



# Storm Betty

Friday 18 and Saturday 19 August 2023

Fourth named storm of the 2022/2023 season. Named by Met Éireann on Friday 18 August 2023.

Date issued: Tuesday 19 December 2023

Storm Betty was the fourth named storm of the 2022-23 season that affected Ireland. It was the second named storm on the official list of storm names by the Western Group (Met Éireann, UK Met Office and KNMI) and the only storm named by Met Éireann for the season.

Storm Betty began as a wave in the polar front off the northeast coast of the United States early on Wednesday 16 August 2023. It moved rapidly across the Atlantic to the south of a large, complex and slow moving area of low pressure to the west of Ireland over the mid-Atlantic. The developing shallow low that became Betty interacted with the left exit region of a strong jet streak and deepened rapidly while moving cyclonically around the parent low to the west of Ireland and approached Ireland from the south southwest early on Friday 18 August 2023.

The low centre crossed the country from south to north in the early hours of Saturday 19th after the main frontal rain band brought very heavy rain, with imbedded thunderstorm activity, across the country during the afternoon and evening of Friday 18. Unusually strong southeast winds, for the time of year, affected the South and East during the overnight hours, which brought down numerous trees in the East of the country.

- The highest daily sustained (10-minute mean) wind speed during storm Betty was observed at Malin Head, Co Donegal with a easterly gale force wind speed of 72 km/h (39 kt) around 18 UTC (7pm local) on the Friday.
- The highest gust (3-minute mean) observed was at Johnstown Castle, Co Wexford with a south-south-easterly 96 km/h (52 kt) around 00 UTC (1 am local) on the Saturday.
- The highest 24hr rainfall total at a synoptic station of 74.0 mm was recorded at Valentia Observatory, Co Kerry on the Friday 18 (00-00 UTC).
- The highest individual wave recorded was 12.7 m at the M5 Buoy on the Saturday around 01 UTC (2am local).
- The lowest land-station mean sea level pressure (MSLP) was 983.6 hPa at Oak Park, Co Carlow on the Saturday around 01 UTC (2am local).
- Dunsany, Co Meath had its highest gust for August on record with 40 knots (74 km/h) late on Friday (length 17 years) and Dublin Airport, Co Dublin had its highest gust for August since 1988 with 47 knots (87 km/h) early on Saturday.

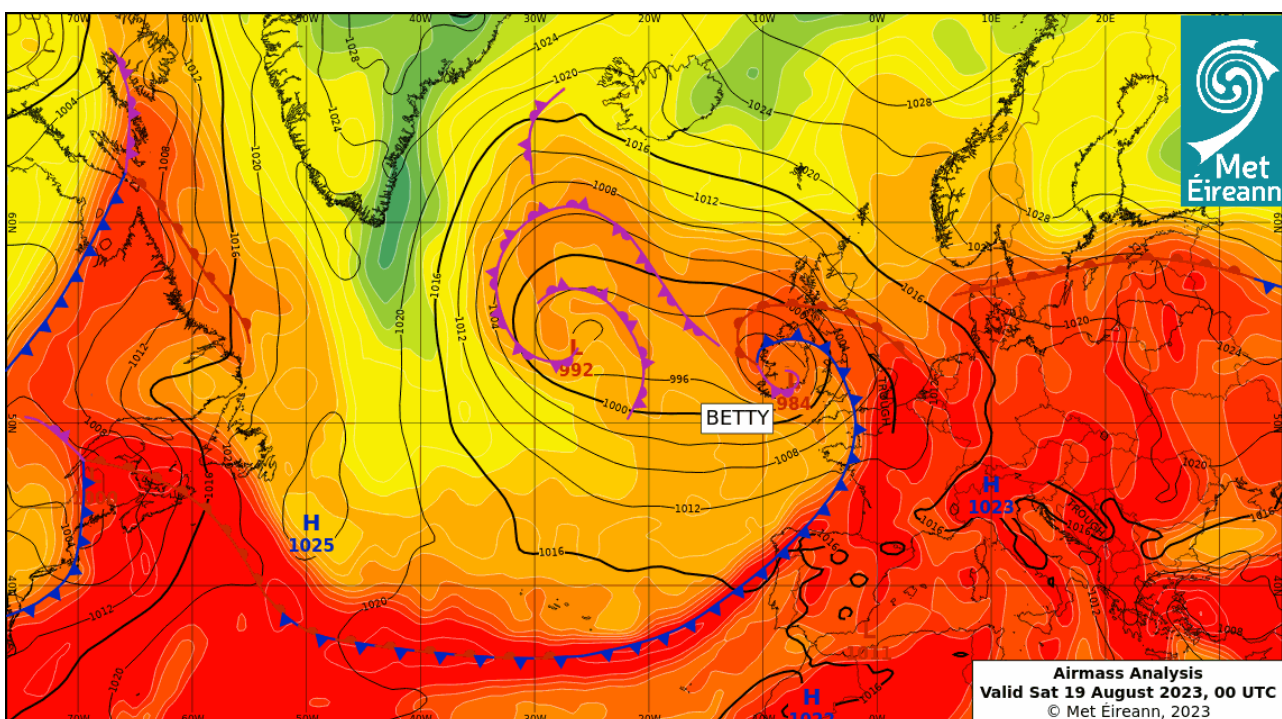


Figure 1. Air mass Analysis chart closest to the highest gust wind speed 96 km/h at Johnstown Castle, Co Wexford at 23:51 UTC on Friday 18 August 2023

## Friday 18 August 2023

A mostly cloudy and humid day with scattered outbreaks of rain during the morning and a few bright spells. During the afternoon, heavy and persistent rain moved in across the South and Southwest of the country. Heavy rain and thundery downpours extended nationwide during the evening and continued overnight with fresh to strong and gusty east-to-southeast winds and gales on southern and eastern coasts later.

## Saturday 19 August 2023

Windy at first with outbreaks of heavy thundery rain in the North and Northwest. The rain cleared northwards later in the morning. Sunny spells and scattered showers followed from the south. South to southwest winds gradually moderated towards evening. During the evening there was a mix of sunny spells and scattered showers. It stayed blustery for a time with moderate to fresh southwest winds, though the winds eased later overnight.

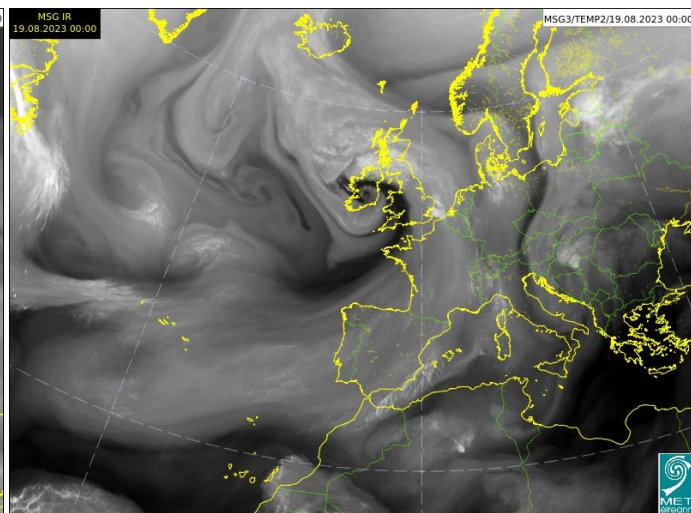
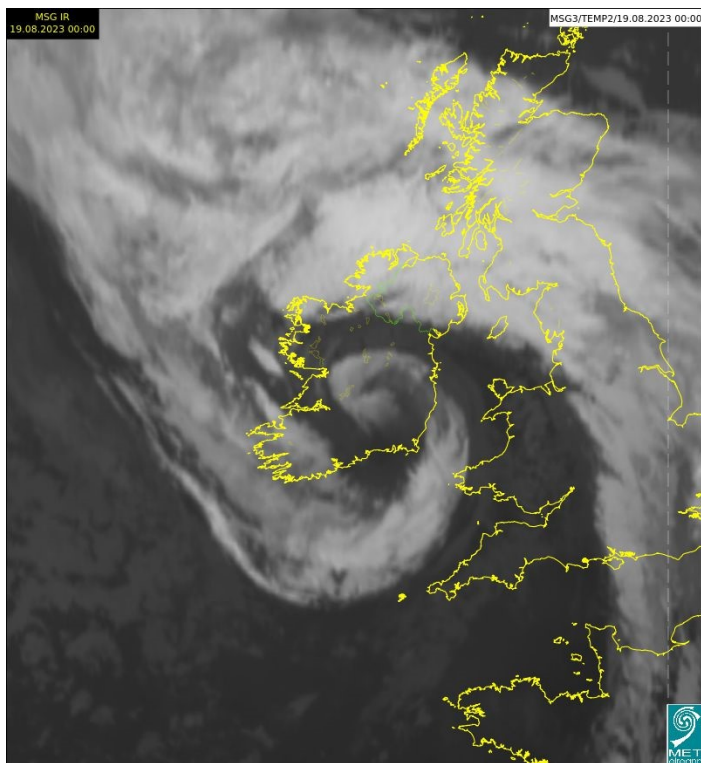


Figure 2 and 3. Infrared satellite & water vapour images closest to hour (0000 UTC) of the lowest mean sea level pressure 983.6 hPa at Oak Park, Co Carlow on Sat 19 Aug 2023.

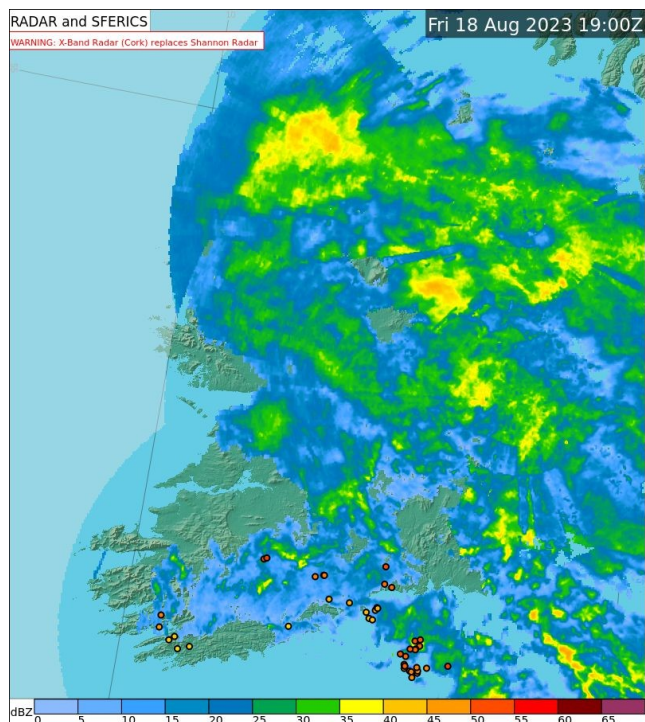


Figure 4. On Fri 18 Aug 2023 in the hour ending 19 UTC 12.5 mm of rain fell at Moore Park, Co Cork

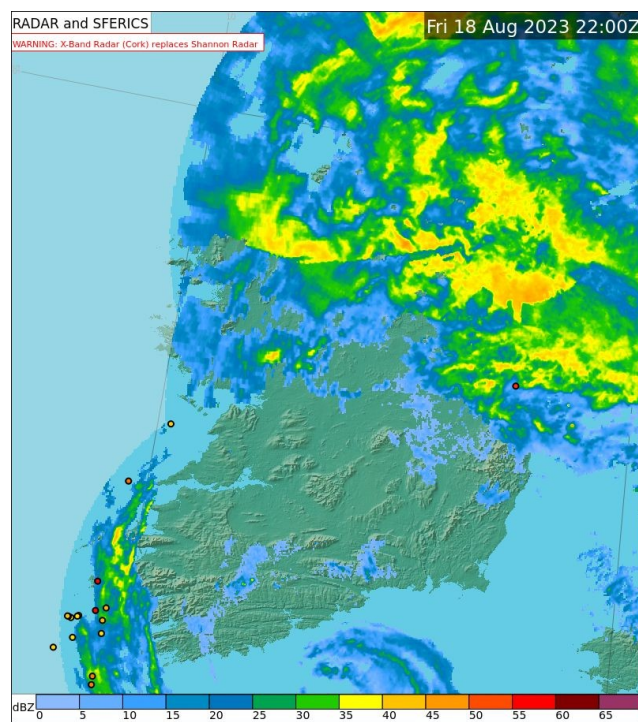
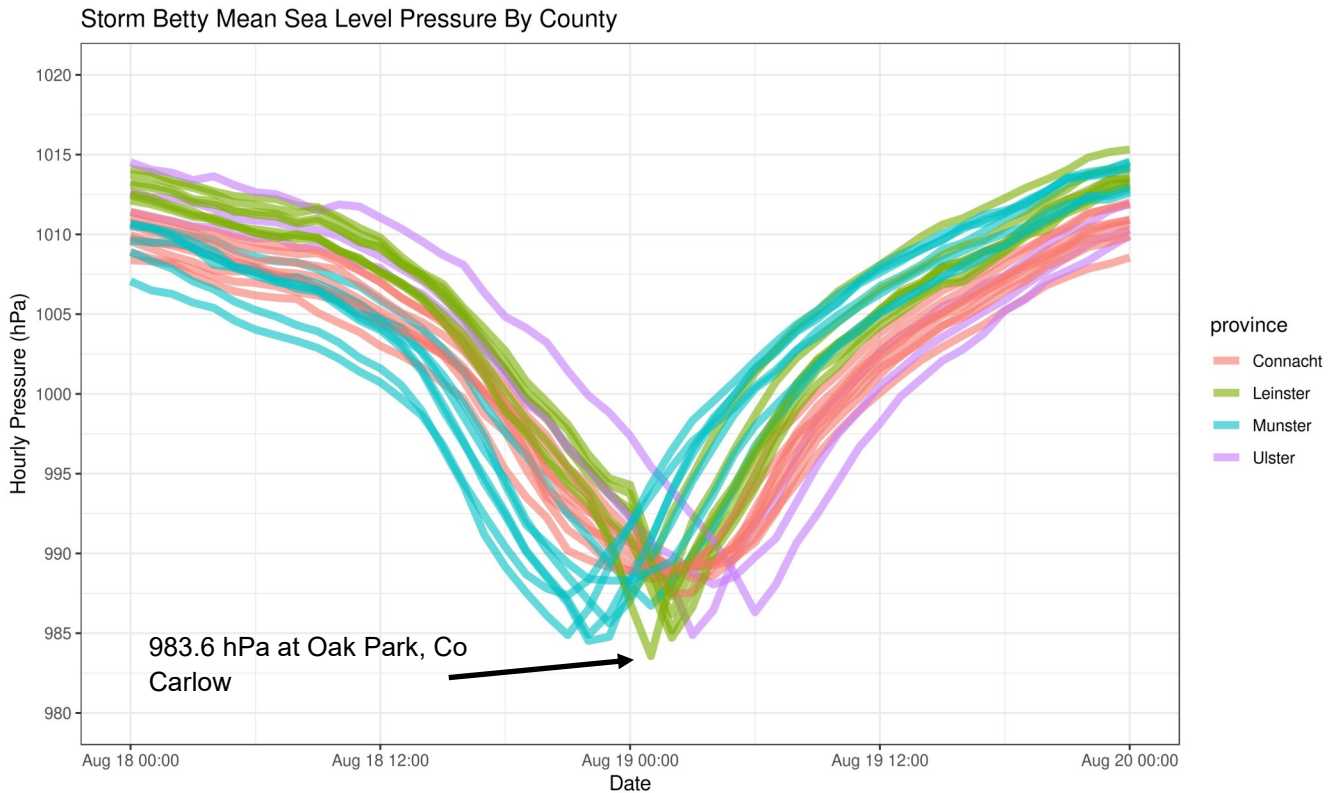


Figure 5. On Fri 18 Aug 2023 in the hour ending 22 UTC 36.2 mm of rain fell at Valentia Observatory, Co Kerry

## Atmospheric Pressure

The minimum hourly mean sea level pressure (MSLP) observed in Ireland during storm Betty was 983.6 hPa at Oak Park, Co Carlow on Sat 19 Aug 2023. While intensifying over the Atlantic storm Betty deepened by approximately 19 hPa over a 24-hour period between 00:00 UTC on Friday 18 August and 00:00 UTC Saturday 19 August when the low-pressure centre made landfall in Leinster.



**Figure 6:** Hourly Mean Sea Level pressure (MSLP) by county (coloured by province) between Friday 18 and Sunday 20 August 2023

## Marine Observations

**Table 1.** Buoy Observations - Thursday 17 to Saturday 19 August 2023

Buoy	Max Mean Winds	Max Gust	Max Sig. Wave	Max Individual Wave
M2	35.8 Knots 66.3 km/h   41.1 mph 19-Aug-2023 02:00:00	50.6 Knots 93.7 km/h   58.2 mph 19-Aug-2023 02:00:00	4.8 M 19-Aug-2023 07:00:00	8.0 M 19-Aug-2023 07:00:00
M3	30.0 Knots 55.6 km/h   34.5 mph 18-Aug-2023 23:00:00	37.6 Knots 69.6 km/h   43.2 mph 18-Aug-2023 23:00:00	3.7 M 19-Aug-2023 13:00:00	6.1 M 19-Aug-2023 11:00:00
M4	27.8 Knots 51.4 km/h   31.9 mph 19-Aug-2023 11:00:00	37.6 Knots 69.6 km/h   43.3 mph 19-Aug-2023 11:00:00	3.4 M 18-Aug-2023 09:00:00	6.1 M 19-Aug-2023 01:00:00
M5	44.2 Knots 81.8 km/h   50.8 mph 18-Aug-2023 23:00:00	60.1 Knots 111.3 km/h   69.1 mph 18-Aug-2023 23:00:00	7.6 M 19-Aug-2023 01:00:00	12.7 M 19-Aug-2023 01:00:00
M6	27.3 Knots 50.5 km/h   31.4 mph 17-Aug-2023 12:00:00	40.4 Knots 46.4 km/h   74.8 mph 17-Aug-2023 13:00:00	4.9 M 17-Aug-2023 16:00:00	7.6 M 17-Aug-2023 16:00:00

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 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	<b>72 km/h</b> Gale Force 8 (39 knots or 45 mph)	Fri 18 Aug 2023 18UTC	110° (ESE)	<b>87 km/h</b> (47 knots or 54 mph)	Sat 19 Aug 2023 0108 UTC and Fri 18 Aug 2023 2211 UTC	100° (E)	<b>12.0</b> Fri 18 Aug 2023	19.9
Johnstown Castle Co Wexford	<b>67 km/h</b> Gale Force 8 (36 knots or 41 mph)	Fri 18 Aug 2023 23UTC	140° (SE)	<b>96 km/h</b> (52 knots or 60 mph)	Fri 18 Aug 2023 2351 UTC	150° (SSE)	<b>30.0</b> Fri 18 Aug 2023	30.4
Casement Aerodrome Co Dublin	<b>61 km/h</b> Near Gale (33 knots or 38 mph)	Sat 19 Aug 2023 02UTC	140° (SE)	<b>94 km/h</b> (51 knots or 59 mph)	Sat 19 Aug 2023 0133 UTC	130° (SE)	<b>10.2</b> Fri 18 Aug 2023	12.0
Sherkin Island Co Cork	<b>61 km/h</b> Near Gale (33 knots or 38 mph)	Sat 19 Aug 2023 00UTC	250° (WSW)	<b>85 km/h</b> (46 knots or 53 mph)	Sat 19 Aug 2023 0010 UTC	250° (WSW)	<b>38.5</b> Fri 18 Aug 2023	39.3
Mace Head** Co Galway	<b>59 km/h</b> Near Gale (32 knots or 37 mph)	Sat 19 Aug 2023 05UTC	240° (WSW)	<b>72 km/h</b> (39 knots or 45 mph)	Sat 19 Aug 2023 0420 UTC	250° (WSW)	<b>20.9</b> Fri 18 Aug 2023	26.6
Shannon Air- port Co Clare	<b>57 km/h</b> Near Gale (31 knots or 36 mph)	Sat 19 Aug 2023 05UTC	230° (SW)	<b>78 km/h</b> (42 knots or 48 mph)	Sat 19 Aug 2023 0407 UTC	240° (WSW)	<b>23.6</b> Fri 18 Aug 2023	26.6
Roches Point Co Cork	<b>57 km/h</b> Near Gale (31 knots or 36 mph)	Sat 19 Aug 2023 02UTC	230° (SW)	<b>76 km/h</b> (41 knots or 47 mph)	Sat 19 Aug 2023 0238 UTC	230° (SW)	<b>59.6</b> Fri 18 Aug 2023	59.7
Dublin Airport Co Dublin	<b>54 km/h</b> Near Gale (29 knots or 33 mph)	Sat 19 Aug 2023 03UTC	150° (SSE)	<b>87 km/h</b> (47 knots or 54 mph)	Sat 19 Aug 2023 0143 UTC	140° (SE)	<b>22.9</b> Fri 18 Aug 2023	24.6
Oak Park Co Carlow	<b>46 km/h</b> Strong Breeze (25 knots or 29 mph)	Sat 19 Aug 2023 01UTC	160° (SSE)	<b>70 km/h</b> (38 knots or 44 mph)	Sat 19 Aug 2023 0030 UTC	120° (ESE)	<b>16.3</b> Fri 18 Aug 2023	18.1
Belmullet Co Mayo	<b>46 km/h</b> Strong Breeze (25 knots or 29 mph)	Sat 19 Aug 2023 12UTC	220° (SW)	<b>63 km/h</b> (34 knots or 39 mph)	Sat 19 Aug 2023 1550 UTC	210° (SSW)	<b>12.9</b> Fri 18 Aug 2023	25.7
Dunsany Co Meath	<b>44 km/h</b> Strong Breeze (24 knots or 28 mph)	Sat 19 Aug 2023 01UTC	100° (E)	<b>74 km/h</b> (40 knots or 46 mph)	Fri 18 Aug 2023 2027 UTC	90° (E)	<b>27.6</b> Fri 18 Aug 2023	31.2
Finner Co Donegal	<b>44 km/h</b> Strong Breeze (24 knots or 28 mph)	Sat 19 Aug 2023 07UTC	220° (SW)	<b>65 km/h</b> (35 knots or 40 mph)	Sat 19 Aug 2023 0856 UTC	230° (SW)	<b>12.5</b> Fri 18 Aug 2023	21.0
Cork Airport Co Cork	<b>44 km/h</b> Strong Breeze (24 knots or 28 mph)	Fri 18 Aug 2023 16UTC	100° (E)	<b>63 km/h</b> (34 knots or 39 mph)	Sat 19 Aug 2023 0232 UTC and Fri 18 Aug 2023 1551 UTC	240° (WSW) and 100° (WSW)	<b>63.0</b> Fri 18 Aug 2023	64.9

**Table 2.** Observations at synoptic stations. Coloured warning levels reached for wind 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)
Valentia Observatory Co Kerry	<b>43 km/h</b> Strong Breeze (23 knots or 26 mph)	Sat 19 Aug 2023 01UTC	240° (WSW)	<b>65 km/h</b> (35 knots or 40 mph)	Sat 19 Aug 2023 0147 UTC	240° (WSW)	<b>74.0</b> Fri 18 Aug 2023	75.2
Knock Airport Co Mayo	<b>41 km/h</b> Strong Breeze (22 knots or 25 mph)	Fri 18 Aug 2023 22UTC	100° (E)	<b>65 km/h</b> (35 knots or 40 mph)	Fri 18 Aug 2023 2013 UTC	100° (E)	<b>24.2</b> Fri 18 Aug 2023	32.1
Athenry Co Galway	<b>41 km/h</b> Strong Breeze (22 knots or 25 mph)	Fri 18 Aug 2023 19UTC	80° (E)	<b>61 km/h</b> (33 knots or 38 mph)	Sat 19 Aug 2023 0503 UTC and Fri 18 Aug 2023 1943 UTC	230° (SW) and 100° (SW)	<b>28.5</b> Fri 18 Aug 2023	32.4
Gurteen Co Tipperary	<b>39 km/h</b> Fresh Breeze (21 knots or 24 mph)	Sat 19 Aug 2023 04UTC	220° (SW)	<b>59 km/h</b> (32 knots or 37 mph)	Sat 19 Aug 2023 0427 UTC	220° (SW)	<b>32.8</b> Fri 18 Aug 2023	36.7
Claremorris Co Mayo	<b>37 km/h</b> Fresh Breeze (20 knots or 23 mph)	Fri 18 Aug 2023 20UTC	80° (E)	<b>63 km/h</b> (34 knots or 39 mph)	Fri 18 Aug 2023 2042 UTC	80° (E)	<b>21.7</b> Fri 18 Aug 2023	24.2
Newport Co Mayo	<b>37 km/h</b> Fresh Breeze (20 knots or 23 mph)	Sat 19 Aug 2023 12UTC and Fri 18 Aug 2023 11UTC	210° (SSW) and 110° (SSW)	<b>57 km/h</b> (31 knots or 36 mph)	Sat 19 Aug 2023 0729 UTC and Fri 18 Aug 2023 2131 UTC	210° (SSW) and 90° (SSW)	<b>18.8</b> Fri 18 Aug 2023	26.4
Mullingar Co Westmeath	<b>33 km/h</b> Fresh Breeze (18 knots or 21 mph)	Sat 19 Aug 2023 05UTC	220° (SW)	<b>59 km/h</b> (32 knots or 37 mph)	Sat 19 Aug 2023 0543 UTC	220° (SW)	<b>15.0</b> Fri 18 Aug 2023	25.1
Ballyhaise Co Cavan	<b>33 km/h</b> Fresh Breeze (18 knots or 21 mph)	Sat 19 Aug 2023 07UTC	210° (SSW)	<b>54 km/h</b> (29 knots or 33 mph)	Sat 19 Aug 2023 0717 UTC	210° (SSW)	<b>18.0</b> Fri 18 Aug 2023	26.2
Moore Park Co Cork	<b>31 km/h</b> Fresh Breeze (17 knots or 20 mph)	Fri 18 Aug 2023 20UTC	120° (ESE)	<b>57 km/h</b> (31 knots or 36 mph)	Fri 18 Aug 2023 2043 UTC	110° (ESE)	<b>46.9</b> Fri 18 Aug 2023	47.1
Mount Dillon Co Roscommon	<b>30 km/h</b> moderate breeze (16 knots or 18 mph)	Fri 18 Aug 2023 12UTC	100° (E)	<b>50 km/h</b> (27 knots or 31 mph)	Sat 19 Aug 2023 0721 UTC	210° (SSW)	<b>25.0</b> Fri 18 Aug 2023	30.6

## Impacts

- **Power Outages:** ESB Power Check showed a number (**70,000**) of outages in areas across the country on Friday 18 August 2023. Areas most impacted were in the South-East along, North Dublin, Dundalk, Portlaoise and Kilkenny.
- **Flooding:** According to the Irish Independent, significant flooding was seen in Cork city and some roads were also closed due to flooding in Co Kerry.
- **Travel:** Iarnród Éireann also reported that services between Dundalk/Drogheda towards Connolly Station were suspended while staff attended to an obstruction on the line.

## 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: <https://www.met.ie/forecasts/marine-inland-lakes/beaufort-scale>
- Buoy locations: [www.met.ie/forecasts/marine-inland-lakes/buoys/buoy-locations](http://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.
- For more information [www.met.ie/about-us/contact-us](http://www.met.ie/about-us/contact-us)

*\*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.*