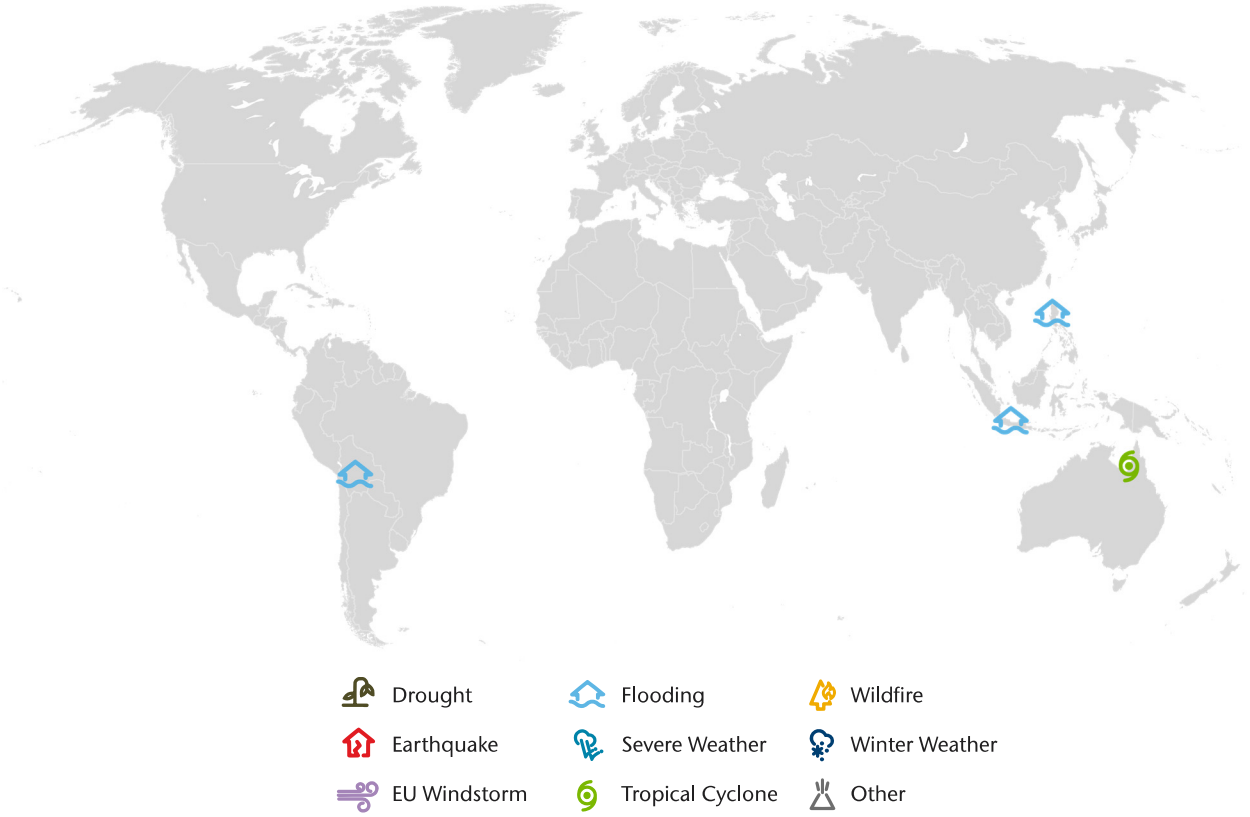
Weekly Cat Report

January 8, 2021

This Week's Natural Disaster Events



Event	Impacted Areas	Fatalities	Damaged Structures and/or Filed Claims	Preliminary Economic Loss (USD)*	Page
Cyclone Imogen	Australia	0	Thousands	Millions	3
Flooding	Indonesia	3	2,500+	Millions	4
Flooding	Philippines	9	550+	1+ million	4
Flooding	Bolivia	4	Hundreds	Unknown	4

**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.*

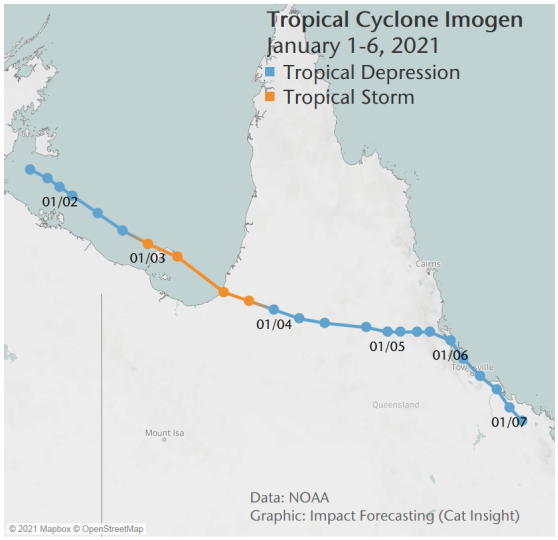
Along with this report, we continue to welcome users to access current and historical natural catastrophe data and event analysis on Impact Forecasting's Catastrophe Insight website: http://catastropheinsight.aon.com

Tropical Cyclone Imogen makes landfall in Australia

Tropical Cyclone Imogen became the first named storm of the 2020-2021 Australian region cyclone season on January 3. Imogen produced maximum sustained winds of 85 kph (50 mph) with an estimated minimum central pressure of 995 millibars, per the Joint Typhoon Warning Center (JTWC). Imogen made landfall near Queensland's Karumba Town on January 3, causing flood- and wind-related damage in northeastern Australia.

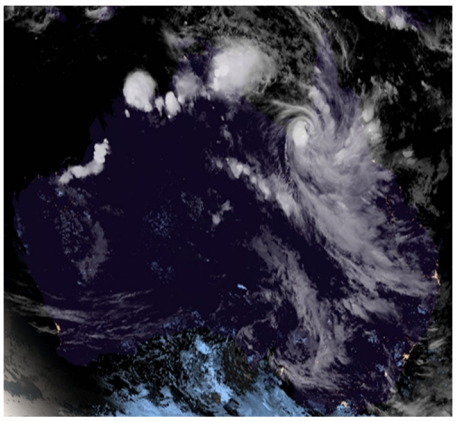
Meteorological Recap

A pulse of the Madden-Julian Oscillation (MJO) moved into the eastern equatorial Indian Ocean resulting in the formation of a low-pressure area near Groote Eylandt, in the western Gulf of Carpentaria, on January 1. Australia's Bureau of Meteorology (BOM) began monitoring the system and issuing severe weather advisories. The system proceeded to gradually strengthened while tracking through a favorable atmospheric and oceanic environment. On January 3, gales fully encircled the central convection region of the system, prompting the BOM to upgrade it into a Category 1 tropical cyclone on the Australia scale. The BOM assigned it an official name, 'Imogen' – the first named storm of the 2020-2021 Australian region cyclone season. Imogen generated maximum sustained winds of 85 kph (50 mph) with an estimated minimum central pressure of 995 millibars, according to the JTWC.



Imogen came ashore north of the Queensland's Karumba Town at approximately 11:00 UTC on January 3. Imogen's structure significantly deteriorated due to interaction with land; however, the system continued to affect northeastern parts of Australia for multiple days.

Event Details



TC Imogen making landfall in Australia
Source: NOAA/RAMMB

Tropical Cyclone Imogen brought heavy rainfall and damaging winds to northeastern parts of Australia. State emergency service officials received hundreds of calls, mostly related to road blockades and power outages. More than 1,500 customers were left without power in Queensland and New South Wales; mostly in the rural areas. Electricity restoration and rescue were severely hampered by heavy waterlogging on the roads.

Heavy precipitation associated with Imogen triggered severe flash flooding in far northern Queensland and New South Wales. The rural roads were waterlogged, leaving several communities isolated for days. Thousands of houses, along with a vast area of agricultural land were inundated. No casualties were reported as of this writing.

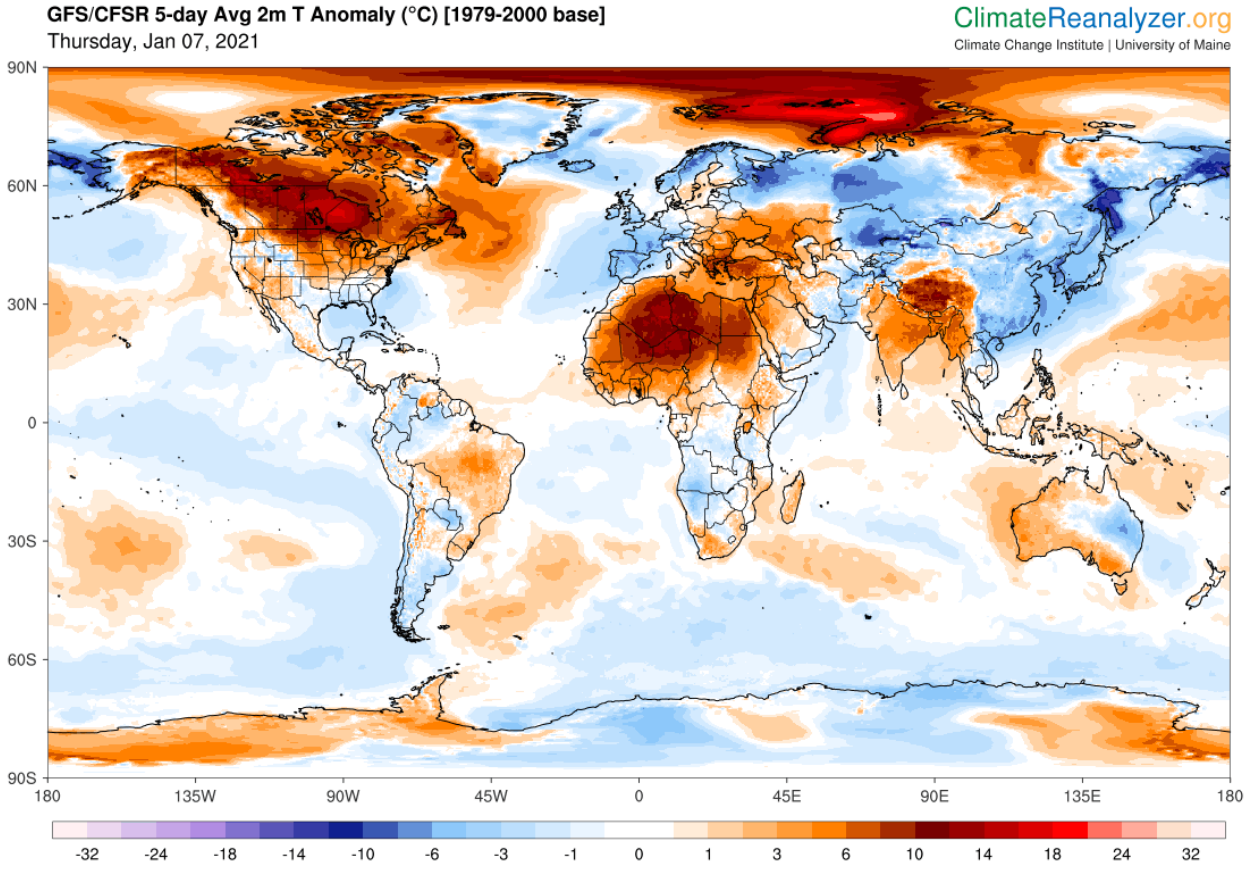
Natural Catastrophes: In Brief

Flooding (Indonesia)
Heavy rains coupled with strong winds prompted flash flooding and triggered landslides in parts of Indonesia between December 30 – January 5; among the hardest-hit provinces included South Kalimantan, North Sulawesi, West Nusa Tenggara, and Aceh. Three people were killed, while tens of thousands of others were affected in rain-related incidents, per Indonesia's National Board for Disaster Management. Approximately 2,500 houses were either damaged or destroyed. Further losses were inflicted in the agriculture sector and on local infrastructure. Total economic losses were likely to be into the millions (USD).

Flooding (Philippines)
Heavy precipitation associated with the Northeast monsoon combined with the Tail-end of a Frontal System (TEFS) affected Philippines' Luzon and Visayas islands from December 31 through January 4, causing widespread damage and casualties. A TEFS is an unsettled weather pattern which forms when a cold airmass – northeasterly monsoon winds over the Philippines – dominates the warm airmass or the warm and moist easterly winds coming from the Pacific Ocean. Interaction of these distinct airmasses often result in elevated precipitation and thunderstorm activity. According to the Philippines' National Disaster Risk Reduction and Management Council (NDRRMC), at least six people were killed, and three others went missing during the event. More than 520 residential houses along with dozens of road segments and bridges were damaged to varying degrees. Total combined economic losses were estimated at PHP50 million (USD1 million); damage to private property is not included in this figure.

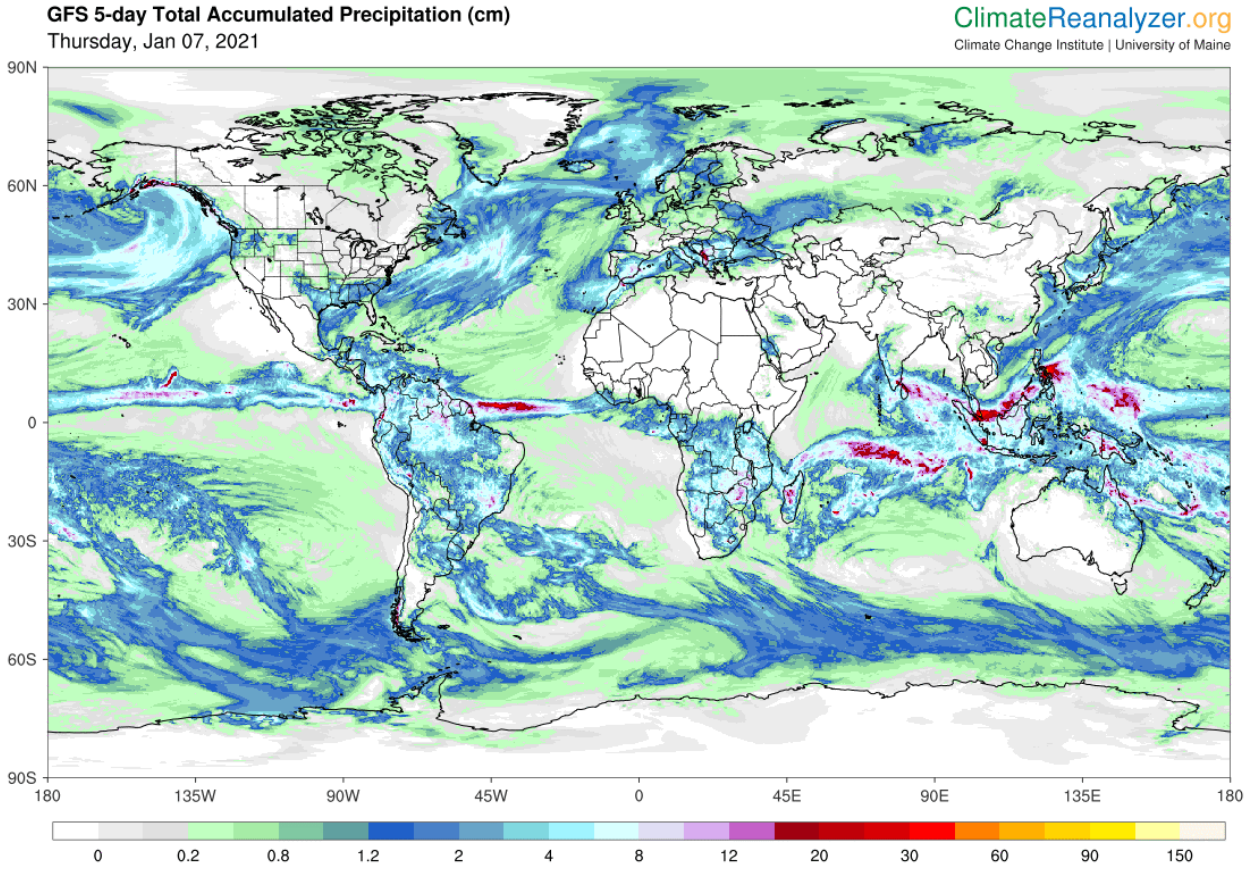
Flooding (Bolivia)
A torrential storm brought hail and life-threatening flash flooding to the Bolivian city of Sucre, in the Chuquisaca Department, on January 4. The Minister of Government indicated that four people were killed and six others remained missing. Seven people were injured. A deluge reaching 1.5 meters (5 feet) rushed through city streets dragging vehicles, debris, and merchant stalls. The Mercado Campesino area of the city was most impacted. Substantial material damage was observed, including impacts to multiple homes. As of this writing, damage surveys were ongoing.

Global Temperature Anomaly Forecast



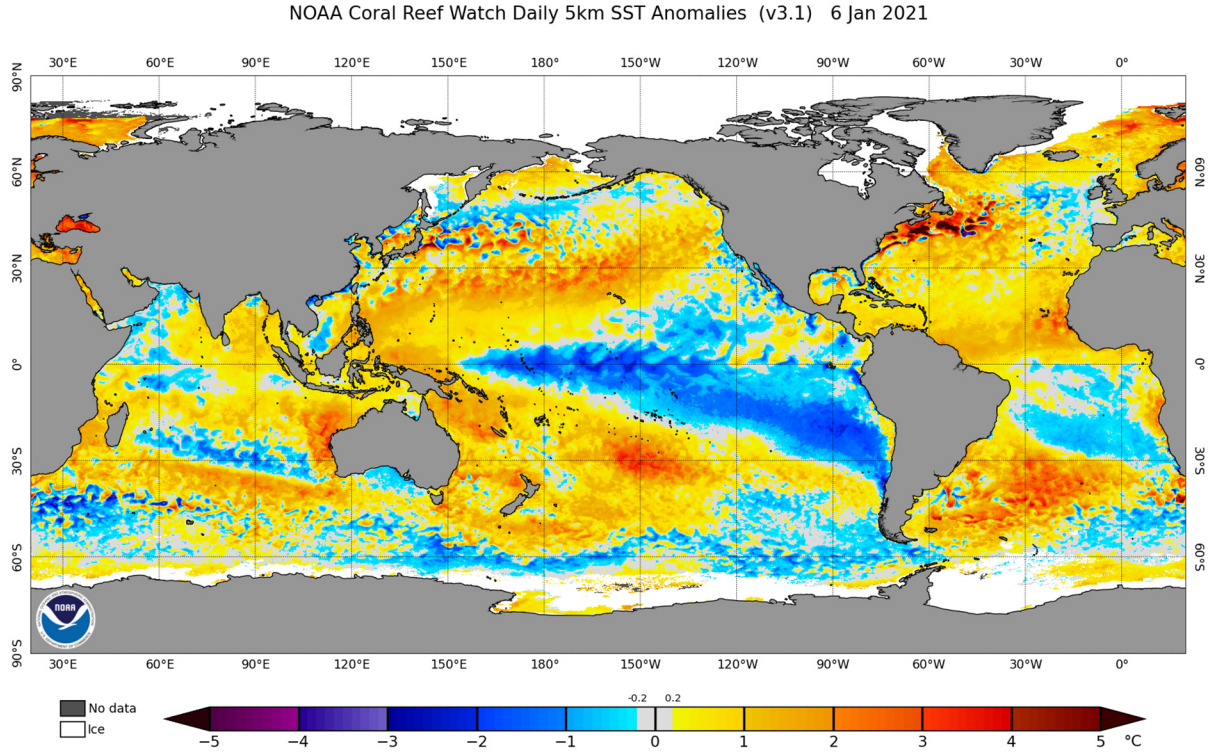
Source: Climate Reanalyzer, Climate Change Institute, University of Maine, USA

Global Precipitation Forecast



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

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



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.

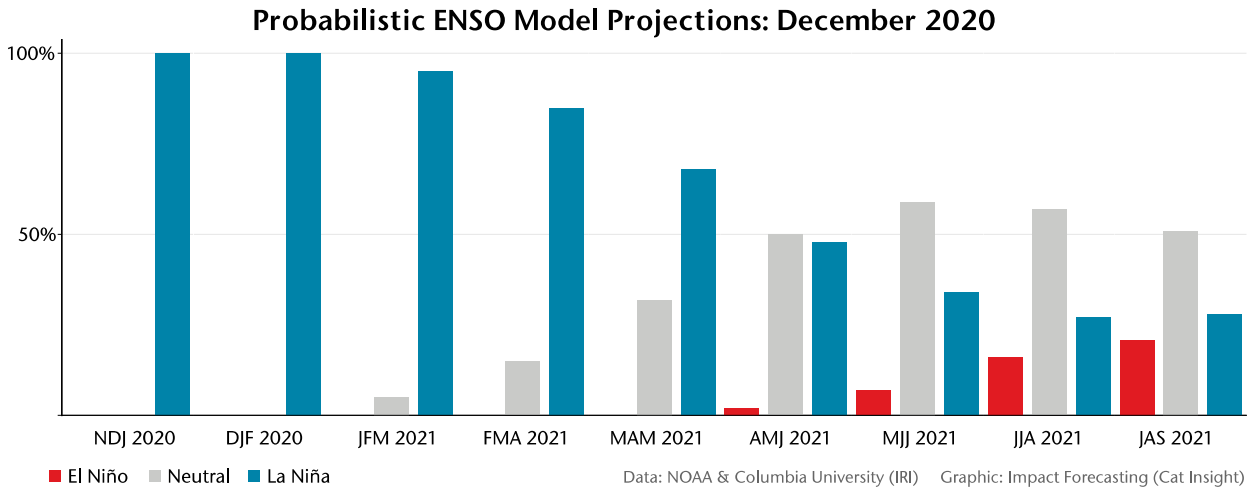
Select Current Global SSTs and Anomalies

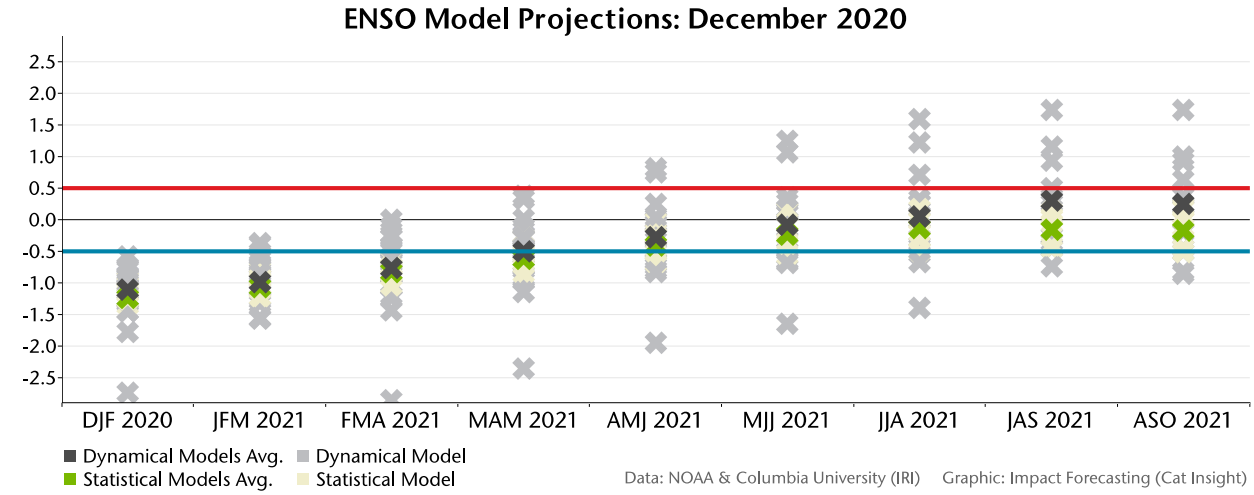
Location of Buoy	Temp (°C)	Departure from Last Year (°C)
Eastern Pacific Ocean (1,020 miles SW of San Salvador, El Salvador)	25.4	-0.2
Niño3.4 region (2°N latitude, 155°W longitude)	24.3	-1.8
Western Pacific Ocean (700 miles NNW of Honiara, Solomon Islands)	29.0	-1.0

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 a 95 percent chance that La Niña conditions will persist through boreal (Northern Hemisphere) winter of 2020 / 2021, and a 50 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.*

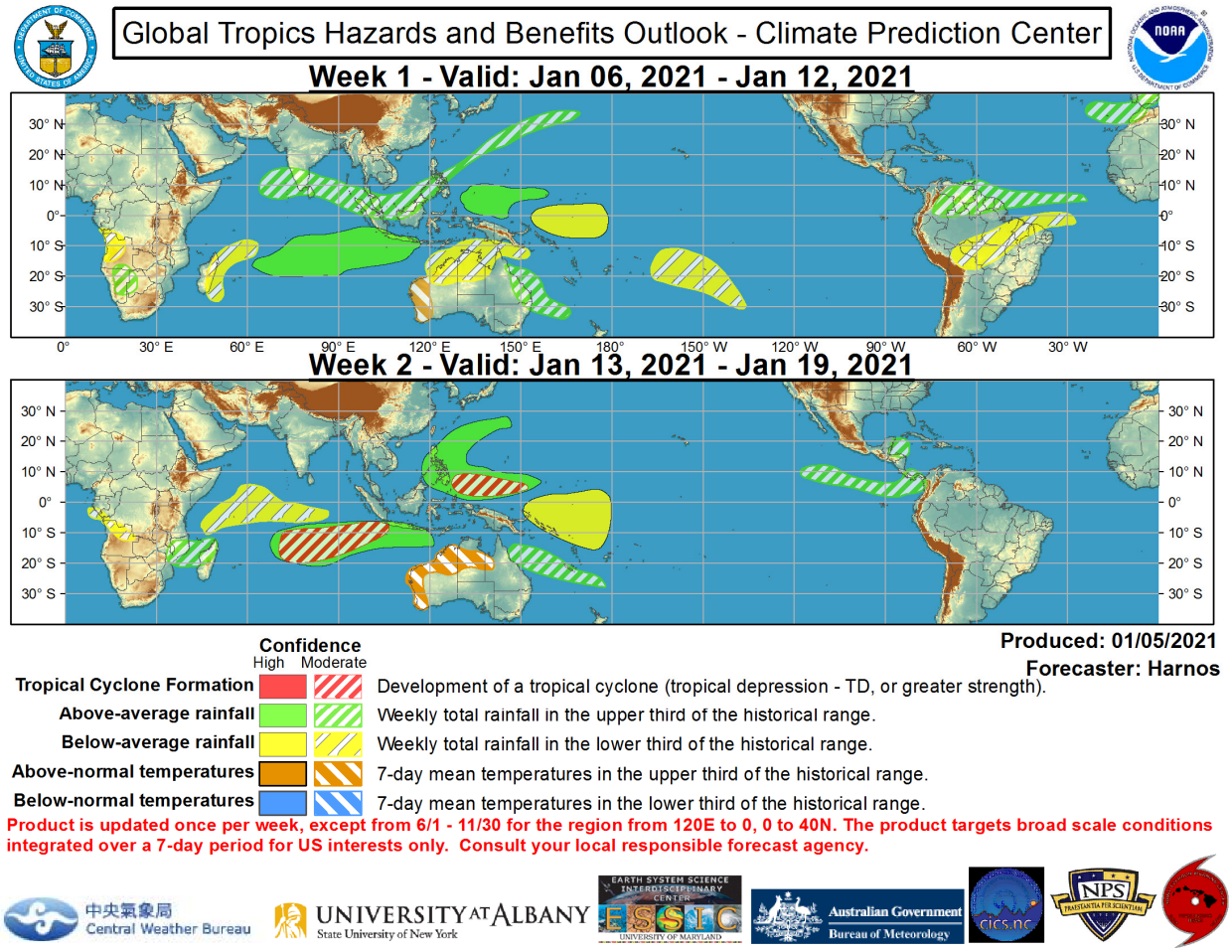
La Niña *refers to the periodic cooling of sea-surface temperatures (-0.5°C) across the east-central equatorial Pacific. It represents the cold phase of the ENSO cycle.*

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.*

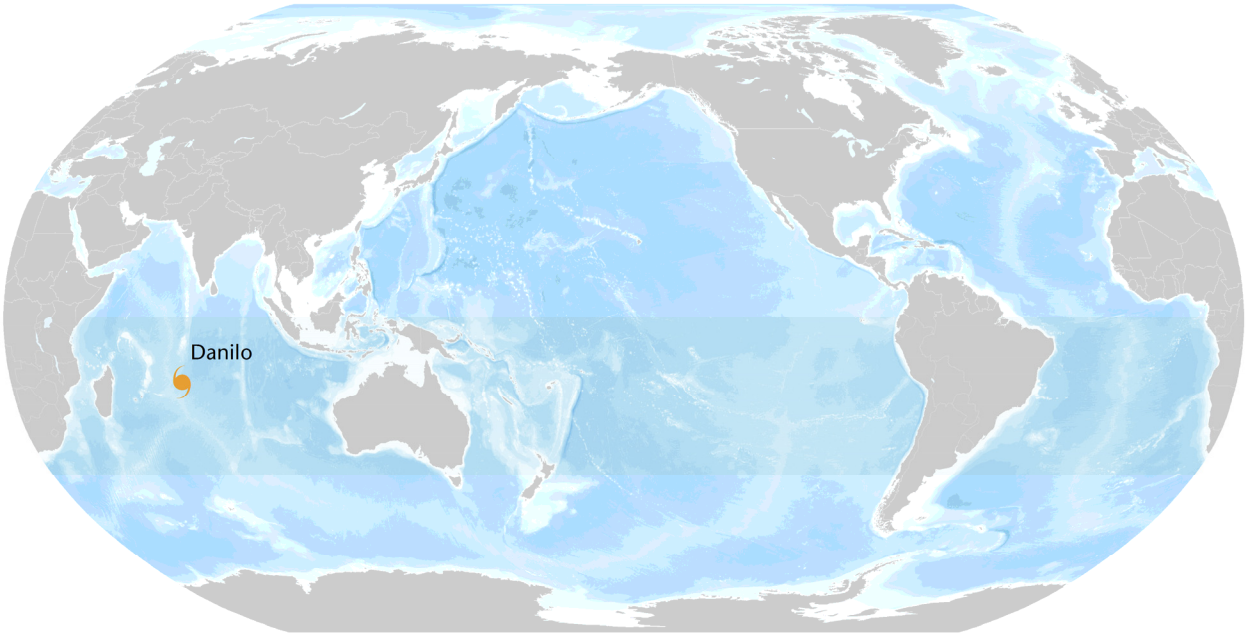
El Niño (La Niña) is a phenomenon in the equatorial Pacific Ocean characterized by a five consecutive 3-month running mean of sea surface temperature (SST) anomalies in the Niño 3.4 region that is above the threshold of +0.5°C (-0.5°C). This is known as the Oceanic Niño Index (ONI).

Global Tropics Outlook



Source: Climate Prediction Center

Current Tropical Systems



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

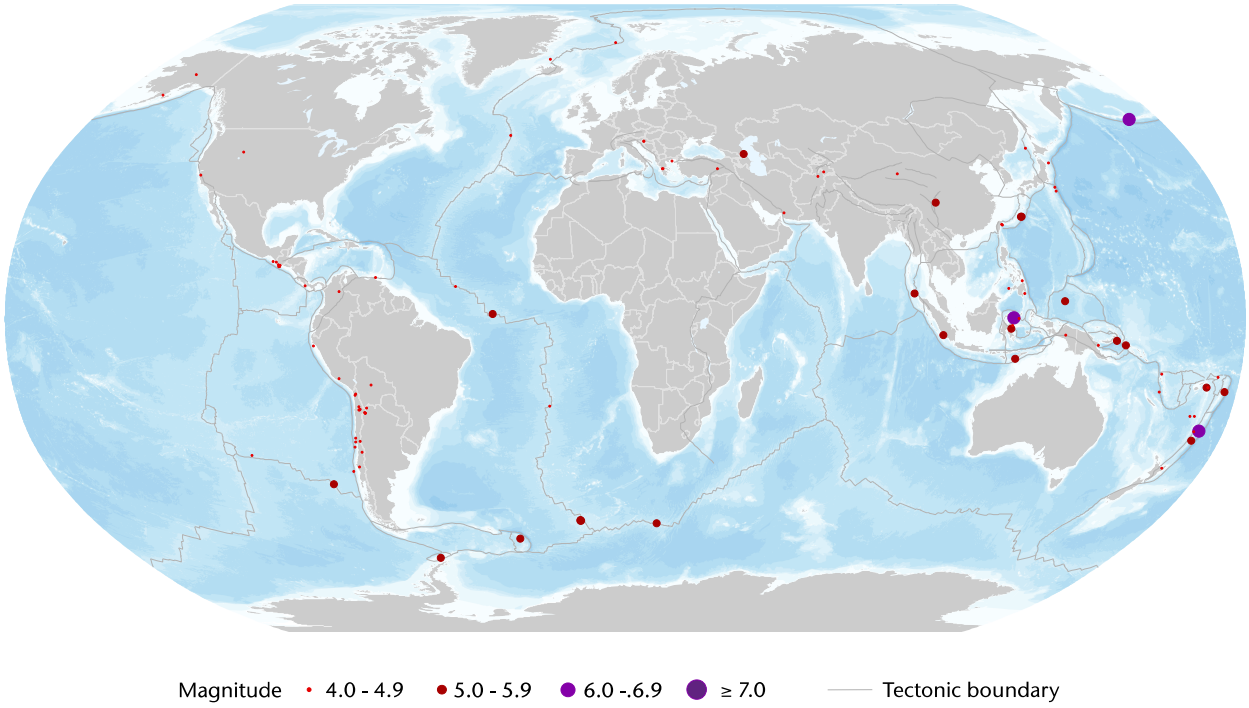
Location and Intensity Information

Name*	Location	Winds	Storm Reference from Land	Motion**
CY Danilo	16.3°S, 70.3°E	40 mph	890 miles (1,435 kilometers) ENE of Port Louis, Mauritius	W at 15 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 (≥M4.0): January 1 – 7

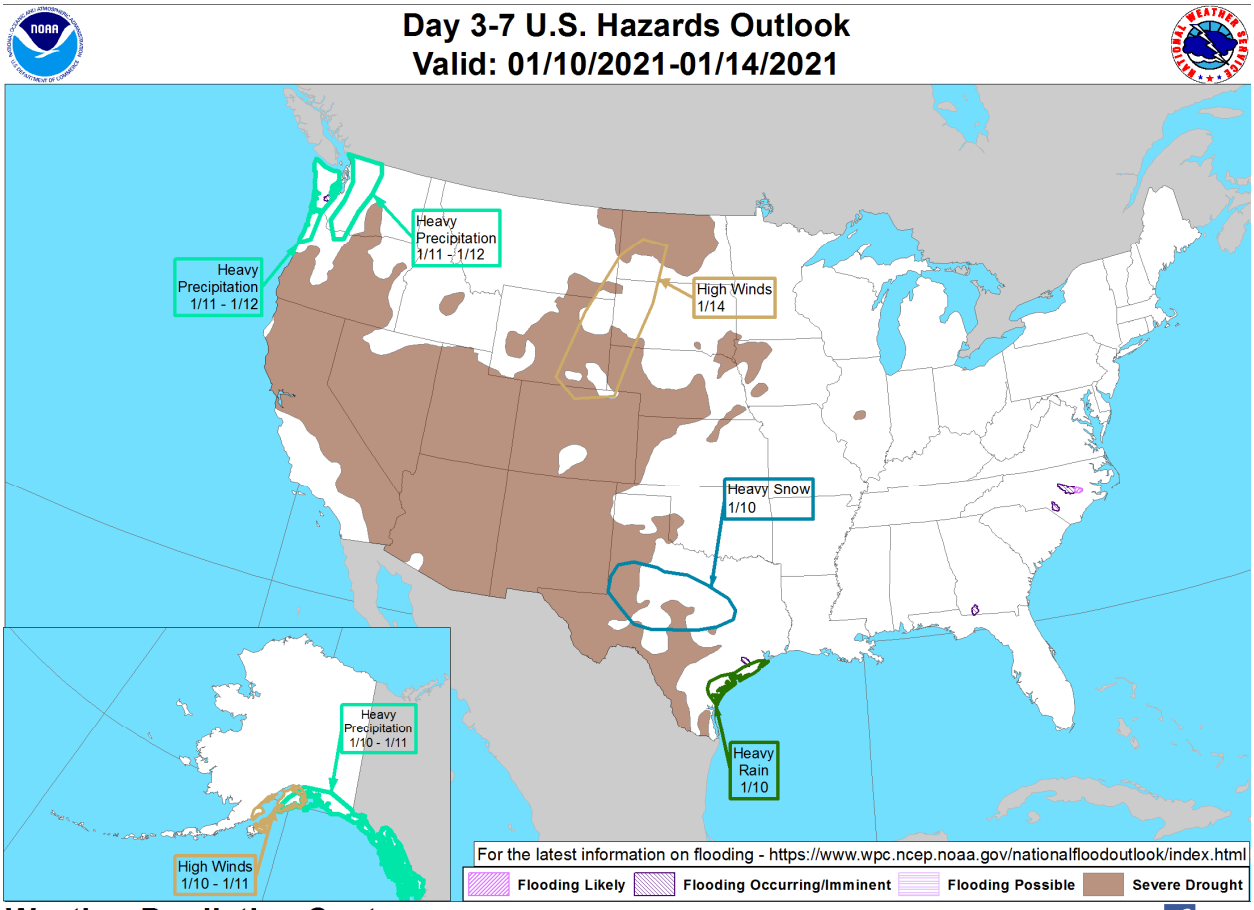


Significant EQ Location and Magnitude (≥M6.0) Information

Date (UTC)	Location	Magnitude	Depth	Epicenter
01/03/2021	51.19°N, 179.84°W	6.1	17 km	23 kilometers (14 miles) WSW of Adak, Alaska
01/06/2021	29.07°S, 176.90°W	6.2	26 km	Kermadec Islands region
01/06/2021	0.01°N, 122.93°E	6.1	157 km	59 kilometers (37 miles) SSW of Gorontalo, Indonesia

Source: United States Geological Survey

U.S. Weather Threat Outlook

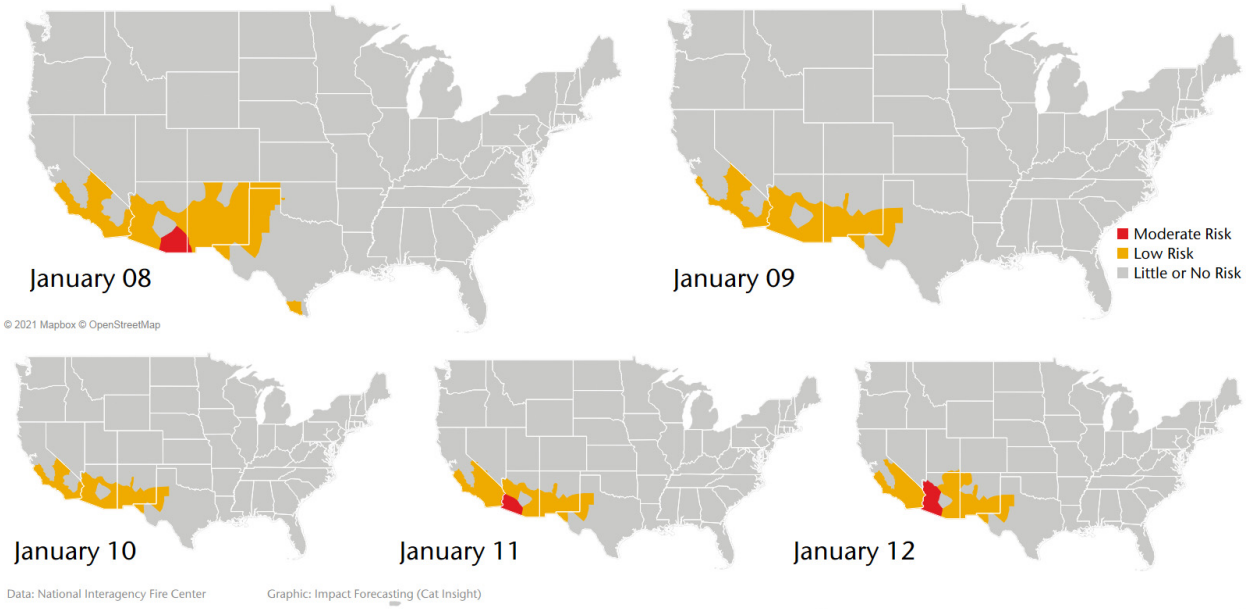


Potential Threats

- A low-pressure system will spread heavy snow across regions of the Southern Rockies and Plains on January 10, while heavy rain is anticipated along the Gulf Coast. The system will subsequently impact the lower Mississippi Valley and Appalachians, where flooding is possible.
- An active weather pattern will generate heavy precipitation between January 11-12 across the Pacific Northwest, with snow expected at higher elevations.
- A strong pressure gradient across the Central Rockies and High Plains on January 14 will produce high winds.
- Prolonged and severe drought persists over large regions of the Western United States.

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

The National Interagency Fire Center has highlighted a limited volume of potential fire risk across much of the country during the next week. The arrival of more seasonal precipitation and temperatures should minimize any significant fire chance for the rest of the winter months.



Annual YTD Wildfire Comparison: 2020 Final

Year	Number of Fires	Acres Burned	Acres Burned Per Fire
2016	67,595	5,503,538	81.42
2017	71,499	10,026,086	140.23
2018	58,113	8,767,801	150.88
2019	50,469	4,664,369	92.42
2020	58,258	10,274,679	176.37
10-Year Average (2010-2019)	**62,882**	**6,789,149**	**107.97**

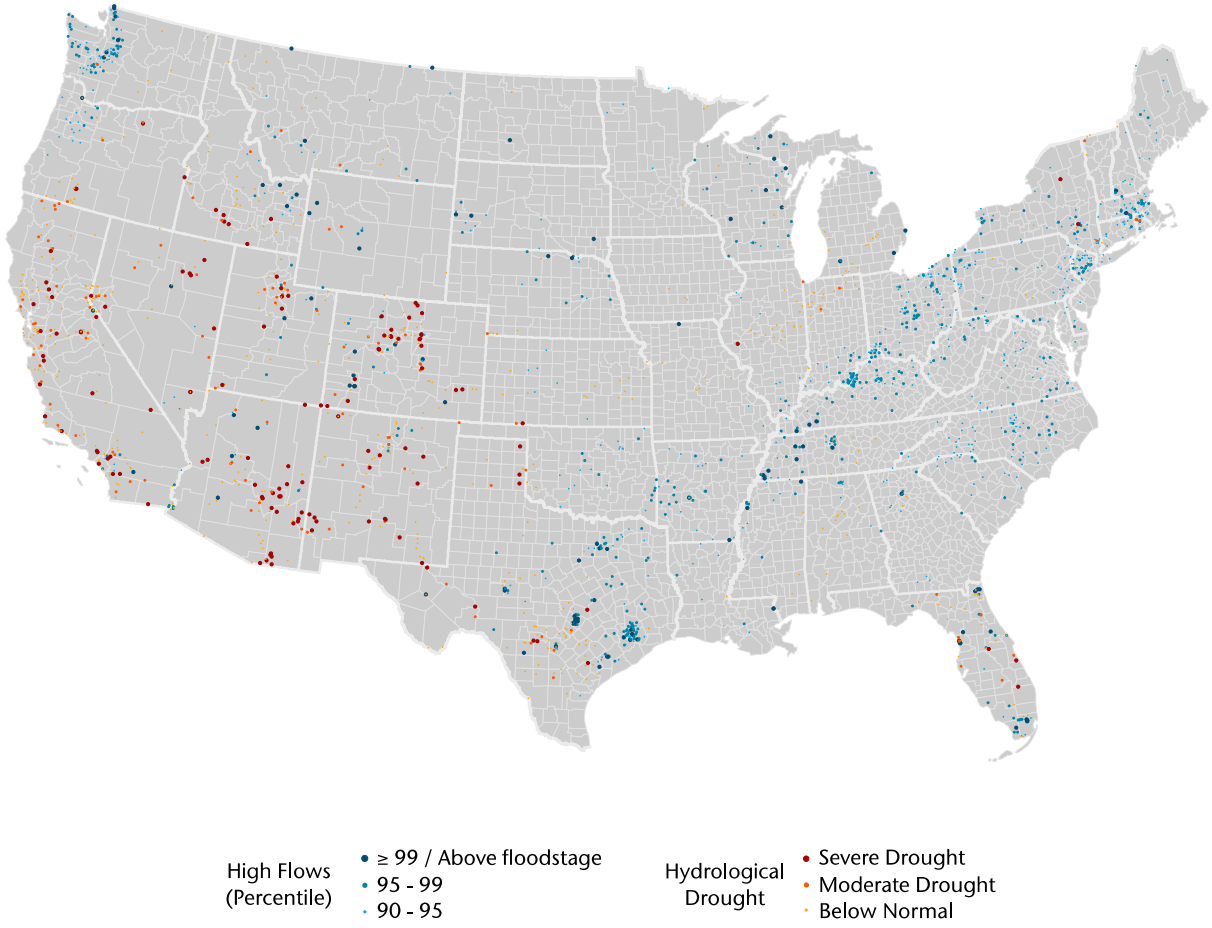
Source: National Interagency Fire Center

Top 5 Most Acres Burned by State: January 7

State	Number of Fires	Acres Burned	Acres Burned Per Fire
Florida	30	501	16.71
Oklahoma	4	50	12.43
Texas	21	37	1.76
Mississippi	3	35	11.77
North Carolina	43	31	0.71

Source: National Interagency Fire Center

Current U.S. Streamflow Status



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.

Top 5 Rivers Currently Nearing or Exceeding Flood Stage

Location	Current Stage (ft)	Flood Percentile
Red Lake River at Crookston, Minnesota	7.76	99.16
Kennebec River at The Forks, Maine	5.05	99.15
Weber River near Oakley, Utah	5.97	99.15
Oconto River near Gillett, Wisconsin	3.94	99.09
Wisconsin River at Muscoda, Wisconsin	4.86	99.07

Source: United States Geological Survey

Source Information

Tropical Cyclone Imogen makes landfall in Australia

Bureau of Meteorology, Australia
Joint Typhoon Warning Centre
State Emergency Service, Australia
Deluge continues in north Queensland with towns on flood watch after Tropical Cyclone Imogen downgraded, ABC News
Severe thunderstorm strikes Sydney as Cyclone Imogen inundates far north Queensland, The Guardian
Dangerous flooding in wake of Cyclone Imogen for north Queensland as heavy rains lash Victoria and NSW, The Guardian

Natural Catastrophes: In Brief

ASEAN Coordinating Centre for Humanitarian Assistance (AHA Centre)
National Disaster Risk Reduction and Management Council, Philippines
The Philippine Atmospheric, Geophysical and Astronomical Services Administration
Vice Minister of Civil Defense arrives in Sucre to assess the damage caused by the flood, El Deber
Deadly flash floods tear through Bolivia's Sucre city, BBC News

Contact Information

Steve Bowen
Director & Meteorologist
Head of Catastrophe Insight
Impact Forecasting
Aon
steven.bowen@aon.com

Brian Kerschner
Senior Catastrophe Analyst
Impact Forecasting
Aon
brian.kerschner@aon.com

Michal Lörinc
Senior Catastrophe Analyst
Impact Forecasting
Aon
michal.lorinc@aon.com

Gaurav Srivastava
Catastrophe Analyst
Impact Forecasting
Aon
gaurav.srivastava6@aon.com

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