

The following provisional past storm analysis is completed for the named storm Otto. The impact date for Ireland was Friday 17 February 2023, this date is based upon the date of the storm's highest sustained (10-minute mean) wind speed in Ireland of 74 km/h observed at 02 UTC at Malin Head, Co Donegal. The storm continued to strengthen as it tracked away from Ireland towards Scandinavia.

- The highest sustained (10-minute mean) wind speed was a west-southwest Gale Force 74 km/h (40 knots | 46 mph) at Malin Head, Co Donegal on Friday 17 February 2023 at around 02 UTC (2 am local). The previous highest sustained (10-minute mean) wind speeds to occur on any Friday 17 February 2023 was 87 km/h strong gale force (47 knots | 54 mph) from the southwest, which occurred at Belmullet, Co Mayo on Monday 17 February 1997.
- The highest gust (3-second) wind speeds of 96 km/h (52 knots | 60 mph) was a west-southwest at Malin Head, Co Donegal around 02 UTC (2 am local) on Friday 17 February 2023. The previous highest gust (3-second mean) wind speeds to occur on any 17th February was 135 km/h (73 knots or 84 mph) from the southwest, which occurred at Belmullet, Co Mayo on Monday 17 February 1997.
- The highest daily rainfall total at a synoptic station around storm Otto was recorded at Newport, Co Mayo with 14.1 mm on Saturday 18th February 2023 (daily being 00-00 UTC).
- The lowest land-station mean sea level pressure (MSLP) was 1004.6 hPa observed at Malin Head, Co Donegal on Friday 17 February 2023 at around 02:00 UTC (2 am local).
- The lowest MSLP recorded at any of the buoy's was 1006.0 hPa at the M4 buoy at 23 UTC (11 pm local) Thursday 16 February 2023.
- The highest individual wave on Friday 17 February 2023 was 10.5 m recorded at M6 (in the deep Atlantic).

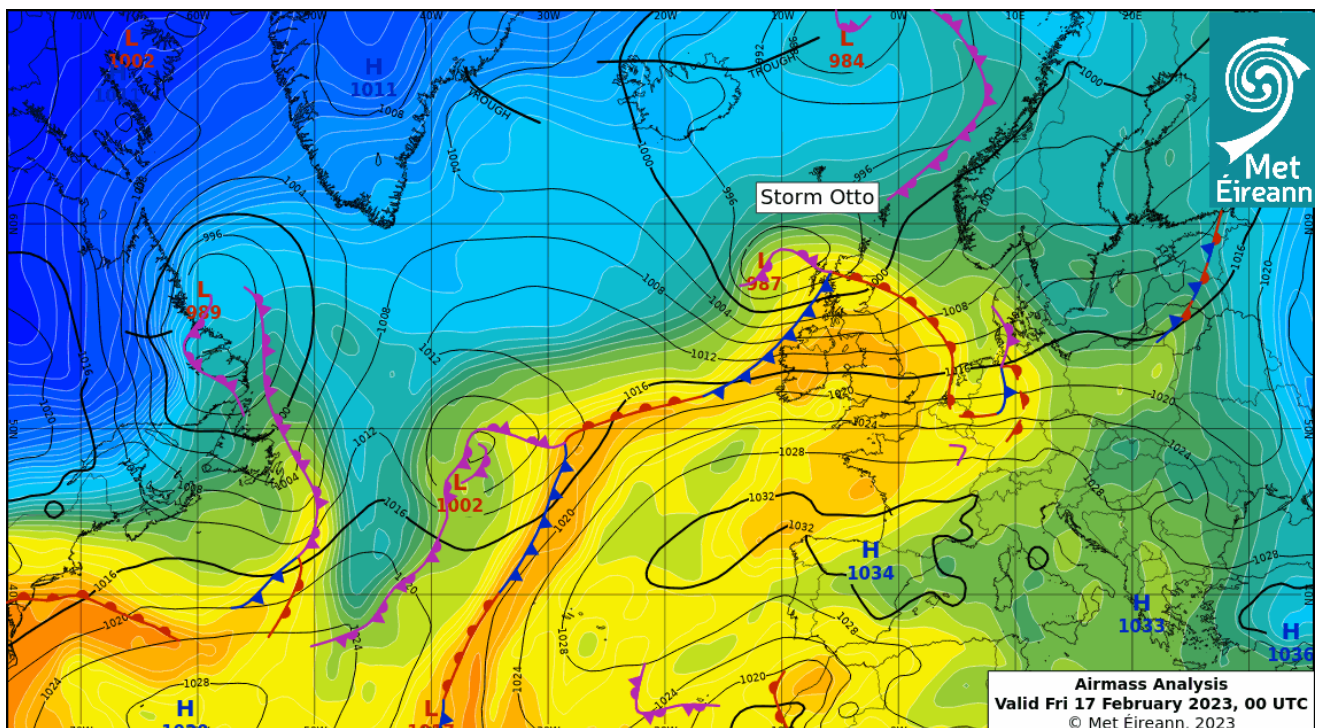


Figure 1. This chart was chosen using the highest gust wind speed 74 km/h at Malin Head, Co Donegal at 02:00 UTC on Friday 17 February 2023

Thursday 16 February 2023

On Thursday 16th Ireland lay in a fresh to strong cyclonic variable airflow. A shallow low 1011 hPa was situated over the country and moved eastwards across the country during the morning. The rain cleared the northeast coast by early morning. Some mist and fog around in the morning. Widespread showers in the North, some isolated elsewhere during the day. Mist and fog returned overnight. Windy along coasts during the afternoon.

Friday 17 February 2023

On Friday 17th there was a strong to gale force southwest to west airflow between high pressure of 1032 hPa to the south of Ireland and a deepening depression of 984 hPa centred approximately 210 nm north of Malin Head, Co Donegal. The airflow eased as the depression tracked across northern Scotland towards Norway. Some bright spells in the North but generally a cloudy day was observed. There were gusty southwest to west winds, which were strongest in the North. Heavy rain fell in the West and North-west during evening hours.

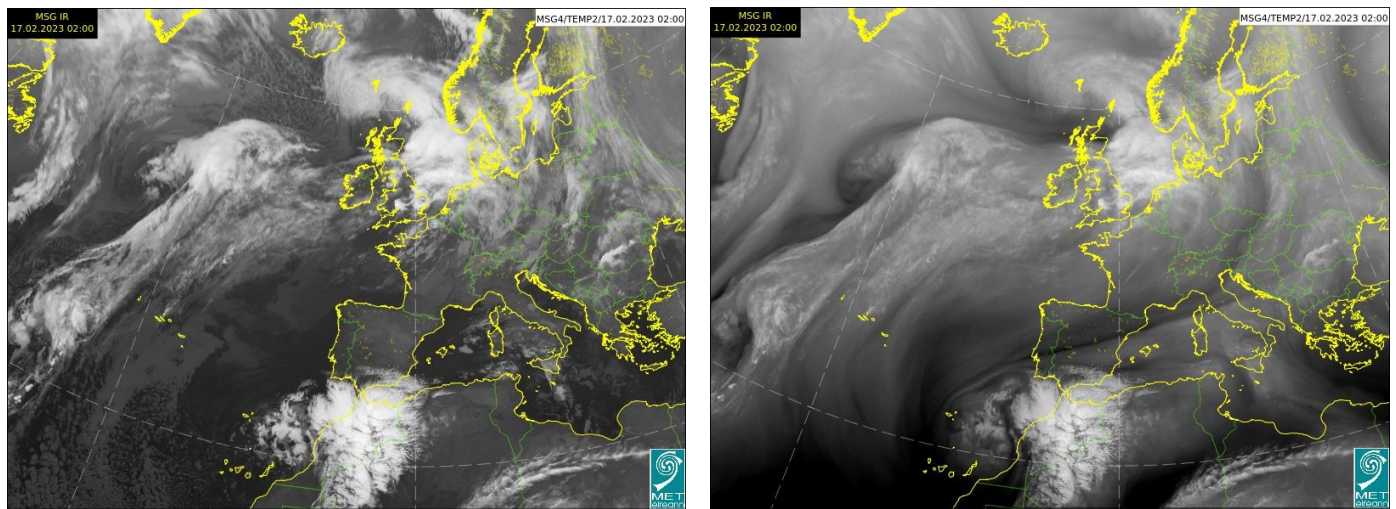


Figure 2 & 3: Infrared satellite & water vapour images closest to hour (0200 UTC) of the lowest mean sea level pressure 1004.6 hPa at Malin Head, Co Donegal on Friday 17 February 2023

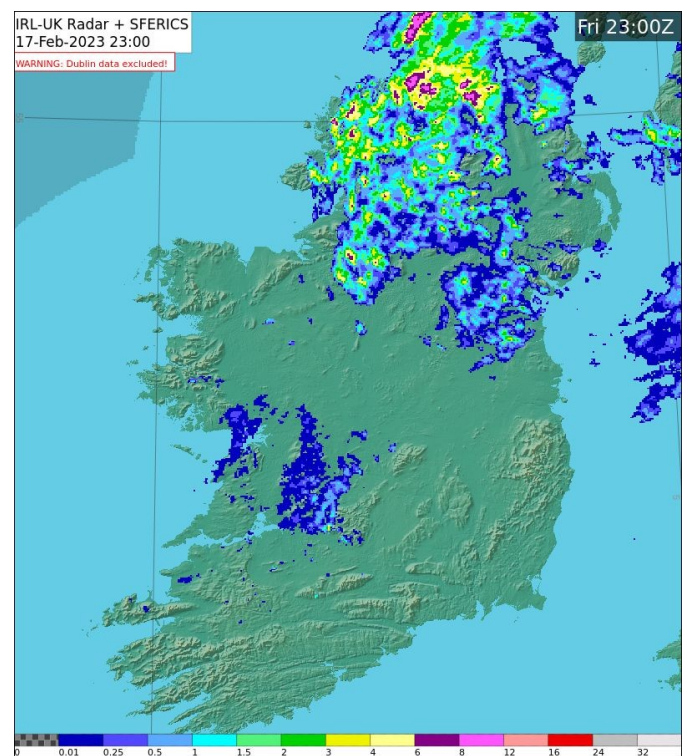
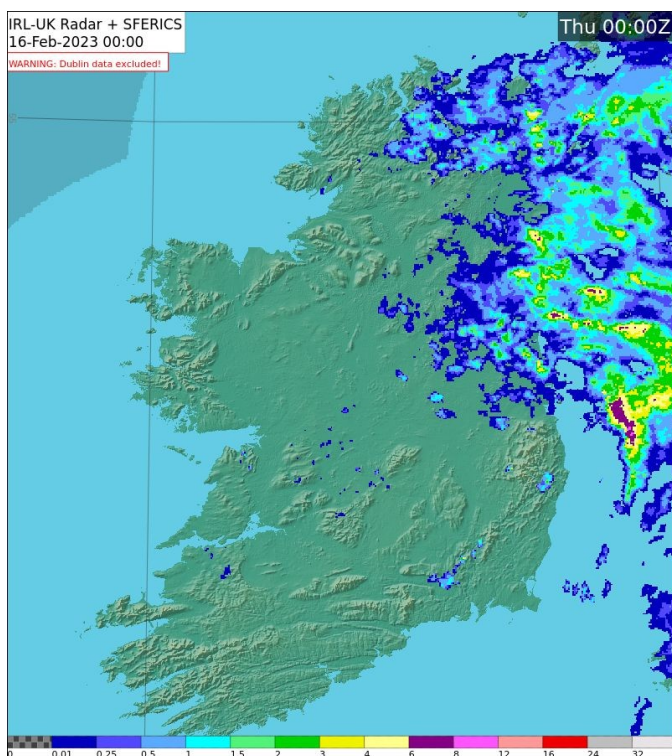


Figure 4 & 5: On Thu 16 Feb 2023 in the hour ending 00 UTC 3.2 mm of rain fell at Dublin Airport, Co Dublin and On Fri 17 Feb 2023 in the hour ending 23 UTC 2.5 mm of rain fell at Malin Head, Co Donegal

Atmospheric Pressure

The minimum hourly mean sea level pressure (MSLP) observed in Ireland during storm Otto was 1004.6 hPa at Malin Head, Co Donegal Friday 17 February 2023 at around 02:00 UTC (2 am local).

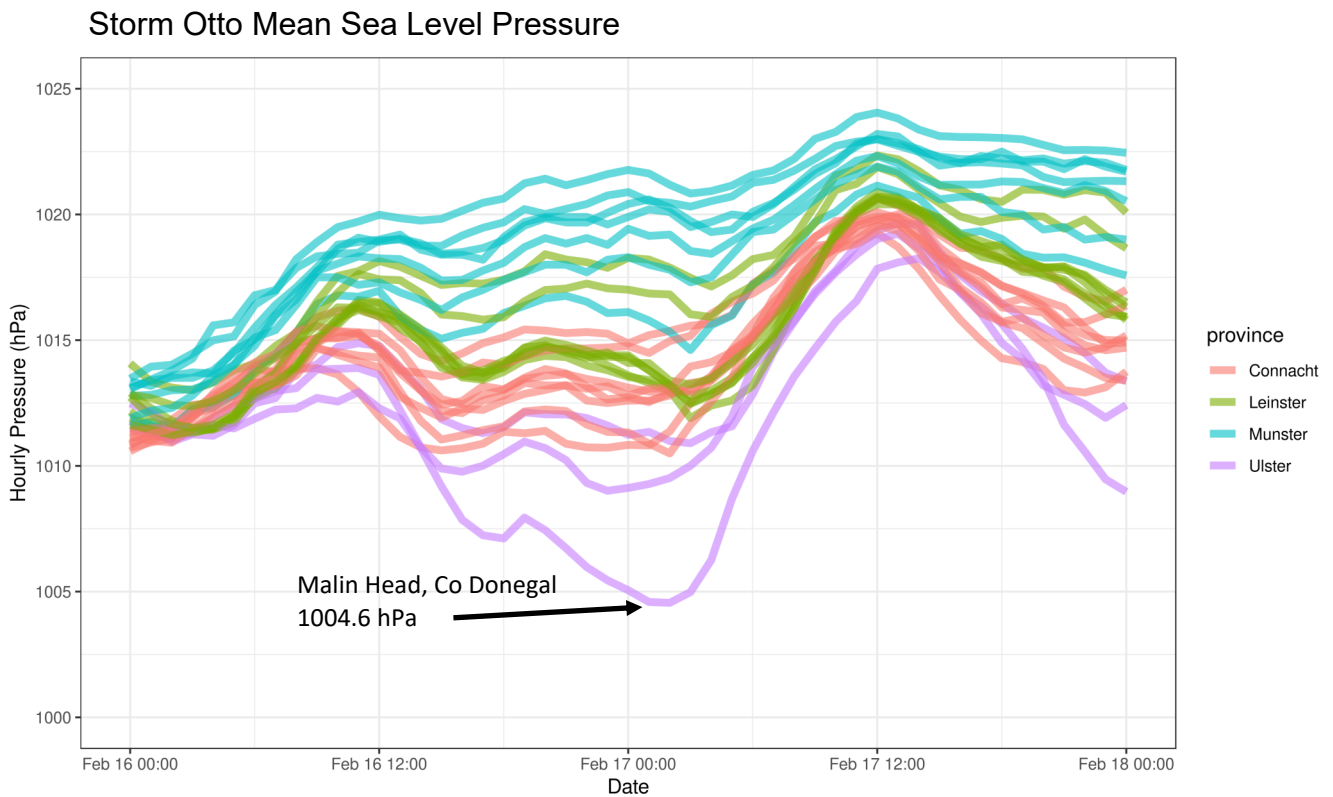


Figure 6: Hourly Mean Sea Level pressure (MSLP) by county (coloured by province) between Thursday 16 and Saturday 18 February 2023

Marine Observations

Table 1. Buoy Observations - Between Thu 16 & Sat 18 February 2023

Buoy	Max Mean Winds	Max Gust	Max Sig. Wave	Max Individual Wave
M2	25.3 Knots 46.8 km/h 29.1 mph 17-Feb-2023 04:00:00	30.8 Knots 57.0 km/h 35.4 mph 17-Feb-2023 04:00:00	2.5 M 16-Feb-2023 03:00:00	3.9 M 17-Feb-2023 05:00:00
M3	22.3 Knots 41.2 km/h 25.6 mph 17-Feb-2023 22:00:00	32.5 Knots 60.1 km/h 37.4 mph 17-Feb-2023 22:00:00	4.7 M 17-Feb-2023 12:00:00	7.5 M 17-Feb-2023 05:00:00
M4	33.1 Knots 61.3 km/h 38.0 mph 17-Feb-2023 03:00:00	44.1 Knots 44.1 km/h 50.7 mph 17-Feb-2023 03:00:00	6.2 M 17-Feb-2023 07:00:00	10.3 M 17-Feb-2023 11:00:00
M5	26.1 Knots 48.3 km/h 30.0 mph 17-Feb-2023 03:00:00	33.8 Knots 62.5 km/h 38.8 mph 17-Feb-2023 03:00:00	3.4 M 17-Feb-2023 05:00:00	6.1 M 16-Feb-2023 06:00:00
M6	27.7 Knots 51.4 km/h 31.9 mph 16-Feb-2023 22:00:00	38.5 Knots 61.8 km/h 38.4 mph 16-Feb-2023 11:00:00	5.6 M 16-Feb-2023 20:00:00	10.5 M 17-Feb-2023 04:00:00

The following table contains wind speeds and rainfall observations for the SYNOPTIC stations for 2 days, Friday 18 and Saturday 19 August 2023. Some of the observations have weather warning thresholds and these are highlighted. See the weather warnings page on <https://www.met.ie/weather-warnings>

Table 2. Observations at synoptic stations. Coloured warning levels reached for wind speeds or rainfall totals are shown.

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)	Total Rain (mm)
Malin Head* Co Donegal	74 km/h Gale Force 8 (40 knots or 46 mph)	Fri 17 Feb 2023 02UTC	250° (WSW)	96 km/h (52 knots or 60 mph)	Fri 17 Feb 2023 0232 UTC	250° (WSW)	11.1 Sat 18 Feb 2023	18.9
Finner Co Donegal	57 km/h Near Gale (31 knots or 36 mph)	Fri 17 Feb 2023 03UTC	250° (WSW)	76 km/h (41 knots or 47 mph)	Fri 17 Feb 2023 0318 UTC	250° (WSW)	5.1 Sat 18 Feb 2023	9.8
Casement Aerodrome Co Dublin	56 km/h Near Gale (30 knots or 35 mph)	Fri 17 Feb 2023 02UTC	230° (SW)	74 km/h (40 knots or 46 mph)	Fri 17 Feb 2023 0201 UTC and Thu 16 Feb 2023 2156 UTC	220° (SW) and 230° (SW)	1.9 Sat 18 Feb 2023	2.9
Knock Airport Co Mayo	54 km/h Near Gale (29 knots or 33 mph)	Sat 18 Feb 2023 01UTC	260° (W)	76 km/h (41 knots or 47 mph)	Sat 18 Feb 2023 0117 UTC	260° (W)	6.4 Sat 18 Feb 2023	10.5
Mace Head** Co Galway	52 km/h Near Gale (28 knots or 32 mph)	Sat 18 Feb 2023 15UTC	270° (W)	65 km/h (35 knots or 40 mph)	Fri 17 Feb 2023 2110 UTC	220° (SW)	2.2 Sat 18 Feb 2023	2.8
Claremorris Co Mayo	50 km/h Strong Breeze (27 knots or 31 mph)	Fri 17 Feb 2023 03UTC	280° (W)	76 km/h (41 knots or 47 mph)	Fri 17 Feb 2023 0401 UTC	270° (W)	3.1 Sat 18 Feb 2023	3.9
Belmullet Co Mayo	50 km/h Strong Breeze (27 knots or 31 mph)	Thu 16 Feb 2023 22UTC	220° (SW)	70 km/h (38 knots or 44 mph)	Thu 16 Feb 2023 2356 UTC	220° (SW)	7.9 Sat 18 Feb 2023	9.9
Sherkin Island Co Cork	48 km/h Strong Breeze (26 knots or 30 mph)	Sat 18 Feb 2023 05UTC	240° (WSW)	63 km/h (34 knots or 39 mph)	Sat 18 Feb 2023 1325 UTC	260° (W)	1.7 Sat 18 Feb 2023	3.7
Dublin Airport Co Dublin	44 km/h Strong Breeze (24 knots or 28 mph)	Sat 18 Feb 2023 19UTC and Fri 17 Feb 2023 7UTC	270° (W) and 260° (W)	76 km/h (41 knots or 47 mph)	Sat 18 Feb 2023 1503 UTC	260° (W)	2.0 Sat 18 Feb 2023	4.5
Gurteen Co Tipperary	44 km/h Strong Breeze (24 knots or 28 mph)	Fri 17 Feb 2023 02UTC	230° (SW)	67 km/h (36 knots or 41 mph)	Fri 17 Feb 2023 0308 UTC	230° (SW)	1.9 Sat 18 Feb 2023	3.6
Newport Co Mayo	43 km/h Strong Breeze (23 knots or 26 mph)	Sat 18 Feb 2023 16UTC	280° (W)	70 km/h (38 knots or 44 mph)	Sat 18 Feb 2023 1609 UTC	280° (W)	14.1 Sat 18 Feb 2023	23.7
Dunsany Co Meath	43 km/h Strong Breeze (23 knots or 26 mph)	Fri 17 Feb 2023 05UTC	240° (WSW)	63 km/h (34 knots or 39 mph)	Fri 17 Feb 2023 0110 UTC	220° (SW)	2.0 Sat 18 Feb 2023	3.7
Shannon Airport Co Clare	43 km/h Strong Breeze (23 knots or 26 mph)	Sat 18 Feb 2023 02UTC and Thu 16 Feb 2023 016UTC	250° (WSW)	63 km/h (34 knots or 39 mph)	Sat 18 Feb 2023 0119 UTC	250° (WSW)	3.5 Sat 18 Feb 2023	5.9

Table 3. Observations at synoptic stations. Coloured warning levels reached for wind speeds or rainfall totals are shown.

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)	Total Rain (mm)
Shannon Airport Co Clare	43 km/h Strong Breeze (23 knots or 26 mph)	Sat 18 Feb 2023 02UTC and Thu 16 Feb 2023 016UTC	250° (WSW)	63 km/h (34 knots or 39 mph)	Sat 18 Feb 2023 0119 UTC	250° (WSW)	3.5 Sat 18 Feb 2023	5.9
Roches Point Co Cork	43 km/h Strong Breeze (23 knots or 26 mph)	Sat 18 Feb 2023 12UTC	270° (W)	54 km/h (29 knots or 33 mph)	Fri 17 Feb 2023 0447 UTC and Sat 18 Feb 2023 1212 UTC	240° (WSW) and 280° (WSW)	0.1 Sat 18 Feb 2023	0.1
Johnstown Castle Co Wexford	41 km/h Strong Breeze (22 knots or 25 mph)	Sat 18 Feb 2023 18UTC	270° (W)	65 km/h (35 knots or 40 mph)	Sat 18 Feb 2023 1801 UTC	270° (W)	0.8 Sat 18 Feb 2023	0.8
Valentia Observatory Co Kerry	41 km/h Strong Breeze (22 knots or 25 mph)	Fri 17 Feb 2023 22UTC	220° (SW)	57 km/h (31 knots or 36 mph)	Fri 17 Feb 2023 2204 UTC	220° (SW)	2.6 Sat 18 Feb 2023	6.4
Athenry Co Galway	39 km/h Fresh Breeze (21 knots or 24 mph)	Fri 17 Feb 2023 00UTC and Thu 16 Feb 2023 00UTC	230° (SW) and 240° (SW)	65 km/h (35 knots or 40 mph)	Thu 16 Feb 2023 2222 UTC	240° (WSW)	5.1 Sat 18 Feb 2023	11.8
Cork Airport Co Cork	39 km/h Fresh Breeze (21 knots or 24 mph)	Fri 17 Feb 2023 01UTC	240° (WSW)	61 km/h (33 knots or 38 mph)	Thu 16 Feb 2023 2326 UTC	250° (WSW)	0.3 Sat 18 Feb 2023	0.6
Oak Park Co Carlow	35 km/h Fresh Breeze (19 knots or 22 mph)	Sat 18 Feb 2023 04UTC	250° (WSW)	52 km/h (28 knots or 32 mph)	Sat 18 Feb 2023 0415 UTC	260° (W)	1.7 Sat 18 Feb 2023	2.6
Ballyhaise Co Cavan	33 km/h Fresh Breeze (18 knots or 21 mph)	Thu 16 Feb 2023 23UTC	220° (SW)	54 km/h (29 knots or 33 mph)	Fri 17 Feb 2023 0034 UTC and Thu 16 Feb 2023 2311 UTC	220° (SW) and 210° (SW)	3.9 Sat 18 Feb 2023	8.6
Mount Dillon Co Roscommon	31 km/h Fresh Breeze (17 knots or 20 mph)	Sat 18 Feb 2023 14UTC	270° (W)	63 km/h (34 knots or 39 mph)	Sat 18 Feb 2023 1436 UTC	250° (WSW)	2.5 Sat 18 Feb 2023	3.7
Moore Park Co Cork	30 km/h moderate breeze (16 knots or 18 mph)	Sat 18 Feb 2023 16UTC	270° (W)	50 km/h (27 knots or 31 mph)	Sat 18 Feb 2023 1434 UTC	280° (W)	0.6 Sat 18 Feb 2023	1.0
Mullingar Co Westmeath	30 km/h moderate breeze (16 knots or 18 mph)	Fri 17 Feb 2023 01UTC and Thu 16 Feb 2023 023UTC	230° (SW) and 250° (SW)	48 km/h (26 knots or 30 mph)	Sat 18 Feb 2023 0215 UTC and Fri 17 Feb 2023 0155 UTC	280° (W) and 230° (W)	4.1 Sat 18 Feb 2023	9.2

Definitions

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

Sustained wind speeds are an average of 10-minute wind speeds.

Beaufort Scale: www.met.ie/forecasts/marine-inland-lakes/beaufort-scale

Buoy locations: www.met.ie/forecasts/marine-inland-lakes/buoys/buoy-locations

This report is based on the observations from Met Éireann's weather and climate stations and data available up to the publication date.

Unless otherwise stated daily means midnight to midnight UTC.

Long-Term Averages (LTAs) and 'normal' refer to the observations being averaged over the period 1981-2010.

Warning colours used are based upon warning thresholds valid on the day.

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