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Monthly Weather Bulletin July 1999

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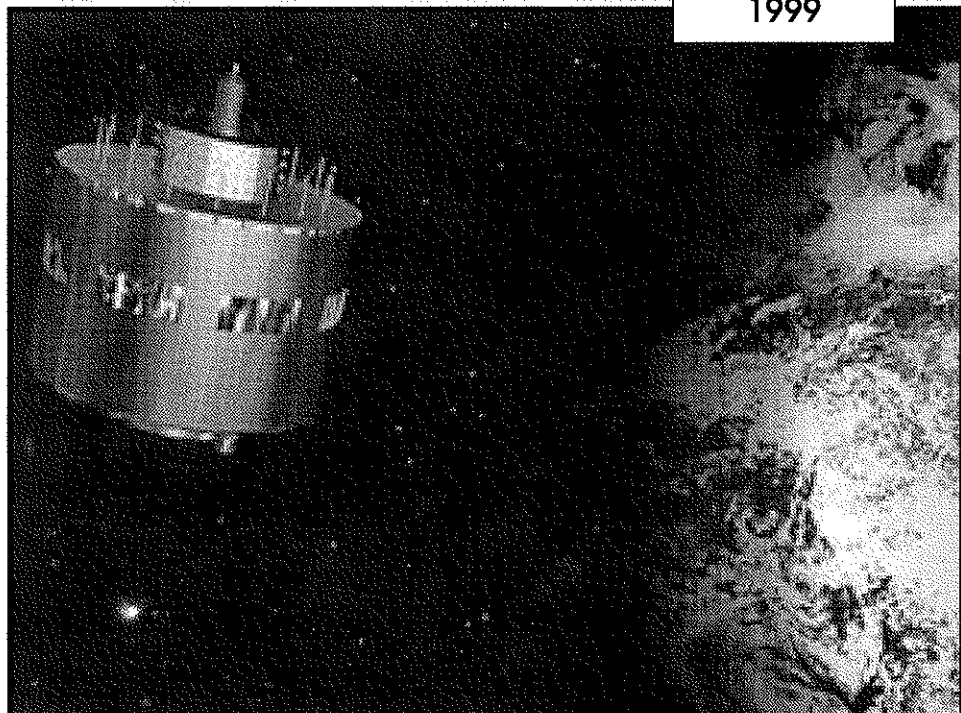


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Monthly Weather Bulletin

JULY
1999



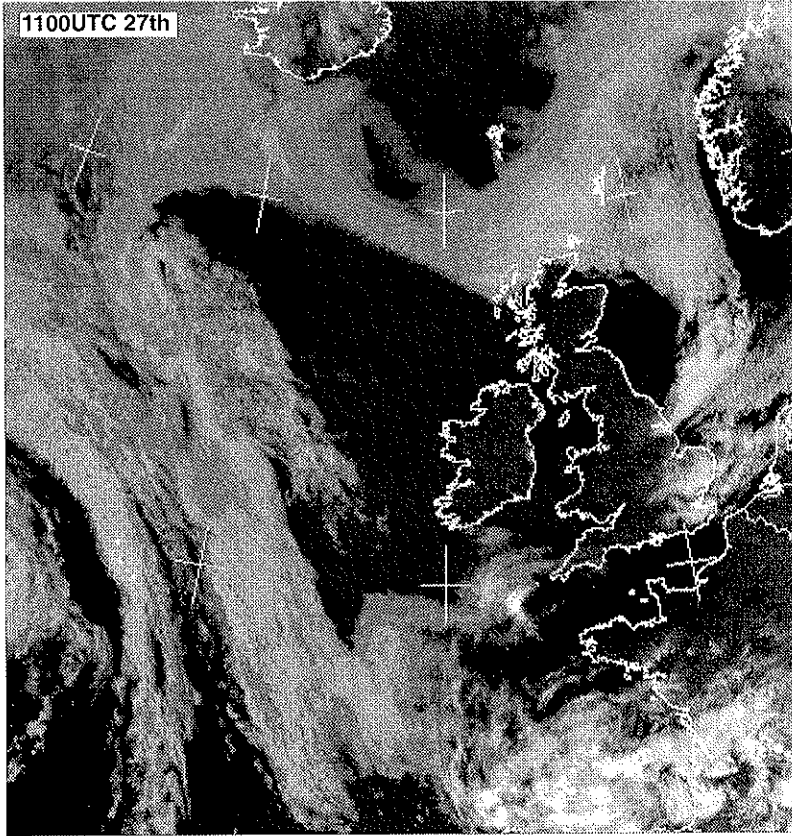
***New generation of meteorological
satellites being launched from 2000***

- see feature page

INSIDE

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1100UTC 27th



Right
Anticyclonic weather prevailed for much of the month, particularly during the final week which was very warm and sunny.

WARM AND SUNNY; ANOTHER DRY MONTH IN SOUTH

Although July temperatures were over a degree above normal, nowhere was it as warm as July 1995. Both maximum and minimum temperatures were above normal for most of the month, but there were also short spells of relatively cool weather. July was a generally dull month until the final week, when several days of almost unbroken sunshine brought monthly totals above normal everywhere. Rainfall was below normal almost everywhere and it was particularly dry in the south and southeast, maintaining a long spell of

dry weather here; Cork Airport's rainfall total since May was just over half the normal for the three-month period.

The weather at the beginning of the month was untypical of most that was to follow, as low pressure to the west of the country brought some spells of rain to all areas between the 1st and 4th, heaviest in the west and north. Southerly winds during this period brought warm, humid air over the country, with mist thickening to fog in places on the 1st and 2nd. Pressure rose over the country on the 5th

as an anticyclone to the south moved slowly northwards, becoming centred in the Irish Sea by the 8th. Although weak frontal systems crossed the country on the 7th and 10th, this anticyclonic influence lasted until the 12th, giving mostly dry weather with light winds as temperatures rose well above normal. After mostly dull weather on the 6th and 7th, the period between the 8th and 12th was generally sunny, although banks of sea fog affected coastal areas at times. Frontal troughs crossing the country on the 13th ended the fine spell as rain cleared to a much cooler westerly airstream. These fresh westerly winds brought showers, some heavy, up to the 16th.

Below
Following Tiger Woods under sunny skies at Waterville, Co. Kerry, on the 4th.
(picture The Examiner)

The period between the 17th and 20th was the wettest of the month in most places, as frontal systems associated with depressions to the north and northwest became slow-moving over the country. Falls of between 20mm and 40mm were recorded in the northwestern half of the country during this spell, but only around 10mm was recorded in the south and southeast. Winds were mostly light and variable in direction between the 17th and 19th, but they strengthened considerably on the 20th and 21st in northern areas as a depression tracked close to the north coast. A showery northwesterly flow on the 21st slackened on the 22nd as pressure once more rose over the country, marking the beginning





Above
Beach weather for old and young at Spanish Point, Co. Clare, on the 5th. (picture The Examiner)

of another spell of anticyclonic weather which persisted until the end of the month in most places. Winds were between northerly and easterly in direction over Ireland as area of high pressure became established to the north of the country at first. Apart from light rain associated with a weak cold front on the 24th, the weather was dry everywhere between the 22nd and 29th and after variable cloud amounts up to the 25th, it became very sunny in all areas between the 26th and 29th. Daytime temperatures rose above

normal, particularly in the sunshine between the 26th and 29th, but eastern and southeastern coastal areas were cooler due to onshore winds. Late on the 29th, cloud increased in the west and south as weak frontal systems moved very slowly eastwards. These brought outbreaks of patchy light rain to a few places on the 30th and 31st, but most parts of the country remained dry, sunny and very warm.

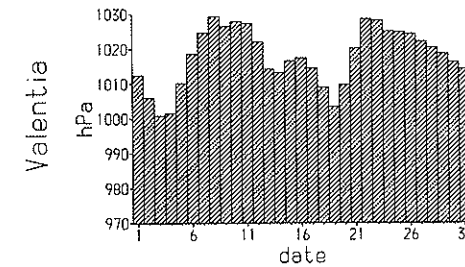
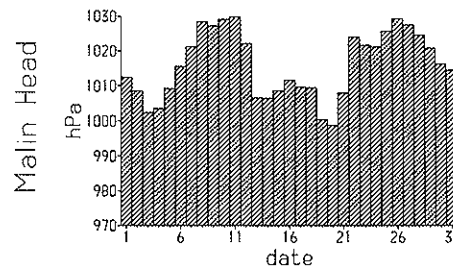
Mean windspeeds for the month of between 7 and 12 knots (8 and 14 mph) at most stations were close to normal everywhere. Winds were light for much of the month, but there were spells of windier weather in the periods 13th to 17th and 20th to 21st. Malin Head recorded the highest gust, 47 knots (54 m.p.h.) on the 21st. Fog was most prevalent during the first nine days of the month, while there were no reports of either hail or thunder.

Climatological Products available from WEATHERDIAL FAX

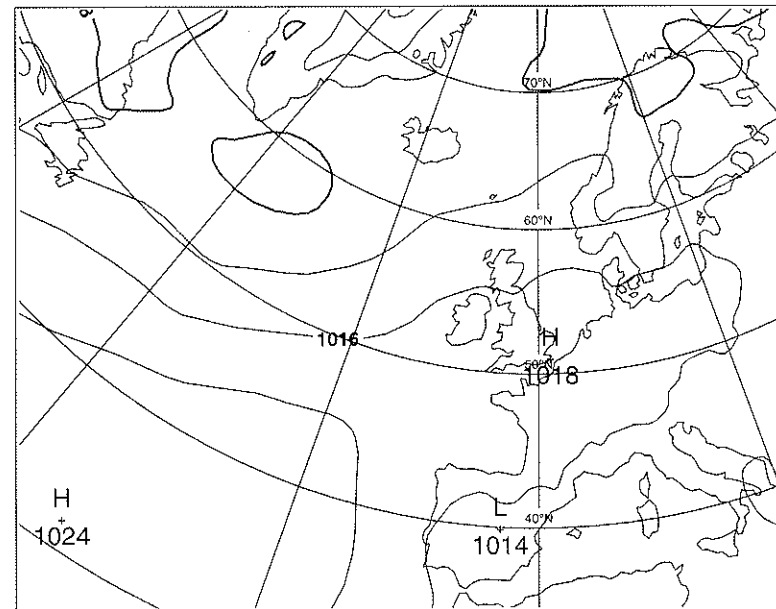
Recent Air and Soil Temperatures, Sunshine, Rainfall
Various elements during preceding 7 days as percentage of normal
Weather of last month, last season, last year

CALL 1570 131838

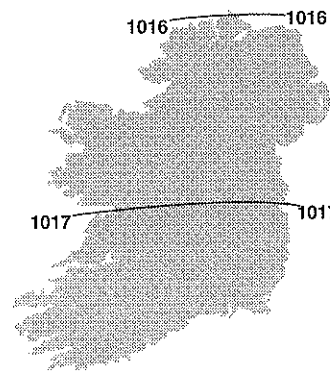
Call from a fax machine with tone phone
Calls cost 100p per minute (incl. VAT). An IndoCom service Tel:(01) 611 2021



Mean daily M.S.L. pressure (hPa)



the above map is based on means of 1200 UTC values



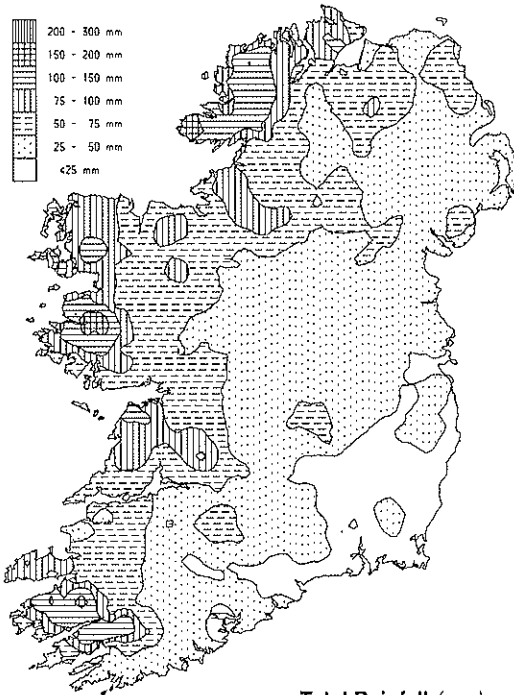
MEAN ATMOSPHERIC PRESSURE

Mean sea level pressure values for the month varied between 1016hPa and 1018hpa and were a little above normal everywhere. Pressure followed a similar pattern to June, with below normal values during the first week, followed by spells of anticyclonic weather in the periods 7th to 12th and 22nd to 29th. Belmullet recorded the highest pressure of the month on the 10th, 1032.7hPa. A depression to the north of the country on the 19th and 20th brought the lowest pressure of the month, with Malin Head measuring the lowest value, 996.0hPa on the 20th.

Totals variable, but dry again in south

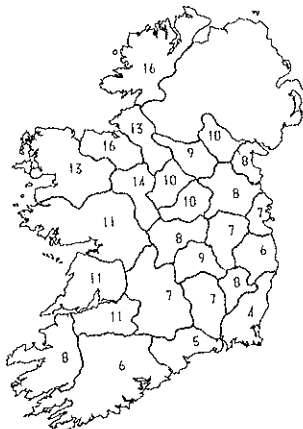
Rainfall totals for the month varied widely, ranging from only 11mm at Rosslare to 147mm at Maam Valley, Co. Galway. Percentage of normal rainfall was around 20% in parts of County Wexford, up to 119% at Claremorris. It was the driest July at most stations for between 8 and 10 years and the driest at Rosslare since 1979.

The late spring and summer so far have been very dry near southern and southeastern coasts, where only just over half the normal rainfall was recorded for the period (see below); soil moisture deficits in these areas were close to 100mm by the end of the month. Significant falls during July were recorded on relatively few days; there were between 6 and 13 wetdays during the month (days with 1.0mm or more of rainfall) at most stations, but only 4 or less in the southeast. Very little rain was recorded outside of the periods 1st to 4th, 17th to 20th or the 13th. Valentia Observatory recorded the highest daily fall of the month on the 17th, 29.7mm.



Total Rainfall (mm)

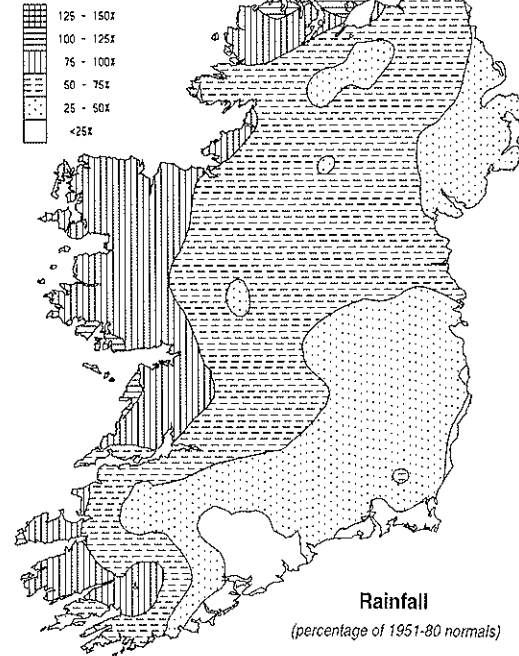
Below
The number of wetdays - days with 1mm or more rainfall - in each county



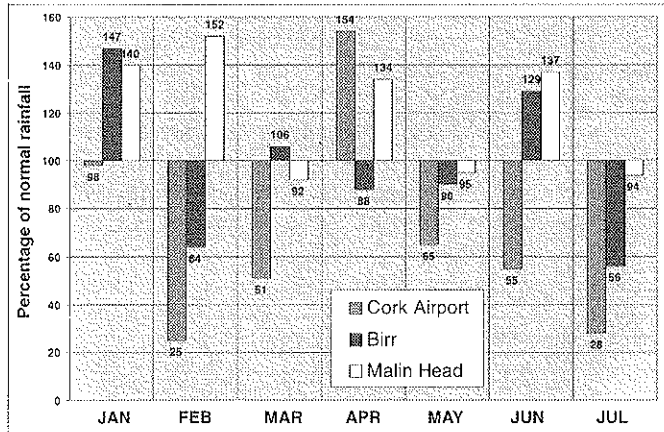
DAILY RAINFALL EXPRESSED AS % OF MONTHLY NORMAL

| COUNTY | DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | TOTAL |
|-----------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| Carlow | 1 | 1 | 2 | - | - | - | - | - | - | 1 | 2 | - | - | - | 10 | 5 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | 30 | |
| Cavan | 9 | 1 | 2 | 3 | 1 | - | - | - | 1 | - | 3 | 3 | - | 4 | 1 | 12 | 13 | 3 | 1 | - | - | - | - | - | - | - | - | - | - | - | 58 | |
| Clare | 7 | 4 | 3 | - | 2 | 1 | - | - | - | - | 3 | 2 | 1 | 3 | 25 | 12 | 15 | 3 | - | - | - | - | - | - | - | - | - | - | - | - | 87 | |
| Cork | 2 | 8 | 11 | 4 | 2 | - | - | - | 1 | - | - | - | - | 1 | 2 | 10 | 5 | - | - | - | - | - | - | - | - | - | - | - | - | - | 49 | |
| Donegal | 6 | 6 | 3 | 7 | 4 | 1 | 2 | - | 8 | - | 5 | 3 | 2 | 6 | 7 | 1 | 5 | 12 | 7 | 5 | - | 4 | - | - | - | - | - | - | - | - | 94 | |
| Dublin | 5 | - | - | 1 | - | - | - | - | - | - | 2 | 1 | - | - | - | 16 | 3 | 10 | 1 | - | 1 | - | - | - | - | - | - | - | - | - | 41 | |
| Galway | 11 | 2 | 5 | 2 | - | 1 | - | - | - | - | 7 | 1 | - | 1 | 4 | 7 | 15 | 15 | 1 | - | - | - | - | - | - | - | - | - | - | - | 72 | |
| Kerry | 3 | 8 | 12 | 6 | 2 | - | - | - | - | 2 | 2 | - | 1 | 5 | 17 | 6 | 5 | 1 | - | - | - | - | - | - | - | - | - | - | - | - | 71 | |
| Kildare | 7 | - | - | - | 4 | - | - | - | - | - | 2 | 1 | - | 1 | - | 23 | 1 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | 47 | |
| Kilkenny | 2 | 1 | - | 2 | 1 | - | - | - | - | 3 | 1 | - | - | 9 | 5 | 10 | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | 35 | |
| Laois | 4 | 1 | 1 | 1 | 4 | - | - | - | - | 1 | 3 | 1 | 3 | 15 | 4 | 13 | 1 | 3 | - | - | - | - | - | - | - | - | - | - | - | - | 57 | |
| Leitrim | 9 | 5 | 3 | 6 | - | 1 | 1 | 1 | - | - | 5 | 1 | 1 | 4 | 1 | 6 | 13 | 3 | 1 | - | - | - | - | - | - | - | - | - | - | - | 64 | |
| Limerick | 2 | 1 | 4 | - | 4 | 1 | - | - | - | - | 3 | 1 | 2 | 3 | 2 | 25 | 6 | 14 | 2 | - | - | - | - | - | - | - | - | - | - | - | 70 | |
| Longford | 14 | - | 1 | 4 | - | - | - | 3 | - | 3 | 2 | - | - | 1 | 16 | 6 | 15 | 1 | - | - | - | - | - | - | - | - | - | - | - | - | 60 | |
| Louth | 9 | 2 | - | 4 | - | - | - | - | 3 | 2 | 1 | - | - | 1 | 6 | 8 | 16 | - | - | - | - | - | - | - | - | - | - | - | - | - | 52 | |
| Mayo | 8 | 1 | 5 | 7 | - | 3 | - | - | - | - | 10 | 1 | 2 | 2 | 10 | 4 | 9 | 16 | 3 | 3 | - | 3 | 1 | - | - | - | - | - | - | - | 88 | |
| Meath | 7 | 1 | - | - | - | - | - | 3 | 2 | 1 | 1 | 1 | 1 | 3 | 3 | 19 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 56 | |
| Monaghan | 9 | 1 | 3 | 1 | 1 | - | - | - | 1 | - | 6 | 3 | 1 | 2 | 1 | 2 | 14 | 17 | 4 | - | - | - | - | - | - | - | - | - | - | - | 67 | |
| Offaly | 7 | 1 | - | - | 4 | - | - | 1 | - | 1 | - | 2 | 1 | 1 | 1 | 14 | 6 | 9 | 1 | 1 | - | - | - | - | - | - | - | - | - | - | 50 | |
| Roscommon | 10 | 2 | 1 | 3 | - | 1 | 1 | - | 1 | - | 6 | 1 | - | 1 | 2 | 6 | 10 | 15 | 1 | 1 | - | - | - | - | - | - | - | - | - | - | 71 | |
| Sligo | 7 | 1 | 11 | 2 | 1 | 2 | 1 | - | - | 5 | 2 | 1 | 3 | 8 | 5 | 8 | 3 | 2 | - | 1 | - | - | - | - | - | - | - | - | - | - | 61 | |
| Tipperary | 3 | 3 | 3 | - | 1 | - | - | - | - | 1 | 1 | 2 | - | - | 11 | 4 | 9 | 4 | 1 | - | - | - | - | - | - | - | - | - | - | - | 43 | |
| Waterford | 2 | 5 | 1 | - | - | - | - | 2 | - | 1 | - | - | - | 1 | 10 | 4 | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | 27 | |
| Westmeath | 8 | 1 | 2 | - | - | - | - | - | 4 | 1 | 3 | 2 | 11 | 11 | 14 | 1 | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | 60 | |
| Wexford | 2 | 3 | 1 | - | - | - | - | 8 | - | 1 | - | - | - | - | - | 5 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | 28 | |
| Wicklow | 2 | 2 | 3 | 2 | - | - | - | - | - | 2 | - | - | - | - | 5 | 5 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | 29 | |
| MEAN | 6 | 2 | 3 | 2 | 1 | - | - | 1 | 1 | 3 | 1 | 1 | 1 | 3 | 9 | 7 | 12 | 2 | 1 | - | - | - | - | - | - | - | - | - | - | - | 55 | |

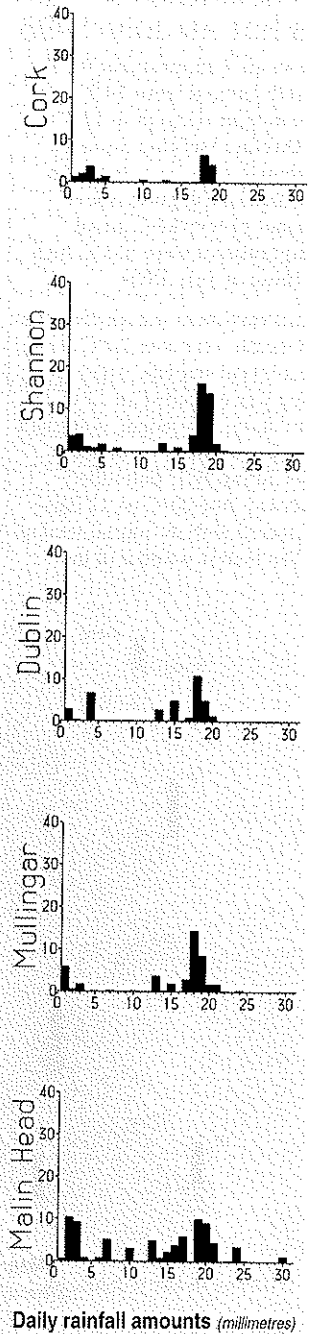
NOTE: in the above table, each value represents the percentage of the monthly normal that fell on each day. Stations within each county are averaged together. For example, 2% of the average monthly rainfall in Co. Carlow fell on the 4th.



Rainfall
(percentage of 1951-80 normals)



Above: The year to date has been a dry one in the south, with rainfall above normal only in April at Cork Airport, but it has been wetter further north.



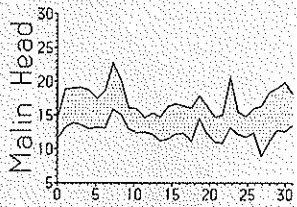
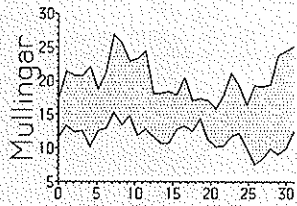
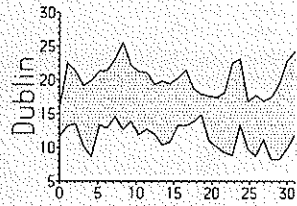
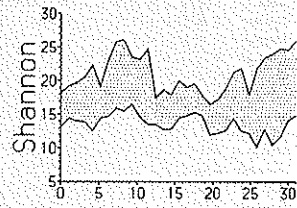
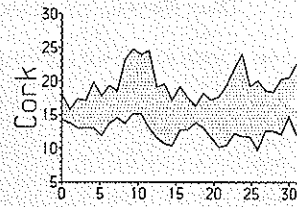
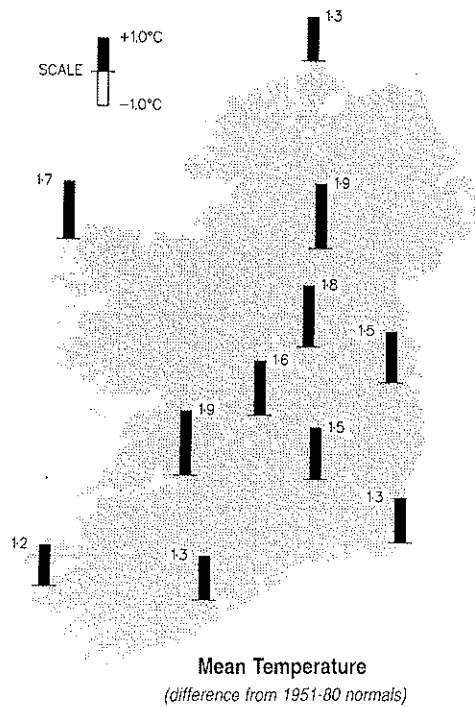
Daily rainfall amounts (millimetres)

Very warm, but not as hot as July 1995

Mean air temperatures for the month ranged from 14.9°C at Connaught Airport to 17.6°C at Dublin (Merrion Square). Although they were between one and two degrees above normal everywhere, mean temperatures were not as high as those of July 1995.

Mean maximum temperatures for the month were over 20°C at most inland stations, where this value was exceeded on 17 or 18 days during the month, compared with the normal 9 or 10 such days during July. Belmullet recorded over 20°C on 11 days compared with its normal total of 2. The hottest weather of the

month was in the periods 8th to 12th and 29th to 31st, when temperatures rose to around 25°C inland. Several stations recorded their highest July temperatures for 9 or 10 years during these periods, including Warrenstown, Co. Meath, where the highest temperature of the month, 28.0°C, was measured on the 9th. Although daytime temperatures were above normal between the 26th and 28th in midland and western areas, under clear skies the nights were cool. Straide, Co. Mayo, recorded the lowest air temperature of the month, 4.0°C, on the 26th, while Ardec (Boharnamoe), Co. Louth, measured the lowest grass minimum temperature, -1.2°C, on the 27th.



Daily maximum and minimum temperatures (°C)

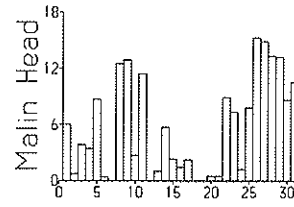
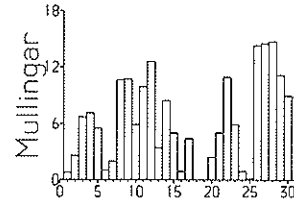
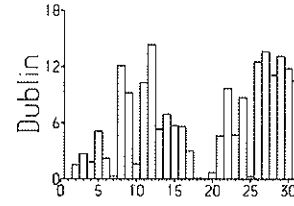
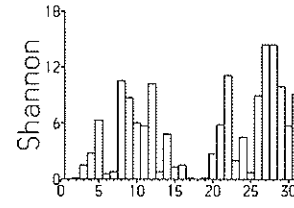
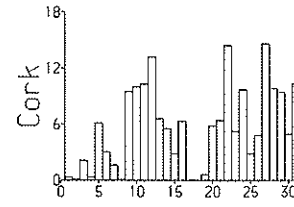
Sunniest July since 1990 in most places

Sunshine totals for the month were above normal almost everywhere; they ranged from 149 hours at Belmullet to 231 hours at Rosslare, with percentage of normal values varying between 98% at Cork Airport and 146% at Clones. It was the sunniest July since 1990 in most places.

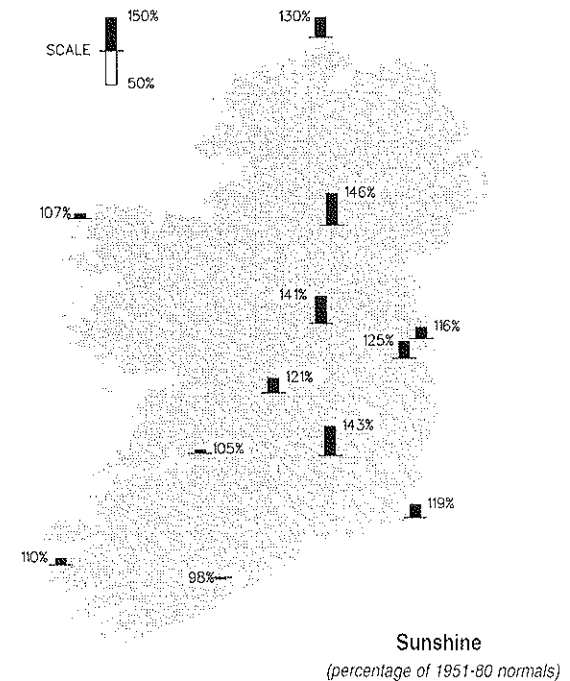
Despite the high totals, it was a relatively dull month up to the 25th, when only the periods 8th to 9th and 11th to 12th had daily values over 10 hours generally.

Over a third of the monthly total at most stations was recorded between the 26th and 31st, with daily values of 8 to 15 hours. Many stations recorded their highest daily sunshine values for July for 9 or 10 years during this period, including Malin Head, where the highest daily sunshine of the month, 15.3 hours, was recorded on the 26th. Belmullet's value of 14.8 hours on the same day made it the sunniest July day there since 1983.

Global solar radiation values were close to normal at Clones and Valentia Observatory, but were around 10% above normal elsewhere.

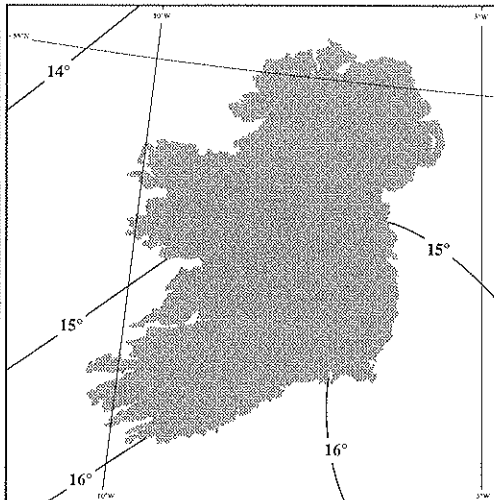
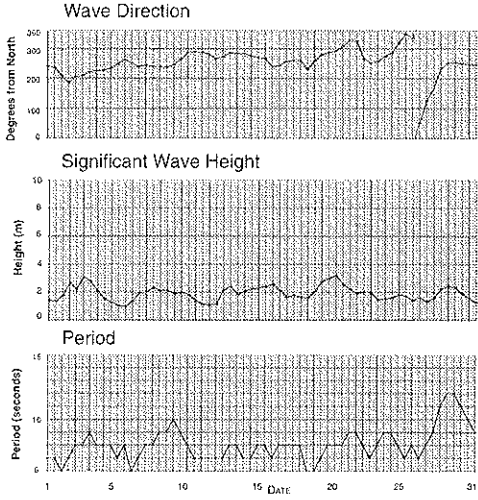


Daily sunshine amounts (hours)



SEA TEMPERATURES

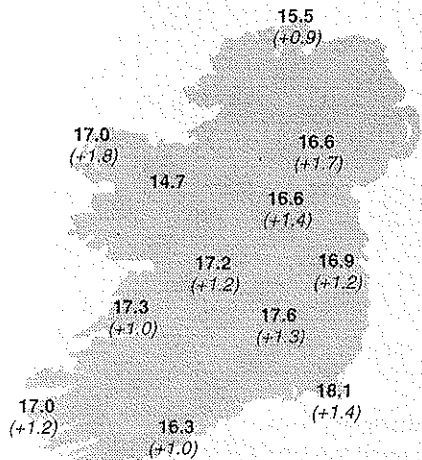
Sea temperatures rose by over two degrees during the month, climbing well above normal everywhere by the end of the month. They ranged from around 14.5°C near northern coasts to over 16°C in the south around mid-month. At Malin Head, the mean sea temperature overall was 14.6°C, almost a degree above normal.



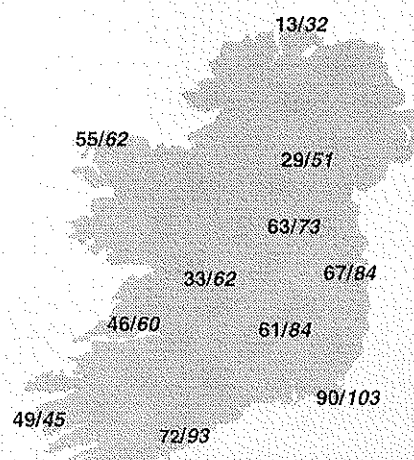
Wave conditions at 52.5°N, 12°W based on WAM model

Sea Temperatures (°C) around mid-month

Mean 10cm Soil Temperatures (°C) at 0900Z (difference from 1961-90 normals in brackets)



Soil Moisture Deficits (mm) 10th of month / End of month



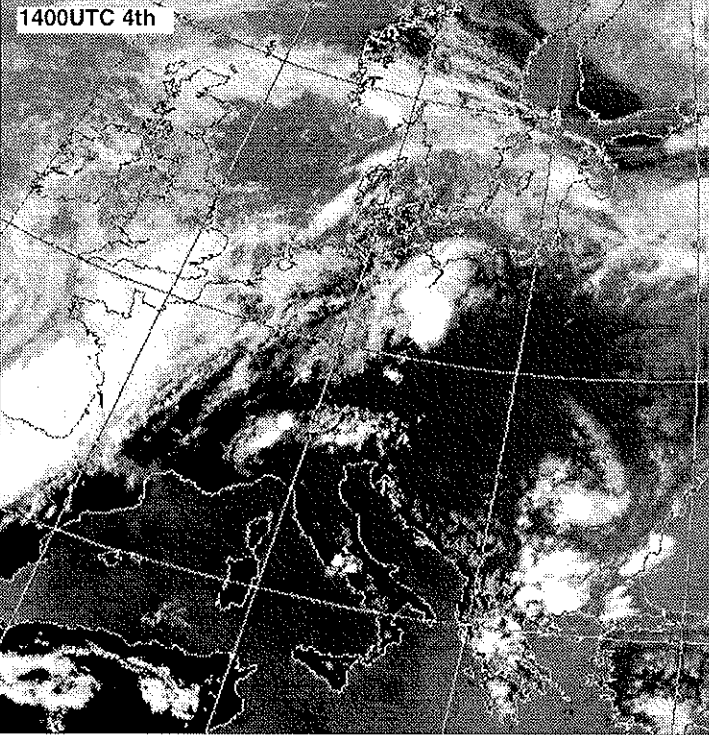
| 10-DAY VALUES FOR SELECTED AGROMETEOROLOGICAL STATIONS | Station | period | RAINFALL | | | TEMPERATURE | | | | | | | | SUNSHINE | | mean wind speed (m/s) (2m agl) | P.E. (Penman) (mm) | | | | | | | |
|--|------------------|--------|----------|--------------|-----------|-------------|-----------|------------|--------------------|-------------|---------------------|---------------------|----------------------|-----------------------|------------------------|--------------------------------|--------------------|--------------------|--------------------|--------------------|--------------|-----|-----|----|
| | | | amount | % of average | rain days | mean max. | mean min. | mean daily | diff. from average | lowest min. | days with all frost | degree days > 4.4°C | degree days > 10.0°C | lowest 'grass' min. * | days with ground frost | | | mean 10cm at 0900h | mean 30cm at 0900h | total no. of hours | % of average | | | |
| Co. Cork | Fermoy | 1-10 | 6.5 | - | 5 | 3 | 20.4 | 13.7 | 17.1 | - | 12.4 | 1 | 0 | 127 | 71 | 9.0 | 5 | 0 | 17.3 | 16.3 | - | - | 2.2 | - |
| | | 11-20 | 7.8 | - | 5 | 3 | 20.3 | 13.0 | 16.7 | - | 9.8 | 12 | 0 | 122 | 66 | 6.2 | 12 | 0 | 17.5 | 17.3 | - | - | 3.3 | - |
| | | 21-end | 0.0 | - | 0 | 0 | 21.9 | 9.7 | 15.8 | - | 6.0 | 28 | 0 | 125 | 67 | 2.0 | 28 | 0 | 16.5 | 16.5 | - | - | 3.1 | - |
| | | month | 14.3 | 24 | 10 | 6 | 20.9 | 12.1 | 16.5 | 1.4 | 6.0 | 28 | 0 | 374 | 204 | 2.0 | 28 | 0 | 17.1 | 16.7 | - | - | 2.9 | - |
| Co. Donegal | Letterkenny | 1-10 | 43.7 | - | 9 | 9 | 21.3 | 14.0 | 17.7 | - | 10.3 | 5 | 0 | 132 | 76 | - | - | - | - | - | - | - | - | - |
| | | 11-20 | 27.0 | - | 10 | 8 | 17.8 | 12.5 | 15.2 | - | 11.0 | 15 | 0 | 108 | 52 | - | - | - | - | - | - | - | - | - |
| | | 21-end | 2.3 | - | 3 | 1 | 20.4 | 10.3 | 15.4 | - | 5.4 | 27 | 0 | 120 | 62 | - | - | - | - | - | - | - | - | - |
| | | month | 73.0 | - | 22 | 18 | 19.8 | 12.2 | 16.0 | - | 5.4 | 27 | 0 | 360 | 190 | - | - | - | - | - | - | - | - | - |
| Co. Kerry | Ardfert | 1-10 | 15.2 | - | 4 | 3 | 21.1 | 13.7 | 17.4 | - | 12.2 | 8 | 0 | 130 | 74 | 9.4 | 5 | 0 | - | - | 47.9 | - | - | - |
| | | 11-20 | 41.8 | - | 8 | 4 | 18.5 | 13.4 | 16.0 | - | 11.8 | 12 | 0 | 115 | 59 | 10.0 | 12 | 0 | - | - | 22.6 | - | - | - |
| | | 21-end | 0.3 | - | 1 | 0 | 21.4 | 11.6 | 16.5 | - | 9.1 | 28 | 0 | 133 | 72 | 6.5 | 28 | 0 | - | - | 82.7 | - | - | - |
| | | month | 57.3 | - | 13 | 7 | 20.3 | 12.9 | 16.6 | - | 9.1 | 28 | 0 | 378 | 205 | 6.5 | 28 | 0 | - | - | 153.2 | - | - | - |
| Co. Leitrim | Ballinamore | 1-10 | 14.3 | - | 8 | 2 | 22.1 | 13.5 | 17.8 | - | 10.0 | 1 | 0 | 134 | 78 | 7.0 | 5 | 0 | 16.5 | 15.9 | 40.8 | - | 1.4 | - |
| | | 11-20 | 36.2 | - | 9 | 7 | 18.6 | 11.8 | 15.2 | - | 10.0 | 11 | 0 | 108 | 52 | 7.5 | 15 | 0 | 16.4 | 16.7 | 43.1 | - | 2.8 | - |
| | | 21-end | 0.7 | - | 2 | 0 | 20.3 | 9.4 | 14.9 | - | 7.4 | 26 | 0 | 115 | 56 | 2.6 | 27 | 0 | 15.5 | 15.7 | 83.6 | - | 2.7 | - |
| | | month | 51.2 | 62 | 19 | 9 | 20.3 | 11.5 | 15.9 | 1.6 | 7.4 | 26 | 0 | 357 | 186 | 2.6 | 27 | 0 | 16.1 | 16.1 | 167.5 | 136 | 2.3 | 77 |
| Co. Louth | Ardee | 1-10 | 15.5 | - | 6 | 3 | 23.1 | 13.0 | 18.1 | - | 10.2 | 5 | 0 | 136 | 80 | 5.9 | 5 | 0 | 17.7 | 17.6 | - | - | - | - |
| | | 11-20 | 18.0 | - | 7 | 4 | 20.5 | 12.1 | 16.3 | - | 9.5 | 12 | 0 | 119 | 63 | 5.4 | 12 | 0 | 17.5 | 18.0 | - | - | - | - |
| | | 21-end | 0.4 | - | 1 | 0 | 20.2 | 8.7 | 14.5 | - | 4.1 | 27 | 0 | 111 | 54 | -1.2 | 27 | 2 | 16.3 | 16.6 | - | - | - | - |
| | | month | 33.9 | 51 | 14 | 7 | 21.2 | 11.2 | 16.2 | - | 4.1 | 27 | 0 | 366 | 197 | -1.2 | 27 | 2 | 17.1 | 17.4 | - | - | - | - |
| Co. Waterford | Dungarvan | 1-10 | 6.1 | - | 4 | 2 | 21.5 | 13.9 | 17.7 | - | 12.5 | 6 | 0 | 133 | 77 | 13.0 | 6 | 0 | 17.2 | 17.6 | 47.4 | - | 1.5 | - |
| | | 11-20 | 15.4 | - | 4 | 3 | 20.9 | 13.5 | 17.2 | - | 10.8 | 15 | 0 | 128 | 72 | 8.0 | 15 | 0 | 17.9 | 18.0 | 49.0 | - | 2.0 | - |
| | | 21-end | 0.5 | - | 1 | 0 | 21.5 | 11.3 | 16.4 | - | 9.5 | 23 | 0 | 132 | 71 | 7.9 | 23 | 0 | 17.3 | 17.3 | 95.6 | - | 1.5 | - |
| | | month | 22.0 | - | 9 | 5 | 21.3 | 12.9 | 17.1 | - | 9.5 | 23 | 0 | 393 | 219 | 7.9 | 23 | 0 | 17.4 | 18.2 | 201.6 | 113 | 1.1 | 83 |
| Co. Wexford | Johnstown Castle | 1-10 | 2.5 | - | 4 | 0 | 20.2 | 13.2 | 16.7 | - | 11.2 | 1 | 0 | 123 | 67 | 8.2 | 6 | 0 | 18.3 | 17.3 | 46.5 | - | 0.8 | - |
| | | 11-20 | 9.9 | - | 5 | 2 | 19.5 | 13.2 | 16.4 | - | 10.5 | 15 | 0 | 119 | 63 | 5.0 | 13 | 0 | 17.8 | 18.0 | 50.7 | - | 1.3 | - |
| | | 21-end | 0.5 | - | 1 | 0 | 19.7 | 11.5 | 15.6 | - | 10.1 | 21 | 0 | 123 | 61 | 2.6 | 23 | 0 | 17.4 | 17.4 | 104.4 | - | 1.1 | - |
| | | month | 12.9 | 18 | 10 | 2 | 19.8 | 12.6 | 16.2 | 1.4 | 10.1 | 21 | 0 | 365 | 191 | 2.6 | 23 | 0 | 17.8 | 17.6 | 201.6 | 113 | 1.1 | 81 |

MEASURED POTENTIAL EVAPOTRANSPIRATION (P.E.) AND SOIL MOISTURE

| County/ Station | Period | P.E. (mm) | | Soil Moisture (mm) | | |
|-----------------|--------|-----------|---------|---------------------|---------|---------|
| | | Amount | Deficit | Accumulated Deficit | Surplus | Deficit |
| Co. Dublin | 1-10 | 28.3 | 15 | 76 | - | - |
| | 11-20 | 34.8 | - | 70 | 6 | - |
| | 21-end | 47.1 | 26 | 96 | - | - |
| month | 110.2 | - | - | - | - | |
| Co. Kerry | 1-10 | 13.4 | - | 28 | 21 | - |
| | 11-20 | 33.4 | - | 9 | 19 | - |
| | 21-end | 20.5 | 20 | 29 | - | - |
| month | 67.3 | - | - | - | - | |
| Co. Leitrim | 1-10 | 17.9 | 4 | 4 | - | - |
| | 11-20 | 26.4 | - | 0 | 10 | - |
| | 21-end | 20.0 | 19 | 19 | - | - |
| month | 64.3 | - | - | - | - | |
| Co. Wexford | 1-10 | 12.5 | 9 | 49 | - | - |
| | 11-20 | 31.8 | 15 | 64 | - | - |
| | 21-end | 32.1 | 20 | 84 | - | - |
| month | 76.4 | - | - | - | - | |

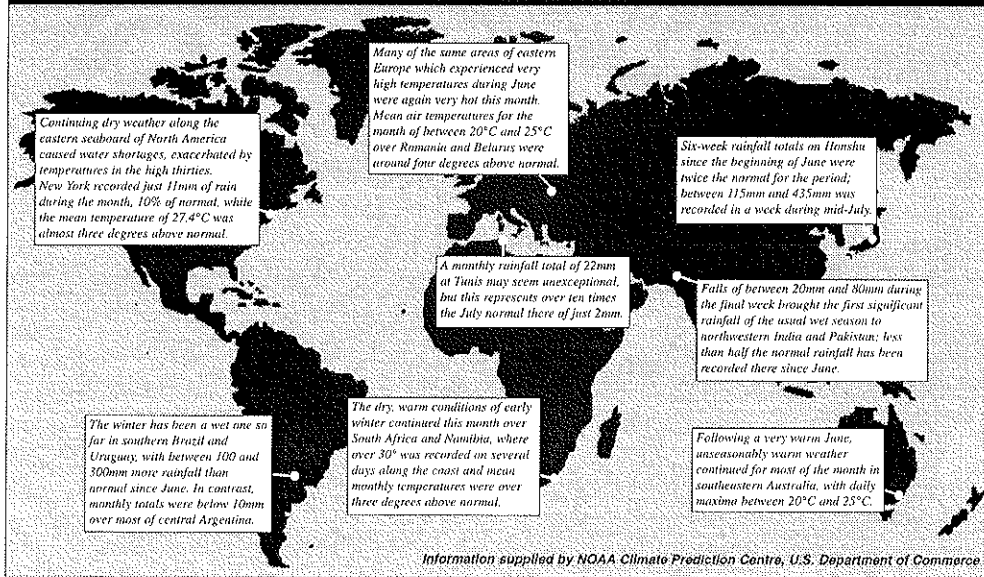
SEE BACK PAGE FOR NOTES ON THE DATA

| County/ Station | GLOBAL SOLAR RADIATION (MJ/sq. m.) | | | P.E. (Penman) total for month (mm) | | |
|-----------------|------------------------------------|--------|--------|------------------------------------|--------|-----|
| | 10-day totals | 11-20 | 21-end | | | |
| Co. Donegal | 1-10 | 164.78 | 129.77 | 234.70 | 529.25 | 82 |
| | 11-20 | 169.26 | 232.46 | 558.28 | 98 | - |
| | 21-end | 150.89 | 138.69 | 214.85 | 504.43 | 83 |
| month | 484.93 | 506.12 | 963.83 | 1031.96 | 263 | |
| Co. Dublin | 1-10 | 172.29 | 157.33 | 240.71 | 570.33 | 99 |
| | 11-20 | 156.56 | 169.26 | 232.46 | 558.28 | 98 |
| | 21-end | 150.89 | 138.69 | 214.85 | 504.43 | 83 |
| month | 479.74 | 465.28 | 688.02 | 1032.94 | 280 | |
| Co. Mayo | 1-10 | 170.49 | 150.40 | 218.54 | 539.43 | 84 |
| | 11-20 | 162.96 | 137.08 | 215.53 | 515.57 | 92 |
| | 21-end | 168.31 | n/a | n/a | n/a | n/a |
| month | 501.76 | 297.48 | 434.07 | 1055.00 | 276 | |
| Co. Offaly | 1-10 | 168.31 | n/a | n/a | n/a | n/a |
| | 11-20 | 168.31 | n/a | n/a | n/a | n/a |
| | 21-end | 168.31 | n/a | n/a | n/a | n/a |
| month | 504.93 | n/a | n/a | n/a | n/a | |

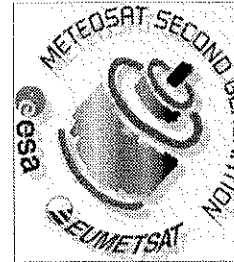


Left
There was intense thunderstorm activity over many parts of Europe on the 4th and 5th, with Britain and France worst affected. Falls of up to 34mm in an hour over central and northern England on the 5th caused flash flooding, while structural damage was reported due to lightning and a number of small tornadoes.
(picture courtesy Dundee University)

SUMMARY OF SIGNIFICANT WEATHER WORLDWIDE DURING JULY



EUROPEAN WEATHER SATELLITES SET FOR RE-LAUNCH



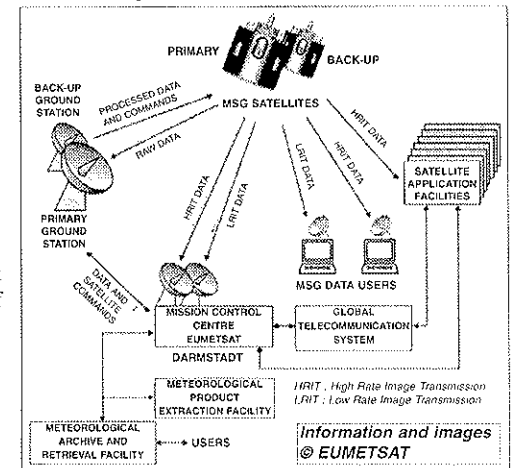
By November 2000 the current generation of Meteosat meteorological satellites will have provided reliable service for 23 years. Meteosat image data are now an essential component of the global observing system and moving cloud sequences from Meteosat are a familiar part of weather forecasts seen daily by millions. Images and derived meteorological products are of considerable value to Numerical Weather Prediction, very short range forecasting and climate monitoring. Next year, the first of a new generation of weather satellites will be launched by the partnership of ESA (European Space Agency) and EUMETSAT (European organisation for the exploitation of METEOROLOGICAL SATELLITES).

The current Meteosat series was designed by ESA in the early 1970s and technology has advanced considerably since then, as have the demands of meteorologists, the climate monitoring community and other Earth-related scientists. To satisfy these demands, EUMETSAT and ESA are cooperating on the production of a completely new system to take over and significantly improve the operational service by early in the next century. The first of three MSG (Meteosat Second Generation) spacecraft will be launched late in the year 2000, allowing Europe to maintain its leading role in gathering global weather data until the year 2012 at least. These MSG satellites represent a significant leap in technological capability and will provide meteorologists with improved imagery and data.

MSG will generate multi-spectral imagery of the Earth's surface and cloud systems at double the rate of the current Meteosat (every 15 minutes instead of every half an hour) and for a much larger number of spectral channels (twelve compared to three for Meteosat). There will also be vastly improved geometrical resolution: 1 km for the high-resolution visible channel and 3 km for the others. Eight of the channels will be in the thermal infrared, providing permanent data about the temperatures of clouds, land and sea surfaces, among other information. Using channels that absorb ozone, water vapour and carbon dioxide, MSG will also allow meteorologists to analyse the characteristics of atmospheric air masses making it possible to reconstruct a three-dimensional view of the atmosphere. The current Meteosat capabilities will be maintained.

MSG will be a spin-stabilised satellite with a rotation speed of 100 rpm. It will be in geostationary orbit at about 36,000 km, positioned

at 0° longitude. Each satellite is designed for a nominal lifetime of seven years. MSG will carry a new radiometer and a Geostationary Earth Radiation Budget (GERB) instrument. The GERB will provide valuable data on reflected solar radiation and thermal radiation emitted by the Earth and atmosphere. In addition to these two instruments, MSG will carry a comprehensive communications payload serving the needs of satellite operation, data communication and user data dissemination. A search and rescue transponder is also included in the communications package. On the ground, a mission control centre at the EUMETSAT headquarters in Darmstadt will perform mission spacecraft control, rectification of image data, extraction of meteorological products and archival and retrieval (see chart below). Some products that require close user interactions and specialised methods are extracted in other satellite applications facilities operated by member states across Europe.



Thursday 1st: A little rain or drizzle overnight and a few fog patches cleared this morning and most areas got off to a dry start with bright spells, mainly in the north and northwest. A belt of rain, heavy in places, moved up slowly from the south during the afternoon and evening but did not affect the extreme north until very late. Behind the rainbelt it was very mild and close with coastal and hill fog.

Rainfall: 1mm to 3mm generally, 4mm to 9mm in the west

Temperature: max. 15°C to 20°C, min. 10°C to 14°C

Sunshine: nil to 1 hour generally, 3 to 6 hours in the northwest

Friday 2nd: Rain in parts of Ulster and north Connaught early. Some hill and coastal fog, especially near the south coast, thinned gradually. Scattered showers today, especially in the evening, and some bright spells. Light to moderate southerly or southeasterly winds. Warm this afternoon except in coastal districts with onshore winds.

Rainfall: nil to 4mm generally, 9mm to 10mm in the extreme west

Temperature: max. 16°C to 23°C, min. 13°C to 15°C

Sunshine: nil to 3 hours

Saturday 3rd: Close overnight with outbreaks of rain in some areas. Scattered showers today, heavy in places, especially in the north and west. Moderate southwesterly or southerly winds. Temperatures normal or above.

Rainfall: nil to 4mm generally, 9mm to 17mm in the northwest

Temperature: max. 16°C to 23°C, min. 12°C to 15°C

Sunshine: trace to 5 hours generally, 7 hours in Mullingar

Sunday 4th: A day of bright intervals and scattered showers, heavy in places. Moderate southerly winds, decreasing to light. Temperatures normal or above.

Rainfall: nil to 2mm generally, 7mm at Dublin Airport, 11mm to 12mm in the extreme west

Temperature: max. 17°C to 22°C, min. 10°C to 14°C

Sunshine: trace to 3 hours generally, 4 to 7 hours in the east and southeast

Monday 5th: Overnight mist and fog cleared early in the morning and sunny spells developed. Many areas were dry but there were well-scattered showers in the late afternoon and evening, heavy in a few places. Light variable winds. Warm.

Rainfall: nil to 2mm generally, 5mm in Birr

Temperature: max. 18°C to 24°C, min. 9°C to 14°C

Sunshine: 4 to 5 hours in the east, 6 to 12 hours elsewhere

Tuesday 6th: Some mist and drizzle early, especially near western and southwestern coasts as winds turned westerly and then southwesterly. It turned out a mostly dry and fairly cloudy day with only parts of the southeast having significant sunshine. Temperatures about normal.

Rainfall: nil to 1mm

Temperature: max. 17°C to 21°C, min. 11°C to 14°C

Sunshine: trace to 3 hours generally, 9 hours in Rosslare

Wednesday 7th: Dull conditions overnight and at first this morning with outbreaks of light rain in many areas. Mostly dry during the afternoon and evening and warm. Winds were light southwesterly.

Rainfall: nil to 1mm generally, 2mm to 5mm in the northwest

Temperature: max. 18°C to 24°C, min. 13°C to 15°C

Sunshine: nil to 2 hours generally, 3 to 8 hours in the southeast

Thursday 8th: Mist patches overnight cleared except in some southern coastal districts. Good sunny spells in many areas caused high temperatures inland this afternoon. Mist patches late in the day. Winds from the south and light in strength.

Rainfall: nil or trace

Temperature: max. 19°C to 27°C, min. 12°C to 16°C

Sunshine: trace at Cork Airport, 10 to 13 hours generally

Friday 9th: Some hill and coastal fog early cleared and good sunny spells developed except in a few coastal areas. A few showers here and there late this evening. Light variable winds. Warm.

Rainfall: nil or trace

Temperature: max. 20°C to 27°C, min. 13°C to 16°C

Sunshine: 2 hours in Belmullet, 8 to 13 hours elsewhere

Saturday 10th: A hazy start with scattered showers as a diffuse front moved slowly southwards; showers were thundery in parts of south Leinster in the late afternoon and early evening. In most other areas the weather brightened during the morning and it was dry as winds turned northerly to northeasterly. Temperatures inland were lower than of late but still above normal.

Rainfall: nil to 1mm generally, 3mm in Malin Head

Temperature: max. 16°C to 26°C, min. 13°C to 17°C

Sunshine: trace to 3 hours in the east and north, 5 to 10 hours elsewhere

Sunday 11th: Light to moderate northerly to northeasterly winds gave a dry day with sunny spells. Afternoon temperatures above normal except on coasts with onshore winds.

Rainfall: nil

Temperature: max. 16°C to 24°C, min. 11°C to 15°C

Sunshine: 6 to 14 hours

Monday 12th: Patchy fog in places cleared and most areas had good sunny spells as conditions continued dry. Light northerly winds becoming variable or northwesterly. Warm inland this afternoon.

Rainfall: nil

Temperature: max. 15°C to 25°C, min. 10°C to 14°C

Sunshine: nil to 1 hour in the northwest, 7 to 14 hours generally

Tuesday 13th: A rainbelt moved eastwards across the country late in the night and this morning. This was followed by brighter conditions with scattered showers, mainly in the north and west where it was cool. In the south and east afternoon temperatures were normal or a little above. Light or moderate southwesterly winds becoming moderate occasionally fresh westerly.

Rainfall: trace to 4mm generally, 5mm to 8mm in the northwest, 11mm in Belmullet

Temperature: max. 15°C to 21°C, min. 10°C to 14°C

Sunshine: 1 to 3 hours generally, 4 to 7 hours in the southeast.

Wednesday 14th: Moderate westerly winds gave a day of bright spells and well-scattered showers. Temperatures below or about normal.

Rainfall: nil to 1mm

Temperature: max. 15°C to 20°C, min. 9°C to 13°C

Sunshine: 3 to 8 hours

Thursday 15th: Bright spells and scattered but locally heavy showers at first. Close conditions with a little light rain spread eastwards during the evening. Moderate occasionally fresh and blustery southwesterly or westerly winds. Normal temperatures.

Rainfall: nil to 3mm generally, 5mm at Dublin Airport

Temperature: max. 16°C to 20°C, min. 10°C to 13°C

Sunshine: trace to 3 hours generally, 5 to 8 hours in the east and southwest

Friday 16th: Some spots of rain in the early hours but mostly a dry day. Rain on parts of the west and northwest coast, towards midnight. Moderate southwesterly winds. Normal temperatures but a bit above in the sunnier areas of the south and east.

Rainfall: nil to 1mm generally, 3mm to 6mm in the northwest

Temperature: max. 17°C to 22°C, min. 12°C to 14°C

Sunshine: 1 to 3 hours generally, 4 to 8 hours in the east and southeast, 11 hours in Rosslare

Saturday 17th: Early rain in Ulster and Connaught cleared and bright spells developed. Munster and Leinster had a dull day with rain at times. Fresh southwesterly winds decreased light to moderate. Normal temperatures.

Rainfall: nil to 4mm generally, 6mm to 10mm in the northwest, 14mm in Valentia

Temperature: max. 16°C to 22°C, min. 11°C to 15°C

Sunshine: nil to 5 hours

Sunday 18th: Winds turning southerly today gave close conditions with spells of rain, heavy in places. Normal temperatures.

Rainfall: nil in Malin Head, 1mm in Rosslare, 7mm to 16mm generally, 26mm in Valentia

Temperature: max. 16°C to 20°C, min. 11°C to 15°C

Sunshine: nil or trace

Monday 19th: Cloudy, close conditions with spells of rain, a few of which were heavy or thundery this evening in parts of Munster. Light or moderate southerly winds. Temperatures a little below normal.

Rainfall: 4mm to 7mm in the south and east, 9mm to 14mm elsewhere

Temperature: max. 15°C to 18°C, min. 12°C to 15°C

Sunshine: nil to 1 hour

Tuesday 20th: Close with occasional light rain overnight. Mostly cloudy today except near the southeast and south coasts. There were scattered showers but in many areas amounts were small. Moderate to fresh and blustery westerly winds. Cool except in the sunnier areas of the southeast.

Rainfall: nil to 2mm generally, 4mm in Clones, 9mm in Malin Head

Temperature: max. 15°C to 20°C, min. 10°C to 13°C

Sunshine: nil to 3 hours generally, 4 to 7 hours in the southeast

Wednesday 21st: Moderate to fresh and blustery westerly to northwesterly winds gave a cool day with sunny spells and scattered showers.

Rainfall: nil to 4mm

Temperature: max. 14°C to 20°C, min. 9°C to 12°C

Sunshine: 1 hour in Malin Head, 3 to 7 hours generally

Thursday 22nd: A few light showers but mostly dry with sunny spells. Light to moderate northwesterly winds backing southwesterly during the evening when there were spots of rain on the west coast. Normal temperatures.

Rainfall: nil to 1mm

Temperature: max. 15°C to 19°C, min. 9°C to 13°C

Sunshine: 5 to 8 hours in the southeast, 9 to 14 hours elsewhere

Friday 23rd: Early mist cleared to give a mostly dry and fairly warm day with sunny spells in most areas. A little rain at times this evening near northern and northwestern coasts where southwesterly winds became fresh at times; elsewhere winds were light or moderate.

Rainfall: nil or trace

Temperature: max. 18°C to 23°C, min. 9°C to 14°C

Sunshine: trace to 5 hours generally, 6 to 10 hours in the northwest

Saturday 24th: Some light rain at times today as a weak front moved slowly southwards to affect eastern areas this evening. All areas also had good dry spells with the south and east having the best of the sunshine. Light or moderate southwesterly winds becoming northwesterly or variable. Cool near the north coast but warm in the sunnier inland areas.

Rainfall: nil to 1mm generally, 2mm to 4mm in the northwest

Temperature: max. 15°C to 25°C, min. 10°C to 14°C

Sunshine: 1 to 5 hours in the west and northwest, 6 to 13 hours elsewhere

Sunday 25th: With the cold front moving slowly southwards there was a little light rain in places early. It then turned out a dry day with variable amounts of sunshine as winds became moderate northeasterly. Normal temperatures inland.

Rainfall: nil or trace

Temperature: max. 15°C to 19°C, min. 9°C to 12°C inland, up to 14°C coastal

Sunshine: trace to 3 hours generally, 7 hours in the southeast, 8 hours in Malin Head and 12 hours in Valentia

Monday 26th: Dry day with sunny spells. Moderate northeasterly winds. Temperatures normal or a little above.

Rainfall: nil

Temperature: max. 16°C to 21°C, min. 7°C to 10°C inland; up to 14°C coastal

Sunshine: 4 to 8 hours in the extreme south, 9 to 15 hours generally

Tuesday 27th: Dry again today with good sunny periods in most areas. Moderate easterly winds. After a cool night temperatures this afternoon were above normal except near coasts with onshore winds.

Rainfall: nil

Temperature: max. 16°C to 23°C, min. 6°C to 14°C

Sunshine: 12 to 15 hours

Wednesday 28th: Dry and sunny with light or moderate easterly or southeasterly winds. Warm except in some coastal districts this afternoon.

Rainfall: nil

Temperature: max. 17°C to 24°C, min. 8°C to 14°C

Sunshine: 10 to 15 hours

Thursday 29th: Fog in a few places cleared early and most areas had a dry warm day with good sunny spells. However, parts of west Munster were cloudy. Light winds mostly from the southeast or east.

Rainfall: nil or trace

Temperature: max. 19°C to 25°C, min. 7°C to 12°C inland; up to 15°C coastal

Sunshine: 1 hour in Valentia, 9 to 13 hours generally

Friday 30th: Most areas had a dry, warm day with good sunny spells but near southwestern and western coasts it was cloudy with occasional showers. Light variable winds. Hazy in some areas early and late.

Rainfall: nil to 1mm

Temperature: max. 19°C to 25°C, min. 10°C to 15°C

Sunshine: trace to 1 hour in Valentia and Malin Head, 5 to 12 hours elsewhere

Saturday 31st: Fog in places cleared during the morning and most areas had a dry day with sunny spells. A few places had isolated showers. Light variable winds. Warm except in some coastal districts.

Rainfall: nil or trace

Temperature: max. 18°C to 27°C, min. 10°C to 15°C

Sunshine: 4 hours in Belmullet, 8 to 11 hours generally

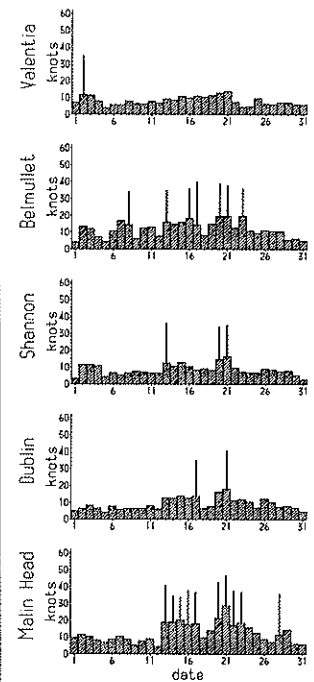
TEMPERATURE (°C)

| County / Station | TEMPERATURE (°C) | | | | | | |
|--------------------------------|------------------|-----------|------------------------------|-------------------|------------------|------------------------|--|
| | Mean max. | Mean min. | Mean/ deviation from average | Highest max./date | Lowest min./date | Lowest grass min./date | |
| CO. CLARE | | | | | | | |
| SHANNON AIRPORT | 21.1 | 13.7 | 17.4 1.9 | 26.0 9 | 10.2 26 | 3.4 28 | |
| CARRON | 19.3 | 11.9 | 15.6 | 25.0 8 | 8.2 26 | 6.5 29 | |
| CO. CORK | | | | | | | |
| FERMOY (MOORE PARK) | 20.9 | 12.1 | 16.5 1.4 | 26.2 24 | 6.0 28 | 2.0 28 | |
| CORK AIRPORT | 19.6 | 12.6 | 16.1 1.3 | 24.7 10 | 9.8 26 | 6.1 15 26 | |
| SHERKIN ISLAND | 18.5 | 13.3 | 15.9 1.2 | 24.8 10 | 8.2 26 | 5.5 26 | |
| BALLINCURRIG (PEAFIELD) | 20.0 | 12.0 | 16.0 | 25.9 24 | 7.3 26 | 5.0 26 | |
| CO. DONEGAL | | | | | | | |
| MALIN HEAD | 17.5 | 12.6 | 15.1 1.3 | 22.7 8 | 9.0 27 | 7.0 27 | |
| BALLYSHANNON (CATHLEEN'S FALL) | 19.6 | 12.7 | 16.2 1.7 | 26.7 8 | 6.8 26 | | |
| LETTERKENNY (MAGHERENAN) | 19.8 | 12.2 | 16.0 | 26.4 9 | 5.4 27 | | |
| CO. DUBLIN | | | | | | | |
| DUBLIN (PHOENIX PARK) | 21.4 | 12.0 | 16.7 1.6 | 26.3 9 | 8.9 26 | 2.2 27 | |
| DUBLIN AIRPORT | 20.3 | 12.1 | 16.2 | 25.6 9 | 8.3 29 | 6.6 29 | |
| CASEMENT AERODROME | 20.7 | 12.1 | 16.4 1.5 | 26.7 9 | 7.1 26 27 | 2.8 27 | |
| DUBLIN (MERRION SQUARE) | 20.8 | 14.4 | 17.6 1.4 | 25.4 9 | 11.9 26 | | |
| CO. GALWAY | | | | | | | |
| GALWAY (UNIV. COLL.) | 20.4 | 13.0 | 16.7 1.7 | 27.0 8 | 7.2 27 | 1.0 26 | |
| MAAM VALLEY | 19.6 | 12.9 | 16.3 | 26.3 8 | 10.3 28 | 7.7 28 | |
| CONNEMARA NATIONAL PARK | 19.2 | 12.6 | 15.9 | 24.4 8 | 8.4 26 | | |
| BALLYGAR | 20.2 | 11.0 | 15.6 | 25.2 31 | 6.0 14 | 2.7 14 | |
| CO. KERRY | | | | | | | |
| VALENTIA OBSERVATORY | 18.7 | 13.2 | 16.0 1.2 | 23.6 9 | 10.2 5 | 5.9 26 | |
| ARDFERT (LISCAHANE) | 20.3 | 12.9 | 16.6 | 27.1 9 | 9.1 28 | 6.5 28 | |
| CO. KILKENNY | | | | | | | |
| KILKENNY | 21.7 | 11.6 | 16.7 1.5 | 27.4 31 | 5.7 27 | 1.0 27 | |
| CO. LEITRIM | | | | | | | |
| BALLINAMORE | 20.3 | 11.5 | 15.9 1.6 | 26.9 8 | 7.4 26 27 | 2.6 27 | |
| CO. LIMERICK | | | | | | | |
| MOUNT RUSSELL | 19.7 | 12.0 | 15.9 | 24.7 9 | 7.8 26 | 4.5 28 | |
| CO. LOUTH | | | | | | | |
| ARDEE (BOHARNAMOE) | 21.2 | 11.2 | 16.2 | 27.9 8 | 4.1 27 | -1.2 27 | |
| CO. MAYO | | | | | | | |
| BELMULLET | 18.8 | 12.8 | 15.8 1.7 | 24.4 28 | 8.5 26 | 5.5 26 | |
| STRAIDE | 20.1 | 12.1 | 16.1 | 26.5 8 | 4.0 26 | 0.0 26 | |
| CONNAUGHT AIRPORT | 18.4 | 11.3 | 14.9 | 25.3 8 | 7.6 26 | 6.1 26 | |
| CO. MEATH | | | | | | | |
| WARRENTOWN | 20.8 | 12.5 | 16.7 2.0 | 28.0 9 | 8.9 28 | 2.4 28 | |
| CO. MONAGHAN | | | | | | | |
| CLONES | 20.6 | 11.9 | 16.3 1.9 | 27.0 8 | 7.0 26 | 0.8 26 | |
| CO. OFFALY | | | | | | | |
| BIRR | 20.7 | 12.1 | 16.4 1.6 | 26.7 8 | 7.6 26 | 3.4 28 | |
| DERRYGREENAGH | 20.9 | 11.4 | 16.2 1.8 | 27.3 8 | 6.9 27 | -0.9 28 | |
| CO. SLIGO | | | | | | | |
| ARDTARMON | 20.2 | 12.5 | 16.4 | 27.2 8 | 7.8 26 | 2.5 26 | |
| CO. TIPPERARY | | | | | | | |
| FETHARD (PARSONSHILL) | 20.9 | 11.7 | 16.3 | 26.2 9 | 8.8 26 | 5.8 26 27 | |
| CO. WATERFORD | | | | | | | |
| WATERFORD (TYCOR) | 21.6 | 12.8 | 17.2 1.6 | 26.8 10 | 8.9 26 | | |
| DUNGARVAN (CARRIGLEA) | 21.3 | 12.9 | 17.1 | 25.9 10 | 9.5 23 | 7.9 23 | |
| CO. WESTMEATH | | | | | | | |
| MULLINGAR II | 20.4 | 11.9 | 16.2 1.8 | 26.9 8 | 7.6 26 | 2.0 26 | |
| CO. WEXFORD | | | | | | | |
| JOHNSTOWN CASTLE | 19.8 | 12.6 | 16.2 1.4 | 24.3 9 | 10.1 21 26 | 2.6 23 | |
| ROSSLARE | 19.1 | 13.6 | 16.4 1.3 | 22.2 9 | 10.4 15 | 8.9 15 | |
| CLONROCHE | 20.5 | 12.1 | 16.3 1.6 | 26.0 9 | 8.9 27 | 1.1 27 | |
| JOHN F. KENNEDY PARK | 20.3 | 12.4 | 16.4 1.4 | 25.0 10 | 10.0 23 31 | 2.9 30 | |

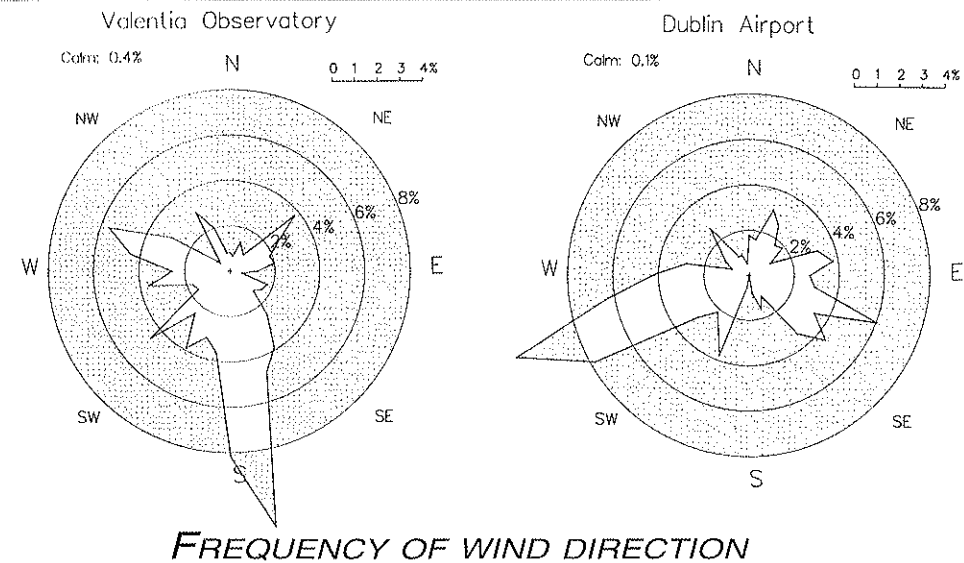
| County / Station | RAINFALL (MM) | | | SUNSHINE (HOURS) | | | |
|--------------------------------|---------------|--------------|--------------------|-----------------------|--------------|---------------|--------------------|
| | Total amount | % of average | Most in a day/date | Daily mean (hrs./day) | % of average | % of possible | Most in a day/date |
| CO. CLARE | | | | | | | |
| SHANNON AIRPORT | 49.7 | 75 | 15.9 17 | 4.87 | 105 | 30 | 14.4 27 28 |
| CARRON | 102.8 | 96 | 27.2 17 | | | | |
| CO. CORK | | | | | | | |
| FERMOY (MOORE PARK) | 14.3 | 24 | 4.2 18 | | | | |
| CORK AIRPORT | 21.1 | 29 | 7.3 18 | 5.69 | 105 | 35 | 14.6 27 |
| SHERKIN ISLAND | 37.1 | 56 | 14.0 18 | 5.44 | 98 | 34 | 13.9 12 |
| BALLINCURRIG (PEAFIELD) | 27.5 | | 11.5 18 | 6.04 | | 31 | 14.6 27 |
| CO. DONEGAL | | | | | | | |
| MALIN HEAD | 74.6 | 93 | 11.0 19 | 5.71 | 130 | 34 | 15.3 26 |
| BALLYSHANNON (CATHLEEN'S FALL) | 71.5 | 79 | 9.6 4 | 5.37 | 133 | 32 | 15.1 26 |
| LETTERKENNY (MAGHERENAN) | 73.0 | | 15.5 5 | | | | |
| CO. DUBLIN | | | | | | | |
| DUBLIN (PHOENIX PARK) | 24.1 | 42 | 10.9 17 | 5.77 | 124 | 35 | 12.9 12 |
| DUBLIN AIRPORT | 35.2 | | 9.6 17 | 6.10 | 116 | 37 | 14.3 12 |
| CASEMENT AERODROME | 24.4 | 45 | 12.8 17 | 6.15 | 125 | 38 | 13.8 26 |
| DUBLIN (MERRION SQUARE) | 19.3 | 37 | 9.8 17 | | | | |
| CO. GALWAY | | | | | | | |
| GALWAY (UNIV. COLL.) | 75.6 | 96 | 15.8 18 | 5.72 | 125 | 35 | 14.6 28 |
| MAAM VALLEY | 147.0 | | 53.1 16 | | | | |
| CONNEMARA NATIONAL PARK | 89.7 | | 21.5 16 | | | | |
| BALLYGAR | 33.3 | 47 | 10.2 19 | | | | |
| CO. KERRY | | | | | | | |
| VALENTIA OBSERVATORY | 84.1 | 98 | 29.7 17 | 5.10 | 110 | 32 | 13.9 27 |
| ARDFERT (LISCAHANE) | 57.3 | | 22.6 17 | 4.94 | | 29 | 14.0 27 |
| CO. KILKENNY | | | | | | | |
| KILKENNY | 24.2 | 41 | 6.4 19 | 6.73 | 143 | 41 | 14.9 27 |
| CO. LEITRIM | | | | | | | |
| BALLINAMORE | 51.2 | 62 | 13.9 19 | 5.40 | 136 | 33 | 14.5 26 |
| CO. LIMERICK | | | | | | | |
| MOUNT RUSSELL | 43.5 | | 7.9 5 | | | | |
| CO. LOUTH | | | | | | | |
| ARDEE (BOHARNAMOE) | 33.9 | 51 | 7.2 19 | | | | |
| CO. MAYO | | | | | | | |
| BELMULLET | 62.1 | 86 | 10.5 12 | 4.81 | 107 | 29 | 14.8 26 |
| STRAIDE | 67.8 | | 12.4 16 | 5.53 | | | 14.9 26 |
| CONNAUGHT AIRPORT | 96.8 | | 16.8 3 | 5.14 | | 31 | 14.8 26 |
| CO. MEATH | | | | | | | |
| WARRENTOWN | 30.6 | 44 | 10.8 19 | | | | |
| CO. MONAGHAN | | | | | | | |
| CLONES | 52.9 | 73 | 14.1 19 | 5.88 | 146 | 35 | 14.7 26 |
| CO. OFFALY | | | | | | | |
| BIRR | 38.2 | 56 | 13.3 17 | 5.25 | 121 | 32 | 14.4 28 |
| DERRYGREENAGH | 30.1 | 45 | 6.7 19 | | | | |
| CO. SLIGO | | | | | | | |
| ARDTARMON | 69.6 | | 14.1 19 | | | | |
| CO. TIPPERARY | | | | | | | |
| FETHARD (PARSONSHILL) | 24.2 | | 10.1 19 | | | | |
| CO. WATERFORD | | | | | | | |
| WATERFORD (TYCOR) | 17.5 | 28 | 5.8 18 | | | | |
| DUNGARVAN (CARRIGLEA) | 22.0 | | 10.2 18 | 6.19 | | 29 | 12.7 27 |
| CO. WESTMEATH | | | | | | | |
| MULLINGAR II | 43.4 | 60 | 9.8 19 | 6.29 | 141 | 38 | 14.7 28 |
| CO. WEXFORD | | | | | | | |
| JOHNSTOWN CASTLE | 12.9 | 18 | 5.7 19 | 6.50 | 113 | 40 | 13.8 12 |
| ROSSLARE | 10.7 | 18 | 4.9 19 | 7.45 | 119 | 46 | 13.7 12 28 |
| CLONROCHE | 39.2 | 51 | 16.9 10 | 6.22 | 121 | 38 | 13.3 9 12 |
| JOHN F. KENNEDY PARK | 13.4 | 20 | 5.0 18 | 6.28 | 127 | 39 | 12.8 28 |

| County / Station | WEATHER — NO. OF DAYS WITH | | | | | | | | | | MEAN 0900 SOIL TEMPERATURES (°C) | | |
|--------------------------------|----------------------------|----------|-----------|--------------|------|------------|------|---------|-----|------|----------------------------------|------|------|
| | Rain days | Wet days | Air frost | Ground frost | Snow | Snow lying | Hail | Thunder | Fog | | 10cm | 20cm | 30cm |
| CO. CLARE | | | | | | | | | | | | | |
| SHANNON AIRPORT | 14 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 17.3 | 17.3 | 17.8 | |
| CARRON | 16 | 14 | 0 | 0 | | | | | | 16.3 | | 16.4 | |
| CO. CORK | | | | | | | | | | | | | |
| FERMOY (MOORE PARK) | 10 | 6 | 0 | 0 | | | | | | 17.1 | 16.6 | 16.7 | |
| CORK AIRPORT | 10 | 6 | 0 | 0 | 0 | 0 | 0 | 12 | | 16.3 | 16.5 | 17.3 | |
| SHERKIN ISLAND | 11 | 7 | 0 | 0 | | | | | | 16.8 | | 17.4 | |
| BALLINCURRIG (PEAFIELD) | 8 | 6 | 0 | 0 | | | | | | 16.1 | 16.0 | 16.2 | |
| CO. DONEGAL | | | | | | | | | | | | | |
| MALIN HEAD | 20 | 16 | 0 | 0 | 0 | 0 | 0 | 2 | | 15.5 | 15.4 | 15.7 | |
| BALLYSHANNON (CATHLEEN'S FALL) | 20 | 14 | 0 | | | | | | | | | | |
| LETTERKENNY (MAGHERENAN) | 22 | 18 | 0 | | | | | | | | | | |
| CO. DUBLIN | | | | | | | | | | | | | |
| DUBLIN (PHOENIX PARK) | 10 | 7 | 0 | 0 | | | | | | | | | |
| DUBLIN AIRPORT | 11 | 8 | 0 | 0 | 0 | 0 | 0 | 5 | | 17.1 | 17.3 | 17.0 | |
| CASEMENT AERODROME | 10 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | | 16.9 | 17.1 | 16.9 | |
| DUBLIN (MERRION SQUARE) | 11 | 5 | 0 | | | | | | | | | | |
| CO. GALWAY | | | | | | | | | | | | | |
| GALWAY (UNIV. COLL.) | 15 | 11 | 0 | 0 | | | | | | | | | |
| MAAM VALLEY | 18 | 13 | 0 | 0 | | | | | | | | | |
| CONNEMARA NATIONAL PARK | 19 | 12 | 0 | | | | | | | | | | |
| BALLYGAR | 8 | 5 | 0 | 0 | | | | | | | | | |
| CO. KERRY | | | | | | | | | | | | | |
| VALENTIA OBSERVATORY | 15 | 9 | 0 | 0 | 0 | 0 | 0 | 2 | | 17.0 | 17.2 | 17.1 | |
| ARDFERT (LISCAHANE) | 13 | 7 | 0 | 0 | | | | | | | | | |
| CO. KILKENNY | | | | | | | | | | | | | |
| KILKENNY | 12 | 7 | 0 | 0 | 0 | | | | | 17.6 | 17.7 | 17.5 | |
| CO. LEITRIM | | | | | | | | | | | | | |
| BALLINAMORE | 19 | 9 | 0 | 0 | | | | | | 16.1 | 15.9 | 16.1 | |
| CO. LIMERICK | | | | | | | | | | | | | |
| MOUNT RUSSELL | 18 | 13 | 0 | 0 | | | | | | 15.3 | 16.0 | | |
| CO. LOUTH | | | | | | | | | | | | | |
| ARDEE (BOHARNAMOE) | 14 | 7 | 0 | 2 | | | | | | 17.1 | 17.4 | 17.4 | |
| CO. MAYO | | | | | | | | | | | | | |
| BELMULLET | 16 | 11 | 0 | 0 | 0 | 0 | 0 | 1 | | 17.0 | 17.5 | 18.3 | |
| STRAIDE | 17 | 13 | 0 | 0 | | | | | | 16.9 | | | |
| CONNAUGHT AIRPORT | 18 | 14 | 0 | 0 | 0 | 0 | 0 | 16 | | 14.7 | 15.0 | 15.3 | |
| CO. MEATH | | | | | | | | | | | | | |
| WARRENSTOWN | 11 | 7 | 0 | 0 | | | | | | 16.6 | 16.8 | 18.3 | |
| CO. MONAGHAN | | | | | | | | | | | | | |
| CLONES | 18 | 10 | 0 | 0 | 0 | | | | | 16.6 | 16.6 | 16.5 | |
| CO. OFFALY | | | | | | | | | | | | | |
| BIRR | 15 | 10 | 0 | 0 | 0 | | | | | 17.2 | 17.3 | 17.3 | |
| DERRYGREENAGH | 12 | 6 | 0 | 2 | | | | | | | | | |
| CO. SLIGO | | | | | | | | | | | | | |
| ARDTARMON | 18 | 16 | 0 | 0 | | | | | | | | | |
| CO. TIPPERARY | | | | | | | | | | | | | |
| FETHARD (PARSONSHILL) | 9 | 7 | 0 | 0 | | | | | | 16.0 | 16.8 | | |
| CO. WATERFORD | | | | | | | | | | | | | |
| WATERFORD (TYCOR) | 8 | 6 | 0 | | | | | | | | | | |
| DUNGARVAN (CARRIGLEA) | 9 | 5 | 0 | 0 | | | | | | | 17.4 | 17.4 | |
| CO. WESTMEATH | | | | | | | | | | | | | |
| MULLINGAR II | 15 | 10 | 0 | 0 | 0 | | | | | 16.6 | 16.8 | 17.5 | |
| CO. WEXFORD | | | | | | | | | | | | | |
| JOHNSTOWN CASTLE | 10 | 2 | 0 | 0 | | | | | | 17.8 | 17.3 | 17.6 | |
| ROSSLARE | 10 | 2 | 0 | 0 | 0 | 0 | 0 | 8 | | 18.1 | 18.0 | 17.9 | |
| CLOMROCHE | 12 | 8 | 0 | 0 | | | | | | 16.8 | 17.3 | 17.0 | |
| JOHN F. KENNEDY PARK | 7 | 4 | 0 | 0 | | | | | | 17.7 | 17.4 | 17.1 | |

| County / Station | WIND (KNOTS) | | | | | | | | | | | | |
|----------------------|--------------|-------------------|------------|-----------|----------------|-------|-----------|-----------------|-----------------------|-----------------------|--|--|--|
| | Mean speed | Max. 10 min. dir. | mean speed | date/hour | Max. Gust dir. | speed | date/time | Days with gales | Hours with gale gusts | Hours with gale gusts | | | |
| CO. CLARE | | | | | | | | | | | | | |
| SHANNON AIRPORT | 8.3 | 280° | 24 | 21/14 | 290° | 36 | 13/1254 | 0 | 3 | 6 | | | |
| CO. CORK | | | | | | | | | | | | | |
| CORK AIRPORT | 9.6 | 290° | 23 | 21/13 | 320° | 34 | 22/0912 | 0 | 1 | 1 | | | |
| CO. DONEGAL | | | | | | | | | | | | | |
| MALIN HEAD | 12.4 | 270° | 35 | 21/12 | 270° | 47 | 21/0850 | 1 | 10 | 65 | | | |
| CO. DUBLIN | | | | | | | | | | | | | |
| CASEMENT AERODROME | 8.7 | 270° | 27 | 21/13 | 280° | 42 | 21/1354 | 0 | 2 | 9 | | | |
| DUBLIN AIRPORT | 9.0 | 260° | 29 | 21/14 | 276° | 41 | 21/1403 | 6 | 2 | 10 | | | |
| CO. KERRY | | | | | | | | | | | | | |
| VALENTIA OBSERVATORY | 8.0 | 150° | 20 | 2/17 | 140° | 35 | 2/1524 | 0 | 1 | 1 | | | |
| | | 280° | 20 | 21/07 | | | | | | | | | |
| CO. KILKENNY | | | | | | | | | | | | | |
| KILKENNY | 6.7 | 260° | 20 | 20/15 | 270° | 32 | 21/1407 | 0 | 0 | 0 | | | |
| | | 280° | 20 | 23/13 | | | | | | | | | |
| CO. MAYO | | | | | | | | | | | | | |
| BELMULLET | 11.7 | 120° | 27 | 17/06 | 120° | 40 | 17/ 459 | 0 | 7 | 40 | | | |
| CONNAUGHT AIRPORT | 8.9 | 280° | 25 | 21/15 | 280° | 37 | 21/1202 | 0 | 2 | 3 | | | |
| CO. MONAGHAN | | | | | | | | | | | | | |
| CLONES | 7.1 | 290° | 24 | 21/14 | 280° | 38 | 21/1128 | 0 | 1 | 4 | | | |
| CO. OFFALY | | | | | | | | | | | | | |
| BIRR | 6.6 | 270° | 18 | 20/13 | 300° | 32 | 21/1247 | 0 | 6 | 0 | | | |
| CO. WESTMEATH | | | | | | | | | | | | | |
| MULLINGAR II | 6.3 | 280° | 17 | 20/18 | 280° | 31 | 21/1009 | 0 | 0 | 0 | | | |
| | | 280° | 17 | 21/11 | | | | | | | | | |
| CO. WEXFORD | | | | | | | | | | | | | |
| ROSSLARE | 8.9 | 030° | 25 | 25/24 | 220° | 34 | 16/1339 | 0 | 1 | 1 | | | |
| | | 040° | 25 | 26/01 | | | | | | | | | |

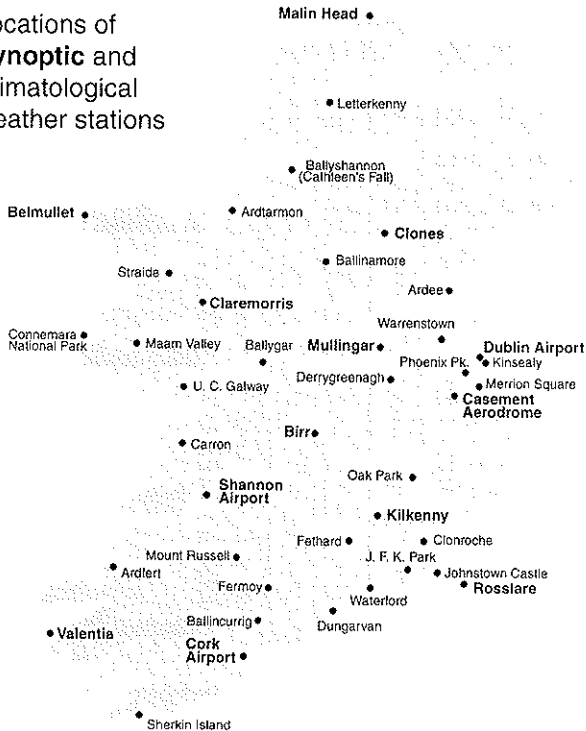


Daily mean wind speeds and maximum significant gusts (34 knots or more)



FREQUENCY OF WIND DIRECTION

Locations of Synoptic and Climatological weather stations



NOTES ON THE TABLES

A. General

1. Rainfall amounts are given in millimetres, temperature in degrees Celsius, sunshine duration in hours and wind speed in knots. (1 knot=1.15 m.p.h.)
2. At all stations daily rainfall totals refer to the 24-hour period ending at 0900UTC the following day. The term rainfall includes all forms of precipitation, such as snow and hail, and deposition from dew or frost, measured as equivalent rain.
3. 'Raindays' and 'wetdays' are days during which the total rainfall is not less than 0.2mm and 1.0mm respectively.
4. A 'day' for the purposes of this publication refers to the period from 0900UTC on a particular day to 0900UTC on the following day. (This is because climatological stations make their daily observations at 0900UTC.)
5. The mean daily air temperature over a period is taken as the mean of the daily maxima and daily minima (averaged separately over the period).
6. Days with air frost are those during which the minimum air temperature was below 0°C. Similarly days with ground frost indicate days when the grass minimum temperature was below 0°C. (Grass minimum temperatures are measured by a thermometer placed horizontally on pegs just above the tips of short grass.)
7. Mean soil and earth temperatures are based on readings taken at 0900UTC.
8. A gale is a mean wind over a 10 minute period of 34 knots or more. A gale gust is a gust of 34 knots or more. All wind speeds refer to the wind at an effective height of 10 metres above the ground.
9. 'e' denotes that the value is calculated using one or more estimated readings.
10. Data from Northern Ireland is kindly provided by the Belfast Weather Centre.

B. Agmet

11. Calculated Potential Evapotranspiration (P.E.) values are based on values of temperature, sunshine, wind speed and vapour pressure using the Penman formula. Because of formula limitations, negative values can occur in winter; these are replaced in the table by zero. Measured P.E. values are those measured by means of soil-filled tanks sunk into the ground with their upper grass-covered ends at surface level.
12. Soil moisture deficits and surpluses are computed from the differences between rainfall and actual evapotranspiration (A.E.). Estimates of A.E. are derived from measured values of P.E. (See Agmet Memo No. 1, 1968). Soil moisture surpluses are assumed to be removed by drainage and surface run-off and are not therefore carried forward from one period to the next. Soil moisture deficits are regarded as being cumulative. Where heavy rain occurs near the end of the fixed period, the date of cut-off may be adjusted to avoid error due to insufficient run-off time.
13. Degree day totals are calculated using the method set out by McVicker in the Journal of the Institution of Heating and Ventilating Engineers (Vol. 14 No. 38, Nov-Dec 1946).
14. Global solar radiation values are given in MJ/sq.m. correct to two decimal places (3.6MJ=1kWh).

C. Laboratory

15. Daily samples of air and precipitation are taken at Valentia Observatory at 1000UTC each day. Monthly precipitation samples at other stations are taken at 1200UTC on the 1st of each month.
16. Air sample data are given in microgrammes per cubic metre, electrical conductivity in micro-Siemens per centimetre and pH in pH units.

The Monthly Weather Bulletin is produced by the Climatology and Observations Division of Met Éireann. The annual subscription to the bulletin costs £36. Further climatological information is available from the Climate Enquiries Office, Glasnevin Hill, Dublin 9, telephone 01-8064260, fax 01-8064216.

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