Evelyn Cusack
Head of Forecasting
Digital Communications
Customer Services
IRELAND WINTER RAINFALL 1850-2016

Island of Ireland Winter Rainfall 1850-2016

(Noone et al., 2015)
Highest annual rainfall total: 3964.9mm at Ballaghbeama Gap, Co Kerry in 1960.
Cold air
Snow showers

Front...rain

Tropical air mass
Fog/drizzle/sunny
Spring 2018

‘The Beast from the East meets Storm Emma’
A Case of Mistaken Identity
28\textsuperscript{th} October 2013

St Jude (Weather Channel)
Christian (FU Berlin)
Allan (DMI)
Simone (SMHI)
Carmen (European Windstorms Centre)
Storm Naming Rules

West group: UK; Ireland; Netherlands

South-West group: France; Spain; Portugal; Belgium
Task Team: European Cooperation on Storm Naming

N: Norway/Sweden/Denmark

W: Ireland/UK/Netherlands

SW: France/Spain/Portugal/Belgium

SE: Cyprus/Greece/Israel …Tri-lateral Italy/Croatia/Slovenia/Montenegro/North Macedonia

Central: Germany/Austria/Switzerland (FU Berlin)
Storm Naming Rules

- Storm depression (large)

- Based on Warnings in the Meteoalarm framework (AMBER/ORANGE or RED ……impact-based and/or thresholds)

- NMS which first issues the warning names the Storm in consultation with other partners.

- Names picked by NMS’s (public suggestions etc)

- It keeps its name given by NHC Miami preceded by ex.
Storm Naming Rules

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- It keeps its name given by NHC Miami preceded by ex.
Naming storms is a decision made jointly by the Duty Forecasters in both Met Éireann and the Met Office.

The criteria will be:
- A wind storm with potential for significant land-based impact has been forecast.
- A severe wind events giving rise to status Orange or status Red weather warnings
- Consideration will also be given to rain and snow events.

For an explanation of the Met Éireann weather warning criteria, see www.met.ie.

Storm Names 2017/18
Ireland and the United Kingdom
Naming storms is a decision made jointly by the Duty Forecasters in both Met Éireann and the Met Office.

The criteria will be:
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- A severe wind event giving rise to status Orange or status Red weather warnings.
- Consideration will also be given to rain and snow events.

For an explanation of the Met Éireann weather warning criteria, see www.met.ie.
2017

<table>
<thead>
<tr>
<th>NUMBER</th>
<th>TYPE</th>
<th>NAME</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TS</td>
<td>ARLENE</td>
<td>APR 19-21</td>
</tr>
<tr>
<td>2</td>
<td>TS</td>
<td>BRETT</td>
<td>JUN 19-20</td>
</tr>
<tr>
<td>3</td>
<td>TS</td>
<td>CINDY</td>
<td>JUN 20-23</td>
</tr>
<tr>
<td>4</td>
<td>TS</td>
<td>DON</td>
<td>JUL 17-18</td>
</tr>
<tr>
<td>5</td>
<td>TS</td>
<td>EMILY</td>
<td>JUL 31-AUG 1</td>
</tr>
<tr>
<td>6</td>
<td>H</td>
<td>FRANKLIN</td>
<td>AUG 6-10</td>
</tr>
<tr>
<td>7</td>
<td>H</td>
<td>GERT</td>
<td>AUG 13-17</td>
</tr>
<tr>
<td>8</td>
<td>MH</td>
<td>HARVEY</td>
<td>AUG 17-SEP 1</td>
</tr>
<tr>
<td>9</td>
<td>MH</td>
<td>IRMA</td>
<td>AUG 30-SEP 12</td>
</tr>
<tr>
<td>10</td>
<td>MH</td>
<td>JOSE</td>
<td>SEP 5-22</td>
</tr>
<tr>
<td>11</td>
<td>H</td>
<td>KATIA*</td>
<td>SEP 5-9</td>
</tr>
<tr>
<td>12</td>
<td>MH</td>
<td>LEE</td>
<td>SEP 15-30</td>
</tr>
<tr>
<td>13</td>
<td>MH</td>
<td>MARIA</td>
<td>SEP 16-30</td>
</tr>
<tr>
<td>14</td>
<td>H</td>
<td>NATE</td>
<td>OCT 4-9</td>
</tr>
<tr>
<td>15</td>
<td>MH</td>
<td>OPHelia</td>
<td>OCT 9-15</td>
</tr>
<tr>
<td>16</td>
<td>TS</td>
<td>PHILIPPE</td>
<td>OCT 28-29</td>
</tr>
<tr>
<td>17</td>
<td>TS</td>
<td>RINA</td>
<td>NOV 6-9</td>
</tr>
</tbody>
</table>

* Denotes post-storm analysis is complete

U.S. DEPARTMENT OF COMMERCE, NATIONAL WEATHER SERVICE
NORTH ATLANTIC HURRICANE TRACKING CHART
Forecast track of Ophelia: 16th of October 2017
Episode 1 - Fundamentals of Climate Change and Projections for Ireland

Episode 1 - Podcast Notes

Episode 2 - What Causes Ireland's Weather

Episode 2 – Podcast Notes

Episode 3 – Hurricanes

Episode 4 - Chaos and Computing in Weather Forecasting

www.met.ie/education/podcast
Reach, engagement and influence for warnings
Authoritative Voice
Single name
Communication: ‘hashtag culture’
Collaboration with adjoining NMS’s
Useful post-event for reference
Year 1: 2015-16
Storm Names 2019/20

Ireland
United Kingdom
Netherlands

In association with:

Ireland's Weather Warnings will be issued at www.met.ie/warnings
### STORM NAMING COORDINATION FORM

<table>
<thead>
<tr>
<th>PROPOSED NAME</th>
<th>FORECASTED LOW CENTRE LOCATION (at first orange/red wind warning onset time)</th>
<th>Latitude (in decimals)</th>
<th>Longitude (in decimals)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAMING NMHS / GROUP</td>
<td>DATE (YYYYMMDD)</td>
<td>FIRST WIND WARNING ONSET</td>
<td>DATE (YYYYMMDD)</td>
</tr>
<tr>
<td></td>
<td>TIME (HH:MM UTC)</td>
<td></td>
<td>TIME (HH:MM UTC)</td>
</tr>
<tr>
<td>FIRST WIND WARNING ISSUING</td>
<td>Orange</td>
<td>OTHER ORANGE/RED WARNINGS ISSUED</td>
<td>Rain</td>
</tr>
<tr>
<td></td>
<td>Red</td>
<td></td>
<td>Snow</td>
</tr>
</tbody>
</table>

**REMARKS**

|-------------------|---------------------------------------------------------------|------------------------|-----------------------------------------------------------------|------------------------------------------------------------------------------------------------|-----------------|-----------------------------------------------------------------|

**List of names W Group 2019/20:** Atiyah, Brendan, Ciara, Dennis, Ellen, Francis, Gerda, Hugh, Iris, Jan, Kitty, Liam, Maura, Noah, Olivia, Piet, Róisín, Samir, Tara, Vince, Willow

**List of names SW Group 2019/20:** Amelie, Bernardo, Cecilia, Daniel, Elsa, Fabien, Gloria, Herve, Ines, Jorge, Karine, Leon, Myriam, Norberto, Odette, Prosper, Raquel, Simon, Teresa, Valentin, Wanda
MID-CENTURY (2041-2060) PROJECTIONS
EXTREME STORM TRACK

1976 to 2005

Mid-century RCP8.5

(No lan,
Weather warnings: Europe

Awareness Reports - You can find detailed information about the warnings in the awareness reports issued for each country. Select the relevant country.

<table>
<thead>
<tr>
<th>Awareness types: all awareness types</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display: today tomorrow</td>
</tr>
<tr>
<td>Caption:</td>
</tr>
</tbody>
</table>

Change Language: BG CZ DA DE EE EN ES ES ES FI FR GR HR HU IS IT LT LV ME MK MT NL NO PL PT RO RS SI SK SV VA
STATUS YELLOW: Weather that does NOT pose a threat to the general population but IS potentially dangerous on a localised scale.

Be aware about meteorological conditions and check if you are exposed to danger by nature of your activity or your specific location. Do not take any avoidable risks.
**STATUS ORANGE:** Infrequent and dangerous weather conditions posing a threat to life and property depending on location and activity.

**Prepare** yourself in an appropriate way (taking advice) for the forecast conditions as all people and property in the affected areas can be impacted on significantly. **Check** your activity/event and delay or cancel as appropriate.
STATUS RED: Rare and very dangerous weather conditions from intense meteorological phenomena.

Take action to protect yourself and your property. This action could be by staying indoors or moving your family out of the danger zone temporarily. Follow instructions and advice given by the authorities under ALL circumstances and be prepared for exceptional measures.
A Storm Naming layer is to be implemented in Meteoalarm 2.0 (activity of EMMA 2019-2023).

The primary purpose of the layer would be to provide the European public an authoritative overview of storms named under the EUMETNET naming schemes.
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An additional functionality may be to aid the naming, communication and notification process for the NMHSs involved.
On the rare occasion that Met Éireann declares a **Status Red** Weather Warning, the following operating policy will apply:

**Status Red Weather Warning on a National Scale:**

All services provided by Bus Éireann under the Department of Education and Skills School Transport Schemes will be cancelled in the affected area if a **Status Red** warning is announced for all or part of a given day.*

Mr Varadkar said conditions like this have not been experienced in Ireland since 1982.

Met Éireann said: “Blizzard-like conditions will develop in heavy snow and strong easterly winds on Thursday evening and will continue Thursday night and Friday morning.”

All schools and third level institutions will close across the two provinces.
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<table>
<thead>
<tr>
<th></th>
<th>STATUS YELLOW</th>
<th>STATUS ORANGE</th>
<th>STATUS RED</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Weather</strong></td>
<td>Weather that does not pose a threat to the general population but is potentially dangerous on a localised scale.</td>
<td>Infrequent and dangerous weather conditions which may pose a threat to life and property.</td>
<td>Rare and very dangerous weather conditions from intense meteorological phenomena.</td>
</tr>
<tr>
<td><strong>Wind</strong></td>
<td><strong>Mean wind:</strong> 10 minute Gusts: 1 minute (higher on coasts/high ground/funneling effects etc)</td>
<td>Widespread mean speeds between 50 and 65km/h Widespread gusts between 90 and 110km/h</td>
<td>Widespread mean speeds in excess of 80 km/h Widespread gusts in excess of 130 km/h</td>
</tr>
<tr>
<td><strong>Coastal Wind Warnings</strong></td>
<td><strong>Mean speeds up to 30 nautical miles offshore</strong></td>
<td>Gale force 8 or strong gale force 9.</td>
<td>Storm force 10.</td>
</tr>
<tr>
<td><strong>Rain</strong></td>
<td><strong>Amounts can be up to double on windward upper slopes &amp; impacts vary with soil moisture deficits</strong></td>
<td>20mm – 30mm in 6 hrs or less. 30mm – 40mm in 12 hrs or less. 30mm – 50mm in 24 hrs</td>
<td>30mm – 50mm in 6 hrs or less. 40mm – 60mm in 12 hrs or less. 50mm – 80mm in 24 hrs</td>
</tr>
<tr>
<td><strong>Snow/Ice</strong></td>
<td>Guidelines only</td>
<td>Guidelines only</td>
<td>Guidelines only</td>
</tr>
<tr>
<td><strong>Low temperature/Ice</strong></td>
<td><strong>Ground temperatures can be as much as 10 degrees lower than air temps</strong></td>
<td>Air minima of minus 3C or minus 4C expected over a wide area (localised lower values will occur). <strong>Dangerous surfaces due to ice and/or lying snow. Situation improving.</strong></td>
<td>Air minima of minus 5C to minus 10C (or lower) expected over a wide area. <strong>Dangerous surfaces due to ice and/or lying snow/freezing rain. Situation stable</strong></td>
</tr>
<tr>
<td><strong>High temperature</strong></td>
<td><strong>High minima can be more impactful than high maxima</strong></td>
<td>&gt;27/15/&gt;27 Maxima in excess of 27°C expected and minima in excess of 15°C over 36 hrs</td>
<td>&gt;30/20/&gt;30/30/&gt;30 Maxima in excess of 30°C for three days and minima of 20°C for two nights (consecutive)</td>
</tr>
<tr>
<td><strong>Thunderstorms</strong></td>
<td>Localised thunderstorms/lightning activity/heavy rainfall.</td>
<td>Widespread thunderstorms/severe lightning activity/heavy rainfall/large damaging hail</td>
<td>Exceptional.</td>
</tr>
<tr>
<td><strong>Fog (or freezing fog)</strong></td>
<td>Dense fog over a wide area or pockets of freezing fog.</td>
<td>Dense fog/freezing fog persisting over a wide area causing a widespread and significant driving hazard on national primary routes.</td>
<td>Exceptional.</td>
</tr>
</tbody>
</table>

- Met Éireann is the National Meteorological Service of Ireland and issues weather forecasts and warnings to ensure the protection and safety of life and property and to enhance support for impact-based decision making for weather events.
- Warnings are issued by the duty forecaster up to 48-hours in advance. The main suite of warnings are generally issued between 10am and midday but are updated as necessary. Advisories on potential hazards are issued up to a week in advance.
- Impacts from wind/rain/snow etc. vary depending on location, recent weather conditions, state of ground, time of year as well as duration.
USEFUL KNOWLEDGE

- The timing and geographical location of a weather event, as well as recent weather conditions, can impact significantly on the individual and on society.
- Heavy rain can turn to snow when temperatures are close to zero.
- Winds can exceed general warning thresholds in exposed areas such as coasts and high ground and also in some low lying areas due to funnelling effects.
- High waves can occur on lakes as well as along coasts.
- Ice is not always visible on roads and surfaces.
- Fog/ice can persist all day.
- Hail showers can result in potentially lethal road conditions as the hail gets quickly compacted by traffic.
- Heavy downpours can lead to flash flooding and poor visibility.
- Thunderstorms: Be aware of the dangers of lightning and DO NOT take shelter under an umbrella or a tree. It is dangerous to be out over open water. Be careful of landline phones or any metal that connects with the ground. Lightning can strike the same spot twice.

GENTLE REMINDER: CHECK ON YOUR OLDER RELATIVES AND NEIGHBOURS

If it’s difficult for you to get around it will be impossible for them.

- Do you have their phone number(s)?
- Phone them or call around
- Make sure they have enough fuel, food supplies and necessary medications
- If in doubt call the Gardaí and ask them to check

You can get more information from:

- www.met.ie (weather)
- www.iws.ie (water safety)
- www.hse.ie (health)
- www.rsa.ie (road safety)
- www.tii.ie (transport systems)
- www.flooding.ie (OPW)
- www.emergencyplanning.ie

Keep yourself informed about the meteorological conditions from Met Éireann with detailed 7-day forecasts available for over 3,000 locations on www.met.ie and mobile App.

Please subscribe to push notifications of Warnings on the Met Éireann App.

LoCall OEP: 1890 252 736 or 0761 001 608
e-mail: oep@defence.ie

www.winterready.ie
@emergencyIE

Rialtas na hÉireann
Government of Ireland
WEATHER WARNINGS

Met Éireann is the National Meteorological Service of Ireland and one of its most important roles is to issue weather forecasts and warnings for Ireland. This Public Weather Service mandate is primarily to protect life and ensure citizen safety. The service also supports the activities of the citizen and other agencies to mitigate damage to property and reduce disturbance to economic activity.

Met Éireann’s main suite of warnings are issued between 10am and midday and these are updated as new information becomes available. In general, warnings will not be issued more than 48-hours ahead of the expected adverse weather but advisories on potential hazards can be issued up to a week in advance.

Local authorities are the lead agencies for coordinating the response to severe weather emergencies. Where weather emergencies are judged to impact public safety at national level a National Emergency Coordination Group (NECG) is activated by the Office of Emergency Planning on request from the Department of Housing, Planning and Local Government which is the Lead Government Department for weather emergencies.

Met Éireann provides the weather briefings at the NECG, which brings together all Government Departments and relevant agencies and organisations, to support the locally led response and ensure coordination across the “Whole-of-Government” for the duration of the emergency.

COLOUR CODING EXPLAINED

STATUS YELLOW: Weather that does NOT pose a threat to the general population but is potentially dangerous on a localised scale.

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STATUS RED: Rare and very dangerous weather conditions from intense meteorological phenomena.

Take action to protect yourself and your property. Follow instructions and advice given by the authorities under ALL circumstances and be prepared for exceptional measures.

This colour coding is used throughout Europe via the Meteoalarm system www.meteoalarm.com

STORM NAMING

Naming storms by National Met Services has been shown to raise awareness of severe weather. It provides a clear, authoritative and consistent message to the public and prompts people to take action to prevent harm to themselves or to their property.

Met Éireann, the UK Met Office and KMNI (Netherlands) collaborate in forecasting and naming storms. The names are chosen from public suggestions and are in alphabetical order, alternating between gender.

- A storm is named by a National Met Service when Orange Level wind warnings are forecast to impact over a wide area overland
- Orange or Red level gusts can occur in exposed areas without the event being named

Once a storm is named by a National Met Service the name is retained. For example: Ophelia was named by the National Hurricane Center (USA) and Emma by IPMA (Portugal).

Marine Warnings

Small Craft Warning: Beaufort Force 6 or 7 forecast out to 10 nautical miles offshore around Irish Coasts.

Gale Warning: Gale Force 8 or higher forecast out to 30 nautical miles offshore (Irish Coastal Waters) and the Irish Sea.

Yellow: Gale Force 8/Strong Gale Force 9
Orange: Storm Force 10
Red: Violent Storm Force 11/Hurricane Force 12
A rapidly deepening depression, named Storm Erik by Met Éireann, is approaching from the Atlantic and will track to the northwest of Ireland early Friday morning with an expected minimum pressure of 954hPa at 9am 8th Feb 2019.
WARNINGS & ADVISORIES

WEATHER WARNINGS

- **Status Orange - Orange Wind warning for Cork, Kerry**
  Orange Wind warning for Cork, Kerry tonight
  Valid: Friday 30 August 2019 09:00 to Saturday 31 August 2019 06:00
  Issued: Friday 30 August 2019 09:00

- **Status Yellow - Yellow Wind warning for Cork, Kerry**
  Yellow Wind warning for Cork, Kerry this evening
  Valid: Friday 30 August 2019 09:00 to Saturday 31 August 2019 06:00
  Issued: Friday 30 August 2019 09:00

- **Northern Ireland Warnings**

- **AMBER RAIN and WIND for Antrim, Armagh, Derry, Down**
  UK Met Office Weather Warnings (www.metoffice.gov.uk)
  Widespread rain across eastern regions with a risk of local flooding accompanied by strong winds especially along the coast
  Valid: Friday 30 August 2019 09:00 to Saturday 31 August 2019 06:00
  Issued: Friday 30 August 2019 09:00

MARINE WARNINGS

There are currently no warnings in operation.
The Intergovernmental Panel on Climate Change (IPCC) will consider the *Special Report on the Ocean and Cryosphere in a Changing Climate* (SROCC) on 20-23 September 2019 during its 51\textsuperscript{st} Session to be held in the Principality of Monaco.

Marine heatwaves are increasing in frequency and intensity. Global sea level is rising with regional variations and at a rate that is accelerating in recent decades due to increasing rates of ice loss from the Greenland and Antarctic ice sheets and from thermal expansion due to ocean warming. Sea level is projected to rise and extreme sea level events that are currently rare will occur frequently by 2050.

Education and climate literacy is essential to implement a low emission pathway and adaptation actions to reduce climate change impacts on the Earth's life-sustaining oceans and cryosphere.
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The report is due to be launched on 25 September 2019.

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