

# **Weekly Cat Report**

### June 23, 2023





### **Executive Summary**



Event	Affected Region(s)			Page
Severe Convective Storm	Western & Central Europe	1	100s of millions	3
Earthquake	France	0	10s of millions	7
Severe Convective Storm	United States	5	100s of millions	9
Flooding	Brazil	16	10s of millions	11
Flooding & Landslides	Nepal	7+	Unknown	12
Flooding	Southeastern Europe	2	10s of millions	12
Heatwave	India	98+	N/A	12
Heatwave	Mexico	8+	N/A	12
Flooding & Landslides	India	7+	Unknown	12

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: <u>http://catastropheinsight.aon.com</u>



### Western & Central Europe: Severe Convective Storm

### Overview

A severe convective outbreak affected several countries in Western and Central Europe on June 18-22. Multiday storms generated very large hail, damaging winds and heavy rainfall, resulting in notable property, vehicular and agricultural damage across the region. Total economic losses can potentially reach hundreds of millions EUR.

#### **Meteorological Recap**

An active convective pattern established in Western and Central Europe on June 18-22 as a strong ridge of high pressure developed over the Mediterranean and extended further north and low-pressure troughs were present on both sides. This allowed for a warm southwesterly flow in the western Europe; storms developed as a surface low named Justus reached France and the associated frontal boundary became quasi-stationary over Western Europe in the following days. A secondary lows Kay and Lambert later affected the continent through June 23.

On **June 18-19**, storm activity was primarily located in France, with notable impacts from heavy rainfall and strong winds. On **June 20**, several isolated systems produced severe phenomena, notably a system that travelled from the Basque Country in northern Spain towards northeast through France, as well as a hailstorm in central-north Switzerland, which produced hailstones with maximums diameter of up to 5 cm (2 inches).



On **June 21**, notable impacts were generated by a long-lived derecho system that originated early morning in northern Switzerland and travelled across southern Germany and across the Czech Republic until late afternoon. Separately, mesoscale convective systems (MSC) generated large hail with maximum diameter peaking at 7 cm (2.8 inches) in the Austrian federal states of Kärnten and Niederösterreich. Similarly, an MSC system affected western Slovakia and generated strong wind gusts in Bratislava, Trnava and Nitra regions.

A particularly dangerous situation developed in Central Europe on **June 22**, as a short-wave trough moved across the region from Iberia to Germany during the day. Strong storm systems, including supercells, developed in a large area characterized by high instability and strong vertical wind shear, particularly in Central Germany and western Czech Republic.

## AON



The most noteworthy system on June 22 started to affect western Germany during midday and left a large hail swath spanning through the country in northeaster direction through Hessen and Niedersachsen to Sachsen-Anhalt. Primary hazard associated with this system was large hail, with maximum diameter of up to 6 cm (2.4 inches). Isolated cells also produced large hail elsewhere in Germany.

One of the storms affected metropolitan Munich, but the city only saw relatively smaller hail of up to 2 cm (0.8 inches) in diameter. Large hail was observed in Baden-Wurttemberg northeast of Ulm.

Isolated instances of heavy rainfall up to 80 mm (3.1 inches) triggered localized flash flooding. At least one tornado formed in Germany. The storms continued to affect parts of the western Czech Republic during the night to June 23.

### **Event Details**

### June 18-19

Thunderstorm activity on June 18 hit **France** primarily with heavy rain and strong winds. Multiple locations in Seine-Maritime department experienced flooding, notably Dieppe. Paris and the lle-de-France region experienced strong winds and at least 11,000 power outages. A tornado caused notable property damage on dozens of houses in the municipality of Motteville, where three people were injured during the storm. Another two people were injured in wind-related incidents on June 19. Noteworthy concentration of wind-related damage occurred in the Cher department, particularly in the village of Preuilly west of Bourges.

### June 20

Storm activity continued June 20, when **France**, Germany and Switzerland were the worst affected. Notable wind-related damage occurred in Rüsselsheim near Frankfurt, **Germany**. More than 160 interventions were carried out in Bremen alone. Large hail with maximum diameter of up to 5 cm (2 inches) was reported in the cantons of Basel-Landschaft and Aargau, northern Switzerland.

Additional damage due to high wind gusts, large hail and heavy rainfall was incurred in Basque Country in northern Spain and southwestern France. Hailstones of size up to 5 cm (2 inches) in diameter and wind gusts in excess of 100 kph (60 mph) caused notable agricultural damage. The storms continued to northeast towards Massif Central – notable damage was reported from Moissac municipality, where fire brigades intervened more than 300 times, mostly due to fallen trees.





Crop damage in Moissac, France (left) and in Jetzelsdorf, Austria (right) Source: France Bleu Occitanie, Austrian Hail Insurance Association

### June 21

On June 21, storm systems caused notable damage across multiple countries, including **Germany**, **Austria**, **the Czech Republic** and **Slovakia**.

A mesoscale convective system generated localized large hail up to 7 cm (2.8 inches) and notable damage on agriculture in the Austrian states of Lower Austria and Carinthia. Total insured agricultural loss amounted to at least  $\in$ 1.8 million (\$2 million), with more than 3,400 hectares (8,400 acres) of land affected, according to the Austrian Hail Insurance Association.

Primary hazards associated with organized storms that affected southern Germany and the Czech Republic were high wind gusts of up to 140 kph (87 mph). Property damage occurred in a large swath from the Basel region all the way to Bohemia, along with downed trees and power lines. Approximately 50,000 customers were left without power in the Czech Republic alone, fire brigades carried out more than 850 interventions.



Flooded streets in Mayen-Koblenz district Source: Einsätze MYK

Additional damage also occurred in western **Slovakia**. An isolated thunderstorm downed tree in Solčava, **Slovenia**, killing one person.

#### June 22

**Germany** was the hardest hit by severe weather on June 22. The city of Kassel in Hessen was hit by large hail and heavy rainfall, which inundated roads and dozens of buildings.

Severe weather caused notable traffic disruption and power outages across the country. Dozens of vehicles were damaged by downed trees as the storms passed and fire brigades responded to



thousands of storm-related emergency calls. In Braunschweig city alone, Lower Saxony state, fire brigades received more than 1,600 calls.

The storms also affected western part of the **Czech Republic.** Even though the national meteorological agency released the highest severe weather warnings prior to the episode, the eventual impact was lower than initially feared.

### **Financial Loss**

Eventual financial impact of the severe weather episode of June 18-22 will be realized in the coming weeks. The most significant impacts related to the storms were likely caused by large hail, which impacted several population centers, including Kassel in Germany on June 22. Notable impacts were also caused by severe winds on June 21. Due to the widespread nature of impacts in several countries, it was initially anticipated that insurers would record thousands of claims and total aggregated losses in the hundreds of million EUR.



### France: Earthquake

### Overview

An unusually strong, magnitude-4.8 earthquake, jolted Nouvelle-Aquitaine Region in western France on June 16 and was followed by several aftershocks. The tremors resulted in damage to hundreds of structures, and total economic losses from the event were initially anticipated to be at least in the tens of millions EUR.

### Seismological Recap

A relatively strong earthquake with a moment magnitude of 4.8 to 4.9 occurred in Western France on June 16 at 6:38 PM local time (4:38 PM UTC) as a result of strike-slip faulting, according to the French Geological Survey (BRGM). Based on the data from RENASS (National Seismic Monitoring Network), the tremor occurred in a very shallow depth of 3 km (1.9 mi), which contributed to relatively notable damage on the ground.

The epicenter was located about 24 km (14.9 mi) southwest of Niort, near the town of La Laigne. The main shock was followed by an aftershock of magnitude of 4.3, which was detected a day after the main event. Shaking was widely felt across the western part of the country, primarily in Pays de la Loire and northern Nouvelle-Aquitaine regions.



Perceived shaking map (Weak – Strong – Severe) Source: BCSF RENASS

#### **Historical Context**

According to the BRGM, the region is characterized by moderate seismicity, related to occasional reactivation of tectonic structures in the area on the southern side of the Armorican Massif and the interaction with the Aquitaine basin. The most recent earthquake of similar magnitude and importance in the region occurred on September 7, 1972, on the island of Oléron (southwest of La Rochelle) and resulted in some structural damage; the event had a moment magnitude of 5.7. The last notable event in metropolitan France occurred in November 2019 in Ardèche department in the southeast. The earthquake, with the epicenter close to the town of Le Teil, resulted in notable insured losses of approximately €260 million at the time.





### **Event Details**

The earthquake caused notable structural damage on hundreds of buildings near the epicenter, in the vicinity of La Laigne. Among other municipalities affected by the event were Benon, Mauzé-sur-le-Mignon, Saint Hilaire-la-Palud and Cram-Chaban.

In a preliminary assessment of damage on June 19, the Ministry of Ecological Transition noted that 250 homes were rendered uninhabitable – of this total, 200 are located in the Charente-Maritime and 50 in Deux-Sèvres departments. Approximately 100 buildings were heavily damaged in total, while at least 300 suffered partial damage. Hundreds of people were forced to leave their homes, particularly in La Laigne.

Damage was also noted on schools and churches. Additionally, two people were slightly injured. The earthquake also disrupted a high-voltage line in the area, resulting in power outages to more than 1,100 households.



**Property damage in La Laigne** Source: BRGM, Department of Charente Maritime

### **Financial Loss**

At this point, it is relatively early to estimate the eventual financial impact of the event, even though some initial estimates released by industry entities suggested thousands of potential claims and losses possibly reaching into the hundreds of millions EUR. In comparison, the November 2019 event resulted in approximately 18,000 claims and total insured losses of €261 million.



### **United States: Severe Convective Storm**

#### Overview

Severe thunderstorms affected parts of Southern and Central Plains and the Southeast in the United States on June 15-22. Associated impacts, including large hail, tornadoes, and strong winds resulted in notable material damage and killed at least five people. This multiday event is likely to result in notable economic and insured losses, initially anticipated to potentially reach into the hundreds of millions USD.

### **Meteorological Recap**

### June 15-16

Widespread severe storm impacts occurred across Southern and Central Plains on June 15-16. Large hail and damaging wind gusts were particularly pronounced along the Texas/Oklahoma border. The largest hailstones were again reported from the Denton County in Texas and measured 5 inches (12.7 cm) in diameter. The storms also produced particularly strong gusts across the area, with peak readings of 88 mph (141 kph) measured in Seward County in Kansas, and later 80+ mph (129 kph) observations in Oklahoma as the supercells moved southeastward towards Louisiana. On June 16, largely scattered severe storms affected portions of the Southeast.

Separately, additional severe storms developed in Michigan and Ohio ahead of a cold front as an upperlevel trough moved southeastward across the Great Lakes region. On June 16, storm reports from this system, mostly wind-related, came from the Mid-Atlantic.

June 17-19



19 Jun 2023 04:21Z - NOAA/NESDIS/STAR - GOES-East - GEOCOLOR Composite - SMV

On June 17, an enhanced risk of severe thunderstorms developed again across Central and Southern Plains, as a shortwave trough moved across the Rockies towards a moist and unstable airmass present in the area. Most of the storm reports came from Texas, Oklahoma, Kansas, Mississippi, Louisiana and Arkansas.

Main hazards associated with storm activity on June 18 included damaging wind gusts and large hail, and were largely concentrated in Arkansas, Louisiana, Mississippi, Alabama and the Florida Panhandle. A slight risk of severe storms remained in place on June 19 in the Gulf states and the Southeast. Relatively minor impacts also extended further north into the Carolinas and Virginia. Notably, a strong tornado of EF3-intensity was reported in Jasper County, Mississippi.



### June 21

Storm activity ensued again on June 21, as a slight risk developed in a north-south corridor spanning through the Plains from Wyoming / South Dakota border to northern Texas.

Most of the impacts were associated with large hail across southeastern Wyoming, western Nebraska and eastern Colorado, as well as hail- and windrelated phenomena across Texas.

Particularly large hail (2.5 inches / 6.3 cm and more) occurred in Washington, Bent and El Paso Counties of Colorado, as well as Cheyenne County in Nebraska.

However, the most significant effects were felt in Texas. Very large hail (4 inches / 10 cm and more) was observed in Motley and Kent Counties. An EF-3 rated tornado impacted the town of Matador in the Motley County in northern Texas



### **Event Details**

During night of June 18/19, one person was killed, and 25 others were injured in the town of Louin in Jasper County, eastern Mississippi due to an EF3rated tornado. More than 20 homes suffered damage across the county.

On June 21, severe storm generated tennis ballsized hail and a deadly, violent tornado in northern Texas. The tornado, which struck the town of Matador in Motley County (population of ~600), claimed four lives, injured 10 others and resulted in significant damage on dozens of buildings.

Elsewhere, a hailstorm injured nearly 100 people attending a concert in Colorado's Red Rocks Amphitheatre.



Tornado damage in Matador Source: Texas Division of Emergency

The storms also resulted in widespread disruption; nearly 500,000 homes and businesses experienced power outages overnight on June 21/22 in Texas and Oklahoma alone.

#### **Financial Loss**

Economic and insured losses from the outbreak were initially anticipated to potentially reach into the hundreds of millions USD, with large hail and tornado damage responsible for a large part of the toll.



### **Brazil: Flooding**

#### Overview

A potent extratropical cyclone affected southern Brazil on June 15-16 and resulted in notable regional flooding. At least 16 people were killed in Rio Grande do Sul and thousands of homes were damaged or destroyed. Material damage was anticipated to end up in the tens of millions USD.

#### **Meteorological Recap**

Southernmost federal states of Brazil were affected by an extratropical cyclone and an associated frontal system on June 15-16. Large amounts of moisture transported by the cyclone inland, combined with the topography of the region, allowed for large rainfall accumulations to occur within the 48-hour period. The states of Rio Grande do Sul, Santa Catarina and Parana experienced rainfall amounts exceeding 100 mm (3.9 inches). Additionally, strong winds were observed, with gusts exceeding 80 kph (50 mph). The coastal town of Tramandaí recorded a peak gust of 102 kph (63 mph) and Bom Jardin de Serra in Santa Catarina recorded 112 kph (70 mph).



Source: NASA

#### **Event Details**

The Civil Defense of Rio Grande do Sul provided a preliminary account of damage across the state on June 21, confirming 16 fatalities. Due to a high number of fatalities, the event was described as "the worst of its kind" in the state in the last 40 years. In total, 48 municipalities were affected, more than 1,500 people were rendered homeless and approximately 15,000 were temporarily displaced. More than 3,700 homes were damaged or destroyed. Authorities also noted widespread infrastructural and agricultural damage.

### **Financial Loss**

Economic impacts of the event were not yet determined by the authorities, but preliminary assessments revelaed anticipated toll in the tens of millions USD.



72-hour accumulated rainfall ending 6/16 Source: INMET



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

### Flooding & Landslides (Nepal)

Heavy rains have triggered flooding and landslides across multiple districts of the Koshi Province in Nepal since mid-June. As of June 19, seven people lost their lives, at least 29 were missing and six people were injured. Among the affected districts were aski, Nuwakot, Okhaldhunga, Panchthar, Shankhuwasabha, Taplejung, Dhankuta and Ilam.

### Flooding (Southeastern Europe)

A low-pressure system with an international name Olga, named by the Central Mediterranean group of meteorological agencies, brought intense rainfall to parts of Italy, Greece and the Balkans during the period of June 14-17. In Italy, notable effects were reported on June 14 from the provinces of Chieti, Potenza and Caserta, from Lazio and Rome, as well as from north-western Lombardia. Two people were killed and dozens of homes were flooded in Greece on June 17. Further flood impacts were reported from Bulgaria, Serbia and Romania.

### Heatwave (India)

At least 98 people have died from extreme heat during the severe heatwave that hit two of India's most populous states over the past several days. Authorities reported no fewer than 54 deaths across Uttar Pradesh in northern India and additional 44 in Bihar in eastern India. Maximum temperatures locally exceeded 45°C (113°F) over the past consecutive days.

### Heatwave (Mexico)

An unprecedent heatwave struck Mexico in recent days. Maximum temperatures surpassed 45°C (113°F) in the states of Campeche, Coahuila, Nuevo León, San Luis Potosí, Sonora, Tabasco, Tamaulipas, Veracruz and Yucatán, beating dozens of all-time temperature records. As of this writing, the Health Ministry reported 8 deaths nationwide due to extreme temperatures. However, final death toll resulting from current prolonged warm conditions will likely be considerably higher, as a heatwave is expected to continue over the next few days, with even higher maximum temperatures.

### Flooding & Landslides (India)

Heavy rainfall has triggered severe flooding and landslides in several districts of Assam state in India since June 14, affecting about 120,000 people, particularly in the districts of Nalbari, Baksa and Lakhimpur. In addition, remnants of cyclone Biparjoy brought heavy rainfall and flooding in the state of Rajasthan in recent days. As of June 21, at least 7 people died, thousands of houses were inundated, along with dozens suffering damage due to flooding and landslides, according to the India's Disaster Management Agency.



### **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)



#### NOAA Coral Reef Watch Daily 5km SST Anomalies (v3.1) 21 Jun 2023





### 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**



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

Storm Name	Location	Winds	Location from Nearest Land Area
TS Cindy	11.8N, 46.3W	45	685 mi (1,100 km) NE from Saint-Laurent-du-Maroni, French Republic
TS Bret	13.4N, 62.0W	60	55 mi (90 km) W from Kingstown, Saint Vincent and the Grenadines

\* 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): June 16-22



Source: United States Geological Survey

Date (UTC)	Location	Magnitude	Epicenter
6/16/2023	23.57S, 175.88W	6.0	Tonga region
6/16/2023	23.48S, 175.51W	6.2	24 km (15 mi) SSW of 'Ohonua, Tonga
6/17/2023	23.44S, 175.43W	6.0	23 km (14 mi) SSW of 'Ohonua, Tonga
6/18/2023	23.24N, 108.63W	6.4	10 km (6 mi) ESE of La Rivera, Mexico
6/18/2023	48.67S, 31.19E	6.0	south of Africa



### **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**



 $A \ge 99^{\text{th}}$  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 steam 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.

Source: United States Geological Survey



### **Source Information**

### Western & Central Europe: Severe Convective Storm

ESWD CHMI Météo-France Local and long-distance traffic disrupted after a storm over Hesse. Hessenschau Mini-tornado, hail, uprooted trees, *Radio France* 

### France: Earthquake

The French Central Seismological Bureau Earthquake in the west: christophe béchu announces "around 250 homes" strongly affected. BFM BCSF RENASS BRGM

### **United States: Severe Convective Storm**

The National Weather Service (NWS) The Storm Prediction Center (SPC) Colorado amphitheater hail storm injures nearly 100 ahead of planned Louis Tomlinson concert, *CNN* 

### **Brazil: Flooding**

INMET

Cyclone do RS is the biggest natural disaster related to rains in the last 40 years, says government, Globo

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

National Observatory of Athens

India heatwave: 96 people dead reportedly from heat-aggravated conditions, *The Guardian* Mexico's heat wave continues, but rain forecast for some states, *Mexico News Daily* 



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## AON

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