

STORM ELIN

Saturday 9 December 2023

The sixth named storm of the 2023/2024 season
 Named by Met Éireann on Saturday 9 December 2023

Updated Tuesday 10 December 2024

Storm Elin developed at the triple point of a frontal boundary associated with a slow moving deep depression over the Atlantic to the west of Canada. As this deep depression stalled the associated weather fronts and elongated trough moved towards Ireland and engaged with the left exit region of a jet streak out to the west of Ireland. This caused a new low centre, storm Elin, to develop and deepen rapidly. Elin then quickly tracked eastwards over the north of the country early on Saturday 9 December 2023. The storm centre then continued to move eastwards over Scotland during the afternoon, leaving strong gale force and gusty west to northwest winds in its wake.

- The highest sustained (10-minute mean) wind speed was a westerly strong gale 81 km/h (44 knots or 51 mph) on Saturday 9 December 2023 around 06 UTC (6 am local time) observed at Mace Head** (coastal), Co Galway.
- The highest gust (3-second mean) wind speed was a westerly 102 km/h (55 knots or 63 mph) on Saturday around 08:04 UTC (8:04 am local time) at Mace Head, Co Galway and at Finner (coastal), Co Donegal as a west-northwesterly at 14:55 UTC (2:55 pm local time).
- The lowest hourly mean sea level pressure (MSLP) was 978.8 hPa on Saturday at around 08 UTC (8 am local time) observed at Finner (coastal), Co Donegal.
- The highest daily (00-00 UTC) rainfall total was 26.4 mm on Saturday at Malin Head* (coastal), Co Donegal (20 % of its 1991-2020 Long Term Average (LTA)). In the 6 hours prior to 14 UTC on Saturday, 21.1 mm of rainfall fell at Malin Head (coastal), Co Donegal. The highest 24-hour (09-09 UTC) rainfall total was 37.6 mm on Saturday at Carndonagh (Rocksmount) (coastal), Co Donegal (25 % of its 1991-2020 (LTA)). Quigley's Point (Three Trees) (coastal) and Fintown (Kingarow) observed 35.3 and 33.2 mm respectively in the 24 hours following 09 UTC on the Saturday.
- The highest individual wave was 9.5 m and this was recorded at Buoy M4 (off the Donegal coast) around 17 UTC (5 pm local).

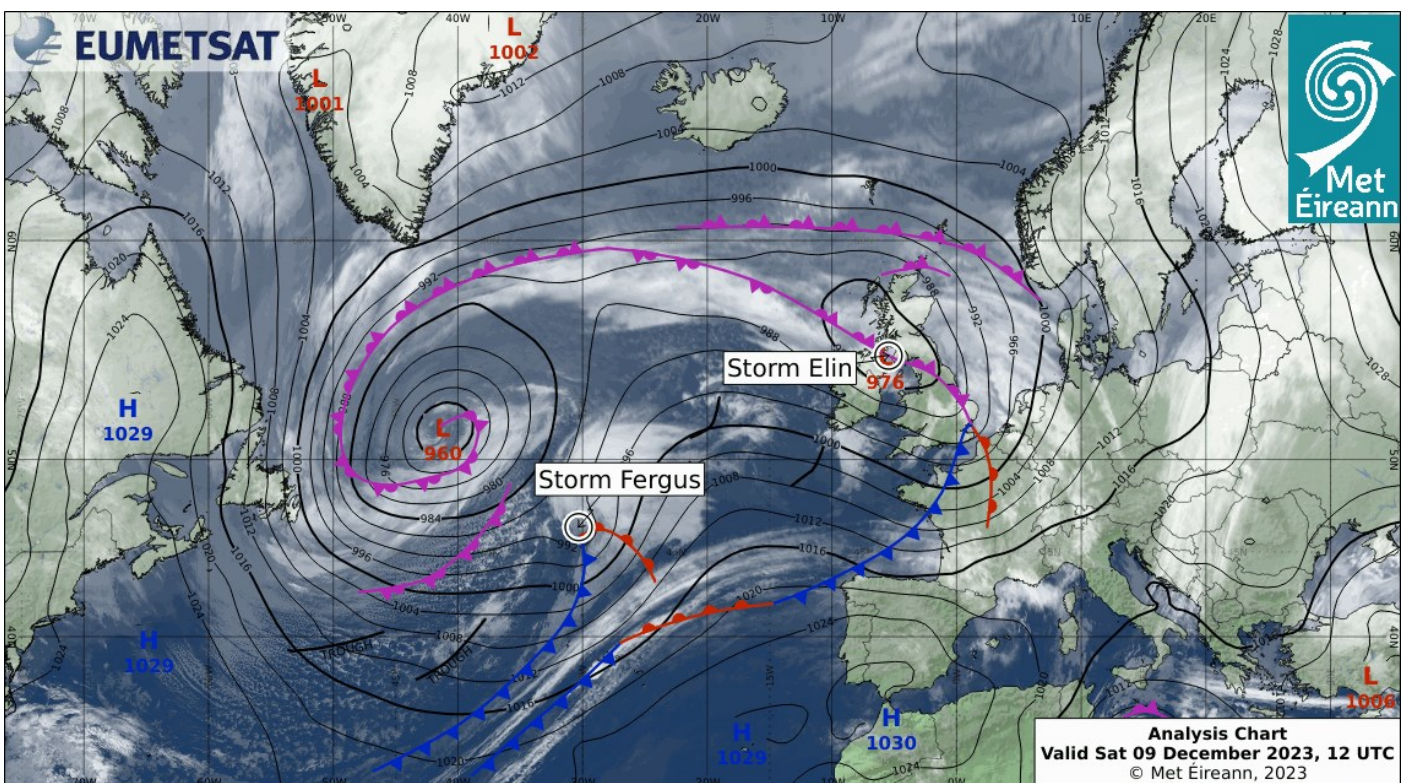


Figure 1. Analysis and Satellite Chart at 12 UTC on Sat 9 Dec 2023

Daily Weather Summaries

Friday 8 December 2023

A low pressure system measuring 973 hPa on the morning of the 8th and located 250 nautical miles west of Malin Head, directed a robust southerly airflow across Ireland. Rainfall persisted in the West from early evening until mid-afternoon, gradually shifting northward. While there were sunny intervals in the South-east and South, the overall sky condition remained cloudy and overcast. Strong and gusty winds were observed in the West, with gusty conditions prevailing nationwide.

Saturday 9 December 2023

Storm Elin developed as an elongated trough that swept across Ireland during the day, intensifying into a storm system with gale to storm-force westerly winds. A temporary ridge formed later as another deepening low-pressure system approached from the west. Storm Elin brought persistent high winds with strong gusts. By morning, rain became concentrated in the North and Northeast. The rest of the day saw a mix of sunny intervals and blustery showers, some heavy and accompanied by hail. Overnight, outbreaks of rain and increasing southerly winds moved into the southwest and western areas.

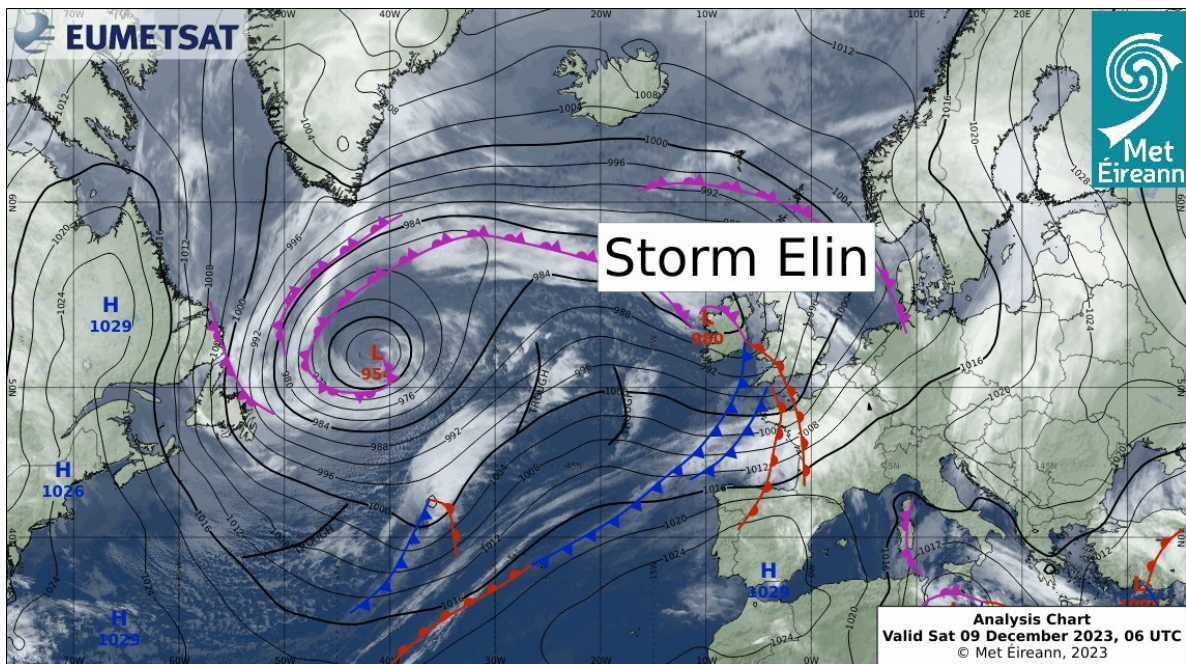


Figure 2. Analysis and satellite chart on Sat 09 Dec 2023 at 06 UTC

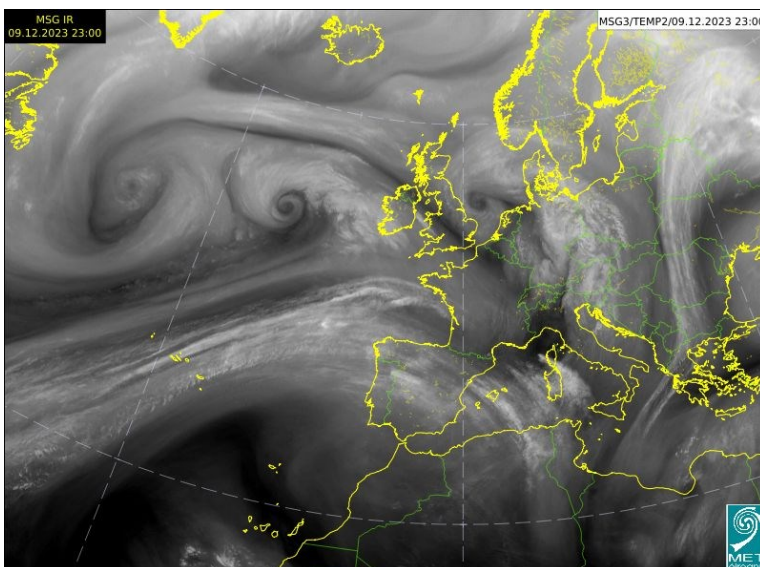


Figure 3 Water Vapour EUMETSAT satellite image at 23 UTC on Sat 9 Dec 2023 as storm Elin moved into the North Sea and storm Fergus approached from the west

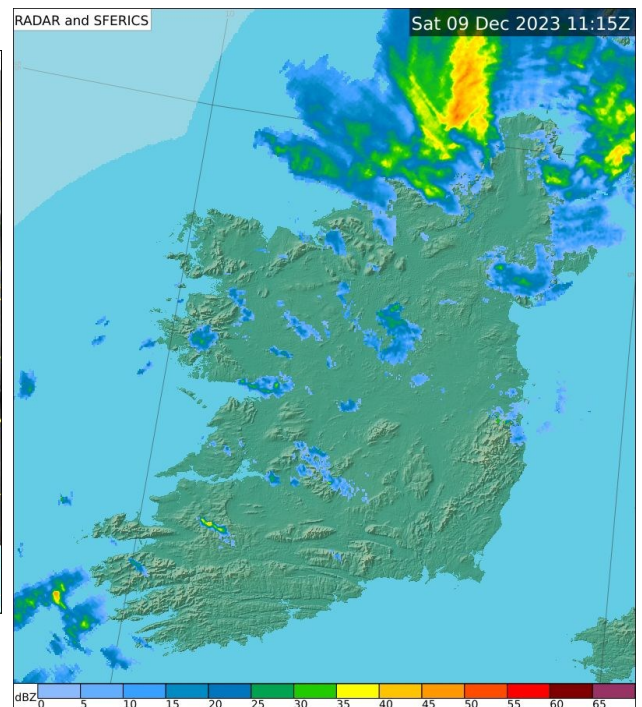
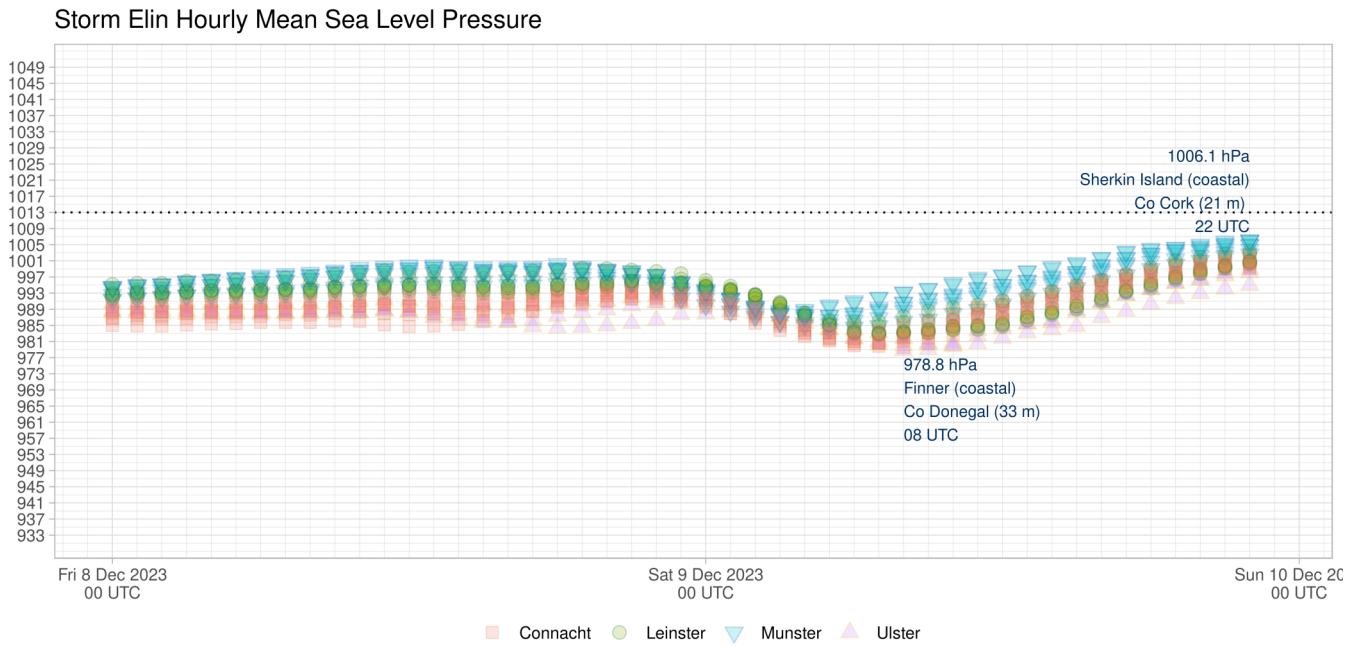


Figure 4. On Sat 9 Dec 2023 in the hour ending 11 UTC 8.4 mm of rain fell at Malin Head, Co Donegal

Mean Sea Level Pressure (MSLP)

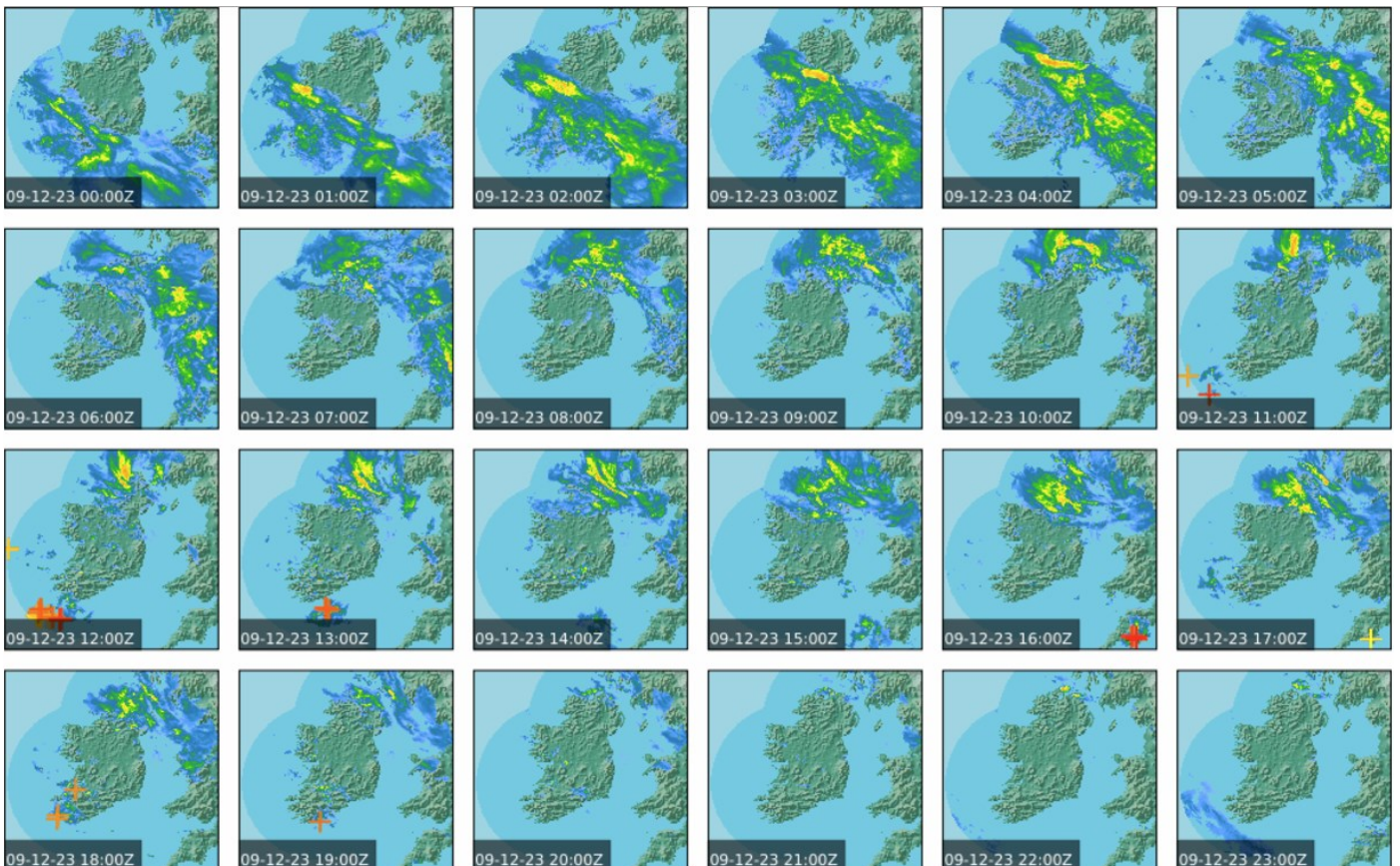
The minimum hourly mean sea level pressure observed in Ireland during storm Elin was 978.8 hPa at Finner, Co Donegal around 08 UTC on Saturday.



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Figure 5: Hourly Mean Sea Level pressure (coloured by province) between Fri 8 and Sun 10 Dec 2023. Each point represents the observation at a station, and are coloured by province.

Figure 6. Hourly Radar Images on Sat 9 Dec 2023



Synoptic land stations' extremes

The following table contains wind speeds and rainfall observations for the primary (SYNOPTIC) stations during storm Elin. Sustained wind speeds (average 10-minute mean land-wind speeds) are shaded according to the Beaufort land-wind scale

Table 2. Extremes of wind and rainfall at synoptic stations

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	Highest Daily Rain (mm)
Mace Head** (coastal) Co Galway	81 km/h Strong Gale Force (44 knots or 51 mph)	Sat 9 Dec 2023 06 UTC	260° (W)	102 km/h (55 knots or 63 mph)	Sat 9 Dec 2023 0804 UTC	260° (W)	11.0 mm Sat 9 Dec 2023
Finner (coastal) Co Donegal	78 km/h Strong Gale Force (42 knots or 48 mph)	Sat 9 Dec 2023 13 UTC	270° (W)	102 km/h (55 knots or 63 mph)	Sat 9 Dec 2023 1455 UTC	290° (W)NW	8.9 mm Sat 9 Dec 2023
Dublin Airport (coastal) Co Dublin	65 km/h Gale Force 8 (35 knots or 40 mph)	Sat 9 Dec 2023 13 UTC	270° (W)	98 km/h (53 knots or 61 mph)	Sat 9 Dec 2023 1242 UTC	270° (W)	9.1 mm Sat 9 Dec 2023
Malin Head* (coastal) Co Donegal	65 km/h Gale Force 8 (35 knots or 40 mph)	Sat 9 Dec 2023 17 UTC	280° (W)	91 km/h (49 knots or 56 mph)	Sat 9 Dec 2023 1739 UTC	270° (W)	26.4 mm Sat 9 Dec 2023
Casement Aerodrome Co Dublin	63 km/h Gale Force 8 (34 knots or 39 mph)	Sat 9 Dec 2023 13 UTC	260° (W)	94 km/h (51 knots or 59 mph)	Sat 9 Dec 2023 1143 UTC	260° (W)	7.2 mm Sat 9 Dec 2023
Dunsany Co Meath	61 km/h Near Gale (33 knots or 38 mph)	Sat 9 Dec 2023 12 UTC	250° (WSW)	94 km/h (51 knots or 59 mph)	Sat 9 Dec 2023 1207 UTC	260° (W)	9.8 mm Sat 9 Dec 2023
Oak Park Co Carlow	57 km/h Near Gale (31 knots or 36 mph)	Sat 9 Dec 2023 12 UTC	260° (W)	85 km/h (46 knots or 53 mph)	Sat 9 Dec 2023 1251 UTC	270° (W)	7.6 mm Sat 9 Dec 2023
Knock Airport Co Mayo	56 km/h Near Gale (30 knots or 35 mph)	Sat 9 Dec 2023 14 UTC	270° (W)	89 km/h (48 knots or 55 mph)	Sat 9 Dec 2023 1520 UTC	270° (W)	9.1 mm Sat 9 Dec 2023
Shannon Airport (coastal) Co Clare	56 km/h Near Gale (30 knots or 35 mph)	Sat 9 Dec 2023 14 UTC	260° (W)	78 km/h (42 knots or 48 mph)	Sat 9 Dec 2023 1302 UTC	260° (W)	8.0 mm Sat 9 Dec 2023
Sherkin Island (coastal) Co Cork	56 km/h Near Gale (30 knots or 35 mph)	Sat 9 Dec 2023 05 UTC	260° (W)	76 km/h (41 knots or 47 mph)	Sat 9 Dec 2023 0522 UTC	270° (W)	2.3 mm Sat 9 Dec 2023
Belmullet (coastal) Co Mayo	54 km/h Near Gale (29 knots or 33 mph)	Sat 9 Dec 2023 12 UTC	270° (W)	94 km/h (51 knots or 59 mph)	Sat 9 Dec 2023 1259 UTC	270° (W)	10.2 mm Sat 9 Dec 2023
Claremorris Co Mayo	54 km/h Near Gale (29 knots or 33 mph)	Sat 9 Dec 2023 09 UTC	270° (W)	91 km/h (49 knots or 56 mph)	Sat 9 Dec 2023 1007 UTC	270° (W)	9.0 mm Sat 9 Dec 2023

Table 2. Cont'd

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	Highest Daily Rain (mm)
Newport (coastal) Co Mayo	54 km/h Near Gale (29 knots or 33 mph)	Sat 9 Dec 2023 13 UTC	290° (WNW)	89 km/h (48 knots or 55 mph)	Sat 9 Dec 2023 1416 UTC	270° (W)	14.3 mm Sat 9 Dec 2023
Johnstown Castle (coastal) Co Wexford	52 km/h Near Gale (28 knots or 32 mph)	Sat 9 Dec 2023 14 UTC	260° (W)	89 km/h (48 knots or 55 mph)	Sat 9 Dec 2023 1439 UTC	260° (W)	12.6 mm Sat 9 Dec 2023
Gurteen Co Tipperary	50 km/h Strong Breeze (27 knots or 31 mph)	Sat 9 Dec 2023 12 UTC	250° (WSW)	81 km/h (44 knots or 51 mph)	Sat 9 Dec 2023 1244 UTC	250° (WSW)	9.0 mm Sat 9 Dec 2023
Roches Point (coastal) Co Cork	48 km/h Strong Breeze (26 knots or 30 mph)	Sat 9 Dec 2023 06 UTC	280° (W)	69 km/h (37 knots or 43 mph)	Sat 9 Dec 2023 0638 UTC	270° (W)	2.9 mm Sat 9 Dec 2023
Valentia Observatory (coastal) Co Kerry	46 km/h Strong Breeze (25 knots or 29 mph)	Sat 9 Dec 2023 08 UTC	260° (W)	69 km/h (37 knots or 43 mph)	Sat 9 Dec 2023 0344 UTC	250° (WSW)	6.2 mm Sat 9 Dec 2023
Cork Airport (coastal) Co Cork	44 km/h Strong Breeze (24 knots or 28 mph)	Sat 9 Dec 2023 07 UTC	270° (W)	61 km/h (33 knots or 38 mph)	Sat 9 Dec 2023 0637 UTC	260° (W)	4.6 mm Sat 9 Dec 2023
Athenry Co Galway	41 km/h Strong Breeze (22 knots or 25 mph)	Sat 9 Dec 2023 12 UTC	270° (W)	87 km/h (47 knots or 54 mph)	Sat 9 Dec 2023 1201 UTC	270° (W)	15.2 mm Sat 9 Dec 2023
Mount Dillon Co Roscommon	41 km/h Strong Breeze (22 knots or 25 mph)	Sat 9 Dec 2023 14 UTC	260° (W)	74 km/h (40 knots or 46 mph)	Sat 9 Dec 2023 1232 UTC	260° (W)	9.6 mm Sat 9 Dec 2023
Moore Park Co Cork	39 km/h Fresh Breeze (21 knots or 24 mph)	Sat 9 Dec 2023 14 UTC	260° (W)	63 km/h (34 knots or 39 mph)	Sat 9 Dec 2023 1359 UTC	280° (W)	6.6 mm Sat 9 Dec 2023
Mullingar Co Westmeath	35 km/h Fresh Breeze (19 knots or 22 mph)	Sat 9 Dec 2023 13 UTC	280° (W)	74 km/h (40 knots or 46 mph)	Sat 9 Dec 2023 1407 UTC	260° (W)	11.4 mm Sat 9 Dec 2023
Ballyhaise Co Cavan	33 km/h Fresh Breeze (18 knots or 21 mph)	Sat 9 Dec 2023 09 UTC	230° (SW)	63 km/h (34 knots or 39 mph)	Sat 9 Dec 2023 1208 UTC	260° (W)	7.6 mm Sat 9 Dec 2023
Markree Castle Co Sligo							11.4 mm Sat 9 Dec 2023
Phoenix Park Co Dublin							10.2 mm Sat 9 Dec 2023

Impacts

- **Power Outages:** ESB Power Check showed outages in Co Cork, Co Galway, Co Kerry, Co Leitrim and Co Wicklow on the morning of Saturday 9 December 2023 ([ESB PowerCheck, 2023](#)).
- **Travel:** Downed trees and debris on the roads resulted in road closers in Co Leitrim and Co Dublin ([RTE, 2023](#)).

Definitions

- Sustained (or mean) wind speeds are an average of 10-minute wind speeds.
- Gust wind speeds are an average of 3-second wind speeds.
- Unless otherwise stated daily means midnight to midnight UTC.
- Long-Term Averages (LTAs) and 'normal' refer to the observations being averaged over the period 1991-2020.
- Beaufort Scale available at www.met.ie/forecasts/marine-inland-lakes/beaufort-scale
- Marine area buoy maps and definitions available at www.met.ie/forecasts/marine-inland-lakes/sea-area-forecast-terminology

** Malin Head, Co Donegal's wind speeds are observed (using an anemometer) at a non-standard height of 23 m while all others are at 10 m. This will cause Malin Head's wind speeds to be higher in a strong air flow.*

*** Mace Head, Co Galway's anemometer is situated above exposed rock at the coast line.*

This report is based on the observations from Met Éireann's weather and climate stations and data available up to the publication date. Only quality-controlled observations are used for climatological purposes, to ensure the accuracy. For more information, please contact Met Éireann's Climate Services Division: enquiries@met.ie or <https://www.met.ie/about-us/contact-us>.