7.60
2019	61	118	1.93
2020	180	2,278	12.66
2021	176	841	4.78
2022	165	1,729	10.48
<b>10-Year Average (2012-2021)</b>	<b>118</b>	<b>5,247</b>	<b>44.47</b>

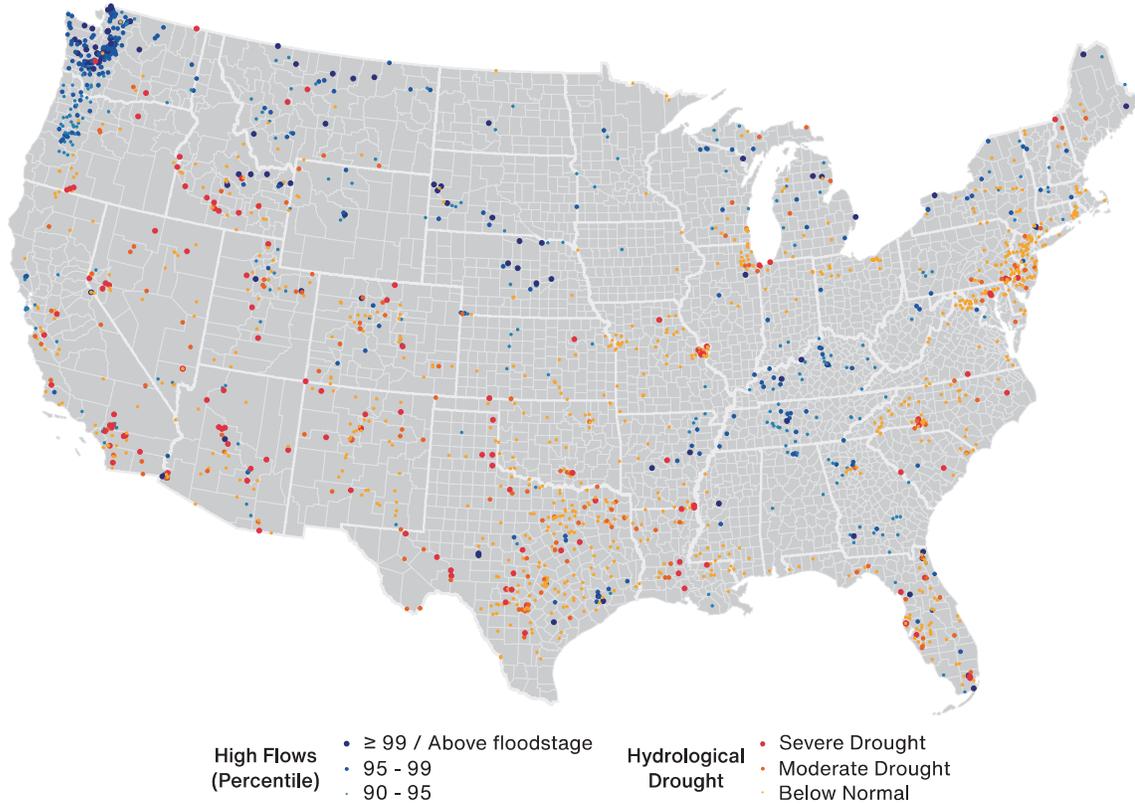
### Top 5 Most Acres Burned by State: January 13

State	Number of Fires	Acres Burned	Acres Burned Per Fire
Louisiana	23	3,464	150.61
Texas	111	2,048	18.45
Kansas	1	400	400.00
Oklahoma	29	364	12.55
Mississippi	16	138	8.63

\*Most recent NIFC update

Source: National Interagency Fire Center

## U.S. Current Riverine Flood Risk



A  $\geq 99^{\text{th}}$  percentile indicates that estimated streamflow is greater than the 99<sup>th</sup> percentile for all days of the year. This methodology also applies for the other two categories. A stream in a state of severe drought has 7-day average streamflow of less than or equal to the 5<sup>th</sup> percentile for this day of the year. Moderate drought indicates that estimated 7-day streamflow is between the 6<sup>th</sup> and 9<sup>th</sup> percentile for this day of the year and 'below normal' state is between 10<sup>th</sup> and 24<sup>th</sup> percentile.

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

Location	Current Stage (ft)	Percentile
Missouri River at Fort Benton, Montana	5.32	99.24
Weber River near Oakley, Utah	7.71	99.15
St. Louis River near Scanlon, Minnesota	4.36	99.12
Musselshell River at Harlowton, Montana	12.39	99.09
Wind River at Riverton, Wyoming	6.77	99.07

Source: United States Geological Survey

## Source Information

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### **Earthquake: China**

United States Geological Survey (USGS)  
Qinghai Provincial Emergency Management Department  
Zhangye People's Government  
Ningxia Earthquake Agency

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

Pakistan announces compensation for dead after 23 perish in Murree snowfall, *Daily Pakistan*  
Hundreds Evacuate Floods in Queensland After 650mm of Rain in 24 Hours, *Floodlist, Queensland Police News*  
Global Disaster Alerting Coordination System (GDACS)  
Mabuyane urges Buffalo City disaster victims not to rebuild shacks in low-lying areas, *Sunday World*  
Indonesia Disaster Management Authority, BNPB  
United States Geological Survey (USGS)  
U.S. National Weather Service (NWS)  
Indonesia Regional Disaster Management Agency, BDPB  
Heavy Rain Leaves 145 Cities In Emergency In Minas Gerais, *teleSUR*  
Civil Protection Minas Gerais  
Emergency Response Coordination Centre (ERCC)  
National Disaster Management Bureau (NDMO)  
'Furnace': Argentina roasts in record-setting heat wave, *Reuters*  
Bureau of Meteorology (BoM) – Australia

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