



20 years of ESSL – monthly jubilee topic

As part of the celebrations of **20 years of ESSL**, our monthly jubilee topics highlight different aspects of our work and community and revisit historical high-impact events featured in the ESSL calendar. This time, we focus on the **tornado event in Cowes on 28 September 1876**.

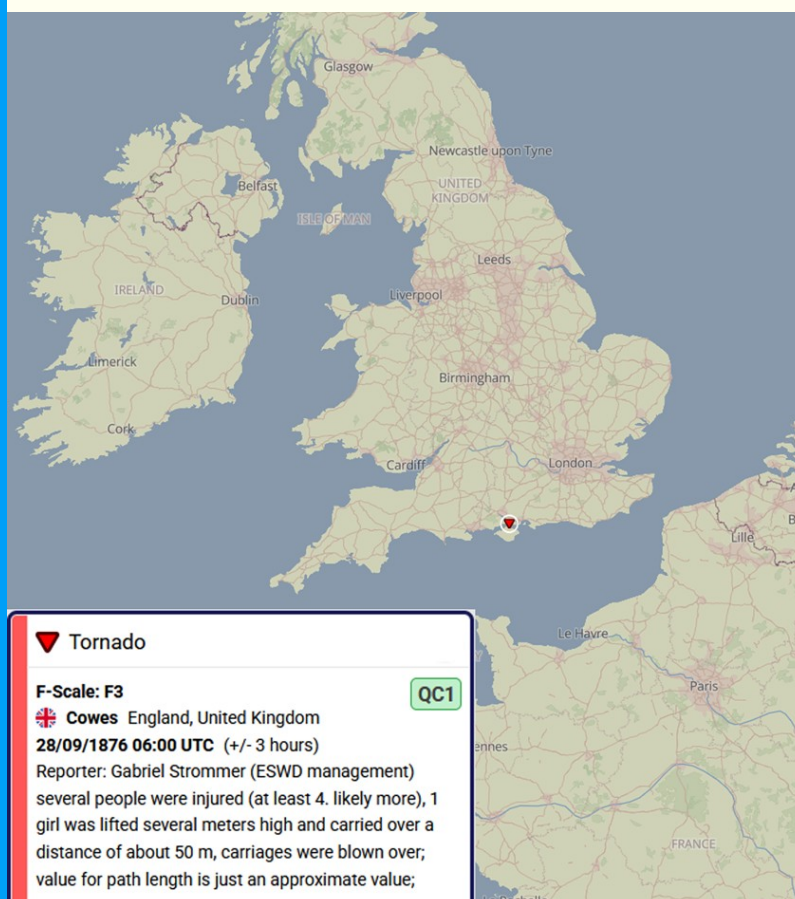
Tornado event in Cowes (England) on 28 September 1876

As this month marks **150 years since the event**, we revisit the Cowes tornado of 28 September 1876. It was one of several tornadoes reported across southern England that day. **In the early morning of 28 September 1876**, a tornado formed in the south-west of the Isle of Wight and then moved north-east across the island, through the town of Cowes.

Symons's Monthly Meteorological Magazine described it as "more remarkable" than any British whirlwind previously reported. The first damage was reported near Brighstone, at around 7.15 a.m. local time, where several buildings were destroyed. Some accounts mention that the tornado started

as a waterspout that broke up at the coast and then re-formed inland. From there it crossed the island, leaving "a continuous line of wreckage". The reports mention large old trees uprooted, a barn that collapsed, injuring at least four people, and a house that was completely destroyed, with only the staircase left standing, "leading to nowhere".

At Cowes the tornado arrived from the south and lasted only about two minutes but caused great damage. At the railway terminus of the Newport and Cowes line, four heavy carriages were blown onto their sides, and a water tank fell onto a locomotive. A little girl was lifted about 15 ft (4.6 m) into the air and carried 50 m, but she was unhurt. Witnesses said the tornado arrived with "a lurid glare of electric light" and looked like "a small spiral cloud, which blasted everything as it swept by". The local newspaper found it remarkable that, with "frightful missiles flying about in all directions", no one in Cowes was killed. The damage was estimated at between £10,000 and £15,000, a very large sum in 1876.



Location of Cowes tornado in England, UK (red triangle; source: ESWD).

References:

Brown, P.R., Meaden, G.T., Rowe, M.W., Tornadoes in Great Britain and Ireland to 1960: Part 4 – Years 1876–1900, in: The International Journal of Meteorology, May/June 2013, Vol. 38, No. 379, p. 110.

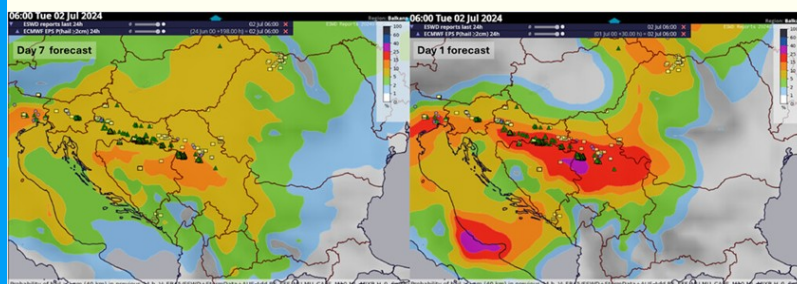
The Cowes storm, in: Symons's Monthly Meteorological Magazine, Oct 1876, Vol. 11, CXXIX, p. 121.

Rowe, M., Britain's greatest tornadoes and tornado outbreaks, in: The International Journal of Meteorology, Jul/Aug 1985, Vol. 10, No. 100, p. 212.

New publication on medium-range forecasting of (very) large hail

We are proud to share a new publication on medium-range forecasting of large and very large hail using our **ARCHaMo-s**, applied to the 51-member ensemble of the European Centre for Medium-Range Weather Forecasts (ECMWF). Scientists from **ESSL, ECMWF and Adam Mickiewicz University** contributed to the work.

The forecasts were evaluated during the main convective seasons of 2024 and 2025. The models demonstrated notable skill at lead times of up to 9 days, with forecast skill gradually decreasing after the first three days. A strong positive bias was found between 18 and 06 UTC, making bias correction necessary. Process-based verification identified two main sources of the remaining forecast error: convection evolving into linear modes unlikely to produce hail and missed storm initiation.

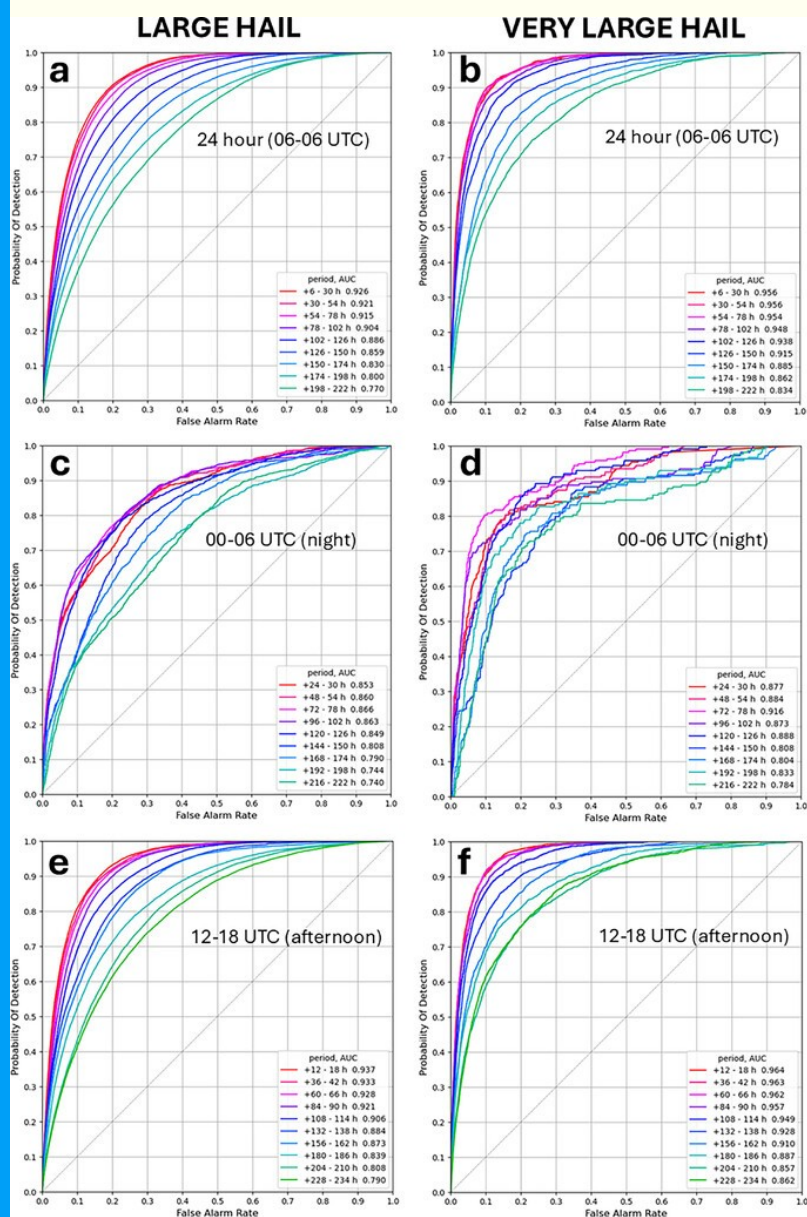


The 24-h accumulated probability of large hail combined with the ESWD reports between 0600 UTC 1 Jul 2024 and 0600 UTC 2 Jul

2024. Green triangles represent large hail, yellow squares represent severe wind gusts, and blue circles represent heavy rain reports. (left) 0000 UTC 24 Jun run; (right) 0000 UTC 1 Jul run.

ESSL Testbed participants generally found the forecasts useful, especially as a first guess of the hail risk over an area of interest.

Work is now continuing at ESSL to further improve large hail forecasting. This includes work on the background ARCHaMo for lightning, extending the training period with more years, especially the remarkable hail seasons of 2022 and 2023, and developing a model to forecast hailstones **8 cm in diameter or larger**.



AUC diagrams of large and very large hail probability forecasts in (a),(b) 24-h periods (0600–0600 UTC), (c),(d) 6-hourly periods valid during the night (0000–0600 UTC), and (e),(f) 6-hourly periods during the afternoon (1200–1800 UTC).

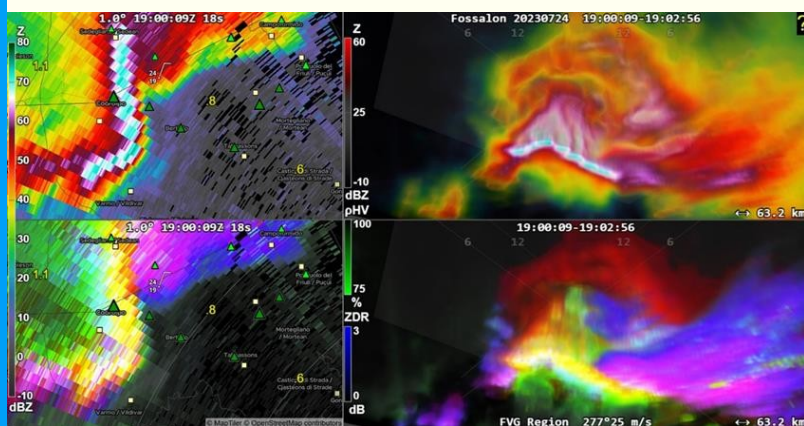
Read the publication: <https://doi.org/10.1175/WAF-D-25-0138.1>

Volumetric rendering in the ESSL Radar Displayer

Last month we introduced a **new feature in the ESSL Radar Displayer: Volumetric rendering**. You can now draw a box on the map, upon which a 3D display appears for this box, including data from all elevation angles within the radar volume. It is especially useful for analysing storm structure, and it works both for real-time and historical data.

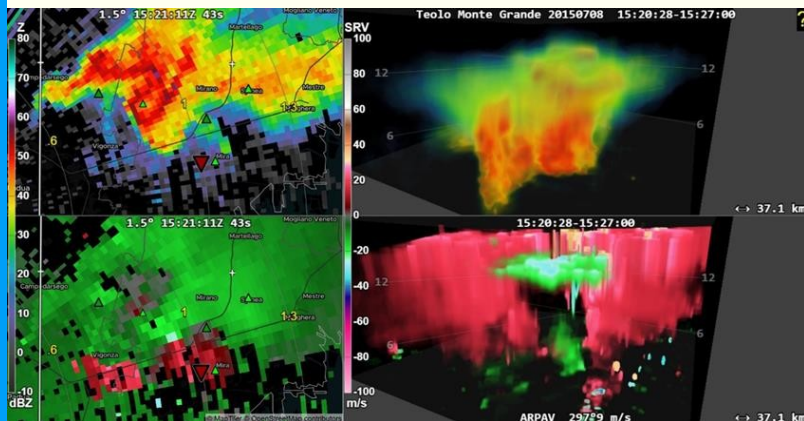
The 3D display is available for reflectivity, (storm-relative) velocity, ZDR, RhoHV, KDP and the polarimetric RGB. The figures show two examples: one for a destructive hailstorm and one for a violent tornado. In both cases the 3D display has been corrected for artificial tilt arising from storm movement in the time window covered by the radar volume, using the storm motion vector.

Quick panning and zooming are possible in the 3D display, and colour settings can be changed with several keyboard shortcuts, with some default configurations quickly available from a right-click menu. Within the next half year adjusting colour settings will also become possible in a menu with sliders and buttons, as a simpler alternative to keyboard shortcuts.



3D display of reflectivity and the polarimetric RGB, valid 10 minutes before this supercell produced destructive wind-driven hail in Mortegliano (IT) on 24 July 2023. One can note an impressive high-reflectivity hail core in 3D reflectivity, corroborated by the yellow colour in the RGB. Furthermore, a Bounded Weak Echo Region

(BWER) can be seen in reflectivity, while the region of blue-purple colour in the RGB that borders this BWER represents a ZDR column. Both features indicate a (very) powerful updraft.



3D display of reflectivity and storm-relative velocity, valid while this supercell was producing a violent IF4 tornado near Mira (IT) on 8 July 2015. The 3D storm-relative velocity shows a column with cyclonic rotation, extending from the ground upward. Additionally, strong storm-top divergence can be noted at anvil-level, indicative of a powerful updraft. Although this storm had an impressive BWER as well, especially 20-30 minutes earlier, it is not visible from this angle in 3D reflectivity.

Those interested in exploring radar data in more depth can register for the second edition of our course, ***Optimal use of radar data in severe storm nowcasting***, taking place in February 2027.

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
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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