

Update: Western & Central Europe Floods

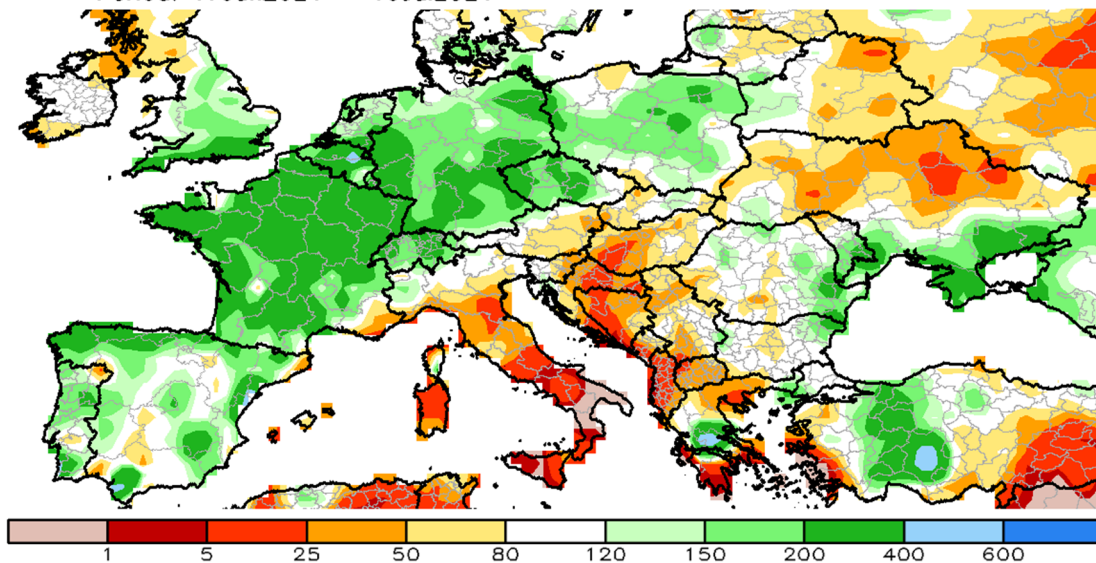
Torrential rainfall caused by a slow-moving area of low pressure – named “Bernd” by Free University of Berlin – resulted in catastrophic flooding across parts of Western and Central Europe from July 12-18. At least 202 people were killed in various flood-related incidents with dozens of people still officially listed as missing by local officials. Most fatalities were associated with flooding in Germany (163) and Belgium (36), and nearly 1,000 others (primarily in Germany) were also injured. The worst regional flooding in decades resulted from record rainfall on July 13-14 that prompted the major overflow of several small and large tributaries flowing into the northern and southern branches of the Rhine River. Thousands of properties were inundated. Beyond Germany and Belgium, widespread flood- and storm-related damage was also noted in Switzerland, France, Luxembourg, United Kingdom, Austria, the Netherlands, Italy, Poland, Hungary, Slovakia, and the Czech Republic. The combined cost of the flooding across Europe was anticipated to reach well into the billions of EUR. The highest portion of anticipated insured losses from the event was expected in Germany.

Meteorological Recap

The extreme flooding event across Western and Central Europe was initially set-up by a series of scenarios which occurred in the weeks and months leading up to the stretch from July 12-18. Following an extended multi-year period from 2018 to 2020 which featured severe drought and well above average temperatures across much of Central and Northern Europe, the pattern shifted in early 2021. Heavy rains caused the Rhine River and several tributaries to overflow their banks in January and February. Another active pattern in May and June saw moisture surging out of the Mediterranean Sea to help fuel heavy rainfall again throughout the Rhine River Basin. This already set the stage for elevated flood potential in parts of Western and Central Europe as soils were highly saturated.

CPC Unified Gauge 30-Day Percent of Normal Rainfall (%)

Period: 17Jun2021 – 16Jul2021



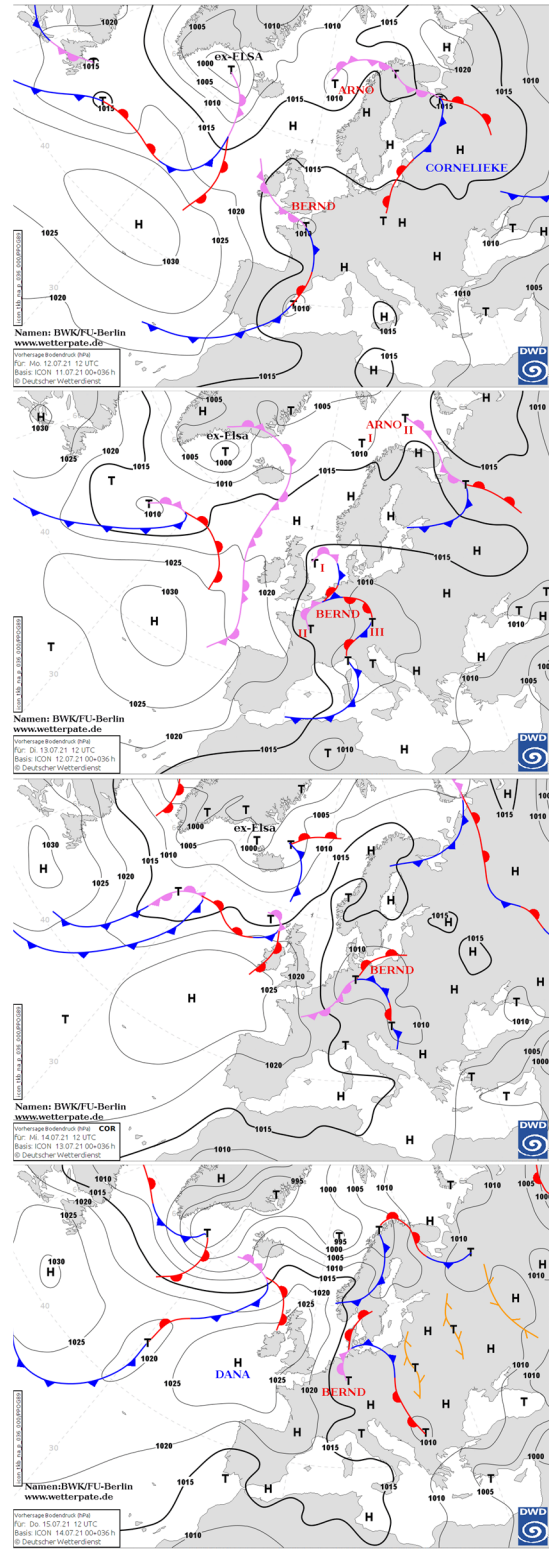
Overview of July 12-18

The stretch from July 12-18 across Western and Central Europe was primarily dominated by a slow-moving area of low pressure and subsequent frontal boundary – named **“Bernd” by Free University of Berlin** – that initially entered the **United Kingdom** on July 11. On July 11-12, the system prompted severe flooding in parts of England, including in the greater London metropolitan area, as some areas recorded more than 76 millimeters (3.00 inches) of rain in just 90 minutes’ time on July 12. Such a volume of rain was equal to more than a months’ worth of precipitation. This resulted in notable flooding as sewers were unable to handle the high volume of rain. More than 2,500 reports of flooded properties and roads due to sewage overflow / backup were noted by Thames Water.

As the storm system pushed eastward into other parts of Western and Central Europe, the main area of low pressure became stalled on July 13. With a strong ridge of high pressure located to the west in the **Atlantic Ocean**, and further ridging to the north and east of the low, this caused an occlusion. The stalled motion of the low allowed it to continuously tap into moisture from the **Mediterranean Sea**. The pattern was essentially a fire hose of moisture which various computer models indicated the **“Total Precipitable Water”** – the amount of moisture in a column of the atmosphere – was comparable to such levels seen in the United States Gulf Coast during hurricane landfalls. **“Bernd”** was largely stationary for four consecutive days before finally weakening and shifting southward on July 16.

The graphics on the right-hand side of the page show daily surface weather maps from July 12-15. It is clearly seen that the low **“Bernd”** did not move much during the 96-hour stretch. Areas of low pressure in the Northern Hemisphere rotate counterclockwise. Such motion tapped into warmth and moisture from the Mediterranean Sea.

The prolonged pattern resulted in persistent heavy rainfall that affected areas of **Germany, Belgium, The Netherlands, Luxembourg, France, Switzerland and Austria** through July 18. The most intense rains in Germany were recorded on July 14, particularly the states of Nordrhein-Westfalen, Rheinland-Pfalz, Hessen, Sachsen, Thüringen, Baden-Württemberg, and Bayern cited some 24- and 48-hour rainfall totals that surpassed the entire rainfall average for the month of July.



Daily surface weather maps from July 12-15
Source: Free University of Berlin

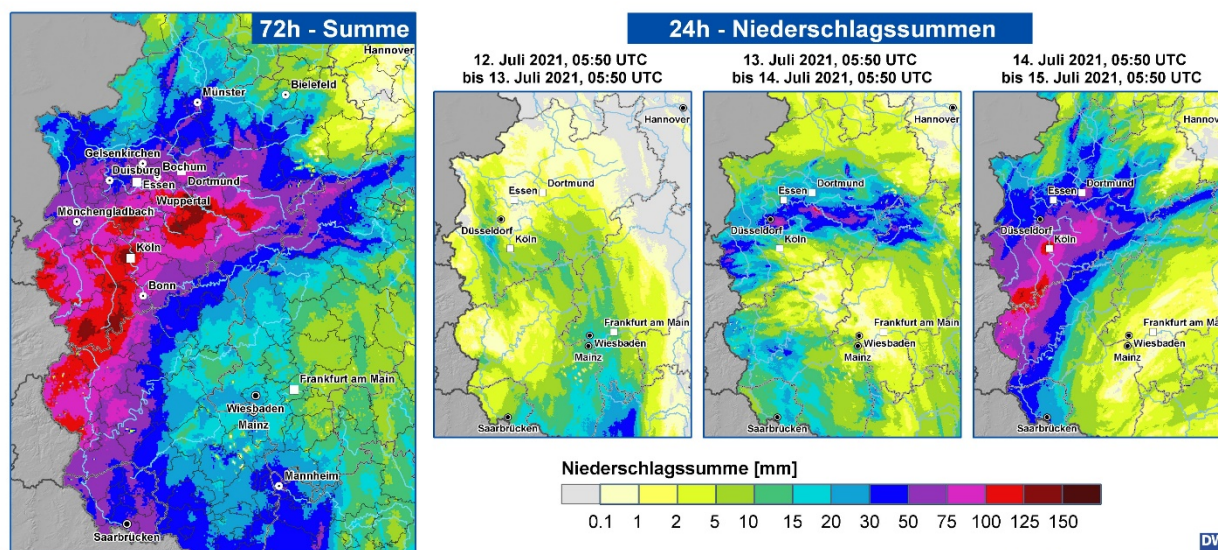
Germany

The German Weather Service (Deutscher Wetterdienst (DWD)) indicated that many areas of western Germany saw rainfall rates that exceeded a 1-in-100-year return period; or having a 1 percent chance of occurrence in any given year. DWD cited that some areas may have recorded rains with a 1-in-1,000-year return period; or a 0.1 percent chance of an annual occurrence.

Location	72-Hour Rainfall (mm)	72-Hour Rainfall (in)	Location	72-Hour Rainfall (mm)	72-Hour Rainfall (in)
Nachrodt-Wiblingwerde	182.4	7.18	Köln	149.8	5.90
Hagen	175.7	6.92	Haan	148.9	5.86
Altena	174.9	6.89	Mettmann	148.7	5.85
Werdohl	161.6	6.36	Lüdenscheid	146.0	5.75
Neuenrade	160.4	6.31	Würselen	144.3	5.68
Halver	154.3	6.07	Düsseldorf	143.4	5.65
Erkrath	152.8	6.02	Kall	142.3	5.60
Wipperfürth	151.5	5.96			

The table below shows top 15 municipalities with the highest 72-hour rainfall totals from July 12 to 15, as provided by the DWD. All these municipalities are located in the federal state of Nordrhein-Westfalen.

Nordrhein-Westfalen und Rheinland-Pfalz, Summe des Niederschlags aus Radar: 12. Juli, 05:50 UTC - 15. Juli 2021, 05:50 UTC



Klimadaten und Darstellung: © Deutscher Wetterdienst 2021 (Stand: 15.07.2021); Geodaten: © GeoBasis-DE/BKG 2020 (Stand: 01.01.2020).

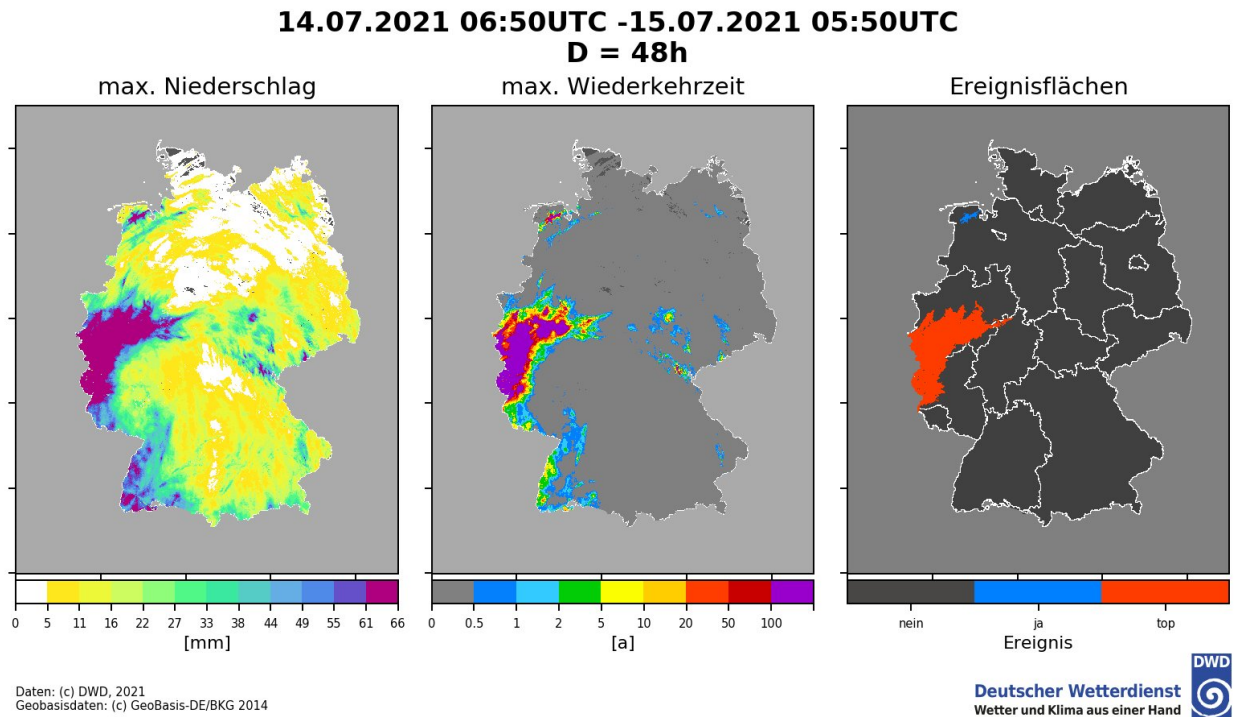
DWD
Deutscher Wetterdienst
Wetter und Klima aus einer Hand

(Left) Total 72-hour rainfall accumulation in Western Germany / (Right) Daily 24-hour rainfall totals from July 12-15
Source: German Weather Service (DWD)

The torrential rains put exceptional strain on local rivers and infrastructure throughout the northern and southern branches of the Rhine River. DWD issued an “Extreme Weather Warning” for parts of three states on July 14 as water levels along the Ahr, Volme, Dhünn, Moselle, Inde, Kyll, Jagst, and several other rivers and creeks that flow into the main Rhine River Basin. The high volume of water resulted in an overtopping of dams such as the Wuppertalsperre and Bevertalsperre, and the Eifel region of western Germany was declared under a state of emergency.

Some water levels in Germany left some communities isolated as road and train access was unavailable due to submersion. Hundreds of water rescues were conducted.

For additional context, the below graphic from the DWD shows the maximum 48-hour rainfall (left), respective return period in years (middle), and red areas in the graphic on the right show a region that registered a 48-hour rainfall in the top 10 percent of similar events during the past 20 years.



Belgium

In **Belgium**, much of the flood damage occurred following an overflow of the Vesdre, Meuse, and Our rivers in the Walloon Region (also known as Wallonia). The worst floods were cited in the provinces of Liège, Luxembourg, and Namur, along with Walloon Brabant. Per the Royal Meteorological Institute (RMI), a national 48-hour rainfall record was established in the municipality of Jalhay (Liège Province) after 271.5 millimeters (10.69 inches) fell. This was equivalent to a 1-in-200-year return period; or a 0.5 percent probability of occurring in any given year. Other areas, including the town of Spa (Liège Province) and large swaths of the province of Luxembourg, cited rainfall totals exceeding 150 millimeters (5.91 inches) during the same timeframe. River overflows turned streets into raging torrents of water that had enough force to destroy multiple buildings, notably in the town of Pepinster.

The floods in Liège were so severe that French civil protection authorities were dispatched after Belgium’s interior minister activated the European Union’s “Civil Protection Mechanism” – which is a multinational agreement in the EU that is aimed to improve disaster prevention, preparedness, and response to man-made or natural disasters.

The Netherlands & Luxembourg

Torrential rains were also highly prevalent in **The Netherlands** and **Luxembourg**. Per both the Royal Netherlands Meteorological Institute (KNMI) and MeteoLux, parts of each country recorded 24-hour rainfall totals ranging from 60 to 98 millimeters (2.36 to 3.86 inches) ending on July 14 or July 15. The KNMI declared a rare “code red” warning on July 14 for the province of Limburg. These rains prompted many rivers, including the main Meuse River (also known as the Maas River), to overflow and cause extensive damage to dozens of communities.

The most significantly affected Dutch province was Limburg. On July 15, the Meuse River reached its highest level at multiple Dutch locations since measurements began in 1911. The high river levels led to several dike failures or overtops, including a dike near Maastricht and the Juliana Canal. The Dutch government declared the event a disaster. In Luxembourg, heavy rains spawned landslides and flooded numerous roads, tunnels, and railways. The peak of the floods were on July 14 and waters started to slowly recede in the country on July 15.

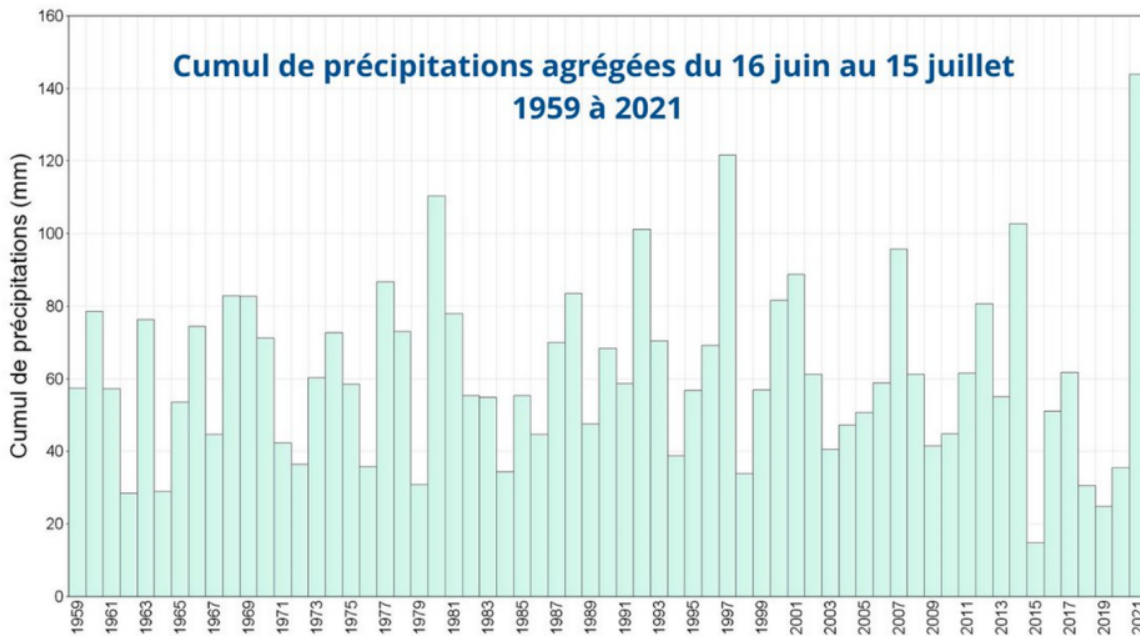
France

In **France**, Météo-France listed more than a dozen departments under flood warnings during the event. In total, Météo-France issued an Orange flood danger alert (3rd highest of 4) for 12 departments. Heavy rains and resultant floods were most prevalent in areas in Moselle Department near or along the Moselle River – which is the second-longest tributary of the Rhine River – and other rivers or canals such as the Orain River and the Canal de la Marne au Rhin overflowed their banks and inundated numerous towns. The Grand Est region communities of Fixem, Beyren-lès-Sierck, Puttelang-lès-Thionville, and Longuyon were among the hardest-hit.

Below are the stations that received the highest rainfall totals between July 12 and 16, as provided by Météo-France:

Location	Dept.	Total Rainfall (mm / inch)	Location	Dept.	Total Rainfall (mm / inch)
Châtel de Joux	Jura	199 / 7.8	Errouville	Meurthe-et-Moselle	151 / 5.9
Plainfaing	Vosges	160 / 6.3	Longuyon	Meurthe-et-Moselle	149 / 5.9
Le Fied	Jura	159 / 6.3	Villette	Meurthe-et-Moselle	144 / 5.7
Villers La Chèvre	Meurthe-et-Moselle	158 / 6.2	Bras-sur-Meuse	Meuse	143 / 5.6

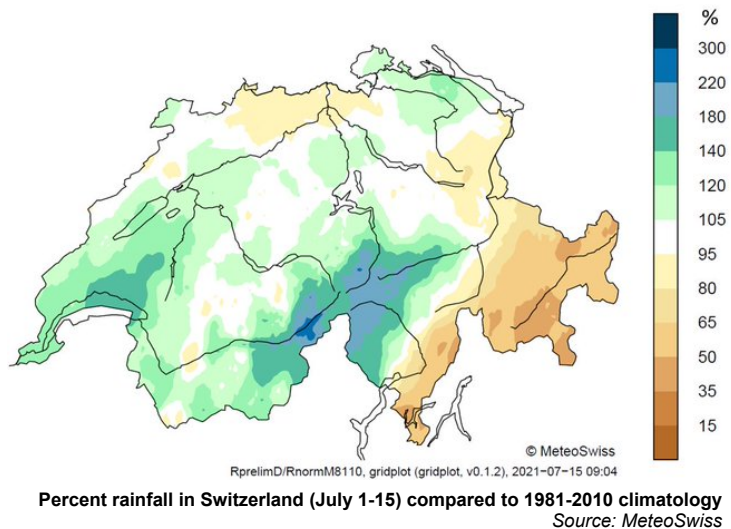
During the 30-day period from June 16 to July 14, Météo-France reported that the country averaged 144 millimeters (5.67 inches) of rain. This is the highest such total for this specific timeframe on record dating to 1959. As noted previously, many parts of Western and Central Europe had recorded heavy rains prior to the July 12-15 period and soils were already highly saturated and conducive for elevated flood risk.



Cumulative 30-day rainfall from June 16 to July 15 by year (1959-2021) METEO FRANCE

Switzerland

Heavy rains even prior to the arrival of “Bernd” in **Switzerland** had already left many lakes (including Lake Geneva, Lake Zurich, Lake Lucerne, Lake Thun, and Lake Biel) at high risk of flooding. Many areas in the Swiss Alps had already cited river and lake overflows prior to July 12. Once July 12-13 arrived, heavy rains and high winds accelerated flood conditions along parts of the Rhine, Reuss, Aare, Limmat, and Rhone rivers. Per MeteoSwiss, many parts of Switzerland recorded rainfall during the first 15 days of July that was nearly 200 percent higher than the climatological normal (1981-2010).



Austria

Elsewhere in Europe, some of the heaviest rains and subsequent flooding were noted in **Austria** on July 17-18 as “Bernd” shifted southeastward as the blocking ridge pattern weakened. This brought significant rainfall to many parts of the country – such as Salzburg and Vienna. Per Austria’s Central Institution for Meteorology and Geodynamics (ZAMG), six federal states (Vienna, Lower Austria, Salzburg, Styria, Tyrol, Vorarlberg) set 24-hour July rainfall records. A peak total of 124 millimeters (4.88 inches) was recorded at Golling an der Salzach, a town located just south of Salzburg.

The worst flooding in decades was cited in many locales, especially those along the Salzach River and its tributaries. One person was killed. The below table shows 10 stations in Austria that recorded the highest 24-hour totals, as provided by ZAMG.

Location	State	24-Hour Rainfall (mm)	24-Hour Rainfall (in)	Location	State	72-Hour Rainfall (mm)	72-Hour Rainfall (in)
Golling	S	128.1	5.0	Reutte	T	103.4	4.1
Kirchdorf in Tirol	T	117.6	4.6	Oberndorf an der Melk	NÖ	102.3	4.0
Kufstein	T	116.3	4.6	Lunz am See	NÖ	101.7	4.0
ST. Pölten	NÖ	107.4	4.2	Bad Ischl	OÖ	97.2	3.8
Söll	T	104.5	4.1	Lilienfeld/Tarschberg	NÖ	96.6	3.8

Elsewhere

Heavy rain and thunderstorms in northeastern **Italy** caused further damage and led to one fatality. Flooding and landslides were noted in the Trentino-Alto Adige region, especially in agricultural areas. Similar types of impacts were also felt in **Liechtenstein**.

The role of Climate Change

There has been vigorous discussion regarding the role of climate change in this event. The tremendous volume of rainfall that occurred was certainly consistent with what scientific research has shown as expected with the continued warming of the atmosphere and oceans. As temperatures warm, this acts as an accelerant to the evaporation process – often over the oceans or other large bodies of water – which then places more water / moisture into the atmosphere. This evolving precipitation life cycle has resulted in heavier rainfall events all around the world.

In terms of the specific July 12-18 event, while climate change was not the direct cause of this event, it is another example of how more unusual heavy precipitation occurrences or stalled weather patterns are becoming more commonplace in a warming world. Another result of a warming atmosphere and oceans is more peculiar behavior of water patterns that can affect the jet stream. With the prospect of more instances of weakened atmospheric circulation and subsequently weaker steering currents, this does increase the probability of extreme rainfall events that can subsequently result in major flooding.

Note: For every 1°C (1.8°F) increase in warming, the atmosphere can absorb another 7 percent of moisture – which in turn can drop to the surface as measurable precipitation.

Event Details

Extreme rainfall and thunderstorm activity related to the low-pressure area Bernd resulted in extensive damage and subsequent losses across several countries from July 12-18.

Germany

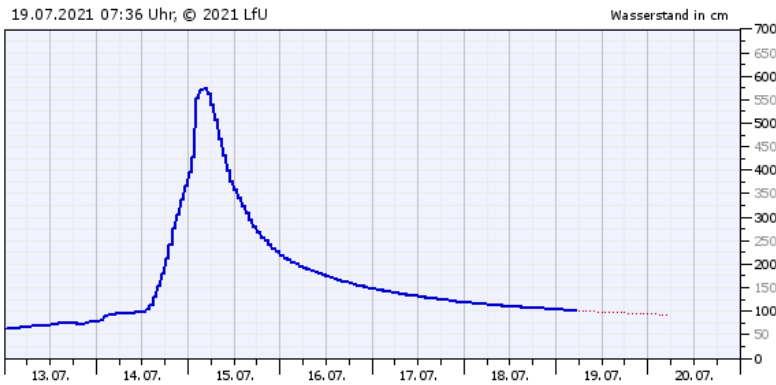
The worst impacts related to the event were recorded in **Rheinland-Pfalz** and **Nordrhein-Westfalen** federal states of Western Germany on July 13-14. At the time of this writing, there were at least 165 confirmed fatalities. Dozens of people are suspected missing, and nearly 1,000 people were identified as injured. At one point, as many as 1,300 residents were listed as missing; this was a result of a collapse of local communication infrastructure. This event now ranks among the deadliest natural disasters in the modern German record and is the deadliest since the North Sea Flood of 1962 when an estimated 340 people were killed.

State	District / City	Fatalities
Rheinland-Pfalz	Ahrweiler	117
	Euskirchen	24
	Rhein-Sieg	6
	Heinsberg	2
	Köln (Cologne)	2
Nordrhein-Westfalen	Märkischer Kreis	2
	Düsseldorf	1
	Solingen	1
	Unna	1
	Rhein-Erft	1
Bayern	Berchtesgaden	2
Baden-Württemberg	Heilbronn	1
other	-	4+
TOTAL		163+

Rheinland-Pfalz

At least 117 people were killed in the Ahrweiler district in **Rheinland-Pfalz** alone, in the worst affected area; twelve fatalities were residents of a housing facility for the disabled in Sinzig. Local police confirmed at least 749 injuries in the district. In the village of Schuld, the Ahr River was so high that dozens of people had to be rescued from the roofs of their homes by either inflatable boats or helicopters. Multiple residential properties were destroyed by the raging torrent in the area. District officials noted that the death toll was expected to rise, and that 3,500 people were living in housing care facilities.

Ahrweiler, which is a wine-growing region, was affected after the Ahr River burst its banks and destroyed a number of homes while inundating many others. Significant damage was incurred on local infrastructure. In total, the loss of cellular network tower access in Ahrweiler district made it nearly impossible at one point to contact more than 1,300 residents in the region at one point. Work was being done to construct drinking water treatment plants; although full restoration of essential infrastructure was expected to last months in some places. Severe losses were incurred on transportation infrastructure; at least seven railway bridges and long stretches of tracks were destroyed or damaged.



Massive scale and a relatively short duration of the flood wave in the Ahr River valley can be shown on the hydrograph from Altenahr. According to the data from the State Office for the Environment, the river crested at 574 centimeters at around 4:00 AM local time at a level far exceeding a 100-year flood and surpassing the previous record of 371 centimeters recorded during the flood in early June of 2016.



Nordrhein-Westfalen

Most of the districts and cities located in Nordrhein-Westfalen (NRW) were affected by the catastrophe, with the highest death toll reported from Euskirchen and Rhein-Sieg districts. Reports from Euskirchen district noted at least 24 fatalities, following major flood damage, with several people missing. Four firefighters were killed during the relief operation in NRW.

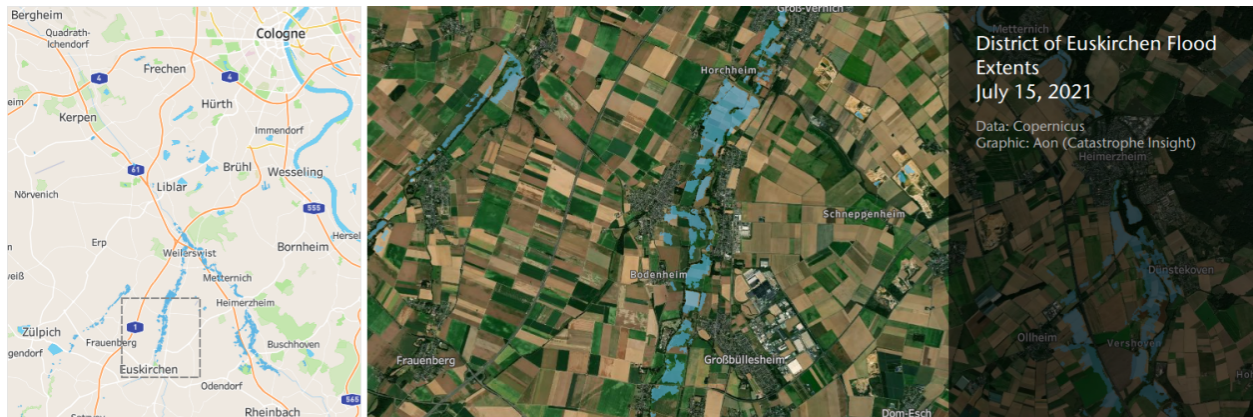
Severe damage was also reported from Rhein-Erft district - particularly in the area of Erfstadt, as local streams burst their banks, while landslides and washouts caused massive erosion and a collapse of multiple structures. As of July 18, 16 people were still missing in the Erfstadt area. More than 100 vehicles were trapped on an inundated highway near Erfstadt.

Widespread inundation also occurred along the Moselle River. Notably, at least 700 homes were reported to be inundated in Ehrang of Trier and the adjacent area; there were at least 1,000 evacuations.



Flooding in Stolberg, NRW
Source: Office of the State Chancellery, NRW

Widespread disruption across the state occurred; temporary shipping restrictions were enacted due to high water, and the Federal Waterways Administration (WSV) was concerned around further rises of the Rhine which would require a full stoppage of shipping. Widespread traffic disruption occurred in several cities, including Düsseldorf and Cologne. Operation of multiple long-distance and local railway lines was suspended.



Several dams and reservoirs threatened to collapse or overflow in the course of the flooding. Notably, 4,500 residents were evacuated due to a situation regarding the Steinbachtalsperre dam near Euskirchen – in the end, the structure withstood the event.



Flooding in the Eifel Region, Rheinland-Pfalz
Source: Rheinland-Pfalz State Government

Elsewhere

Further damage was recorded elsewhere in Germany, including federal states of Baden-Württemberg, Bayern, Hessen, Saarland, Sachsen and Thüringen. The situation was dramatic in the Berchtesgaden region of **Bayern** on July 17-19, with widespread inundation reported. Two people were killed as river Ache overflowed and caused landslides in the area.

At the peak of the event, more than 200,000 Westnetz customers were without electricity. Westnetz is Germany's largest power distribution grid. The severity of the event prompted the German government to declare that flags would be hung at half-mast on public buildings on July 16. The floods proved much deadlier than the 2002 disaster which left 27 people and is thought to be the worst flood event in Western Germany in decades. The total economic toll in Germany was anticipated to be substantial.

Belgium

Catastrophic flooding along the Meuse River in Wallonia of **Belgium** resulted in widespread property damage and at least 36 fatalities. More than 160 people remained missing. The highest death toll occurred in the Vesdre valley; municipal authorities of Verviers confirmed at least 23 killed in the area. Majority of municipalities in Wallonia were hit by severe flooding. The most significant flooding was noted in Liege (population: 200,000), which is Belgium's third-largest urban area after Brussels and Antwerp. Many city residents were urged to evacuate the city after the Meuse River, which flows through the city, overflowed and threatened to rise further on July 15-16. Officials were also concerned regarding the risk of a dam bridge may collapse under the excessive water pressure of the high river levels.



Source: Office of Belgian Defence Force

All tourists were asked to leave the city, and no vehicles were allowed into the city. Only traffic evacuating was allowable. The severity of the flood risk forced all businesses to close operations. The flooding further left many municipalities in Liege and Namur provinces without drinkable tap water.

In the town of Pepinster, the Vesdre River burst its banks and sent torrents of water through the streets. At least 10 homes were destroyed, and many others were damaged or inundated. Extensive damage to major highways was cited across many southern and eastern parts of Belgium. All trains were halted as thorough track inspections were required. The government deployed the Belgian Defence Force to assist in relief and recovery efforts across the country, though most of the early focus was in Liege.

The graphic below highlights an initial flood extent as provided by Copernicus. This focuses in on one specific area near the Belgium / Dutch border where flood-related property damage was reported.



The Netherlands

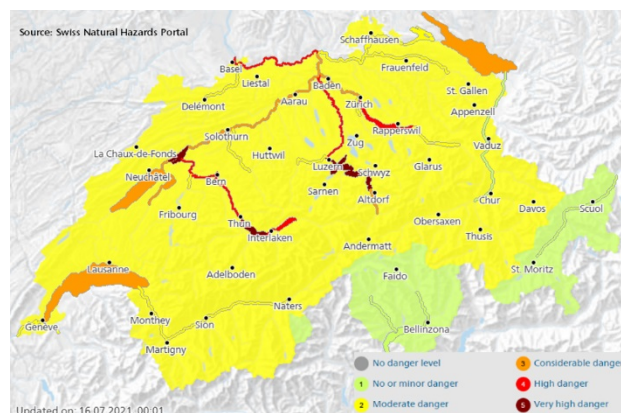
Severe flooding also occurred in the Netherlands, particularly in the southern part of the province Limburg. Several rivers burst their banks and caused significant damage, including the Meuse River which reached its higher summertime level in more than 100 years in the southern province of Limburg. As a result of the flooding in the city Valkenburg aan de Geul, a bridge collapsed, and several other bridges were also at risk. In parts of southeast Netherlands, rivers and streams overflowed and submerged parts of roadways A2, A79, and A76. Evacuations were ordered in the cities and towns of Maastricht, Roermond, Stein, Eijsden-Margraten, and Valkenburg. At least one fatality was confirmed.

Luxembourg

Several rivers in Luxembourg overflowed their banks and subsequently flooded surrounding municipalities. Notably affected – either due to flood damage or power outages – were the towns of Mamer, Vianden, Bettemburg, Trier, Echternach, Rosport, Mersch, Beringen, and Rollington. The Sauer River exceeded 9.0 meters (30 feet) on July 15 for just the second time on record; the first in 1918. At Bollendorf, the Sauer reached 6.08 meters (19.94 feet), which was the second-highest value since records began being kept in the municipality.

Switzerland

Renewed rounds of intense thunderstorms started to affect parts of Switzerland on July 12-13. Strong winds, torrential rain and hail caused severe damage in the city of Zurich and areas of Kloten and Winterthur. Hundreds of emergency interventions dealt with property damage, flooded cellars, and numerous fallen trees. There was a major disruption within the city and elsewhere in the region. In canton Uri, a major Swiss highway was closed due to severe weather. Shipping on the Rhine at Basel had to be suspended. Shipping also stopped on Lake Lucerne, Lake Thun and Lake Biel.



Widespread flooding in the country continued through July 19, as water levels continued to rise due to additional rainfall. The event was likely to result in significant economic losses, adding to an already historic total for one of the costliest years in terms of weather-related losses in Switzerland.

Austria

Widespread flood-related damage was recorded in Austria on July 17-18, as the focus of the heaviest rainfall shifted southeastward to southeastern Germany and Austria. Among the worst affected federal states were Niederösterreich, Tirol, Salzburg and Oberösterreich, as thousands of fire brigade personnel conducted an extensive relief operation. Dramatic situation ensued in the town of Hallein in Salzburg, area adjacent to Berchtesgaden region in Germany. One person was killed in Saalbach-Hinterglemm.

Rest of Europe

In the **Czech Republic**, emergency services responded to more than 800 requests for help on July 13-14 in response to severe convective storms and flooding. The most affected were regions Středočeský, Plzeňský, Karlovarský, Ústecký, Prague and Liberecký. Some locations recorded hailstones with a diameter of at least 4.0 centimeters (1.6 inches). Further flash flooding occurred in parts of the country on July 17, notably in Děčín area, where dozens of homes were flooded. Localized flash flooding also occurred in **Slovakia** on July 12, particularly in Stará Ľubovňa district.

In Masovian Voivodeship in east-central **Poland**, nearly 2,000 emergency service response requests were responded to on July 12 following heavy rains and damaging winds that affected the region. More than 500 children were evacuated from summer camps happening in Kujawsko-Pomorskie, Pomorskie and Warmińsko-Mazurskie Voivodeship. The storms caused flooding, fallen trees, and damaged roofs. No injuries were recorded. Inclement weather continued to affect the country in the following days; notable wind-related damage was recorded across central Poland on July 13, particularly in Lodzkie and Slaskie voivodeships.

Localized flooding was reported from several regions during the week till July 18; notably, intense precipitation resulted in hundreds of interventions in the early morning hours of July 18 in southern Poland, in Malopolskie and Podkarpackie voivodeships.

On July 13, strong storms hit the Trentino region in the north of **Italy**, particularly affecting the areas of upper Garda, Malcesine, and Torri del Benaco. A mixture of rain and hail, pushed by a strong wind, caused flooding of dozens of basements, garages, residential and commercial buildings. In the city of Riva del Garda, winds reached 90 kph (56 mph), several fallen trees destroyed cars and caused road closures. One person died in Veneto region.

Financial Loss

With relief and recovery efforts still in their early stages across most of the hardest-hit areas of Western and Central Europe, it still remains too early to provide a specific financial loss estimate at this time. However, the observed footprint and scale of damage from this event makes it highly likely that both the overall economic and insured loss will each be measured in the multiple billions (EUR). A large portion of the damage is expected to be uninsured, however. This reinforces the importance of flood protection improvements, earlier warnings to vulnerable populations, adaptation to more amplified weather phenomena, and increased measures to lower the protection gap.

The table below is a **select list** of some of the costliest flood events ever recorded in Europe. The data, which comes via **Aon's Catastrophe Insight Database**, has been inflation-adjusted to today's dollars. This is a peril that does not frequently cause more than USD10 billion in economic damage, but there is notable precedent for large-scale, multi-national events that leave substantial impacts.

Event	Economic Loss (2021 USD)	Insured Loss (2021 USD)
Italy (Piedmont) Floods (1994)	\$21.3 billion	\$0.6 billion
Central Europe Floods (2002)	\$20.9 billion	\$4.8 billion
Central Europe Floods (2013)	\$13.2 billion	\$3.9 billion
Italy (Florence) Floods (1966)	\$13.1 billion	\$0.1 billion
Central Europe Floods (1997)	\$10.7 billion	\$1.1 billion
United Kingdom Floods (2007)	\$10.2 billion	\$7.7 billion

One notable point in the historical loss table above is the significant portion of the economic losses that went uninsured. Some regions – like the United Kingdom and Germany – do have more robust insurance take-up for residential and commercial assets, though wide gaps do remain.

For example, the German Insurance Association (GDV) recently noted that 46 percent of all properties in Germany had some type of insurance coverage against all weather phenomenon; meaning that a majority (54 percent) is uninsured. However, there are significant regional differences in insurance take-up. In the hardest-hit regions from the July 2021 floods, take-up rates include 47 percent in Nordrhein-Westfalen; and only 37 percent in Rheinland-Pfalz; 44 percent in Hessen; 38 percent in Bayern; but 94 percent in Baden-Württemberg. This suggests that while there is likely to multi-billion-dollar (USD) industry loss in Germany from this event, the overall economic loss will be substantially higher.

This will be a continuation of what has been one of the most expensive six-week periods in Europe for the insurance industry in years. A series of severe convective storm (SCS) outbreaks in late June – June 17-25 and June 28-30 – has already been estimated to result in a combined insured loss of USD4.5 billion. The overall economic loss was even higher at nearly USD6.5 billion. That equals the costliest SCS two-week stretch on record with the peril for the European insurance industry. Most of that damage was due to catastrophic hail, tornadoes, and flash flood incidents in Germany, Switzerland, France, Austria, and the Czech Republic.

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