

Published Wednesday 24 July 2024

Storm Agnes formed in the mid-Atlantic on Tuesday 26 September 2023 and tracked northeast over the country on Wednesday 27th and exited towards Scotland by late evening. A storm summary now follows:

- The highest sustained (10-minute mean) wind speed was a southeasterly (170°) strong gale force 85 km/h (46 knots or 53 mph) on Wednesday 27 September 2023 around 12 UTC (1 pm local time) observed at Roches Point, Co Cork. The previous (now joint) highest sustained wind speed to occur on any Sept 27th was a westerly strong gale force 85 km/h on Thursday 27 September 1973 at both Malin Head\*, Co Donegal and Casement Aerodrome, Co Dublin. The highest September sustained wind speed remained a south-southeasterly (210°) hurricane force 122 km/h (66 knots or 76 mph) during Hurricane Debbie on Saturday 16 September 1961 at Malin Head, Co Donegal.
- The highest gust (3-second mean) wind speeds was a west-southwesterly 117 km/h (63 knots or 72 mph) at Sherkin Island, Co Cork on Wednesday 27th around 14:08 UTC (3:08 pm local). The previous highest gust to occur on any Sept 27th was a southerly 128 km/h (69 knots | 79 mph) at Casement Aerodrome, Co Dublin in 1973. The highest September gust wind speed remains 181 km/h (98 knots or 113 mph) on 1961 during Hurricane Debbie at Malin Head, Co Donegal .
- The lowest land-station hourly mean sea pressure (MSLP) was 975.9 hPa on the Wednesday 27th at around 13 UTC (2 pm local) observed at Valentia Observatory, Co Kerry.
- The highest 24-hour rainfall total was 51.5 mm (09-09 UTC) at Glenmacnass, Co Wicklow (41% of its 1991-2020 Long-Term Average (LTA)) on the 27th.
- The highest individual wave height was 14.2 m and this was recorded at M3 off the (Kerry/Cork coast) and M5 Buoy off the south Wexford coast.

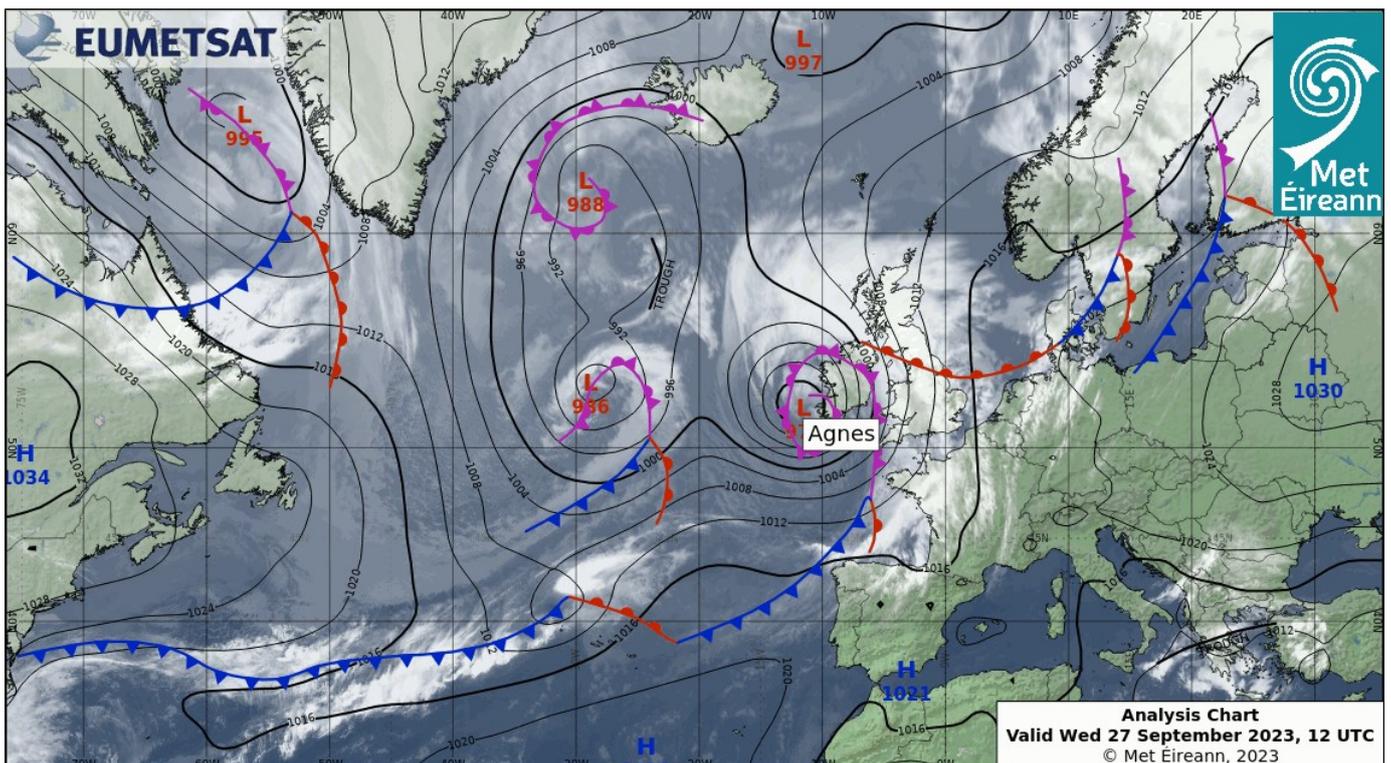


Figure 1. Analysis Chart at 12 UTC on Wed 27 Sept 2023

## Tuesday 26 September 2023

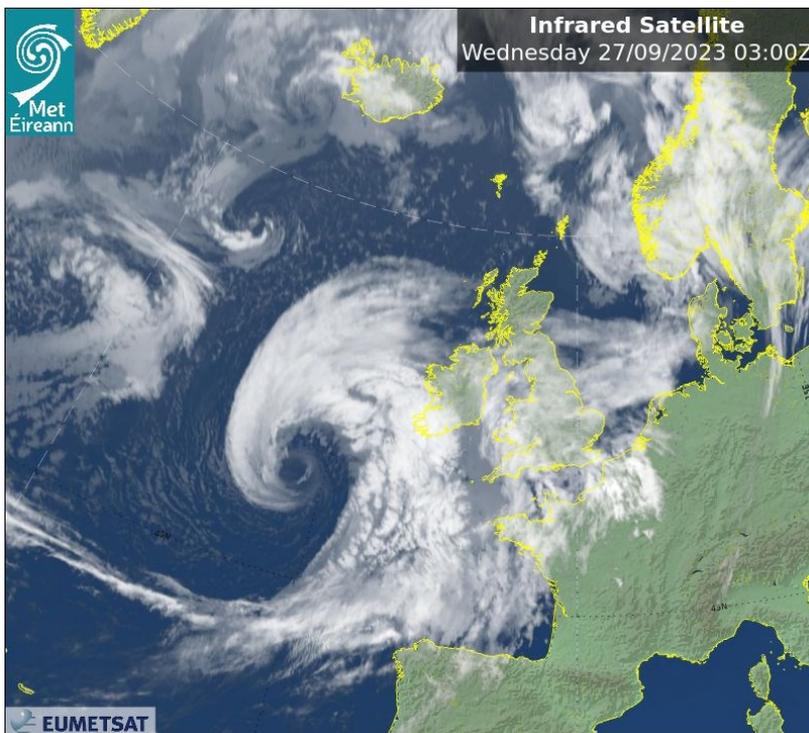
A strong southerly airflow covered Ireland as a front tracked eastwards over the country. A fresh south-west airflow followed as the front cleared eastwards into the Irish Sea by late morning. Heavy rain during the morning in the North and East cleared north-westwards. The afternoon was a mix of sunny spells and scattered showers some heavy and thundery at times. The evening was mostly clear with isolated showers and moderate to fresh and gusty south-westerly winds. Outbreaks of rain developed in the Southwest overnight as Storm Agnes approached.

## Wednesday 27 September 2023

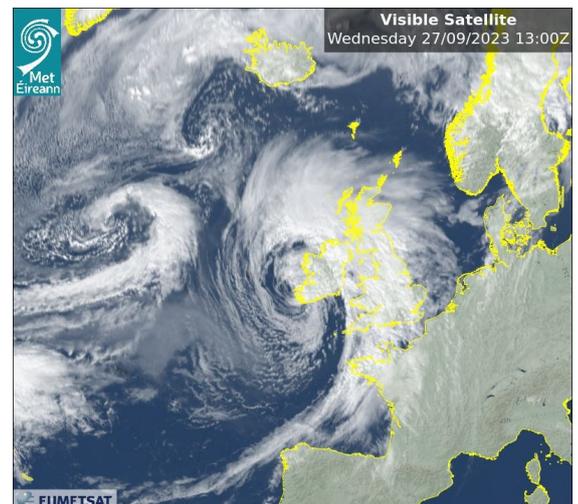
A moderate to fresh southeast airflow covered Ireland during which strengthened as Storm Agnes tracked across the country from the southwest. Storm Agnes moved north-eastwards over Ireland during the day. It was wet and very windy with strong to gale force southeast winds, shifting westerly later in the day. It became extremely windy and stormy for a time in the East and South. Strong onshore winds and high seas brought coastal flooding to southern coasts. Heavy rain extended nationwide by the evening with some localised flooding.

## Thursday 28 September 2023

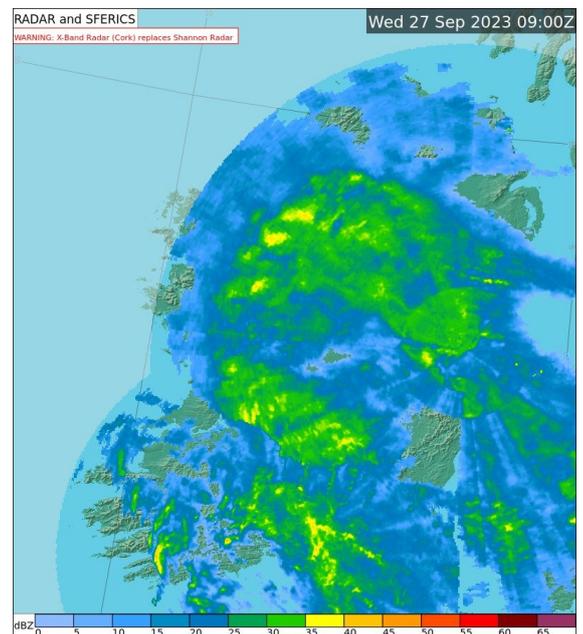
Storm Agnes was centred over Scotland generated a strong to gale force south-westerly airflow over Ireland during the day. The morning was mostly dry and clear apart from some patches of drizzle in the Southwest early in the morning and which moved eastwards. A narrow band of rain pushed in from the west during the afternoon and moved across the country through the evening. The rain turned heavy at times.



**Figure 2 (above left).** Infrared EUMETSAT Satellite image on Wed 27 Sep 2023 at 03 UTC after it underwent explosive cyclogenesis



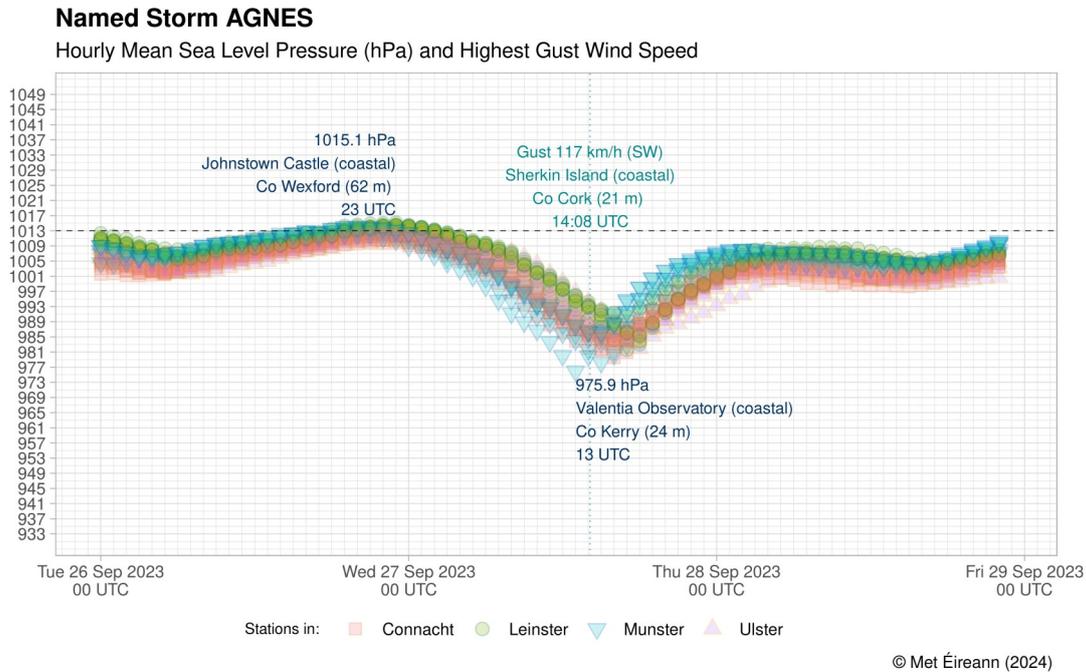
**Figure 3 (top right).** Visible EUMETSAT Satellite image on Wed 27 Sep 2024 at 13 UTC as system weakened on approach



**Figure 4 (bottom right).** Radar and Sferics image on Wed 27 Sep 2023 at 09 UTC when 10.9 mm of rain fell at Moore Park, Co Cork

## Mean Sea Level Pressure

The minimum hourly mean sea level pressure (MSLP) observed in Ireland during storm Agnes was 975.9 hPa at Valentia Observatory, Co Kerry around 13 UTC (2 pm local) on Wednesday 27th. On the day of impact, the recorded maximum pressure drop amounted to 33.4 hPa at Shannon Airport, Co Clare, as the mean sea level pressure decreased from 1011.6 to 978.2 hPa. Valentia 1012.1 to 975.9 hPa from Tuesday 26 to Thursday 28 September 2023 (inclusive).



**Figure 5:** Hourly Mean Sea Level pressure (MSLP) and highest gust wind speed (with stations coloured by province) between Tue 26 and Thu 28 Sep 2023

## Marine Observations

**Table 1. Extremes of wind speeds and wave heights at buoys from 16 UTC Tue 26 Sep 2024 to 04 UTC Thu 28 Sep 2023**

Buoy (Location)	Sustained Wind Speeds	Gust Wind Speeds	Significant Wave	Individual Wave
M2 (in Irish Sea)	71 km/h (39 knots or 44 mph) Wed 27 Sep 2023 15 UTC	96 km/h (52 knots or 59 mph) Wed 27 Sep 2023 15 UTC	4.6 m Wed 27 Sep 2023 19 UTC	7.7 m Wed 27 Sep 2023 22 UTC
M3 (off Cork coast)	80 km/h (43 knots or 50 mph) Wed 27 Sep 2023 13 UTC	105 km/h (57 knots or 65 mph) Wed 27 Sep 2023 13 UTC	8.4 m Wed 27 Sep 2023 15 UTC	14.2 m Wed 27 Sep 2023 14 UTC
M4 (off Donegal coast)	55 km/h (30 knots or 34 mph) Wed 27 Sep 2023 23 UTC	73 km/h (40 knots or 46 mph) Wed 27 Sep 2023 23 UTC	4.3 m Thu 28 Sep 2023 02 UTC	6.4 m Thu 28 Sep 2023 01 UTC
M5 (off south Wexford coast)	54 km/h (29 knots or 33 mph) Wed 27 Sep 2023 12 UTC	86 km/h (47 knots or 54 mph) Wed 27 Sep 2023 12 UTC	8.2 m Wed 27 Sep 2023 19 UTC	14.2 m Wed 27 Sep 2023 20 UTC
M6 (in deep Atlantic)	49 km/h (26 knots or 30 mph) Thu 28 Sep 2023 04 UTC	67 km/h (36 knots or 42 mph) Thu 28 Sep 2023 04 UTC	5.1 m Wed 27 Sep 2023 17 UTC	8.0 m Wed 27 Sep 2023 19 UTC

## Synoptic stations - extremes of wind speeds and rainfall totals

The table below contains wind speeds and rainfall observations for the SYNOPTIC stations during Storm Agnes.

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)	3-day Total Rain (mm)
Roches Point Co Cork	<b>85 km/h</b> Strong Gale Force (46 knots or 53 mph)	Wed 27 Sep 2023 12UTC	170° (S)	<b>111 km/h</b> (60 knots or 69 mph)	Wed 27 Sep 2023 1519 UTC	210° (SSW)	<b>20.4</b> Wed 27 Sep 2023	33.9
Sherkin Island Co Cork	<b>83 km/h</b> Strong Gale Force (45 knots or 52	Wed 27 Sep 2023 13UTC	200° (SSW)	<b>117 km/h</b> (63 knots or 72 mph)	Wed 27 Sep 2023 1408 UTC	220° (SW)	<b>22.2</b> Wed 27 Sep 2023	35.4
Malin Head* Co Donegal	<b>70 km/h</b> Gale Force 8 (38 knots or 44 mph)	Thu 28 Sep 2023 01UTC	250° (WSW)	<b>89 km/h</b> (48 knots or 55 mph)	Thu 28 Sep 2023 0143 UTC	250° (WSW)	<b>16.0</b> Wed 27 Sep 2023	24.0
Cork Airport Co Cork	<b>65 km/h</b> Gale Force 8 (35 knots or 40 mph)	Wed 27 Sep 2023 16UTC	210° (SSW)	<b>109 km/h</b> (59 knots or 68 mph)	Wed 27 Sep 2023 0803 UTC	140° (SE)	<b>26.7</b> Wed 27 Sep 2023	49.4
Mace Head** Co Galway	<b>65 km/h</b> Gale Force 8 (35 knots or 40 mph)	Wed 27 Sep 2023 20UTC	270° (W)	<b>81 km/h</b> (44 knots or 51 mph)	Wed 27 Sep 2023 2033 UTC	270° (W)	<b>14.4</b> Thu 28 Sep 2023	34.6
Casement Aerodrome Co Dublin	<b>63 km/h</b> Gale Force 8 (34 knots or 39 mph)	Wed 27 Sep 2023 13UTC	150° (SSE)	<b>98 km/h</b> (53 knots or 61 mph)	Wed 27 Sep 2023 1910 UTC	240° (WSW)	<b>10.3</b> Wed 27 Sep 2023	15.0
Valentia Observatory Co Kerry	<b>63 km/h</b> Gale Force 8 (34 knots or 39 mph)	Wed 27 Sep 2023 14UTC	250° (WSW)	<b>96 km/h</b> (52 knots or 60 mph)	Wed 27 Sep 2023 0744 UTC	140° (SE)	<b>29.5</b> Wed 27 Sep 2023	56.3
Shannon Airport Co Clare	<b>63 km/h</b> Gale Force 8 (34 knots or 39 mph)	Wed 27 Sep 2023 17UTC	230° (SW)	<b>83 km/h</b> (45 knots or 52 mph)	Wed 27 Sep 2023 1600 UTC	240° (WSW)	<b>11.3</b> Tue 26 Sep 2023	22.8
Belmullet Co Mayo	<b>59 km/h</b> Near Gale (32 knots or 37 mph)	Thu 28 Sep 2023 08UTC	180° (S)	<b>81 km/h</b> (44 knots or 51 mph)	Tue 26 Sep 2023 0001 UTC	180° (S)	<b>10.2</b> Tue 26 Sep 2023	23.3
Dublin Airport Co Dublin	<b>57 km/h</b> Near Gale (31 knots or 36 mph)	Wed 27 Sep 2023 14UTC	150° (SSE)	<b>87 km/h</b> (47 knots or 54 mph)	Wed 27 Sep 2023 1343 UTC	150° (SSE)	<b>15.0</b> Wed 27 Sep 2023	19.6
Finner Co Donegal	<b>56 km/h</b> Near Gale (30 knots or 35 mph)	Wed 27 Sep 2023 23UTC	260° (W)	<b>76 km/h</b> (41 knots or 47 mph)	Wed 27 Sep 2023 2335 UTC	250° (WSW)	<b>14.0</b> Wed 27 Sep 2023	28.2
Johnstown Castle Co Wexford	<b>54 km/h</b> Near Gale (29 knots or 33 mph)	Wed 27 Sep 2023 12UTC	150° (SSE)	<b>83 km/h</b> (45 knots or 52 mph)	Wed 27 Sep 2023 1440 UTC	180° (S)	<b>17.0</b> Wed 27 Sep 2023	30.2

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)	3-day Total Rain (mm)
Oak Park Co Carlow	<b>52 km/h</b> Near Gale (28 knots or 32 mph)	Wed 27 Sep 2023 18UTC	240° (WSW)	<b>83 km/h</b> (45 knots or 52 mph)	Wed 27 Sep 2023 1812 UTC	240° (WSW)	<b>16.4</b> Wed 27 Sep 2023	27.3
Dunsany Co Meath	<b>50 km/h</b> Strong Breeze (27 knots or 31 mph)	Wed 27 Sep 2023 18UTC	220° (SW)	<b>74 km/h</b> (40 knots or 46 mph)	Wed 27 Sep 2023 1932 UTC	240° (WSW)	<b>13.6</b> Wed 27 Sep 2023	21.4
Moore Park Co Cork	<b>48 km/h</b> Strong Breeze (26 knots or 30 mph)	Wed 27 Sep 2023 10UTC	150° (SSE)	<b>91 km/h</b> (49 knots or 56 mph)	Wed 27 Sep 2023 1016 UTC	140° (SE)	<b>27.7</b> Wed 27 Sep 2023	43.6
Gurteen Co Tipperary	<b>48 km/h</b> Strong Breeze (26 knots or 30 mph)	Wed 27 Sep 2023 12UTC	150° (SSE)	<b>70 km/h</b> (38 knots or 44 mph)	Wed 27 Sep 2023 1714 UTC	240° (WSW)	<b>11.2</b> Wed 27 Sep 2023	20.4
Knock Airport Co Mayo	<b>48 km/h</b> Strong Breeze (26 knots or 30 mph)	Wed 27 Sep 2023 midnight	260° (W)	<b>69 km/h</b> (37 knots or 43 mph)	Thu 28 Sep 2023 1143 UTC	180° (S)	<b>15.2</b> Wed 27 Sep 2023	29.9
Newport Co Mayo	<b>46 km/h</b> Strong Breeze (25 knots or 29 mph)	Wed 27 Sep 2023 09UTC	110° (ESE)	<b>69 km/h</b> (37 knots or 43 mph)	Wed 27 Sep 2023 1208 UTC	120° (ESE)	<b>12.4</b> Wed 27 Sep 2023	31.9
Ballyhaise Co Cavan	<b>39 km/h</b> Fresh Breeze (21 knots or 24 mph)	Wed 27 Sep 2023 13UTC	120° (ESE)	<b>69 km/h</b> (37 knots or 43 mph)	Wed 27 Sep 2023 1325 UTC	120° (ESE)	<b>23.3</b> Wed 27 Sep 2023	33.0
Mullingar Co Westmeath	<b>39 km/h</b> Fresh Breeze (21 knots or 24 mph)	Wed 27 Sep 2023 12UTC	130° (SE)	<b>65 km/h</b> (35 knots or 40 mph)	Wed 27 Sep 2023 1154 UTC	160° (SSE)	<b>15.4</b> Wed 27 Sep 2023	25.0
Claremorris Co Mayo	<b>39 km/h</b> Fresh Breeze (21 knots or 24 mph)	Wed 27 Sep 2023 10UTC	110° (ESE)	<b>63 km/h</b> (34 knots or 39 mph)	Wed 27 Sep 2023 1042 UTC	110° (ESE)	<b>20.2</b> Wed 27 Sep 2023	43.3
Mount Dillon Co Roscommon	<b>39 km/h</b> Fresh Breeze (21 knots or 24 mph)	Wed 27 Sep 2023 12UTC	120° (ESE)	<b>57 km/h</b> (31 knots or 36 mph)	Wed 27 Sep 2023 1204 UTC	120° (ESE)	<b>20.4</b> Wed 27 Sep 2023	30.8
Athenry Co Galway	<b>35 km/h</b> Fresh Breeze (19 knots or 22 mph)	Wed 27 Sep 2023 12UTC	150° (SSE)	<b>56 km/h</b> (30 knots or 35 mph)	Wed 27 Sep 2023 1848 UTC	280° (W)	<b>21.9</b> Wed 27 Sep 2023	41.5

## Impacts

- **Power Outages:** ESB Power Check showed 2,000 customers without power in Dublin with the southern and southeastern parts of the country mostly affected ([ESB PowerCheck, 2023](#)).
- **Flooding:** Flooding in Co Cork and the southwest of the country ([The Irish Times, 2023](#)).
- **Airports:** A number of flights were diverted from Kerry and Cork Airports to Dublin Airport. ([The Journal, 2023](#)) Dublin Airport Authorities reported there were delays and flights cancelled.
- **Trains:** Iarnród Éireann / Irish Rail reported a number of delays to Dublin Dart train services.

## 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](http://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](http://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. For more information, please contact Met Éireann's Climate Services Division: [enquiries@met.ie](mailto:enquiries@met.ie) or <https://www.met.ie/about-us/contact-us>.