

# Recent Warm Weather Report

## Up to 10th July 2018

(This is a preliminary report, based on the data from our Synoptic stations, and will be updated when all the data from our Climate stations is received).

There were intense thunderstorms especially on the 1st and 8<sup>th</sup> June, but in general the dry, settled weather from the end of May continued for the first two weeks of June with high pressure in charge and a slack easterly flow. The north Atlantic jet stream stayed well to the north. There was a break in the fine weather for the third week of the month. Storm Hector passed close to the Northwest, giving two days of rain and gales on the 13th and 14th followed by frontal systems crossing the country from the west up to the 20th. Even during this unsettled spell, rainfall totals were very low especially in the South and East. From the 21st, the remainder of the month and first part of July was settled and exceptionally dry due to an area of high pressure building over Ireland. Heat wave and partial drought conditions were reported in many locations. Absolute Droughts are now ongoing.

On June 21st, an area of high pressure of up to 1035 hPa was centred to the west of Ireland bringing a north-westerly air flow across Ireland. In the days that followed, an easterly airflow dominated our weather. As high pressure persists over Ireland, it has brought the warmest conditions so far in 2018, with the highest maximum temperature of 32.0°C recorded at Shannon Airport on the 28<sup>th</sup> June.

Five Synoptic stations in the West and South had maximum temperature over 30°C on the 28<sup>th</sup> June 2018. These were Shannon Airport, Mount Dillon, Claremorris, Athenry and Moore Park. On 29<sup>th</sup> June, Shannon Airport was the only station which recorded above 30 °C with a temperature of 31.1 °C.

The weather for June and early July 2018 has been warm and dry with mean temperatures 2 to 3 °C above normal in most areas. However, Atlantic coastal fringes and much of Ulster were slightly cooler with mean air temperatures of 1 to 2 degrees above average. Rainfall is just 50% of normal in the west and as low as 5% of normal in the east. This follows on from what was a dry and warm May.

### **HEATWAVES**

*Definition:* A heatwave occurs where there are 5 consecutive days or more with maximum temperature over 25 degrees Celsius (i.e. daily maximum temperature > 25 °C.)

Official heatwaves were recorded at fifteen Synoptic stations this year, (See table below). These occurred in the East, the Midlands, the West and the South.

RECORDED HEATWAVE PERIODS SINCE 2000			
STATION WITH LONGEST PERIOD	START DATE	END DATE	LENGTH (Days)
CAVAN	04-Aug-03	08-Aug-03	5
GLENGARRIFF	09-Jul-05	13-Jul-05	5
CAVAN	15-Jul-06	21-Jul-06	7
NAVAN	24-Jul-06	28-Jul-06	5
CASHEL	06-Jul-13	14-Jul-13	9
KILKENNY	17-Jun-17	21-Jun-17	5
OAK PARK	24-Jun-18	4-Jul-18	11
MULLINGAR	24-Jun-18	29-Jun-18	6
GURTEEN	24-Jun-18	30-Jun-18	7
ATHENRY	24-Jun-18	30-Jun-18	7
MOUNT DILLON	24-Jun-18	30-Jun-18	7
SHANNON AIRPORT	24-Jun-18	30-Jun-18	7
CASEMENT	24-Jun-18	28-Jun-18	5
MOORE PARK	26-Jun-18	4-Jul-18	9
BALLYHAISE	25-Jun-18	29-Jun-18	5
NEWPORT	25-Jun-18	29-Jun-18	5
DUNSANY	24-Jun-18	29-Jun-18	6
CLAREMORRIS	25-Jun-18	30-Jun-18	6
KNOCK AIRPORT	26-Jun-18	30-Jun-18	5
MARKREE	26-Jun-18	30-Jun-18	5
FINNER	26-Jun-18	30-Jun-18	5

#### HIGHEST JUNE MAXIMUM TEMPERATURES PER DECADE

DECADE	TEMPERATURE	STATION	DATE
1940's	27.7°C	Shannon Airport	23rd June 1949
1950's	28.9°C	Mullingar	6th June 1950
1960's	26.6°C	Belmullet	10th June 1963
	26.6°C	Mountmellick	1st June 1963
	26.6°C	Tuam	12th June 1968
1970's	32.5°C	Boora, Co. Offaly	29th June 1976
1980's	28.7°C	Galway	19th June 1989
1990's	31.1°C	Athy	29th June 1995
2000's	28.6°C	Galway	2nd June 2009
2010's	32.0°C	Shannon Airport	28th June 2018

## **SUNSHINE**

The highest daily sunshine for June this year was 16.5 hours at Malin Head on the 28<sup>th</sup> June. A value of 16.0 hours was recorded at Knock Airport on the 24<sup>th</sup> June, its highest daily value since the station opened in 1997. All stations had above average sunshine for June. Percentage of monthly sunshine values ranged from 139% (monthly sunshine total of 200.6 hours) at Knock Airport, Co Mayo to 160% (monthly sunshine total of 256.6 hours) at Casement Aerodrome, Co Dublin. Monthly sunshine totals for June were highest at Johnstown Castle, Co Wexford with 279.9 hours.

## **DROUGHT**

*Definitions:* An absolute drought is a period of 15 or more consecutive days to none of which is credited 0.2 mm or more of precipitation (i.e. daily rainfall < 0.2 mm.)

A partial drought is a period of at least 29 consecutive days the mean daily rainfall of which does not exceed 0.2 mm (i.e. mean for period ≤ 0.2 mm.)

A dry spell is a period of 15 or more consecutive days to none of which is credited 1.0 mm or more of precipitation (i.e. daily rainfall < 1.0 mm.)

Current soil moisture deficits range from 60mm – 95mm, highest in the Midlands and East, 75mm and above represent drought conditions.

We are now recording Absolute droughts and dry spells at all our Synoptic stations. (See table below). An absolute drought occurred at Belmullet earlier in the month also (see table below). The last time there were drought conditions in Ireland was April-May 2017 in the Midlands and the West.

## **RECENT MAXIMUM TEMPERATURE INFORMATION**

The last time a June temperature in Ireland was above 31.5 °C was 29-Jun-1976 at Shannon Airport, Co Clare (when it was 31.6 °C) and on the same day at Boora, Co Offaly (when it was 32.5 °C).

32.0 °C was the highest temperature recorded so far this year (it was recorded on 28<sup>th</sup> June 2018) at Shannon Airport and this is the highest June temperature recorded in Ireland since 1976. It is the highest temperature for any month since July 2006, (where 32.3 °C was recorded at Elphin, Co Roscommon on 19<sup>th</sup> July 2006). 32.0 °C is the highest temperature ever recorded at a Synoptic station in Ireland (and it was recorded on 28<sup>th</sup> June 2018 at Shannon Airport).

While this event is in the realm of climate variability, this is an extreme event that occurred in the context of a warming world. Climate studies show that there is an increasing occurrence of extreme weather events. Nevertheless further studies are required to establish a high degree of confidence in linking climate change to this extreme event. The prevalent synoptic circulation plays a key role in determining weather and models need to be able to reproduce the same kind of circulation patterns with a realistic frequency to be suitable for an attribution study.

The Fifth Assessment report of the Intergovernmental Panel on Climate Change (IPCC) concluded that ‘human influence on the climate system is clear’ and that ‘changes in many extreme weather and climate events have been observed since about 1950’. Societies around the world are faced with increasing climate change risks.

**RECORDED ABSOLUTE DROUGHTS 2018**

<b>STATION</b>	<b>START DATE</b>	<b>END DATE</b>	<b>LENGTH (Days)</b>
Belmullet	22-May-18	12-Jun-18	22
Phoenix Park	21-Jun-18	Ongoing	20
Mace Head	21-Jun-18	6-Jul-18	16
Oak Park	21-Jun-18	Ongoing	20
Shannon Airport	21-Jun-18	Ongoing	20
Dublin Airport	21-Jun-18	Ongoing	20
Sherkin Island	21-Jun-18	Ongoing	20
Ballyhaise	21-Jun-18	Ongoing	20
Mullingar	21-Jun-18	Ongoing	20
Roches Point	21-Jun-18	5-Jul-18	15
Dunsany	21-Jun-18	Ongoing	20
Gurteen	21-Jun-18	Ongoing	20
Johnstown Castle	21-Jun-18	Ongoing	20
Athenry	21-Jun-18	7-Jul-18	17
Mount Dillon	21-Jun-18	Ongoing	20
Finner	21-Jun-18	9-Jul-18	19
Claremorris	21-Jun-18	Ongoing	20
Valentia	21-Jun-18	Ongoing	20
Casement	21-Jun-18	Ongoing	20
Cork Airport	21-Jun-18	5-Jul-18	15
Knock Airport	21-Jun-18	Ongoing	20

**RECORDED DRY SPELLS JUNE-JULY 2018**

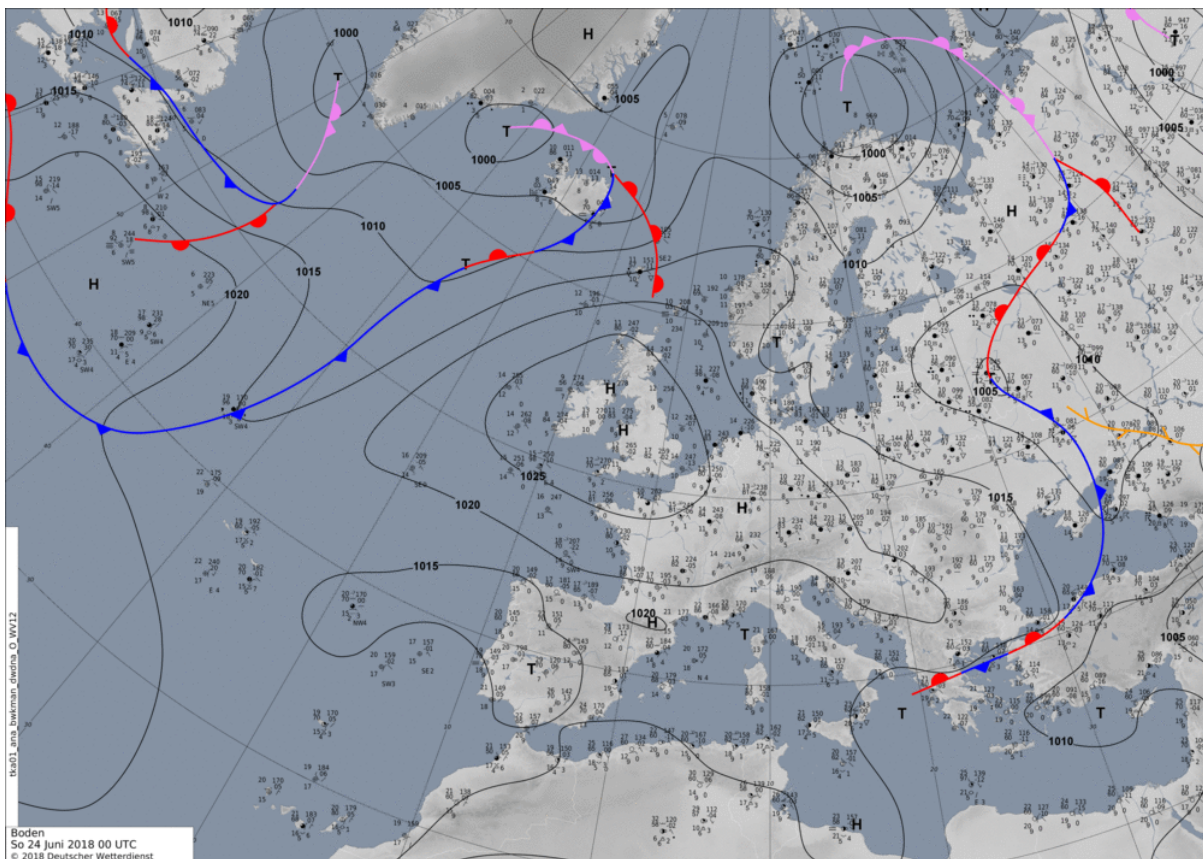
Belmullet	21-Jun-18	Ongoing	20
Moore Park	18-Jun-18	Ongoing	23
Newport	21-Jun-18	Ongoing	20
Markree	21-Jun-18	Ongoing	20
Malin Head	21-Jun-18	Ongoing	20

### *What is a heatwave?*

A heatwave refers to a prolonged period of abnormally hot weather which may be accompanied by high humidity. While there is no generally accepted definition of a heatwave, in Ireland it's classified as 5 consecutive days with a maximum temperature in excess of 25 degrees Celsius.

### *Why and when do heatwaves happen?*

Heatwaves are most common in summer when high pressure develops over the country. High pressure systems, also known as anticyclones, are slow moving and can persist for a prolonged period of time, resulting in dry and settled weather. In anticyclones, cool air descends from aloft and diverges outwards at lower levels. As the air descends it is warmed by compression. The position of the jet stream over Ireland determines the type of weather we experience. When a high pressure system materialises over Ireland, the jet stream is usually located to the north of us and keeps low pressure systems away.



Above: Surface pressure chart for 24<sup>th</sup> June 2018 showing a Tropical Continental (TC) air mass affecting Ireland, bringing highest maximum temperatures close to 30°C.

Different air masses affect us at different times of the year and this has a major impact upon the weather we experience in this country. The Tropical Continental air mass is the least frequent air mass affecting Ireland and is most common in summer when sub-tropical high pressure moves north. This air mass originates over North Africa and tracks northwards over continental Europe. Although the lower layers of this air mass are usually quite stable, the unstable upper layers may give rise to severe

thunderstorms. Its low humidity tends to bring us clear skies and long periods of sunshine. The highest temperatures experienced in Ireland usually occur under the influence of this air mass giving maximum temperatures in excess of 30 °C.

Ireland only experiences occasional heatwaves which are usually less frequent and not as prolonged as those found in more southerly latitudes. In August 1976, Birr recorded heatwave conditions lasting 14 days. More recently, heatwave conditions occurred in the summers of 2017, 2013, 2006, 2003, 1995, 1989 and 1983.

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