Met Éireann

The Irish Meteorological Service

Storm Fergus

Marine Storm Report

Marine Unit

Report Date: 02 October 2025

Report Time: 14:38 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)	**59 km/h** (32 knots or 16 mph) Sun 17 Dec 2023 03 UTC	**76 km/h** (41 knots or 21 mph) Sun 17 Dec 2023 03 UTC	**3.3 m** Sun 17 Dec 2023 06 UTC	**4.8 m** Sun 17 Dec 2023 03 UTC	**1019.5** Tue 19 Dec 2023 03 UTC 13UTC

M3 Buoy (in the Irish Sea)	**50 km/h** (27 knots or 14 mph) Sat 16 Dec 2023 21 UTC	**62 km/h** (34 knots or 17 mph) Sat 16 Dec 2023 21 UTC	**5.0 m** Sun 17 Dec 2023 11 UTC	**9.2 m** Sun 17 Dec 2023 03 UTC	**1022.9** Mon 18 Dec 2023 20 UTC 13UTC
M4 Buoy (off the Cork coast)	**64 km/h** (35 knots or 18 mph) Sun 17 Dec 2023 04 UTC	**93 km/h** (50 knots or 26 mph) Sun 17 Dec 2023 04 UTC	**7.0 m** Sun 17 Dec 2023 06 UTC	**11.1 m** Sun 17 Dec 2023 08 UTC	**1013.8** Sun 17 Dec 2023 06 UTC 13UTC
M5 Buoy (off the Donegal coast)	**46 km/h** (25 knots or 13 mph) Sun 17 Dec 2023 01 UTC	**65 km/h** (35 knots or 18 mph) Sun 17 Dec 2023 02 UTC	**3.2 m** Sun 17 Dec 2023 22 UTC	**6.1 m** Mon 18 Dec 2023 00 UTC	**1021.1** Tue 19 Dec 2023 05 UTC 13UTC
M6 Buoy (in the south Wexford coast)	**62 km/h** (33 knots or 17 mph) Sat 16 Dec 2023 21 UTC	**86 km/h** (46 knots or 24 mph) Sat 16 Dec 2023 21 UTC	**6.8 m** Sat 16 Dec 2023 23 UTC	**11.9 m** Sun 17 Dec 2023 00 UTC	**1011.2** Sun 17 Dec 2023 04 UTC 13UTC

Station-by-Station Analysis

Buoy 62091 - M2 Buoy

- **Location:** 53.47°N, 5.42°W
- **Peak Wind Speed:** 32.0 knots (59.3 km/h) on Sun 17 Dec 2023 03:00 UTC
- **Peak Significant Wave Height (Hm0):** 3.3 m on Sun 17 Dec 2023 06:00 UTC
- **Peak Maximum Wave Height (Hmax):** 4.8 m on Sun 17 Dec 2023 03:00 UTC
- **Minimum Pressure:** 1019.5 hPa on Tue 19 Dec 2023 03:00 UTC
- **Data Quality:** Excellent (100.0% good data)
- **Observations:** 97 records (QC good data only)

Buoy 62092 - M3 Buoy

- **Location:** 53.48°N, 5.42°W
- **Peak Wind Speed:** 26.9 knots (49.8 km/h) on Sat 16 Dec 2023 21:00 UTC
- **Peak Significant Wave Height (Hm0):** 5.0 m on Sun 17 Dec 2023 11:00 UTC
- **Peak Maximum Wave Height (Hmax):** 9.2 m on Sun 17 Dec 2023 03:00 UTC
- **Minimum Pressure:** 1022.9 hPa on Mon 18 Dec 2023 20:00 UTC
- **Data Quality:** Excellent (100.0% good data)
- **Observations:** 97 records (QC good data only)

Buoy 62093 - M4 Buoy

- **Location:** 51.22°N, 6.70°W
- **Peak Wind Speed:** 34.7 knots (64.3 km/h) on Sun 17 Dec 2023 04:00 UTC
- **Peak Significant Wave Height (Hm0):** 7.0 m on Sun 17 Dec 2023 06:00 UTC
- **Peak Maximum Wave Height (Hmax):** 11.1 m on Sun 17 Dec 2023 08:00 UTC
- **Minimum Pressure:** 1013.8 hPa on Sun 17 Dec 2023 06:00 UTC

- **Data Quality:** Excellent (100.0% good data)
- **Observations:** 97 records (QC good data only)

Buoy 62094 - M5 Buoy

- **Location:** 51.69°N, 6.70°W
- **Peak Wind Speed:** 24.7 knots (45.8 km/h) on Sun 17 Dec 2023 01:00 UTC
- **Peak Significant Wave Height (Hm0):** 3.2 m on Sun 17 Dec 2023 22:00 UTC
- **Peak Maximum Wave Height (Hmax):** 6.1 m on Mon 18 Dec 2023 00:00 UTC
- **Minimum Pressure:** 1021.1 hPa on Tue 19 Dec 2023 05:00 UTC
- **Data Quality:** Excellent (100.0% good data)
- **Observations:** 74 records (QC good data only)

Buoy 62095 - M6 Buoy

- **Location:** 53.06°N, 7.90°W
- **Peak Wind Speed:** 33.4 knots (61.8 km/h) on Sat 16 Dec 2023 21:00 UTC
- **Peak Significant Wave Height (Hm0):** 6.8 m on Sat 16 Dec 2023 23:00 UTC
- **Peak Maximum Wave Height (Hmax):** 11.9 m on Sun 17 Dec 2023 00:00 UTC
- **Minimum Pressure:** 1011.2 hPa on Sun 17 Dec 2023 04:00 UTC
- **Data Quality:** Excellent (100.0% good data)
- **Observations:** 97 records (QC good data only)

Meteorological Analysis

Wind Analysis

The storm produced maximum sustained winds of **34.7 knots** (64.3 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 **7.0 m**, representing **high**.

Maximum Wave Heights (Hmax): Individual wave heights peaked at **11.9 m**. Note: Hmax values represent individual wave heights and are not used for sea state classification.

Wave Height Relationship: The Hmax/Hm0 ratio was **1.69**, 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

Quality Control Summary

Total Records: 462

QC Status Distribution:

- Good Data (QC=1): 462 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: 347_Wavesense , 8704_CR6

Buoy 62092 (M3 Buoy):

- Logger(s) used: 314_Wavesense , 12146_CR6

Buoy 62093 (M4 Buoy):

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

Buoy 62094 (M5 Buoy):

- Logger(s) used: 12142_CR6 , 12143_CR6

Buoy 62095 (M6 Buoy):

- Logger(s) used: 12145_CR6 , 341_Wavesense

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: Marine meteorological analysis showing wind speed, wave height, atmospheric pressure, air temperature, wind direction, and wave period during Storm Fergus.

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

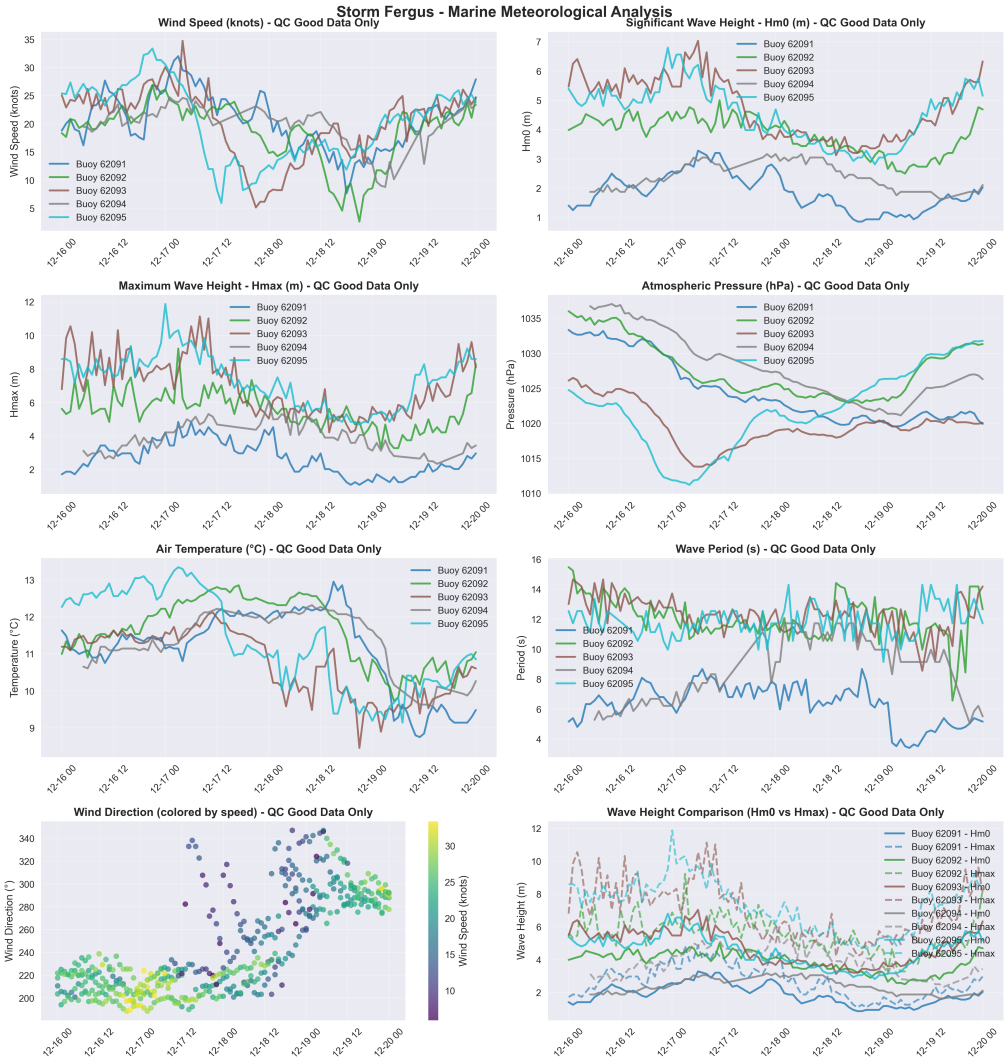

Figure 1: Marine meteorological observations during Storm Fergus. Eight-panel analysis showing wind speed, significant wave height (Hm0), maximum wave height (Hmax), atmospheric pressure, air temperature, wave period, wind direction patterns, and comparative wave heights across the Irish Marine Data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