Met Éireann

The Irish Meteorological Service

Storm Éowyn

Marine Storm Report

Marine Unit

Report Date: 02 October 2025

Report Time: 14:39 UTC

Marine Observations Summary

Data Sources

- **Buoy 62091** (M2 Buoy): 53.47°N, 5.42°W
- **Buoy 62092** (M3 Buoy): 53.48°N, 5.42°W
- **Buoy 62093** (M4 Buoy): 51.22°N, 6.70°W
- **Buoy 62094** (M5 Buoy): 51.69°N, 6.70°W
- **Buoy 62095** (M6 Buoy): 53.06°N, 7.90°W

Peak Conditions Observed

Buoy (Location)	Sustained Wind Speeds	Gust Wind Speeds	Significant Wave Height	Individual Wave	MSLP (hPa)
M2 Buoy (in the Irish Sea)	**80 km/h** (43 knots or 22 mph) Fri 24 Jan 2025 09 UTC	**106 km/h** (57 knots or 29 mph) Fri 24 Jan 2025 09 UTC	**5.5 m** Fri 24 Jan 2025 09 UTC	**9.5 m** Fri 24 Jan 2025 09 UTC	**968.3** Fri 24 Jan 2025 04 UTC 13UTC

M3 Buoy (in the Irish Sea)	**90 km/h** (49 knots or 25 mph) Fri 24 Jan 2025 01 UTC	**98 km/h** (53 knots or 27 mph) Thu 23 Jan 2025 21 UTC	**11.2 m** Sun 26 Jan 2025 23 UTC	**18.8 m** Sun 26 Jan 2025 22 UTC	**962.5** Mon 27 Jan 2025 00 UTC 13UTC
M4 Buoy (off the Cork coast)	**76 km/h** (41 knots or 21 mph) Fri 24 Jan 2025 13 UTC	**103 km/h** (56 knots or 29 mph) Fri 24 Jan 2025 13 UTC	**11.5 m** Fri 24 Jan 2025 12 UTC	**16.9 m** Fri 24 Jan 2025 12 UTC	**952.7** Fri 24 Jan 2025 02 UTC 13UTC
M5 Buoy (off the Donegal coast)	**56 km/h** (30 knots or 16 mph) Fri 24 Jan 2025 08 UTC	**98 km/h** (53 knots or 27 mph) Fri 24 Jan 2025 07 UTC	**9.5 m** Fri 24 Jan 2025 10 UTC	**14.2 m** Fri 24 Jan 2025 09 UTC	**970.8** Sun 26 Jan 2025 21 UTC 13UTC
M6 Buoy (in the south Wexford coast)	**90 km/h** (49 knots or 25 mph) Fri 24 Jan 2025 02 UTC	**109 km/h** (59 knots or 30 mph) Fri 24 Jan 2025 03 UTC	**9.6 m** Fri 24 Jan 2025 02 UTC	**15.8 m** Fri 24 Jan 2025 05 UTC	**952.0** Thu 23 Jan 2025 21 UTC 13UTC

Station-by-Station Analysis

Buoy 62091 - M2 Buoy

- **Location:** 53.47°N, 5.42°W
- **Peak Wind Speed:** 42.9 knots (79.5 km/h) on Fri 24 Jan 2025 09:00 UTC
- **Peak Significant Wave Height (Hm0):** 5.5 m on Fri 24 Jan 2025 09:00 UTC
- **Peak Maximum Wave Height (Hmax):** 9.5 m on Fri 24 Jan 2025 09:00 UTC
- **Minimum Pressure:** 968.3 hPa on Fri 24 Jan 2025 04:00 UTC
- **Data Quality:** Excellent (100.0% good data)
- **Observations:** 92 records (QC good data only)

Buoy 62092 - M3 Buoy

- **Location:** 53.48°N, 5.42°W
- **Peak Wind Speed:** 48.6 knots (90.1 km/h) on Fri 24 Jan 2025 01:00 UTC
- **Peak Significant Wave Height (Hm0):** 11.2 m on Sun 26 Jan 2025 23:00 UTC
- **Peak Maximum Wave Height (Hmax):** 18.8 m on Sun 26 Jan 2025 22:00 UTC
- **Minimum Pressure:** 962.5 hPa on Mon 27 Jan 2025 00:00 UTC
- **Data Quality:** Excellent (100.0% good data)
- **Observations:** 92 records (QC good data only)

Buoy 62093 - M4 Buoy

- **Location:** 51.22°N, 6.70°W
- **Peak Wind Speed:** 41.1 knots (76.1 km/h) on Fri 24 Jan 2025 13:00 UTC
- **Peak Significant Wave Height (Hm0):** 11.5 m on Fri 24 Jan 2025 12:00 UTC
- **Peak Maximum Wave Height (Hmax):** 16.9 m on Fri 24 Jan 2025 12:00 UTC
- **Minimum Pressure:** 952.7 hPa on Fri 24 Jan 2025 02:00 UTC

- **Data Quality:** Excellent (100.0% good data)
- **Observations:** 89 records (QC good data only)

Buoy 62094 - M5 Buoy

- **Location:** 51.69°N, 6.70°W
- **Peak Wind Speed:** 30.2 knots (55.9 km/h) on Fri 24 Jan 2025 08:00 UTC
- **Peak Significant Wave Height (Hm0):** 9.5 m on Fri 24 Jan 2025 10:00 UTC
- **Peak Maximum Wave Height (Hmax):** 14.2 m on Fri 24 Jan 2025 09:00 UTC
- **Minimum Pressure:** 970.8 hPa on Sun 26 Jan 2025 21:00 UTC
- **Data Quality:** Excellent (100.0% good data)
- **Observations:** 97 records (QC good data only)

Buoy 62095 - M6 Buoy

- **Location:** 53.06°N, 7.90°W
- **Peak Wind Speed:** 48.7 knots (90.3 km/h) on Fri 24 Jan 2025 02:00 UTC
- **Peak Significant Wave Height (Hm0):** 9.6 m on Fri 24 Jan 2025 02:00 UTC
- **Peak Maximum Wave Height (Hmax):** 15.8 m on Fri 24 Jan 2025 05:00 UTC
- **Minimum Pressure:** 952.0 hPa on Thu 23 Jan 2025 21:00 UTC
- **Data Quality:** Excellent (100.0% good data)
- **Observations:** 93 records (QC good data only)

Meteorological Analysis

Wind Analysis

The storm produced maximum sustained winds of **48.7 knots** (90.3 km/h).

Wind Categories:

- Force 7 — Near gale: 28–33 kn (50–61 km/h)
- Force 8 — Gale: 34–40 kn (62–74 km/h)
- Force 9 — Severe gale (aka Strong gale): 41–47 kn (75–88 km/h)
- Force 10 — Storm: 48–55 kn (89–102 km/h)
- Force 11 — Violent storm: 56–63 kn (103–117 km/h)
- Force 12 — Hurricane force: ≥64 kn (≥118 km/h)

Wave Analysis

Significant Wave Heights (Hm0): Peak values reached **11.5 m**, representing **very high**.

Maximum Wave Heights (Hmax): Individual wave heights peaked at **18.8 m**. Note: Hmax values represent individual wave heights and are not used for sea state classification.

Wave Height Relationship: The Hmax/Hm0 ratio was **1.63**, within normal range (1.3-1.8).

Sea State Classification (Hm0):

- Rough: 2.5-4.0 m

- Very Rough: 4.0-6.0 m
- High: 6.0-9.0 m
- Very High: 9.0-14.0 m
- Phenomenal: >14.0 m

Wave Height Definitions:

- **Hm0 (Significant Wave Height):** Average height of the highest one-third of waves
- **Hmax (Maximum Wave Height):** Highest individual wave recorded during the period

Pressure Analysis

Atmospheric pressure dropped to a minimum of **952.0 hPa**.

Quality Control Summary

Total Records: 463

QC Status Distribution:

- Good Data (QC=1): 463 records (100.0%)
- Adjusted Data (QC=5): 0 records (0.0%)
- Missing Data (QC=9): 0 records (0.0%)
- No QC (QC=0): 0 records (0.0%)

Data Sources and Logger Information

Active Logger Information During Storm Period

Buoy 62091 (M2 Buoy):

- Logger(s) used: 12105_CR6 , 7577_CR6

Buoy 62092 (M3 Buoy):

- Logger(s) used: 12147_CR6 , 427_Wavesense

Buoy 62093 (M4 Buoy):

- Logger(s) used: 189_Wavesense , 12144_CR6

Buoy 62094 (M5 Buoy):

- Logger(s) used: 8704_CR6 , 347_Wavesense

Buoy 62095 (M6 Buoy):

- Logger(s) used: 12146_CR6 , 13443_CR6

Note: This report uses only quality-controlled data (QC indicators 1 and 5) for meteorological analysis. Logger information shows which data acquisition systems were active during the storm period.

Data Visualization

!Storm Overview

Figure 1: Comprehensive marine meteorological analysis showing wind speed, wave height, atmospheric pressure, air temperature, wind direction, and wave period during Storm Éowyn.

Technical Notes

QC Methods Applied

- **Manual QC:** Visual inspection and expert validation
- **Automatic QC:** Range checks, spike detection, and flat-line identification

Data Quality Indicators

- 0: No QC performed
- 1: QC performed, data OK
- 4: QC performed, raw data not OK and not adjusted
- 5: QC performed, raw data not OK but value adjusted/interpolated
- 6: QC performed, data OK (Datawell Hmax sensor specific)
- 9: Data missing

Report generated by Marine Storm Analysis System Data source: Irish Marine Data Buoy Network Quality controlled data from Met Éireann marine observations

Marine Meteorological Analysis

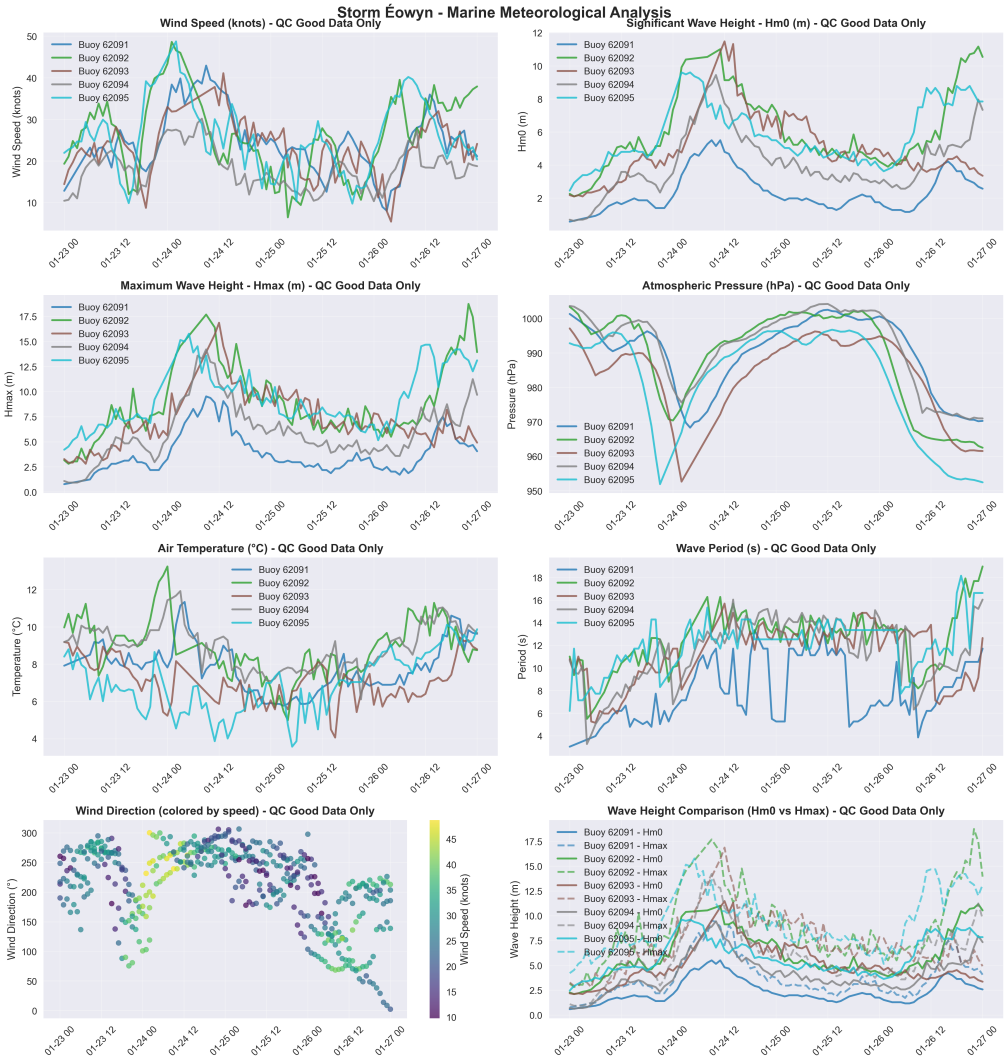

Figure 1: Marine meteorological observations during Storm Éowyn. Eight-panel analysis showing wind speed, significant wave height (Hm0), maximum wave height (Hmax), atmospheric pressure, air temperature, wave period, wind direction patterns, and comparative wave heights across the Irish Marine Data Buoy Network. Quality-controlled data only.

Met Éireann Marine Unit

Irish Marine Data Buoy Network

Valentia Observatory, Co. Kerry

www.met.ie/climate/storm-centre