



20 years of ESSL – monthly jubilee topic

As part of the celebrations of **20 years of ESSL**, we are publishing a series of monthly jubilee topics highlighting different aspects of our work and community. Each month, we also briefly revisit a historical high-impact event featured as the “topic of the month” in the ESSL calendar. This time, we focus on the **tornado in Carmagnola on 10 July 1826**.

The Carmagnola tornado (Piedmont, Italy) on 10 July 1826

As this month marks **200 years since the event**, we revisit the tornado that struck **near Carmagnola, south of Turin, on 10 July 1826**. Around two in the afternoon, a tornado touched down near Carmagnola. A newspaper article from *Giornale del Regno delle Due Sicilie*, written the next day, calls it a “tromba terrestre” (a tornado, in the language of the time) and says it arrived “as the herald of the most furious tempest, which entirely devastated the territories of Carmagnola and Ceresole”. The tornado caused damage to some farmhouses and crops. Five hours of torrential rain followed, which “caused damage beyond description”.

Near Colombaro, a farmer was on the road with a cart loaded with wheat when the air became so thick that he felt he was suffocating. He unhitched his oxen and ran. When he looked back, he “saw his cart lifted into the air to no small height, and then heard the crash of its fall, by which all its parts were shattered except a single wheel.”

Two hundred years later, this event has become part of the European Severe Weather Database, thanks to the efforts of our dedicated and highly active VOP Federico Pavan. The lofted cart, later smashed on impact, is the sort of evidence that damage surveyors use to confirm a tornado.

Source: *Giornale del Regno delle Due Sicilie*, p. 727, 1826.



Tornado

 **Carmagnola** Piemonte, Italy QC1

10/07/1826 12:00 UTC (+/- 30 minutes)

Reporter: Federico Pavan (PRETEMP)

Tornado caused damage to some farmhouses and crops. A farmer, while on the road with his trailer full of wheat, had to leave it and run with his cows as the tornado lofted and tossed the trailer some distance

Location of the Carmagnola tornado in Italy (red triangle; source: ESWD).

Records from the ESWD

A selection of outstanding severe weather events as stored in our database

In this issue, alongside the calendar topic, we present a small selection of outstanding events

from the **European Severe Weather Database (ESWD)**, covering the categories of heavy rainfall, large hail, damaging lightning, tornadoes and severe winds.

Heavy rainfall

For heavy rainfall, one of the most catastrophic events in the ESWD is the **29 May 1613 flood disaster in present-day Germany**, when violent flash floods caused **at least 2,261 fatalities** in the Thuringian Highlands and Ore Mountains. Historical sources report widespread destruction of villages, houses and bridges, with floodwaters reaching several metres in height in some places. Several further heavy-rain disasters with death tolls in the thousands are documented in Europe before 1950. From the second half of the 20th century, one of the most devastating cases is the **Vallés Occidental flood in Spain on 25 September 1962**, which caused **at least 617 fatalities** and severe destruction in Catalonia. In recent years, the [29 October 2024 flash-flood disaster in Spain](#) stands out as the deadliest, with **237 fatalities** recorded in the Valencia, Albacete and Málaga areas.

Heavy rain

1	29 May 1613	2	25 Sep 1962	3	29 Oct 2024
	Thuringian Highlands / Ore Mountains, Germany		Vallés Occidental, Spain		Valencia region, Spain
	At least 2,261 fatalities		At least 617 fatalities		At least 237 fatalities

Large hail

The largest hail records currently listed in the ESWD all come from southern Europe. The current record holder is the [19 cm hailstone confirmed in Azzano Decimo, Italy, on 24 July 2023](#). The second-ranked event is the **Padova hailstorm of 26 August 1834**, where hailstones of up to **17 cm** were measured and some were reported to weigh

1 to 2 kg. The third-ranked event is from **Caspe, Spain, on 21 July 1859**, where hailstones of up to **16 cm** and about **700 g** were reported during a sequence of destructive storms that caused total crop loss.

These examples also show why it is so important to document hail size as carefully as possible. When photographing hail, observers are encouraged to include a **reference object**, ideally a ruler; if one is not available, [another familiar object can also help with a later size estimate](#).



Damaging lightning

For damaging lightning, the deadliest event currently listed in the ESWD is the **Campo Maior disaster in Portugal on 16 September 1732**, where a lightning strike triggered an explosion in an ammunition tower and killed **316 people**. It is followed by the **Luxembourg event of 26 June 1807**, in which lightning struck an explosives storage and caused an explosion and fire that killed **up to 230 people**. Another event worth highlighting is **the Dannenwalde event in northeast Germany on 14 August 1977**, where lightning hit a missile base and triggered a series of explosions that **killed at least 70 people**. These cases underline that the most catastrophic lightning disasters in the ESWD are closely linked to secondary impacts such as explosions and fire.



Tornadoes

For tornadoes, the ESWD currently [lists eight confirmed IF5 events in Europe](#). However, the deadliest tornado event currently listed in the database is an earlier **F4-rated tornado that struck the city of Cádiz, Spain, on 15 March 1671** and is reported to have killed **about 600 people**. Among the tornadoes that have so far been reassessed using the **International Fujita (IF) scale**, the **Montville tornado in northern France on 19 August 1845** stands out as the deadliest, with **at least 75 fatalities**. Other confirmed IF5 cases include the **Woldegk tornado in northern Germany on 29 June 1764** and the **Catania tornado in Italy on 7 October 1884**, where **28 people were killed** and several hundred injured. A complete overview of violent tornadoes currently listed in the ESWD can be found on the ESSL website.

Confirmed IF5 events in the ESWD					
No	Date	Country	Regions	Path	Deaths
1	29 JUN 1764	GERMANY	Woldegk (Mecklenburg-Vorpommern)	33 km 800 m	1
2	23 APR 1800	GERMANY	Dittersdorf (Sachsen)	9.5 km 50 m	0
3	19 AUG 1845	FRANCE	Montville (Normandie)	15 km 500 m	75
4	07 OCT 1884	ITALY	Catania (Sicilia)	30 km 750 m	28
5	01 JUN 1927	NETHERLANDS	Neede (Gelderland)	–	7
6	24 JUL 1930	ITALY	Selva del Montello (Veneto)	36 km 750 m	21
7	16 JUN 1957	ITALY	Valle Scuropasso (Lombardia)	–	6
8	24 JUN 1967	FRANCE	Palluel (Région Nord-Pas-de-Calais)	23 km 250 m	6

Severe wind

For severe wind, records in the ESWD can be viewed from different perspectives. In terms of measured wind speed, one of the most outstanding recent events is the **18 August 2022 storm in Marignana, Corsica (France)**, where an extremely severe gust of **62.4 m/s (224.6 km/h)**

was recorded. This observation was associated with the well-known [18 August 2022 derecho event](#), during which severe storms affected a broad swath from **Menorca through Corsica, northern Italy, Slovenia, Austria and southern Czechia**.

In terms of fatalities, the deadliest wind-related event currently listed in the ESWD is the **16 January 1219 storm surge** affecting the northern Netherlands and northwestern Germany, known as the *first Marcellus Flood*, which caused around **36,000 deaths**. A particularly notable maritime disaster is the loss of the Swedish full-rigged ship *Prinsessan Sophia Albertine*, which capsized west of Texel Island during a severe storm on **21 August 1781**, causing **419 fatalities**.



Together, these records highlight the ESWD as a unique pan-European severe weather database that reaches far into the past, from events preserved in historical chronicles and newspapers to those documented today through social media, all subject to quality control and assigned a [QC level](#) according to source reliability.

ESSL scientists in the media

Two recent German-language articles feature insights from ESSL scientists on tornado identification and the hazards associated with very large hail.

Why not every vortex is a tornado and how to recognise one

In [an interview with weather.com](#), Alois M. Holzer

explains why a photograph alone is often not sufficient to identify a tornado, how different types of vortices form, and why damage surveys are essential for assessing tornado intensity.

Giant hail, forecasting and hail trends

Our colleague Dr. Tomáš Púčik recently shared his expertise on giant hail, hail forecasting and hail trends in [an interview with the German newspaper DER WESTEN](#).

The article discusses how large hail forms, the hazards associated with giant hail, and why forecasting its exact size and location remains challenging.

ESSL event and training calendar 2026 and 2027

Our event calendar has been updated with upcoming courses, Testbeds, workshops and conferences through 2027.

Date	Activity
6 – 11 September 2026	EMS Annual Meeting (co-sponsored by ESSL) Utrecht, Netherlands
14 – 18 September 2026	ESSL-EUMETSAT Forecaster Testbed (MTG focus)
28 September 2026	20th Anniversary of the ESSL – jubilee event
29 September – 1 October 2026	IF Scale and wind damage assessment workshop
5 – 9 October 2026	ESSL-EUMETSAT Forecaster Testbed (MTG focus)
15 – 19 February 2027	HIGHLIGHT - 2nd edition of new radar course : Optimal use of radar data in severe storm nowcasting
1 – 5 March 2027	The legendary STANDARD every forecaster should attend at least once: Course on Forecasting Severe Convection
15 – 19 March 2027	Course – spring edition: Aviation Forecasting of Severe Convection
10 – 14 May 2027	EUMETSAT-ESSL Forecaster Training Testbed with focus on MTG – week 1
31 May – 4 June 2027	EUMETSAT-ESSL Forecaster Training Testbed with focus on MTG – week 2
7 – 11 June 2027	ESSL Testbed with focus on radar, nowcasting products and NWP – week 1
21 – 25 June 2027	ESSL Testbed with focus on radar, nowcasting products and NWP – week 2
28 June – 2 July 2027	ESSL Testbed – expert week This event is by invitation only.
5 – 10 September 2027	EMS Annual Meeting (co-sponsored by ESSL) Kraków, Poland
13 – 17 September 2027	EUMETSAT-ESSL Forecaster Training Testbed with focus on MTG – week 3
18 – 22 October 2027	European Conference on Severe Storms – ECSS2027 in Genova, Italy
22 – 26 November 2027	Course – autumn edition: Aviation Forecasting of Severe Convection

You can find details about all events and registration at

<https://www.events.essl.org/>.

Unsure which course to attend? [Try our online quiz!](#)

For further information about registration, please contact us via email at events@essl.org.

Or contact us for [tailored training or forecaster training on the job](#).



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