

Storm Ellen

Wednesday Night 19th and Thursday 20th August 2020

Storm Ellen was the eight named storm of the 2019-20 season (the fifth on the official list of storm names by Met Éireann, the UK Met Office or KNMI). The first named Storm of the season, Lorenzo was an ex tropical system named by The National Hurricane Centre in the US and affected Ireland on the 3rd and 4th October 2019. Storm Atiyah, named by Met Éireann affected Ireland on the 8th and 9th of December 2019. A low-pressure system associated with Storm Elsa, named by the Portuguese weather service, affected Ireland on the 18th of December 2019. Storm Brendan, also named by Met Éireann affected Ireland on the 13th January 2020. Storm Ciara affected Ireland on the 9th and 10th of February 2020 and was named by the UK Met Office. Storm Dennis, also named by The UK Met Office affected Ireland on the 15th and 16th of February 2020. Storm Jorge, named by AEMET, the Spanish national meteorological service, was the 7th named storm of the season and affected Ireland on the 29th February 2020.

Met Éireann named Storm Ellen on the evening of Tuesday the 18th August 2020. A rapidly deepening and unseasonal Atlantic low-pressure system was forecast to cross the country on Wednesday night and Thursday morning. Status Red/Orange/Yellow wind warnings were issued for the Island of Ireland.

A complex area of low pressure associated with a deep trough in the Atlantic was approaching Ireland on the 18th and merged with the remnants of tropical storm Kyle as it moved northwest across the Atlantic. This interaction spawned a new compact Low centre, named Storm Ellen, south of the main parent low pressure system. Storm Ellen deepened rapidly as it approached Ireland from the south-southwest, moving cyclonically around the parent low, while interacting with the left exit of the Jetstream associated with the trough in the Atlantic.

Storm Ellen, with a rapidly deepening low centre of 972 hPa, approached the Cork coast at approximately 9pm, and tracked northwards over the country during the night, followed by a very strong south-westerly airflow, backing south-west to south. Associated fronts moved north-eastwards across the country overnight, bringing some localised heavy thundery downpours in places. A combination of storm surge, spring tides and onshore winds caused some coastal flooding particularly along the South coast.

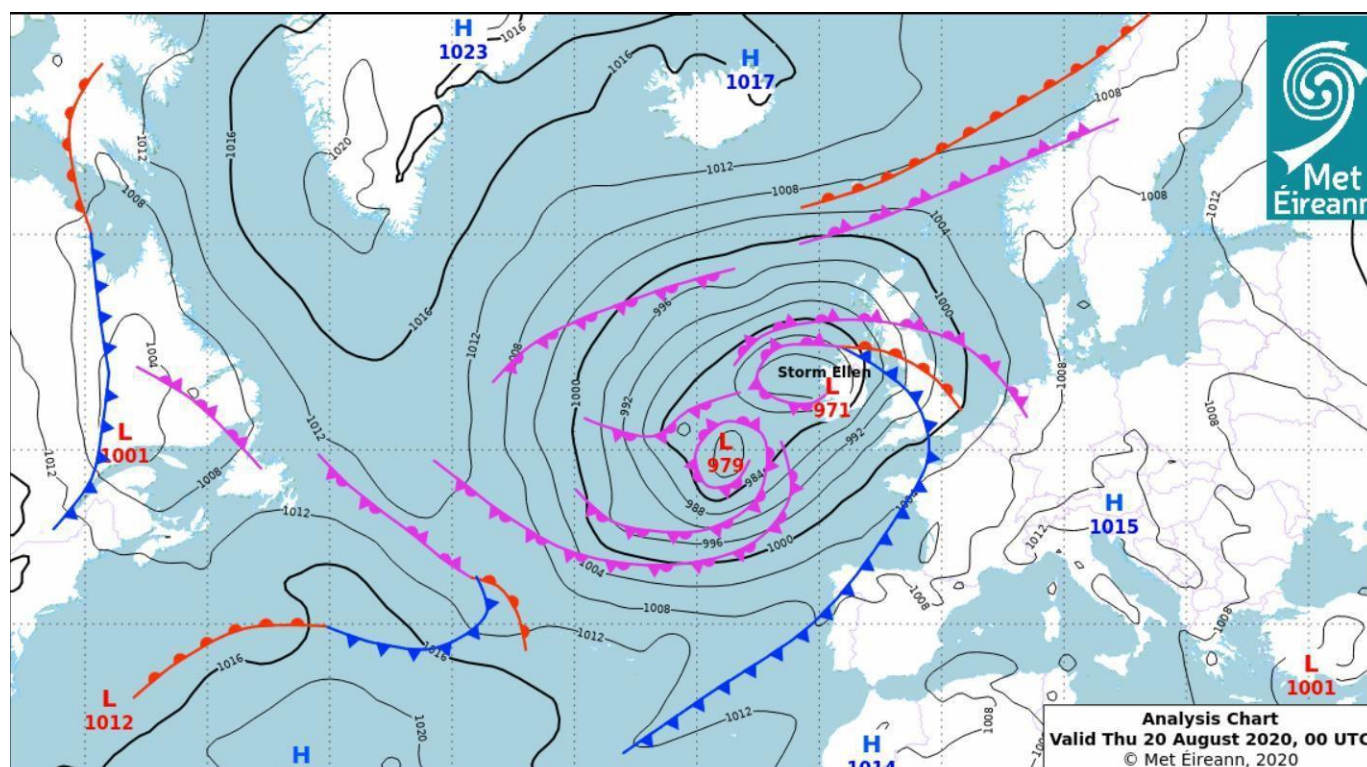


Figure 1. Analysis Chart at the hour 00 UTC on Thurs Aug 20, 2020

Southeasterly strong gale force 9 to storm force 10, veered south to southwest and occasionally reached violent storm force 11 as the storm centre approached the South Coast.

The combination of unseasonal heavy rainfall and strong winds coinciding with trees in full leaf and the peak holiday season resulted in impacts more associated with late autumn or winter, particularly across Southern coastal areas where winds were strongest.

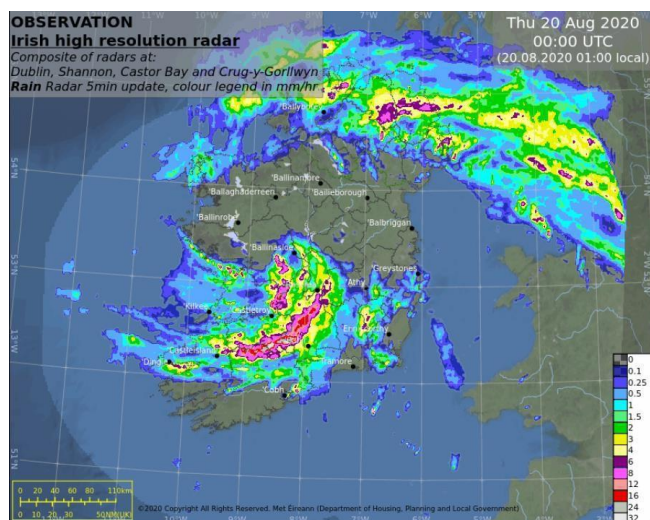


Figure 3. High Resolution Radar Image at 00 UTC on Thurs Aug 20th, 2020

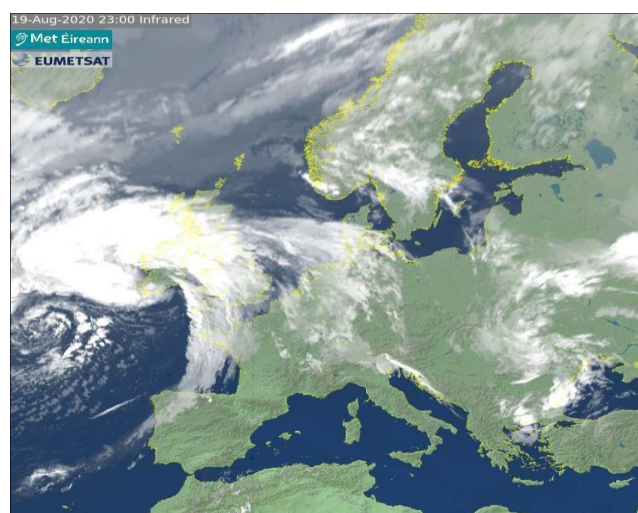


Figure 2. EUMETSAT Visible Satellite Image at 23 UTC on Wed Aug 19th, 2020

Highest 10-minute mean wind speed recorded for Storm Ellen – New August record for Ireland

Roches Point (Cork) - 60 knots (111km/h) at 2200utc on 19th August 2020 (the highest on record for August. Wind records date back to 1942).

Highest gust recorded for Storm Ellen – New August record for Ireland

Roches Point (Cork) – 77 knots (143km/h) 2200utc on 19th August 2020 (the highest on record for August. Wind records date back to 1942).

Station Name	Rainfall (mm)	Highest 10-minute mean wind speed (km/h).	Highest Gust (km/h)	Wind Direction (degree)	Hour of occurrence (utc)
ROCHES POINT	13.4	111 (60 kt)	143 (77 kt)	190	21
SHERKIN ISLAND	30.1	78 (42 kt)	104 (56 kt)	240	21
CORK AIRPORT	24.7	67 (36 kt)	107 (58 kt)	200	23
MALIN HEAD	2.3	63 (34 kt)	80 (43 kt)	100	22
MOORE PARK	7.9	59 (32 kt)	100 (54 kt)	170	21
GURTEEN	3.1	57 (31 kt)	85 (46 kt)	150	23
OAK PARK	5.7	54 (29 kt)	81 (44 kt)	170	23
VALENTIA	34.4	52 (28 kt)	76 (41 kt)	220	23
ATHENRY	3.0	46 (25 kt)	85 (46 kt)	90	22
JOHNSTOWN	17.5	46 (25 kt)	81 (44 kt)	170	21
MT DILLON	3.9	43 (23 kt)	69 (37 kt)	110	23
CLAREMORRIS	4.8	43 (23 kt)	67 (36 kt)	80	23
DUNSANY	4.6	41 (22 kt)	67 (36 kt)	160	23
MACE HEAD	1.3	39 (21 kt)	50 (27 kt)	80	22
FINNER	3.9	39 (21 kt)	65 (35 kt)	110	23
MULLINGAR	2.7	39 (21 kt)	69 (37 kt)	130	23
BELMULLET	5.1	33 (18 kt)	54 (29 kt)	90	23
NEWPORT	8.2	30 (16 kt)	54 (29 kt)	80	23
BALLYHAISE	5.4	28 (15 kt)	54 (29 kt)	120	23

Synoptic station data for 19th August 2020

Table 1. Observations at SYNOPTIC STATIONS

**Measured gusts (143km/h) and mean wind speeds (111km/h) met Meteorological Red Warning Criteria.
Mean Sea Level (MSL) pressure - New August record for Ireland**

Athenry, Co Galway recorded a MSL Pressure of 966.4 hPa at midnight of the 20th August 2020 during Storm Ellen, which is the lowest MSL Pressure on record for Ireland in August. The previous record was 967.8 hPa at Belmullet, Co Mayo on the 14th August 1959.

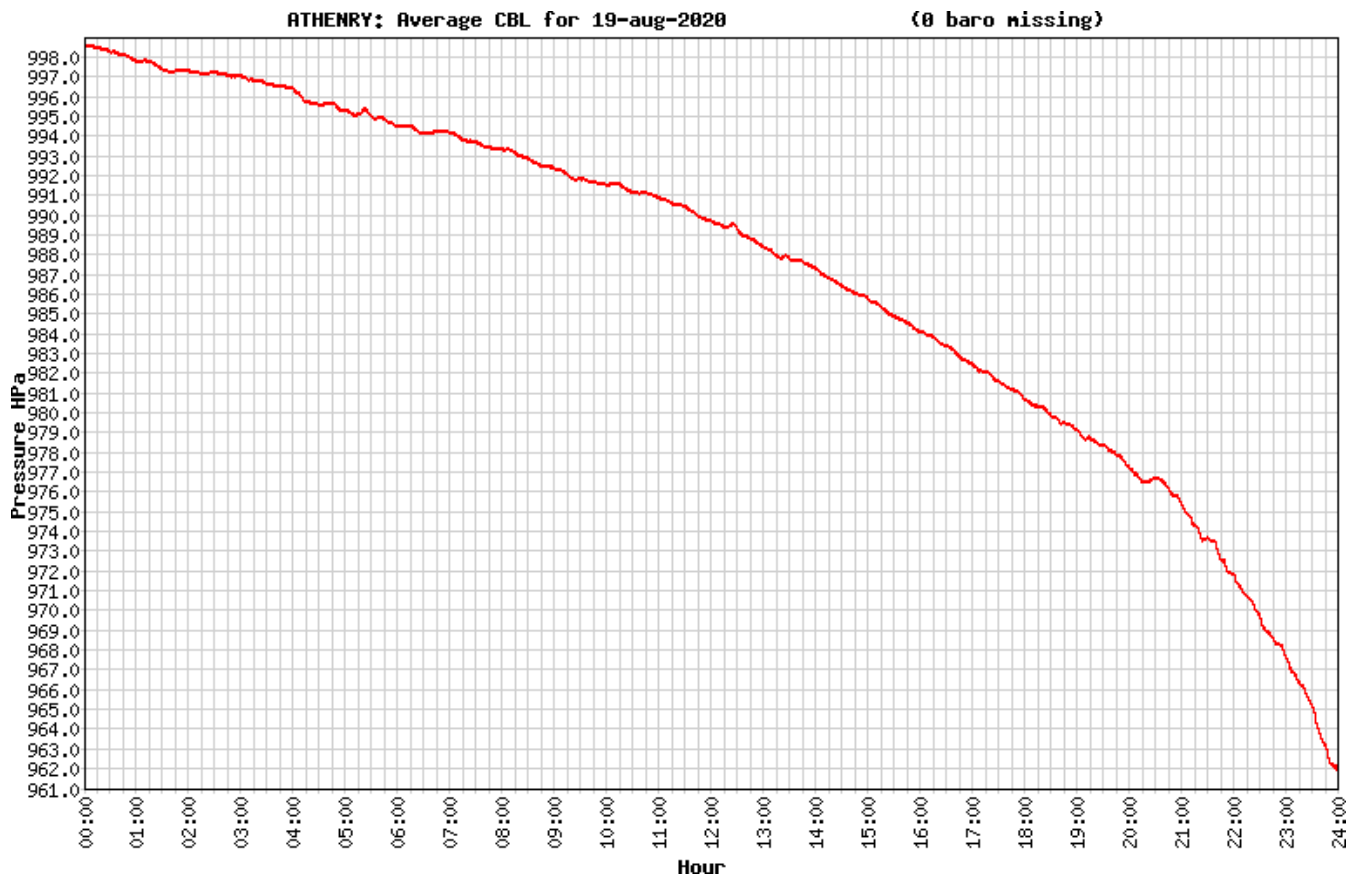


Table 2. Graph showing CBL pressure (atmospheric pressure) drop at Athenry on the 19th August 2020, a drop of over 36hPa in 24 hrs (see information about [recording pressure](#))

Impacts:

- Up to 200,000 homes left without power mainly in Cork, Waterford and Tipperary
- Strong winds brought down trees and power lines.
- Severe localised flooding due to heavy rainfall.
- Trees felled by the storm across the county.

Climate Projections for Ireland

The latest climate model projections for Ireland suggest possible decrease in the frequency of storms affecting Ireland by mid-century, but a likely **increase in the severity of the storms** that do.

WEATHER WARNINGS ISSUED

Status Red - Wind warning for Cork

Met Éireann Weather Warning

Between 9pm and midnight Storm Ellen will produce a core of very severe and destructive winds.

Valid: 21:00 Wednesday 19/08/2020 to 23:59 Wednesday 19/08/2020

Issued: 11:00 Wednesday 19/08/2020

Status Orange - Wind warning for Munster, Galway and Mayo

Met Éireann Weather Warning

Storm Ellen will track over Ireland this evening and tonight bringing severe and damaging winds.

Heavy rainfall and storm surge will result in some flooding.

Valid: 21:00 Wednesday 19/08/2020 to 06:00 Thursday 20/08/2020

Issued: 11:22 Wednesday 19/08/2020

Status Yellow - Wind warnings for Ireland

Met Éireann Weather Warning

It will become very windy on Wednesday night and throughout the day on Thursday. Severe gusts are likely and there is a risk of some disruption.

Due to the combination of storm surge, spring tides and onshore winds there is a potential risk of coastal flooding.

Valid: 21:00 Wednesday 19/08/2020 to 23:59 Thursday 20/08/2020

Issued: 15:00 Tuesday 18/08/2020

Status Yellow - Wind warnings for Carlow, Cavan, Donegal, Dublin, Kildare, Kilkenny, Leitrim, Laois, Longford, Louth, Meath, Monaghan, Offaly, Roscommon, Sligo, Westmeath, Wexford, and Wicklow

Met Éireann Weather Warning

It will become very windy this evening and tonight, with severe gusts likely. Some flooding likely also, especially in coastal areas.

Issue 16:27 Wednesday 19/08/2020

Valid: 21:00 Wednesday 19/08/2020 to 08:00 Thursday 20/08/2020

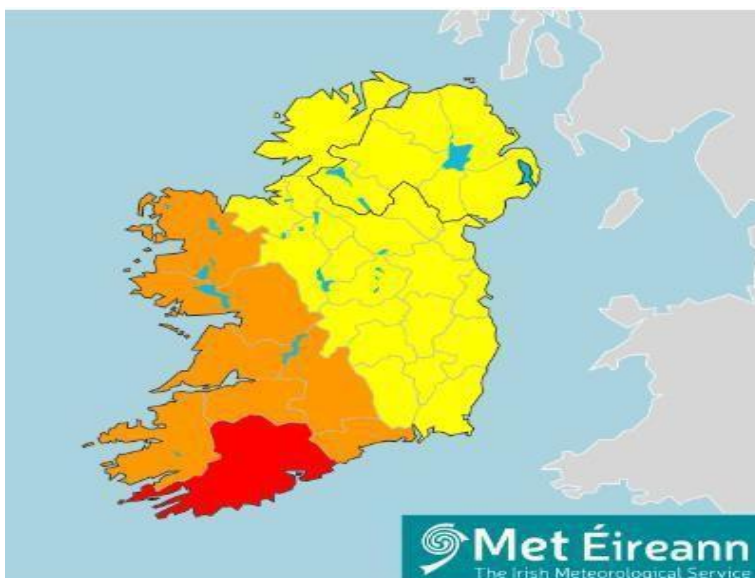


Figure 4. Wind Warnings Issued for Wed 19 and Thurs 20 Aug 2020