

Storm Babet
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)	61 km/h (33 knots or 17 mph) Fri 20 Oct 2023 17 UTC	80 km/h (43 knots or 22 mph) Fri 20 Oct 2023 17 UTC	4.8 m Fri 20 Oct 2023 18 UTC	7.8 m Fri 20 Oct 2023 16 UTC	976.3 Thu 19 Oct 2023 09 UTC 13UTC

M3 Buoy (in the Irish Sea)	67 km/h (36 knots or 19 mph) Fri 20 Oct 2023 17 UTC	86 km/h (47 knots or 24 mph) Fri 20 Oct 2023 17 UTC	7.7 m Fri 20 Oct 2023 19 UTC	12.5 m Fri 20 Oct 2023 19 UTC	970.6 Thu 19 Oct 2023 06 UTC 13UTC
M4 Buoy (off the Cork coast)	48 km/h (26 knots or 13 mph) Wed 18 Oct 2023 00 UTC	66 km/h (36 knots or 18 mph) Fri 20 Oct 2023 13 UTC	5.1 m Fri 20 Oct 2023 16 UTC	8.2 m Fri 20 Oct 2023 16 UTC	975.3 Thu 19 Oct 2023 15 UTC 13UTC
M5 Buoy (off the Donegal coast)	59 km/h (32 knots or 16 mph) Tue 17 Oct 2023 21 UTC	77 km/h (42 knots or 21 mph) Tue 17 Oct 2023 23 UTC	4.0 m Tue 17 Oct 2023 20 UTC	7.3 m Wed 18 Oct 2023 01 UTC	974.9 Thu 19 Oct 2023 13 UTC 13UTC
M6 Buoy (in the south Wexford coast)	57 km/h (31 knots or 16 mph) Thu 19 Oct 2023 17 UTC	82 km/h (44 knots or 23 mph) Thu 19 Oct 2023 17 UTC	6.9 m Thu 19 Oct 2023 15 UTC	11.6 m Thu 19 Oct 2023 23 UTC	976.0 Thu 19 Oct 2023 03 UTC 13UTC

Station-by-Station Analysis

Buoy 62091 - M2 Buoy

- **Location:** 53.47°N, 5.42°W
- **Peak Wind Speed:** 32.8 knots (60.8 km/h) on Fri 20 Oct 2023 17:00 UTC
- **Peak Significant Wave Height (Hm0):** 4.8 m on Fri 20 Oct 2023 18:00 UTC
- **Peak Maximum Wave Height (Hmax):** 7.8 m on Fri 20 Oct 2023 16:00 UTC
- **Minimum Pressure:** 976.3 hPa on Thu 19 Oct 2023 09:00 UTC
- **Data Quality:** Excellent (100.0% good data)
- **Observations:** 121 records (QC good data only)

Buoy 62092 - M3 Buoy

- **Location:** 53.48°N, 5.42°W
- **Peak Wind Speed:** 36.2 knots (67.1 km/h) on Fri 20 Oct 2023 17:00 UTC
- **Peak Significant Wave Height (Hm0):** 7.7 m on Fri 20 Oct 2023 19:00 UTC
- **Peak Maximum Wave Height (Hmax):** 12.5 m on Fri 20 Oct 2023 19:00 UTC
- **Minimum Pressure:** 970.6 hPa on Thu 19 Oct 2023 06:00 UTC
- **Data Quality:** Excellent (100.0% good data)
- **Observations:** 121 records (QC good data only)

Buoy 62093 - M4 Buoy

- **Location:** 51.22°N, 6.70°W
- **Peak Wind Speed:** 25.7 knots (47.7 km/h) on Wed 18 Oct 2023 00:00 UTC
- **Peak Significant Wave Height (Hm0):** 5.1 m on Fri 20 Oct 2023 16:00 UTC
- **Peak Maximum Wave Height (Hmax):** 8.2 m on Fri 20 Oct 2023 16:00 UTC
- **Minimum Pressure:** 975.3 hPa on Thu 19 Oct 2023 15:00 UTC

- **Data Quality:** Excellent (100.0% good data)
- **Observations:** 121 records (QC good data only)

Buoy 62094 - M5 Buoy

- **Location:** 51.69°N, 6.70°W
- **Peak Wind Speed:** 31.8 knots (58.9 km/h) on Tue 17 Oct 2023 21:00 UTC
- **Peak Significant Wave Height (Hm0):** 4.0 m on Tue 17 Oct 2023 20:00 UTC
- **Peak Maximum Wave Height (Hmax):** 7.3 m on Wed 18 Oct 2023 01:00 UTC
- **Minimum Pressure:** 974.9 hPa on Thu 19 Oct 2023 13:00 UTC
- **Data Quality:** Excellent (100.0% good data)
- **Observations:** 121 records (QC good data only)

Buoy 62095 - M6 Buoy

- **Location:** 53.06°N, 7.90°W
- **Peak Wind Speed:** 30.6 knots (56.7 km/h) on Thu 19 Oct 2023 17:00 UTC
- **Peak Significant Wave Height (Hm0):** 6.9 m on Thu 19 Oct 2023 15:00 UTC
- **Peak Maximum Wave Height (Hmax):** 11.6 m on Thu 19 Oct 2023 23:00 UTC
- **Minimum Pressure:** 976.0 hPa on Thu 19 Oct 2023 03:00 UTC
- **Data Quality:** Excellent (100.0% good data)
- **Observations:** 121 records (QC good data only)

Meteorological Analysis

Wind Analysis

The storm produced maximum sustained winds of **36.2 knots** (67.1 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 **7.7 m**, representing **high**.

Maximum Wave Heights (Hmax): Individual wave heights peaked at **12.5 m**. Note: Hmax values represent individual wave heights and are not used for sea state classification.

Wave Height Relationship: The Hmax/Hm0 ratio was **1.62**, 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: 605

QC Status Distribution:

- Good Data (QC=1): 605 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 Babet.

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

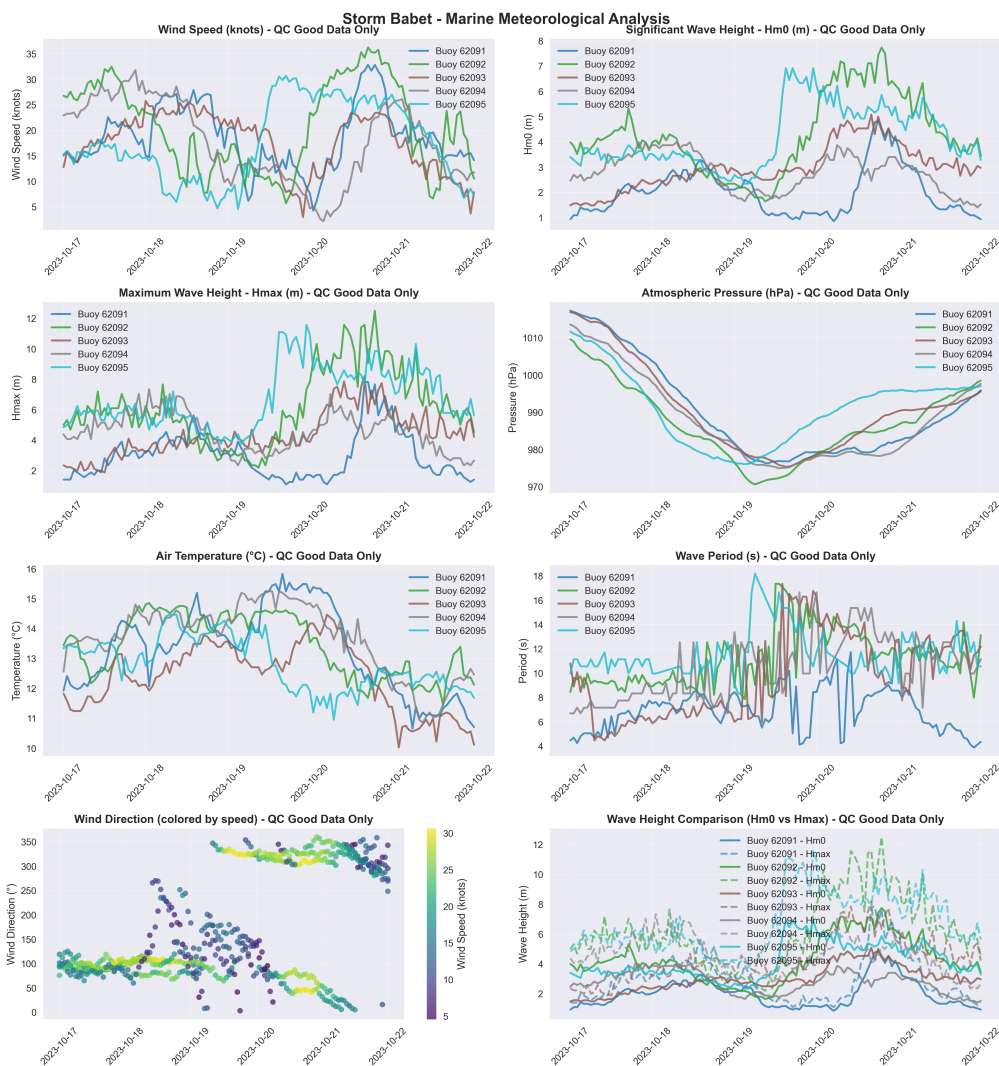


Figure 1: Marine meteorological observations during Storm Babet. Eight-panel analysis showing wind speed, significant wave height (Hm0), maximum wave height (Hmax), atmospheric pressure, air temperature, wave period, wind direction patterns, and comparative wave heights across the Irish Marine Data Buoy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