

Storm Dudley was part of a particularly disturbed period of weather for north-western Europe, where three named storms, Dudley, Eunice and Franklin, developed within a week. They were associated with a powerful jet stream in the North Atlantic that developed due to a steep temperature gradient between a very cold arctic air mass moving out of Canada and warm subtropical air mass originating from the Caribbean. A strong stratospheric polar vortex aloft in the Arctic also helped to enhance the jet stream.

Storm Dudley began as a wave disturbance along the polar front in the Atlantic to the west of Ireland. It continued to deepen as it moved from west to east just to the north of Ireland.

- The highest daily sustained (10-minute mean) wind speeds during Storm Dudley were observed at Malin Head, Co Donegal 80 km/h (43 kt) at around 14:00 UTC from the direction of 240° (WSW) and the fourth highest (10-minute mean) wind speeds observed so far this year.
- The highest gust (3-minute mean) observed was at Knock Airport, Co Mayo 126 km/h (68 kt) 260° (W).
- The highest 24hr total rainfall of 23.7 mm was recorded at Lough Euler, Co Wicklow on 16th February 2022,
- The highest hourly total rainfall of 6.0 mm was recorded at Malin Head, at the hour ending 11 UTC 16th February 2022.
- The highest individual wave recorded was 11.2 m at M3 Buoy near the hour 22 UTC.
- The lowest MSLP (977.2 hPa) was recorded at Malin Head, Co Donegal at the hour ending 12 UTC.

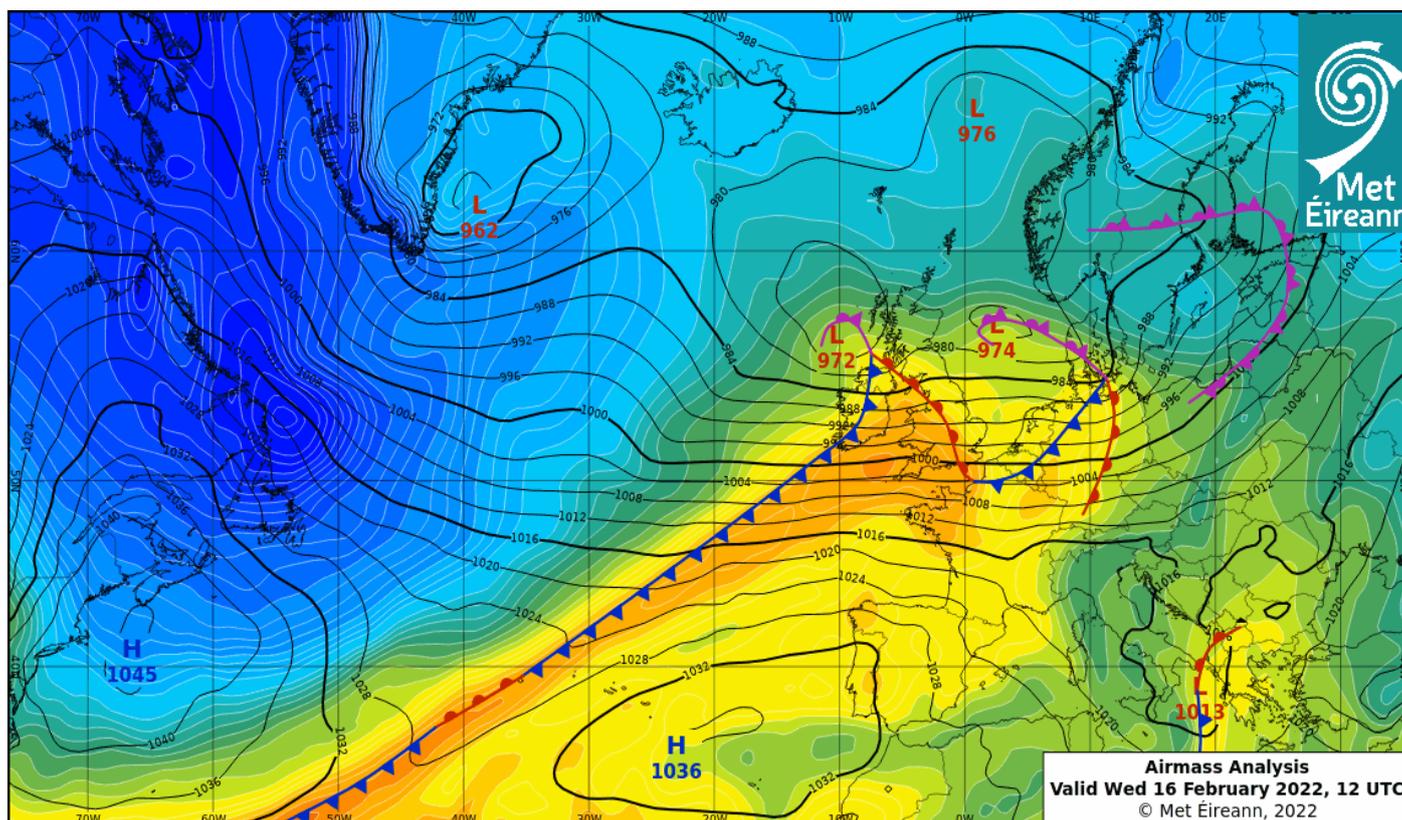


Figure 1. Analysis Chart closest to hour 12:00 UTC Wednesday 2022, when the minimum mean sea level pressure (977.2 hPa) was observed at Malin Head, Co Donegal.

Wednesday 16th February 2022

Wet and windy through the day with just a few patches of light rain and drizzle early morning. Showery outbreaks of heavy rain moved into parts of the West late in the morning, tracking eastwards bringing some spot flooding. West to southwest winds strong and very gusty, reaching gale force or strong gale on exposed coasts with some coastal flooding. Continued to be windy but winds eased towards noon. Scattered blustery showers through the day, heaviest and most frequent in the North and West with some wintry falls. Towards the evening winds decreased moderate to fresh and gusty, strong at times on western and southwest coasts. Clouds moved in from the southwest overnight, ahead of rain and strengthening winds.

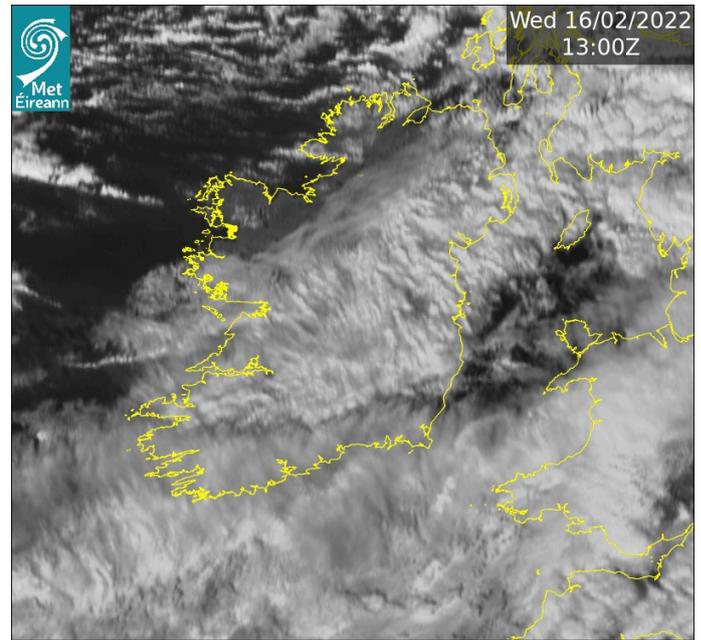
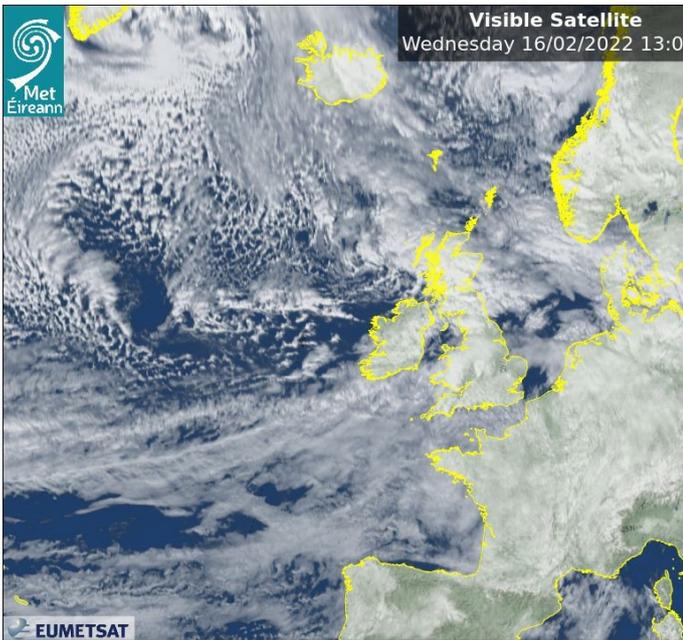


Figure 2. and 3. EUMETSAT Visible Satellite images closest to hour (1200 UTC) of the lowest mean sea level pressure 977.2 hPa at Malin Head, Co Donegal on Weds 16 Feb 2022

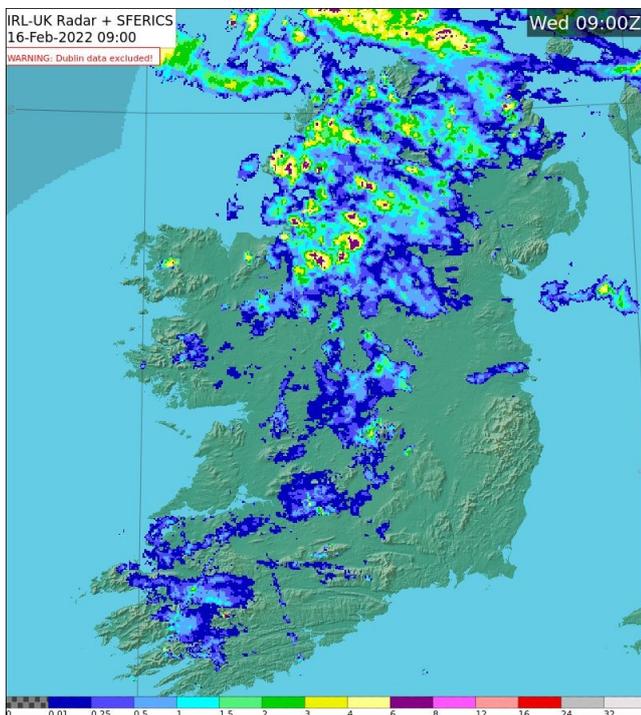


Figure 4. On Wed 16 Feb 2022 in the hour ending 09 UTC 3.4 mm of rain fell at Newport, Co Mayo

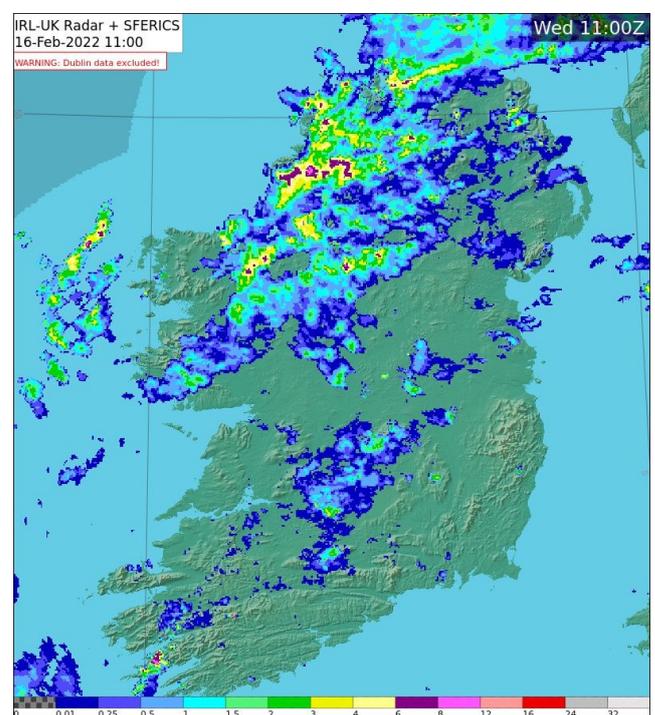


Figure 4. On Wed 16 Feb 2022 in the hour ending 11 UTC 6.0 mm of rain fell at Malin Head, Co Donegal

Atmospheric Pressure

The minimum mean sea level pressure (MSLP) observed in Ireland during Storm Dudley was 977.2 hPa at Malin Head, Co Donegal at around 1 pm . The pressure drop of approximately 15 hPa occurred at Malin Head, Co Galway over a 24-hour period and steadily rose as the low-pressure centre moved on across the Irish-Sea.

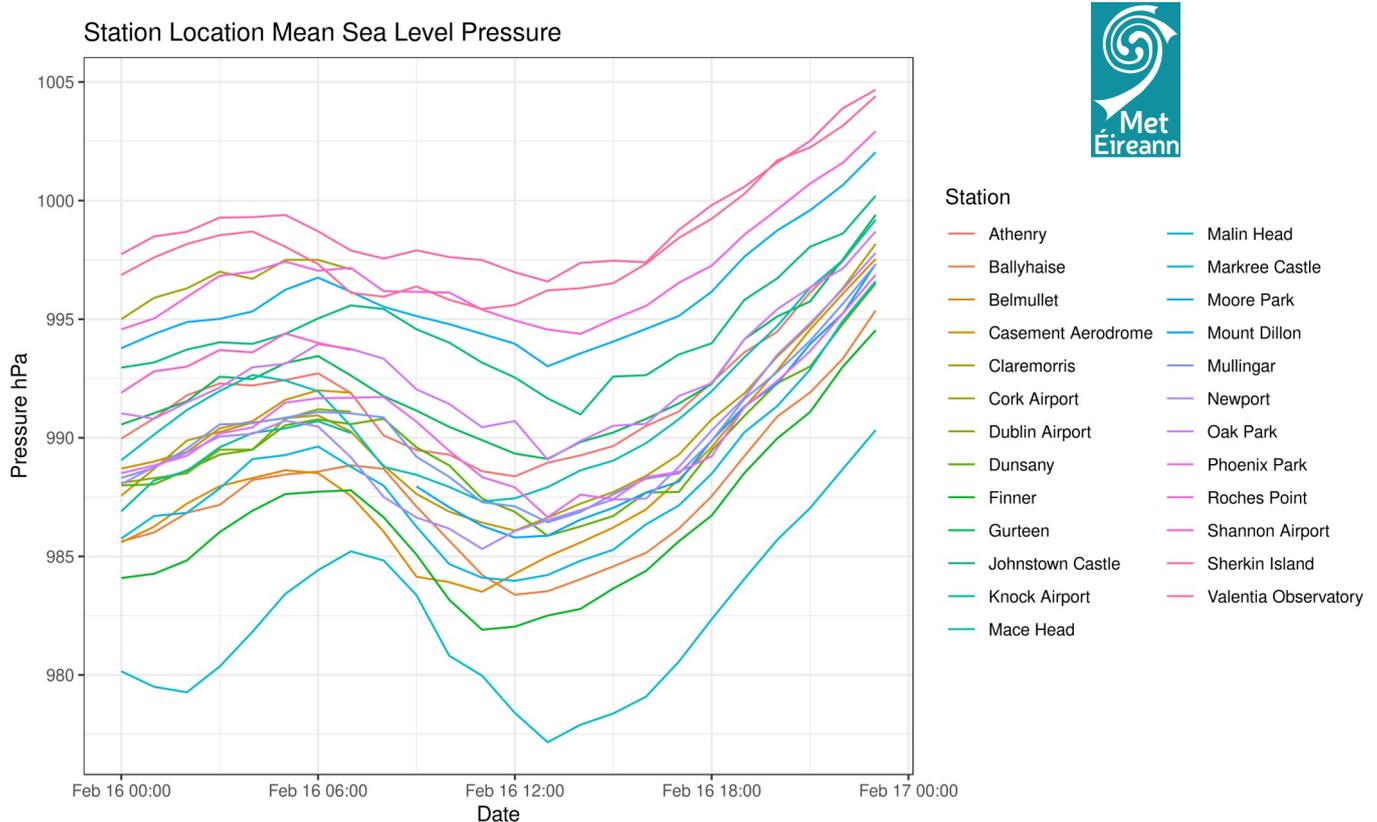


Figure 5 On Wed 16 Feb 2022 Mean sea level pressure recorded at all stations over a 24 hour period

Impacts

- **Power Outages:** ESB Power Check showed a number of outages in areas across the country on the morning of Wednesday 16.
- **Flooding:** Some flooding in coastal areas with the Western Corridor line flooded between Ennis and Limerick.
- **Travel:** Some air travel flights cancelled and delays experienced. Ferry cancellations reported. Dublin Fire Brigade also helped clear a fallen tree from the road in Mulhuddart Co. Dublin.
- **Services:** Fire fighters from Donnybrook fire station and public lighting crews from Dublin City Council were called to Ballsbridge after high winds damaged a lamp post.
- **Northern Europe:** – knocked down trees and power lines, which caused travel delays in parts of Scotland, England, Germany and the Netherlands. Three people died in Germany, and two more deaths were confirmed in Poland, according to the Associated Press.

Table 1. Observations at SYNOPTIC STATIONS

The following table contains wind speeds and rainfall observations for the SYNOPTIC stations for Wednesday 16–February-2022. Some of the observations have weather warning thresholds and these are highlighted. See the weather warnings page on www.met.ie.

Station location	Sustained (10-min mean) Wind Speed	Date highest mean	Wind Direction Highest sustained	Gust (3-sec mean) Wind Speed	Date Highest Gust	Wind Direction Highest Gust	Daily Rain (mm)
Malin Head* Co Donegal	80 km/h Strong Gale Force (43 knots or 49 mph)	Wed 16 Feb 2022 13UTC	250° (WSW)	107 km/h (58 knots or 67 mph)	Wed 16 Feb 2022 1344 UTC	240° (WSW)	13.0 Wed 16 Feb 2022
Mace Head** Co Galway	78 km/h Strong Gale Force (42 knots or 48 mph)	Wed 16 Feb 2022 16UTC	250° (WSW)	109 km/h (59 knots or 68 mph)	Wed 16 Feb 2022 1614 UTC	260° (W)	0.5 Wed 16 Feb 2022
Oak Park Co Carlow	67 km/h Gale Force 8 (36 knots or 41 mph)	Wed 16 Feb 2022 13UTC	270° (W)	96 km/h (52 knots or 60 mph)	Wed 16 Feb 2022 1846 UTC	250° (WSW)	2.4 Wed 16 Feb 2022
Finner Co Donegal	67 km/h Gale Force 8 (36 knots or 41 mph)	Wed 16 Feb 2022 13UTC	250° (WSW)	96 km/h (52 knots or 60 mph)	Wed 16 Feb 2022 1638 UTC	280° (W)	6.0 Wed 16 Feb 2022
Sherkin Island Co Cork	63 km/h Gale Force 8 (34 knots or 39 mph)	Wed 16 Feb 2022 20UTC	250° (WSW)	85 km/h (46 knots or 53 mph)	Wed 16 Feb 2022 1620 UTC	250° (WSW)	11.0 Wed 16 Feb 2022
Roches Point Co Cork	59 km/h Near Gale (32 knots or 37 mph)	Wed 16 Feb 2022 14UTC	250° (WSW)	81 km/h (44 knots or 51 mph)	Wed 16 Feb 2022 1509 UTC	260° (W)	0.8 Wed 16 Feb 2022
Gurteen Co Tipperary	57 km/h Near Gale (31 knots or 36 mph)	Wed 16 Feb 2022 14UTC	260° (W)	89 km/h (48 knots or 55 mph)	Wed 16 Feb 2022 1408 UTC	260° (W)	6.6 Wed 16 Feb 2022
Belmullet Co Mayo	57 km/h Near Gale (31 knots or 36 mph)	Wed 16 Feb 2022 11UTC	250° (WSW)	85 km/h (46 knots or 53 mph)	Wed 16 Feb 2022 1619 UTC	270° (W)	5.3 Wed 16 Feb 2022
Dunsany Co Meath	57 km/h Near Gale (31 knots or 36 mph)	Wed 16 Feb 2022 13UTC	250° (WSW)	85 km/h (46 knots or 53 mph)	Wed 16 Feb 2022 1328 UTC	250° (WSW)	4.2 Wed 16 Feb 2022
Newport Co Mayo	54 km/h Near Gale (29 knots or 33 mph)	Wed 16 Feb 2022 16UTC	290° (WNNW)	94 km/h (51 knots or 59 mph)	Wed 16 Feb 2022 1653 UTC	290° (WNNW)	7.0 Wed 16 Feb 2022
Claremorris Co Mayo	54 km/h Near Gale (29 knots or 33 mph)	Wed 16 Feb 2022 16UTC	260° (W)	91 km/h (49 knots or 56 mph)	Wed 16 Feb 2022 1207 UTC	240° (WSW)	3.8 Wed 16 Feb 2022
Valentia Observatory Co Kerry	54 km/h Near Gale (29 knots or 33 mph)	Wed 16 Feb 2022 18UTC	250° (WSW)	87 km/h (47 knots or 54 mph)	Wed 16 Feb 2022 1239 UTC	240° (WSW)	3.8 Wed 16 Feb 2022

**Caution: Malin Head wind speeds are observed (using an anemometer) at a non-standard height of 23m while all others are at 10m. This will cause Malin Head's wind speeds to be higher in a strong air flow. ** Caution: Mace Head anemometer is situated above exposed rock at the coast line.*

Station location	Sustained (10-min mean) Wind Speed	Date highest mean	Wind Direction Highest sustained	Gust (3-sec mean) Wind Speed	Date Highest Gust	Wind Direction Highest Gust	Daily Rain (mm)
Athenry Co Galway	46 km/h Strong Breeze (25 knots or 29 mph)	Wed 16 Feb 2022 11UTC	220° (SW)	76 km/h (41 knots or 47 mph)	Wed 16 Feb 2022 1045 UTC	230° (SW)	5.2 Wed 16 Feb 2022
Johnstown Castle Co Wexford	43 km/h Strong Breeze (23 knots or 26 mph)	Wed 16 Feb 2022 19UTC	260° (W)	70 km/h (38 knots or 44 mph)	Wed 16 Feb 2022 1347 UTC	230° (SW)	1.2 Wed 16 Feb 2022
Moore Park Co Cork	41 km/h Strong Breeze (22 knots or 25 mph)	Wed 16 Feb 2022 14UTC	270° (W)	70 km/h (38 knots or 44 mph)	Wed 16 Feb 2022 1717 UTC	250° (WSW)	2.4 Wed 16 Feb 2022
Mount Dillon Co Roscommon	39 km/h Fresh Breeze (21 knots or 24 mph)	Wed 16 Feb 2022 17UTC	230° (SW)	80 km/h (43 knots or 49 mph)	Wed 16 Feb 2022 1734 UTC	260° (W)	4.7 Wed 16 Feb 2022
Ballyhaise Co Cavan	39 km/h Fresh Breeze (21 knots or 24 mph)	Wed 16 Feb 2022 11UTC	220° (SW)	67 km/h (36 knots or 41 mph)	Wed 16 Feb 2022 1408 UTC	230° (SW)	8.4 Wed 16 Feb 2022
Mullingar Co Westmeath	37 km/h Fresh Breeze (20 knots or 23 mph)	Wed 16 Feb 2022 13UTC	260° (W)	70 km/h (38 knots or 44 mph)	Wed 16 Feb 2022 1246 UTC	230° (SW)	5.7 Wed 16 Feb 2022

Caution: Malin Head wind speeds are observed (using an anemometer) at a non-standard height of 23m while all others are at 10m. This will cause Malin Head's wind speeds to be higher in a strong air flow. Caution: Mace Head anemometer is situated above exposed rock at the coast line.*

Table 2: Marine Buoy data

The following table was provided by the Met Éireann Marine Unit for the 16 February 2022.

buoy	Max Mean Winds	Max Gust	Max Sig. Wave	Max Individual Wave
M2	57.4 km/h (31 knots or 35.6 mph)	79.6 km/h (43 knots or 49.4 mph)	3.0 m	5.2 m
M3	62.9 km/h (34 knots or 39.1 mph)	81.4 km/h (44 knots or 50.6 mph)	7.5 m	15.3 m
M4	59.2 km/h (32 knots or 36.8 mph)	88.8 km/h (48 knots or 55.2 mph)	7.1 m	13.8 m
M5	50 km/h (27 knots or 31.0 mph)	81.4 km/h (44 knots or 50.6 mph)	5.2 m	8.6 m

Wind warnings issued for Storm Dudley

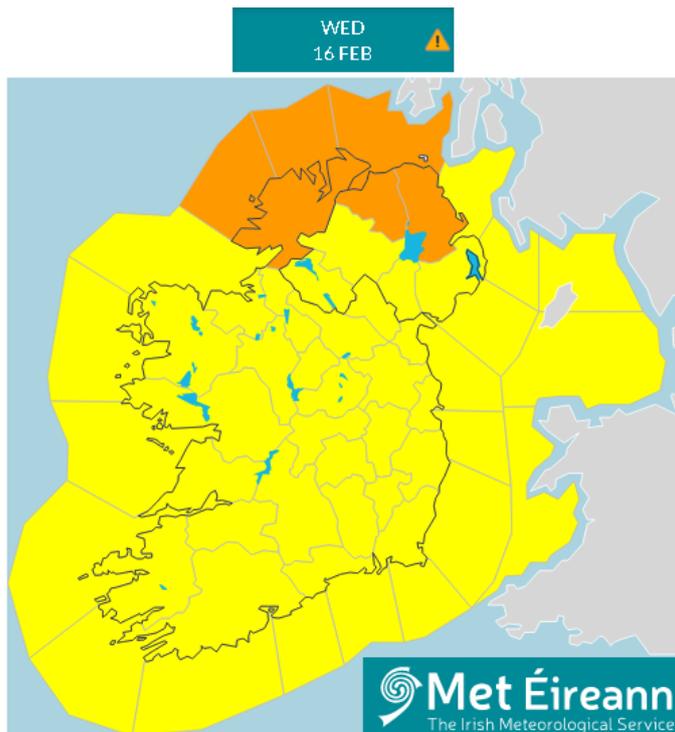


Figure 7. Weather Warnings issued by Met Éireann for Storm Dudley.

Definitions

Gust wind speeds are an average of 3-second wind speeds.

Sustained wind speeds are an average of 10-minute wind speeds. For observations of sustained wind speeds:

- Storm Force 10 \geq 89 km/h (48 knots)
- Violent Storm Force 11 \geq 103 km/h (56 knots)
- Hurricane Force 12 \geq 117 km/h (64 knots)

This report is based on the data observed at Met Éireann's weather stations and available on this date. All times are UTC unless stated they are local Irish time. Synoptic station data is midnight to midnight UTC. Long-Term Averages (LTAs) and 'normal' refer to the observations being averaged over the period 1981-2010. *Sunshine data is from the Autosol Network. LTAs for these sites are currently not used for comparison purposes.

For more information, contact Met Éireann at e-mail: enquiries@met.ie