STORM KATHLEEN
Saturday 6 April 2024

The thirteenth named storm of the 2023/2024 season
Named by Met Éireann on Thursday 4 April 2024

Date published Friday 14 February 2025

Storm Kathleen was an unusually deep area of low pressure for the time of year. The storm developed near the Azores early Friday on the eastern side of a deep trough that was situated in the mid-Atlantic. It deepened rapidly as it approached from the south southwest and interacted with the left exit region of a strong southerly jet stream. Frontal rain bands preceded the strongest winds and moved from south to north from late afternoon Friday to the early hours of Saturday 6th, followed by showers. Very strong southerly winds swept northwards across the country during the day Saturday 6th as the centre of the storm moved from south to north just to the west of Ireland. The winds were strongest in the South and West but very gusty everywhere.

- The highest sustained (10-minute mean) wind speed was an south-southeasterly strong gale force 85 km/h (46 knots or 53 mph) on Saturday 6 April 2024 at Sherkin Island (coastal), Co Cork (at 05 UTC / 6 am), Roches Point (coastal), Co Cork (at 06 UTC/ 7 am) and Belmullet (coastal), Co Mayo (at 10 UTC / 11 am).
- The highest gust (3-second mean) wind speed was a southerly 113 km/h (61 knots or 70 mph) at Finner, Co Donegal on Saturday around 14:26 UTC (3:26 pm local time).
- The highest daily mean wind speeds was 57.6 km/h (31.1 knots or 35.8 mph) at Mace Head (coastal), Co Galway on Saturday.
- The lowest hourly mean sea level pressure (MSLP) was 966.7 hPa at Belmullet, Co Mayo on Saturday around 09 UTC (10 am local time).
- The highest daily (00-00 UTC) rainfall total was 8.4 mm on Saturday at Belmullet, Co Mayo (11 % of its 1991-2020 April Long Term Average (LTA)). The highest 24-hour rainfall total was 48.3 mm at Kenmare (Derreen), Co Kerry (34 % of its LTA) in the 24 hours after 09 UTC Friday 5 April 2024.
- The highest individual wave height was 17.7 m and this was recorded at Buoy M3 (off Cork coast) at around 11 UTC (11 am local).

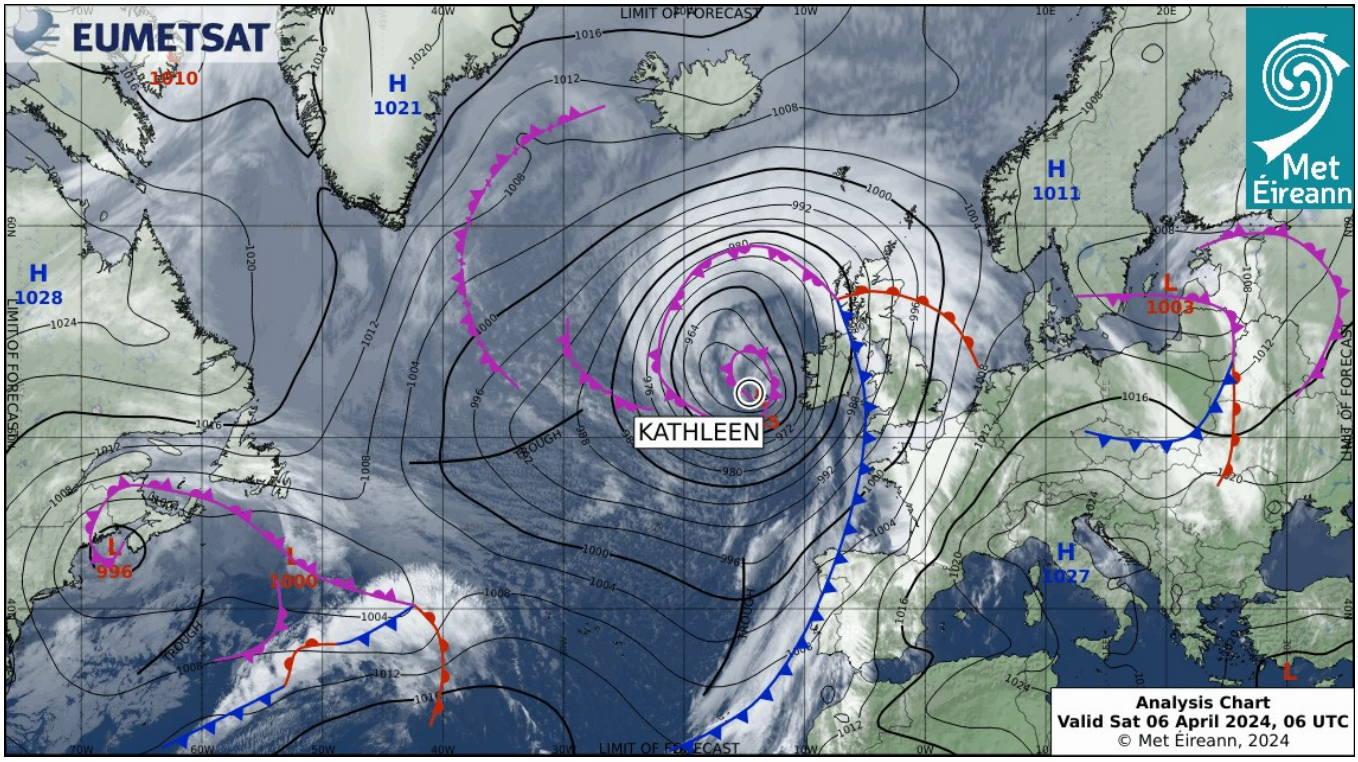

Figure 1. Analysis and Satellite Chart at the hour 06 UTC on Thu 6 Apr 2024

Daily Weather Summaries

Saturday 6 April 2024

Ireland experienced near gale to gale force southerly winds from Storm Kathleen, which had a central pressure of 953 hPa on the morning of Saturday 6th. The storm tracked northward past the west coast, bringing strong, gusty southerly winds, especially to the south and west, along with continuous showers moving northeast. Overnight, conditions remained windy with fresh to strong south to southwest winds, particularly in the West, Northwest, and Southeast.

Mount Dillon, Co Roscommon observed 16.2 °C (3.1 °C above its LTA. While temperatures in Netherlands rose above 20 °C across the entire country (KNMI, accessed 12-Dec-2024).

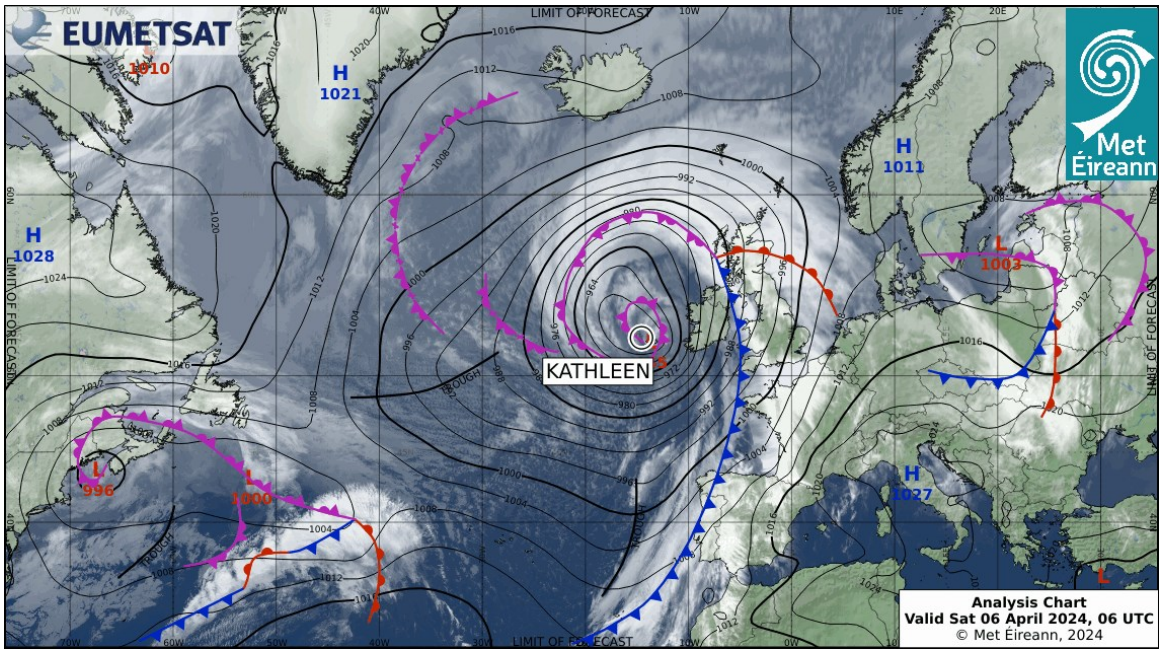

Figure 2. Analysis and satellite chart at hour 06 UTC on Sat 6 April 2024

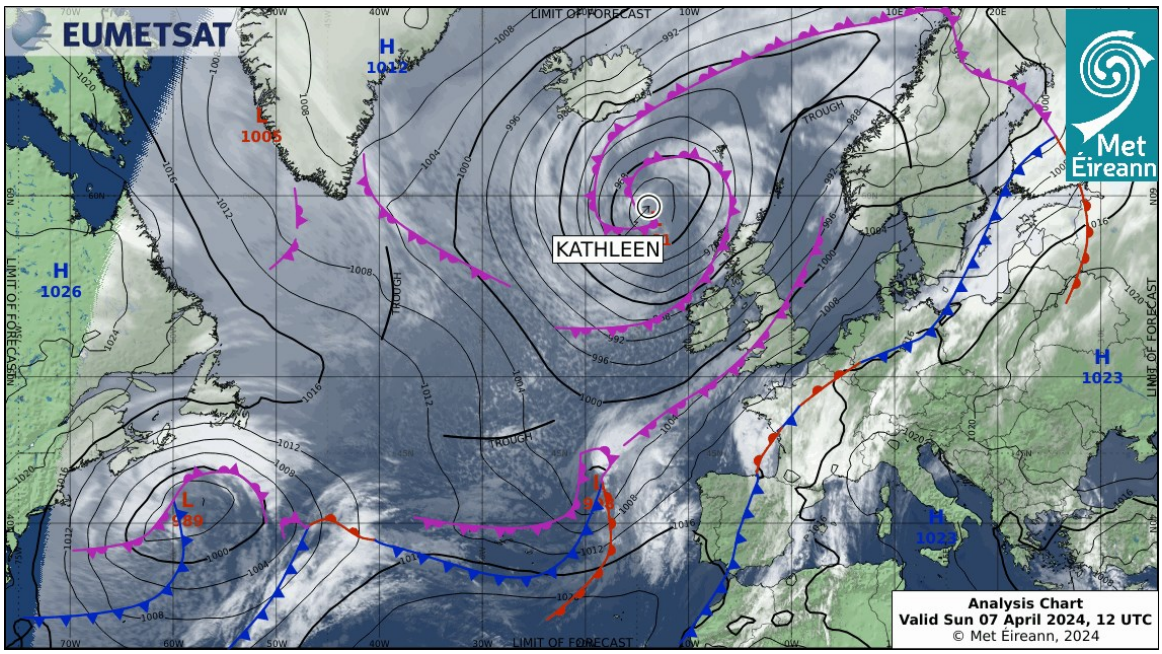

Figure 3. Analysis and satellite chart at hour 12 UTC on Sun 7 April 2024

Sunday 7 April 2024

On Sunday 7th, Ireland experienced strong, unstable southerly winds from Storm Kathleen, which was centered 310 nautical miles, by around 09 UTC, northwest of Erris Head with a pressure of 954 hPa. Showery troughs were embedded in this airflow. The morning saw fresh to strong, gusty south-westerly winds, strongest in the Northwest. The day featured a mix of sunny intervals and scattered, blustery showers, some heavy with isolated hail and thunder.

Mean Sea Level Pressure (MSLP)

The minimum hourly mean sea level pressure (MSLP) observed in Ireland during storm Kathleen was 966.7 hPa observed at Belmullet (coastal), Co Mayo on Saturday.

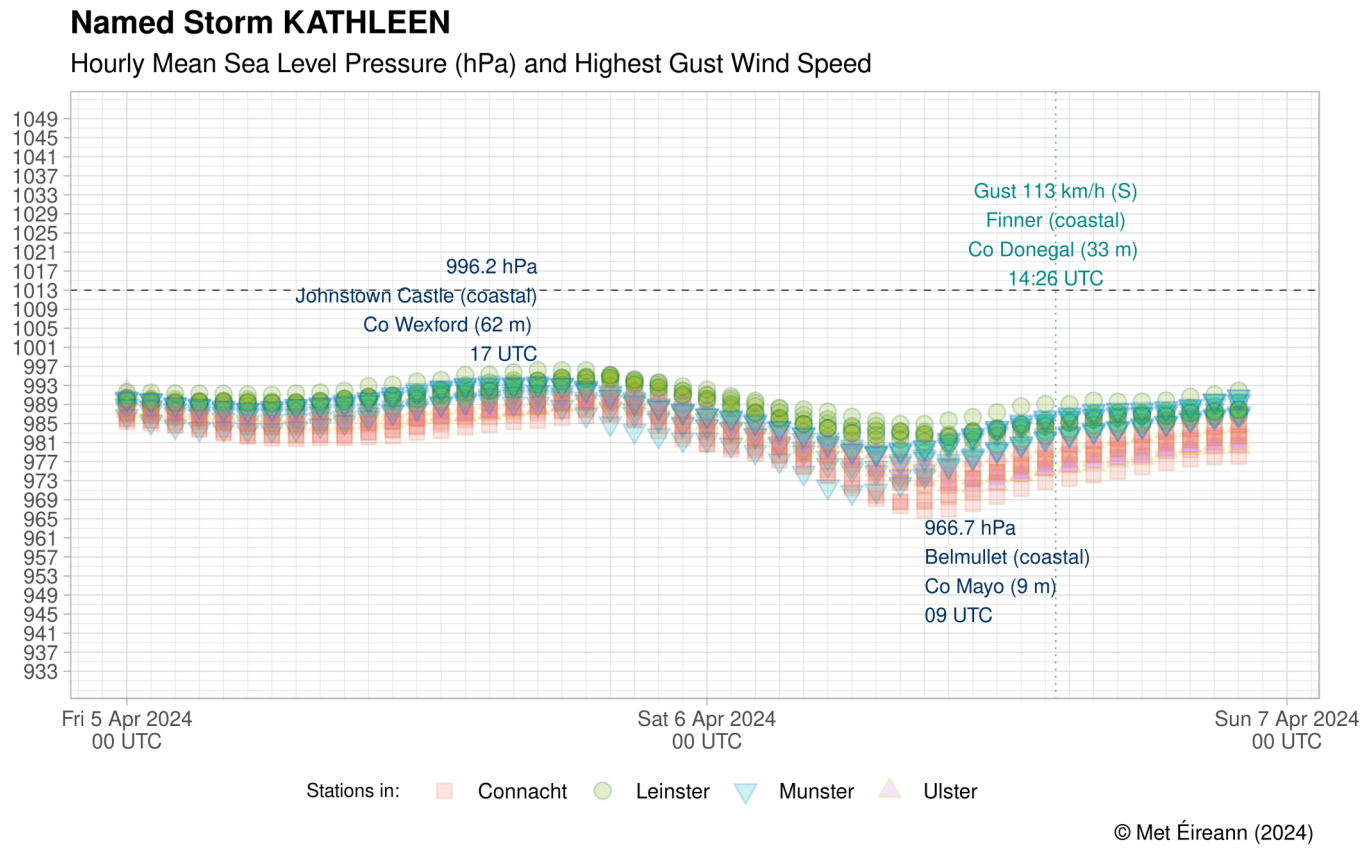

Figure 4: Hourly Mean Sea Level pressure (coloured by province) between Fri 5 and Sat 6 April 2024. Each point represents the observation at a station, and are coloured by province.

Table 1. Wind speeds and wave heights at Irish Marine Data Buoys Fri 05 and Sun Apr-2024

Buoy (Location)	Highest Sustained Wind Speeds	Highest Gust Wind Speeds	Highest Significant	Highest Individual	Mean Sea Level Pressure
Buoy M2 (in the Irish Sea)	**57 km/h** (31 knots or 36 mph) 11 UTC Sat 6 Apr 2024	**85 km/h** (46 knots or 53 mph) 11 UTC Sat 6 Apr 2024	**4.8 m** 16 UTC Sat 6 Apr 2024	**8.3 m** 16 UTC Sat 6 Apr 2024	**984.7 hPa** 11 UTC Sat 6 Apr 2024
Buoy M3 (off the Cork coast)	**64 km/h** (35 knots or 40 mph) 05 UTC Sat 6 Apr 2024	**94 km/h** (51 knots or 59 mph) 06 UTC Sat 6 Apr 2024	**11.1 m** 10 UTC Sat 6 Apr 2024	**17.7 m** 11 UTC Sat 6 Apr 2024	**970.1 hPa** 06 UTC Sat 6 Apr 2024
Buoy M4 (off the Donegal coast)	**71 km/h** (38 knots or 44 mph) 19 UTC Sat 6 Apr 2024	**99 km/h** (54 knots or 62 mph) 09 UTC Sun 7 Apr 2024	**8.4 m** 10 UTC Sun 7 Apr 2024	**12.5 m** 08 UTC Sun 7 Apr 2024	**965.6 hPa** 11 UTC Sat 6 Apr 2024
Buoy M5 (off the south Wexford coast)	**67 km/h** (36 knots or 42 mph) 08 UTC Sat 6 Apr 2024	**92 km/h** (50 knots or 57 mph) 08 UTC Sat 6 Apr 2024	**8.4 m** 15 UTC Sat 6 Apr 2024	**13.6 m** 15 UTC Sat 6 Apr 2024	**985.1 hPa** 08 UTC Sat 6 Apr 2024
Buoy M6 (in the deep Atlantic)	**72 km/h** (39 knots or 45 mph) 19 UTC Sat 6 Apr 2024	**95 km/h** (51 knots or 59 mph) 17 UTC Sat 6 Apr 2024	**7.8 m** 14 UTC Sat 6 Apr 2024	**13.6 m** 01 UTC Sun 7 Apr 2024	**955.9 hPa** 07 UTC Sat 6 Apr 2024

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 speeds and rainfall totals at synoptic on Saturday 6 April 2024

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)
Belmullet (coastal) Co Mayo	**85 km/h** Strong Gale Force (46 knots or 53 mph)	Sat 6 Apr 2024 10UTC	180° (S)	**111 km/h** (60 knots or 69 mph)	Sat 6 Apr 2024 0901 UTC	160° (SSE)	**8.4** Sat 6 Apr 2024
Sherkin Island (coastal) Co Cork	**85 km/h** Strong Gale Force (46 knots or 53 mph)	Sat 6 Apr 2024 05UTC	160° (SSE)	**111 km/h** (60 knots or 69 mph)	Sat 6 Apr 2024 0722 UTC	180° (S)	**1.7** Sat 6 Apr 2024
Roches Point (coastal) Co Cork	**85 km/h** Strong Gale Force (46 knots or 53	Sat 6 Apr 2024 06UTC	170° (S)	**106 km/h** (57 knots or 66 mph)	Sat 6 Apr 2024 0708 UTC	170° (S)	**1.1** Sat 6 Apr 2024
Mace Head** (coastal) Co Galway	**83 km/h** Strong Gale Force (45 knots or 52	Sat 6 Apr 2024 09UTC	170° (S)	**111 km/h** (60 knots or 69 mph)	Sat 6 Apr 2024 0931 UTC	190° (S)	**3.2** Sat 6 Apr 2024
Malin Head* (coastal) Co Donegal	**78 km/h** Strong Gale Force (42 knots or 48	Sat 6 Apr 2024 10UTC	160° (SSE)	**106 km/h** (57 knots or 66 mph)	Sat 6 Apr 2024 0923 UTC	160° (SSE)	**4.0** Sat 6 Apr 2024
Shannon Airport (coastal) Co Clare	**74 km/h** Gale Force 8 (40 knots or 46	Sat 6 Apr 2024 09UTC	170° (S)	**96 km/h** (52 knots or 60 mph)	Sat 6 Apr 2024 0819 UTC	160° (SSE)	**1.6** Sat 6 Apr 2024
Finner (coastal) Co Donegal	**70 km/h** Gale Force 8 (38 knots or 44	Sat 6 Apr 2024 14UTC	200° (SSW)	**113 km/h** (61 knots or 70 mph)	Sat 6 Apr 2024 1426 UTC	190° (S)	**3.4** Sat 6 Apr 2024
Knock Airport Co Mayo	**63 km/h** Gale Force 8 (34 knots or 39	Sat 6 Apr 2024 10UTC	170° (S)	**102 km/h** (55 knots or 63 mph)	Sat 6 Apr 2024 0909 UTC	160° (SSE)	**2.7** Sat 6 Apr 2024
Cork Airport (coastal) Co Cork	**63 km/h** Gale Force 8 (34 knots or 39	Sat 6 Apr 2024 15UTC	210° (SSW)	**102 km/h** (55 knots or 63 mph)	Sat 6 Apr 2024 1020 UTC	210° (SSW)	**0.4** Sat 6 Apr 2024
Casement Aerodrome Co Dublin	**63 km/h** Gale Force 8 (34 knots or 39	Sat 6 Apr 2024 15UTC	200° (SSW)	**98 km/h** (53 knots or 61 mph)	Sat 6 Apr 2024 1027 UTC	190° (S)	**3.1** Sat 6 Apr 2024
Newport (coastal) Co Mayo	**63 km/h** Gale Force 8 (34 knots or 39	Sat 6 Apr 2024 07UTC	140° (SE)	**94 km/h** (51 knots or 59 mph)	Sat 6 Apr 2024 1056 UTC	170° (S)	**4.5** Sat 6 Apr 2024
Oak Park Co Carlow	**61 km/h** Near Gale (33 knots or 38	Sat 6 Apr 2024 09UTC	180° (S)	**93 km/h** (50 knots or 58 mph)	Sat 6 Apr 2024 1018 UTC	190° (S)	**5.9** Sat 6 Apr 2024

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	Daily Rain (mm)	Total Rain (mm)
Claremorris Co Mayo	**59 km/h** Near Gale (32 knots or 37 mph)	Sat 6 Apr 2024 13UTC	200° (SSW)	**93 km/h** (50 knots or 58 mph)	Sat 6 Apr 2024 1555 UTC	200° (SSW)	**3.7** Sat 6 Apr 2024	12.9
Valentia Observatory (coastal) Co Kerry	**57 km/h** Near Gale (31 knots or 36 mph)	Sat 6 Apr 2024 11UTC	200° (SSW)	**93 km/h** (50 knots or 58 mph)	Sat 6 Apr 2024 1149 UTC	200° (SSW)	**6.5** Sat 6 Apr 2024	11.2
Dublin Airport (coastal) Co Dublin	**57 km/h** Near Gale (31 knots or 36 mph)	Sat 6 Apr 2024 12UTC	190° (S)	**91 km/h** (49 knots or 56 mph)	Sat 6 Apr 2024 1259 UTC	180° (S)	**0.8** Sat 6 Apr 2024	16.1
Gurteen Co Tipperary	**56 km/h** Near Gale (30 knots or 35 mph)	Sat 6 Apr 2024 13UTC	180° (S)	**87 km/h** (47 knots or 54 mph)	Sat 6 Apr 2024 1313 UTC	180° (S)	**3.2** Sat 6 Apr 2024	14.9
Moore Park Co Cork	**54 km/h** Near Gale (29 knots or 33 mph)	Sat 6 Apr 2024 08UTC	170° (S)	**93 km/h** (50 knots or 58 mph)	Sat 6 Apr 2024 0811 UTC	170° (S)	**0.9** Sat 6 Apr 2024	19.1
Dunsany Co Meath	**54 km/h** Near Gale (29 knots or 33 mph)	Sat 6 Apr 2024 09UTC	170° (S)	**89 km/h** (48 knots or 55 mph)	Sat 6 Apr 2024 0928 UTC	180° (S)	**0.7** Sat 6 Apr 2024	15.1
Ballyhaise Co Cavan	**50 km/h** Strong Breeze (27 knots or 31 mph)	Sat 6 Apr 2024 08UTC	170° (S)	**85 km/h** (46 knots or 53 mph)	Sat 6 Apr 2024 1001 UTC	170° (S)	**1.7** Sat 6 Apr 2024	7.6
Mullingar Co Westmeath	**50 km/h** Strong Breeze (27 knots or 31 mph)	Sat 6 Apr 2024 09UTC	170° (S)	**83 km/h** (45 knots or 52 mph)	Sat 6 Apr 2024 1008 UTC	180° (S)	**2.0** Sat 6 Apr 2024	9.0
Johnstown Castle (coastal) Co Wexford	**50 km/h** Strong Breeze (27 knots or 31 mph)	Sat 6 Apr 2024 11UTC	190° (S)	**81 km/h** (44 knots or 51 mph)	Sat 6 Apr 2024 0932 UTC	190° (S)	**2.8** Sat 6 Apr 2024	16.2
Athenry Co Galway	**46 km/h** Strong Breeze (25 knots or 29 mph)	Sat 6 Apr 2024 16UTC	220° (SW)	**81 km/h** (44 knots or 51 mph)	Sat 6 Apr 2024 1608 UTC	210° (SSW)	**3.4** Sat 6 Apr 2024	4.3
Mount Dillon Co Roscommon	**41 km/h** Strong Breeze (22 knots or 25 mph)	Sat 6 Apr 2024 07UTC	160° (SSE)	**72 km/h** (39 knots or 45 mph)	Sat 6 Apr 2024 1057 UTC	170° (S)	**5.7** Sat 6 Apr 2024	13.9

Impacts

- **Power Outages**: Around 34,000 homes and businesses were without electricity on the morning of Sunday 7 April 2024 (ESB PowerCheck, 2024).

- **Travel**: All Aer Lingus flights departing from Belfast were canceled, and several flights bound for Ireland were diverted to the UK because of strong winds. (The Independent, 2024).

Storm Name Background

Kathleen 'Kay' McNulty Mauchly Antonelli: one of the pioneers of computer programming.

- Kay was an Irish computer programmer, and one of the six original programmers on the ENIAC machine, which was one of the first general purpose electronic digital computers. In 2017, DCU honoured Kay by naming their computer science building in her name. The Irish-Centre for High-End Computing (ICHEC) also honoured her in 2019 when they named their new supercomputer "Kay" following a public vote whereby Kathleen beat out other candidates including Francis Beaufort and Nicholas Callan.

Kathleen Lonsdale: Irish crystallographer who demonstrated the crystal structure of benzene.

- She was the first to use Fourier spectral methods while solving the structure of hexachlorobenzene in 1931. She was also one of the first two women inducted as a Fellow of the Royal Society in 1945 alongside Marjory Stephenson, a British biochemist.

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*.