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Monthly Weather Bulletin December1994

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Monthly Weather Bulletin

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**DECEMBER
1994**

no. 104



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MILD BUT VERY WET

Very disturbed weather prevails for most of month with heavy rainfall in final week

Cover

Early morning sunshine makes its mid-winter reappearance in the chamber of the passage grave of Newgrange, Co. Meath, on the 21st. (picture Irish Times)

The track of the Atlantic depressions was mostly to the north of Ireland during December, usually closer to Iceland than to Ireland. As quite a number of these low-pressure areas were deep, it was a windy month. Ridges of high pressure were infrequent and mostly moved briskly eastwards across Ireland; indeed it was not until the early hours of the 14th that ridge conditions persisted long enough to give a widespread air frost. Lowest air temperatures of the month were recorded in anticyclonic conditions during the 21st and 22nd but the Christmas period was mild except in parts of Ulster. A series of depressions in the final week of the month brought heavy rain to western and south-western areas.



Right

Flooding became a problem in many parts of the country by the end of the month, affecting both urban and rural areas.

The month began with the Atlantic depressions moving northwards well to the west of Ireland, maintaining a very mild, dull southerly airflow over the country. The first significant rain was in the west on the 2nd when a cold front became slow-moving there; Claremorris received over 20 millimetres in two hours but other areas escaped quite lightly. A second rainbelt came in from the Atlantic late on the 2nd and cleared the east coast early on the morning of the 3rd. The strong but mild southerlies were replaced by cooler southwest to west winds and there were sunny spells and scattered showers. There followed a cool night over much of the country as a shallow depression moved eastwards near the south coast early on the 4th, giving early rain in south Munster and the southeast of Leinster. Another low pressure area moved in over Connaught during the morning of the 4th and gave showery conditions as it continued eastwards and a westerly airflow developed behind it. A major depression passed northeastwards to the west of Ireland on the 5th. A strong southerly developed ahead of the rainbelt which moved northeastwards during the morning and a cold and very strong southwest to westerly airflow with squally showers followed. Another deep depression moved northeastwards further out in the Atlantic during the 6th. A very strong southerly windflow developed ahead of a rainbelt which crossed Ireland late on the 6th; though moving very quickly it nonetheless deposited over 17mm of rain in one hour at Valentia Observatory.

We spent much of the 7th in a blustery southwesterly with squally and locally



Left - Taking advantage of some fine weather on the 15th to harvest Christmas trees at Thomastown, Co. Offaly. (picture Irish Times)

thunderly showers giving more than 15mm near western and southern coasts while parts of the east had less than 1mm. Late on the 7th a deepening depression approached the southwest and moved rapidly northeastwards, just to the south of Dublin early on the 8th. To the south of the depression centre there were very strong winds for a time and a strong westerly windflow developed behind it. With the main Atlantic lows stretching from Greenland towards Scandinavia and a new depression forming near Newfoundland, we had something of a lull on the 9th. However, an offshoot from the main depression in the far west of the Atlantic moved rapidly northeastwards and its active warm front crossed Ireland early on the 10th bringing in very mild but windy conditions which continued on the 11th and 12th. There was a trough line extending from southwest to northeast across the North Atlantic which was slowly pushing eastwards as a high

pressure area developed just behind it. As the line moved eastwards depressions formed along it and on the 13th one of these low pressure areas moved eastwards across the south of Ireland giving rain. Pressure rose rapidly during the afternoon and evening and by midnight there was an anticyclone over the west of the country.

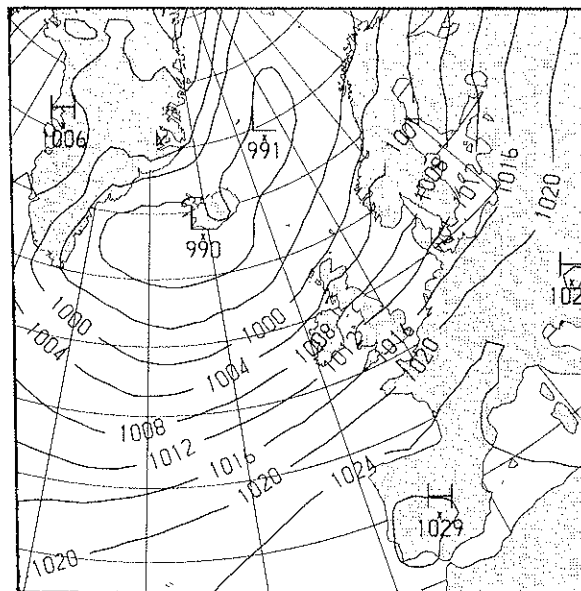
Conditions were anticyclonic on the 14th with frost and fog, especially early and late. With the anticyclone to the east on the 15th, a southerly flow developed which turned southwesterly and then westerly as weak troughs crossed the country. A ridge of high pressure crossed Ireland early on the 16th. Later a major depression developed in mid-Atlantic and moved northwards towards Iceland. A southerly airflow developed over Ireland in the afternoon and evening and there was a little rain mainly near the north and west coasts. As the cold front, associated with the depression near Iceland, approached on

the 17th the southerly flow became strong, especially in the northwest. As the rainbelt crossed the country during the afternoon winds veered southwesterly and decreased. During the 18th the Icelandic low moved eastwards and caused winds over Ireland to turn more westerly. The weather was cool with sun and squally showers and there were reports of waterspouts in Galway

Bay. It remained cool on the 19th as winds turned more to the northwest. During the 20th Atlantic rainbelts came in over southwestern and southern areas but as pressure rose to the north, the rain was pushed southwards late in the day and mist and fog became widespread. The rainbelt cleared the southwest early on the 21st and with an anticyclone moving slowly eastwards just to the north of Ireland we had widespread frost and fog on the 21st. However, with the anticyclone drifting southwards over England during the 22nd a southerly airflow developed over Ireland and, after a frosty start, temperatures rose gradually. As winds turned southwesterly on the 23rd it became milder with some light rain or drizzle. A cold front approached the northwest during the evening of the 23rd and became slow-moving over the country on the 24th.

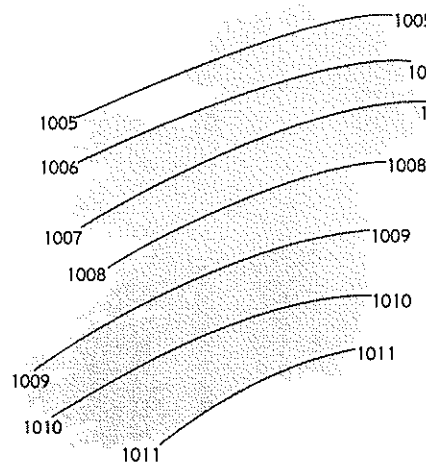
On Christmas Day we had strengthening southerly winds early in the day but after a cold front had moved eastwards during the late morning and afternoon a colder westerly airflow developed. A depression moved eastwards across the south of Ulster on the 26th, resulting in strong winds with spells of rain. An active warm front came in over the south late on the 26th but it moved only very slowly northwards during the 27th; consequently maximum temperatures ranged from 10°C at Valentia Observatory to less than 6°C at Malin Head. On the 28th the warm front cleared the northeast and we had a mild, dull southwesterly windflow at first. A trough moved eastwards during the afternoon bringing brighter, fresher weather with scattered showers. There was a lot of shower activity, some of it thundery on the 29th, and the southwesterly winds were strong and very gusty. Conditions remained showery on the 30th as winds turned more westerly. A trough swung down from the north late on the 30th and early on the 31st bringing in a cold northerly airflow and, while shower activity decreased, some of the showers were of

Below
Unseasonal weather for modelling swimwear in Dublin on the 13th.
(picture Irish Times)



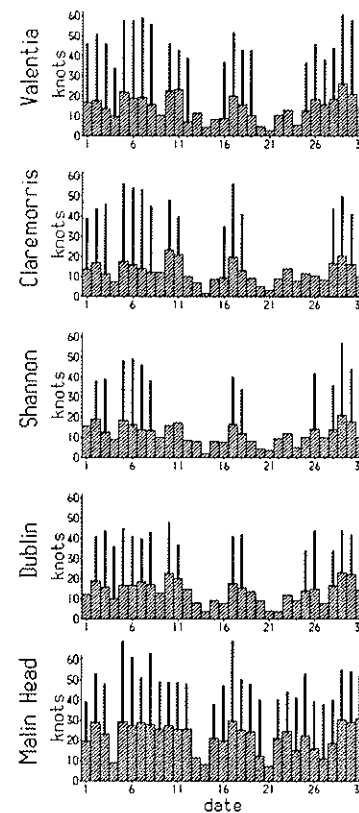
MEAN ATMOSPHERIC PRESSURE

Mean sea level pressure was below normal everywhere, by about 1hPa in the south to 4hPa below in the north. The much tighter than normal gradient over the country reflects the pattern during the month of deep depressions tracking north of the country. Pressure was below normal for the first and last weeks of the month and reached their highest values in the middle of the month. The highest air pressure, 1034.5hPa,



Mean Sea Level Pressure (hPa)

was recorded at Dublin Airport on the 14th. Many stations recorded their lowest pressure values on the 8th, when a deep depression passed over the south of the country. The lowest pressure of the month, however, was 964.2hPa recorded at Malin Head on the 29th.



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

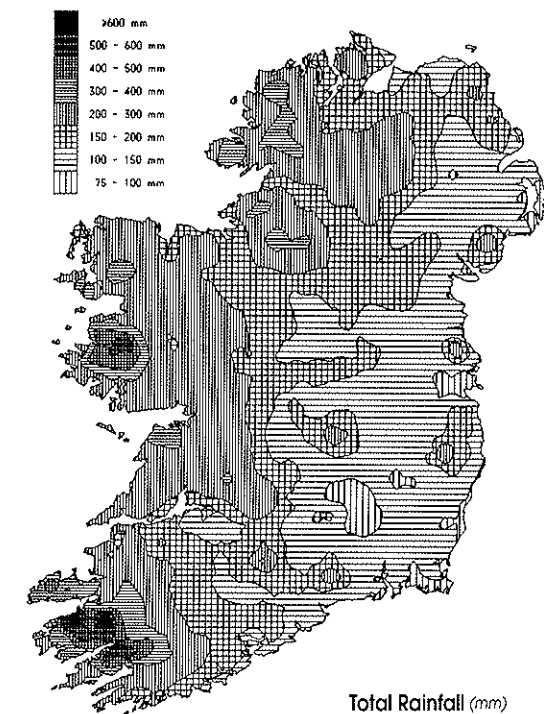
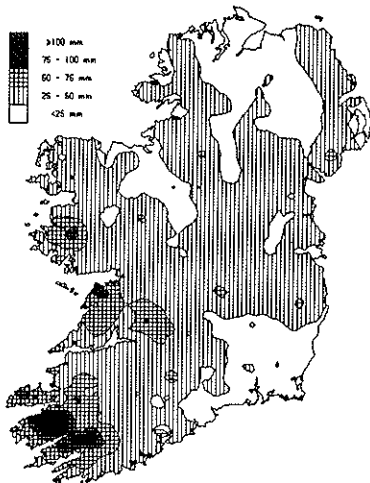
SEA TEMPERATURES

Although sea temperatures declined by a couple of degrees during the course of the month, they remained above normal throughout. They were in the range 9°C to 11°C around the north coast and 11°C to 13°C off the south coast and in the Irish Sea. The mean temperature for the month at Malin Head was 9.6°C, which is over a degree above normal.

Flooding follows heavy rain in final week

Rainfall was above normal everywhere except in a few parts of the east and southeast and was over twice the normal in parts of the mid-west. Amounts ranged from 87.7mm at Dublin (Merrion Sq.) to 478.2mm - almost 19 inches - at Maam Valley, Co. Galway. Valentia Observatory, with a total of 250.2mm, had its wettest December since 1979. Rainfall was fairly evenly distributed throughout the month and there were few dry days; Valentia Observatory recorded some rain on all but one day.

By the end of the month flooding had become a serious problem in some areas, especially in the west. The wettest periods were associated with the most disturbed weather of the

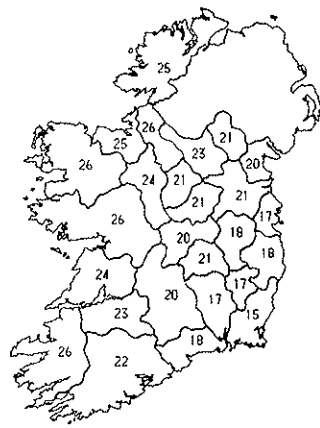


Total Rainfall (mm)

month from the 3rd to the 8th and in the days following Christmas between the 26th and the 29th; there were also locally heavy falls on the 10th, 13th and 20th. A number of daily falls in excess of 25mm were recorded, mainly in the west and south west, the highest of these being 56.4mm at Carron, Co. Clare, on the 26th. The only relatively dry days were the 14th and the period from the 21st to the 23rd.

Left - The final week of the month was particularly wet in parts of the west, with totals of over 100mm in several places for this period - this map shows the 48-hour rainfall for the 26th and 27th.

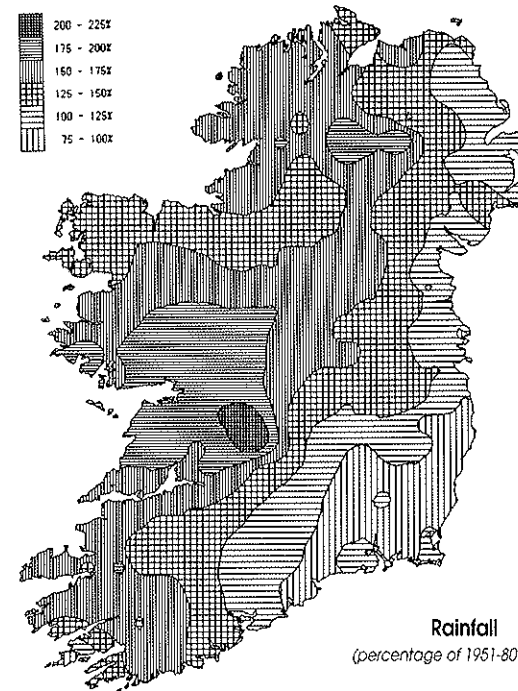
Below - The number of wetdays - days with 1mm or more of rain - in each county during December 1994



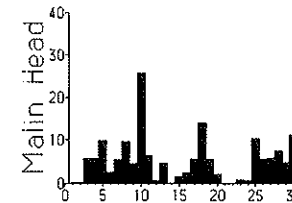
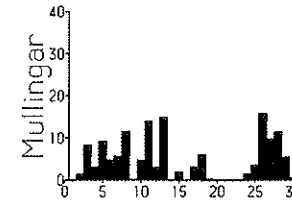
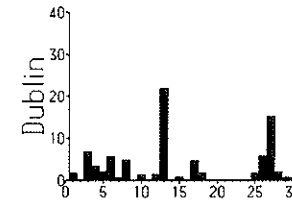
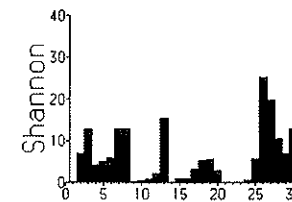
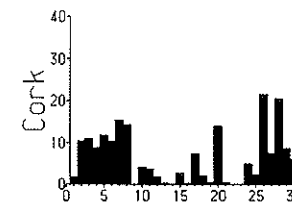
DAILY RAINFALL EXPRESSED AS % OF MONTHLY NORMAL (1951-80)

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	16	3	2	7	12	8	-	-	1	1	4	-	-	1	3	3	-	1	-	-	1	14	11	4	6	4	-	...	104			
Cavan	-	8	1	5	4	5	17	1	8	6	11	8	3	-	3	2	8	5	2	-	1	3	2	11	15	9	8	6	-	...	154		
Clare	-	11	6	4	4	8	19	2	1	4	10	6	-	2	1	4	6	3	3	-	2	9	27	15	7	13	6	-	...	176			
Cork	2	15	4	8	3	14	-	1	1	2	-	-	1	-	1	-	5	3	1	7	-	-	2	1	4	18	8	7	2	...	126		
Donegal	-	7	3	4	6	5	11	4	9	15	6	3	1	-	2	5	8	7	4	1	-	-	3	4	7	4	11	3	7	11	...	154	
Dublin	-	10	2	1	4	8	9	-	1	-	2	13	13	-	1	-	6	2	-	-	-	-	-	2	22	10	3	2	3	1	...	115	
Galway	1	8	8	4	4	8	17	2	6	6	10	17	-	-	2	3	10	5	1	-	-	-	3	6	5	20	9	12	8	3	...	180	
Kerry	3	18	4	6	4	11	11	1	3	1	2	1	-	1	3	3	6	3	3	11	-	1	3	2	7	20	10	7	7	3	...	155	
Kildare	-	15	3	-	7	9	2	-	-	3	8	12	-	-	17	2	-	1	-	-	3	-	2	28	8	6	2	4	-	...	141		
Kilkenny	1	13	2	3	6	6	8	-	-	2	2	3	-	-	3	2	-	1	-	-	1	2	2	18	3	4	7	5	-	...	94		
Laois	-	13	2	9	4	6	14	2	1	1	5	10	1	-	1	3	4	1	1	-	-	1	2	2	10	7	8	1	-	...	133		
Leitrim	-	8	2	4	6	7	10	1	14	7	9	9	1	-	2	2	5	8	4	1	-	1	3	4	9	11	8	6	2	...	159		
Limerick	2	12	3	14	5	13	7	1	-	-	2	9	4	-	-	5	5	3	3	-	-	2	3	1	29	3	5	11	2	...	138		
Longford	-	7	3	3	7	8	8	7	7	11	11	-	-	2	1	10	1	-	1	-	-	2	4	1	12	17	10	7	5	-	...	137	
Louth	-	9	2	2	5	3	13	-	7	4	7	7	5	-	1	-	4	3	-	-	-	1	2	3	13	19	5	2	4	-	...	121	
Mayo	-	14	3	4	6	7	12	3	12	7	6	8	3	-	2	2	6	4	2	1	-	-	5	3	7	10	10	6	6	3	...	158	
Meath	-	11	1	2	5	2	19	-	5	2	11	5	-	1	1	5	2	-	-	-	1	-	1	3	13	15	11	1	4	-	...	125	
Monaghan	-	9	-	1	7	6	12	-	7	2	12	5	8	-	2	1	9	5	2	1	-	-	1	1	3	10	18	7	12	-	...	148	
Offaly	-	10	2	14	5	11	1	1	1	3	7	11	9	-	1	-	4	4	-	1	-	-	1	4	23	13	6	10	4	-	...	157	
Roscommon	-	11	5	5	3	12	14	2	9	6	9	8	1	-	2	7	7	2	1	-	-	2	5	9	11	11	10	5	2	...	161		
Sligo	1	10	1	4	3	6	11	1	12	6	7	11	-	-	3	8	2	4	3	1	-	-	3	5	3	7	10	7	6	6	3	...	144
Tipperary	2	14	3	7	5	9	13	1	1	1	3	2	6	1	-	1	5	4	1	2	-	-	1	1	3	22	8	7	10	3	...	136	
Waterford	3	15	5	6	4	11	12	-	-	1	-	1	1	-	1	1	1	1	1	-	-	3	3	2	12	3	9	4	1	1	...	102	
Westmeath	-	8	3	3	7	5	18	1	4	3	14	10	7	-	2	-	9	4	-	-	-	1	2	4	19	15	11	6	2	3	...	159	
Wexford	1	13	7	2	7	9	15	-	1	-	2	-	-	-	1	3	3	-	-	-	-	1	4	1	11	2	11	4	1	-	...	97	
Wicklow	1	14	4	-	9	9	8	-	-	1	1	6	-	1	-	5	1	-	-	-	-	1	1	1	17	5	4	5	2	-	...	96	
MEAN	1	12	3	4	6	8	12	1	4	3	5	7	4	-	1	2	6	4	1	1	-	-	2	2	4	16	10	7	6	4	1	...	137

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, 1% of the average monthly rainfall in Co. Carlow fell on the 1st.



Rainfall (percentage of 1951-80 normals)



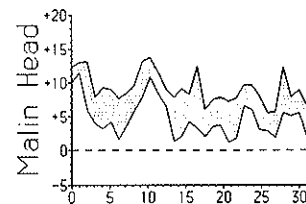
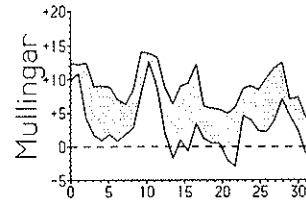
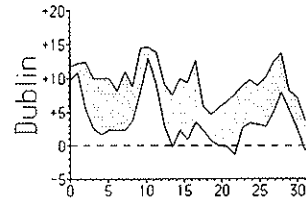
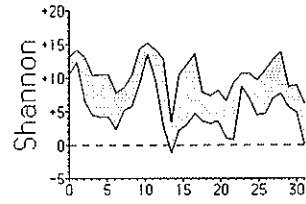
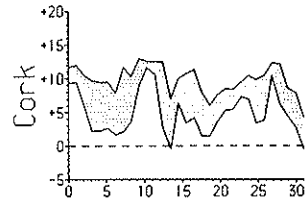
Daily rainfall amounts (millimetres)

Another mild month

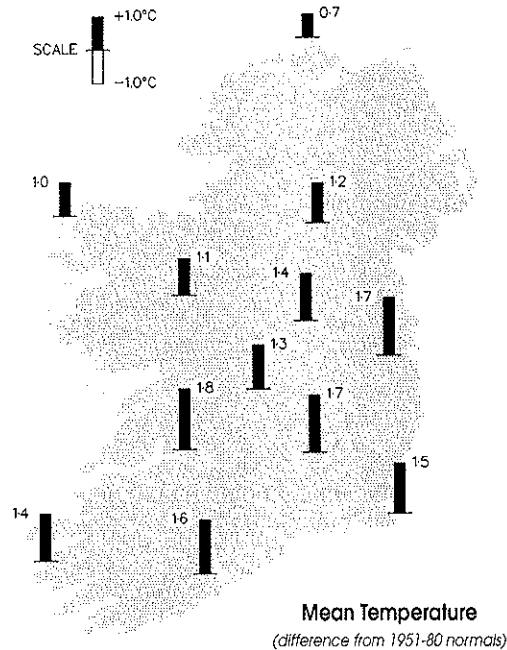
Following the record mild November, it was another very mild month, especially in the southern half of the country. Mean temperatures, ranging from 5.6°C at Ballinamore, Co. Leitrim, to 9.2°C at Sherkin Island, Co. Cork, were the highest in most places since the exceptionally mild December of 1988. They ranged from 0.7°C above normal at Malin Head to 1.8°C above at a number of southern stations. It was particularly mild in the periods 1st to 3rd and 10th to 12th, when the temperature touched 15°C at a number of stations, and on the 27th and 28th. Belmullet, with 13.6°C on the 2nd, and Kilkenny, with 15.5°C on the

10th, had their highest December temperatures since recording began in the late 1950s. Carlow (Oak Park) recorded 16.7°C on the 11th, the highest air temperature of the month.

The very cloudy and windy conditions which prevailed for much of the month ensured that there was less than half the usual number of air frosts; no air frost was observed at coastal stations. The lowest temperatures were recorded on the 14th, in the period 20th to 22nd and on the 31st. The lowest air temperature, -3.7°C, was recorded at Ardee (Bohernamoe), Co. Louth, on the 22nd; Kilkenny recorded the lowest grass minimum temperature, -8.5°C, on the same date.



Daily maximum and minimum temperatures (°C)

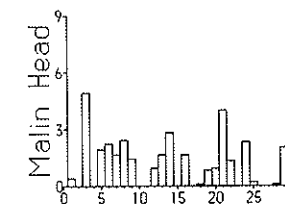
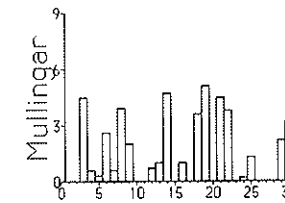
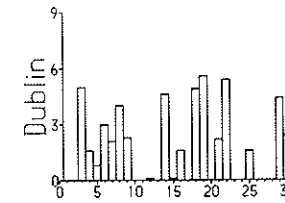
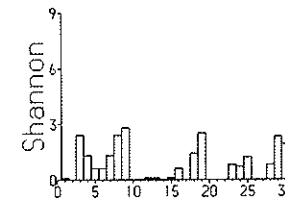
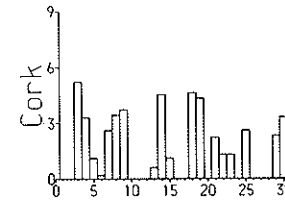


Mean Temperature
(difference from 1951-80 normals)

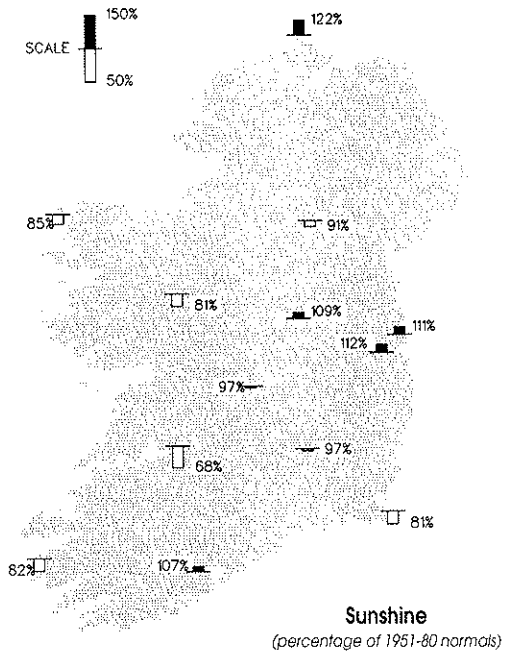
Dull in west and south

Percentage of normal sunshine ranged from 68% at Shannon Airport to 122% at Malin Head, which for the second month in a row had the most sunshine compared to normal. Despite the very low percentage values in the west, however, it was still a sunnier month than the exceptionally dull December of 1993. Mean daily sunshine of an hour or less was recorded at several stations in the western half of the country; Belmullet recorded the lowest mean daily value of just 0.9 hours.

The east and north fared better with Dublin Airport recording the highest mean daily sunshine of 1.9 hours. Even here, however, there were thirteen dull days (days with less than half an hour of sunshine); there were as many as seventeen such days at some stations. The periods 10th to 11th and 26th to 27th were days with no sunshine anywhere. The most sunshine recorded in a day was 6.4 hours at Sherkin Island, Co. Cork on the 14th and at Shannon and Dublin Airports on the 31st; other fairly sunny days were the 3rd, 19th and the 21st and 22nd in more eastern areas, ironically the shortest days of the year.



Daily sunshine amounts (hours)



Sunshine
(percentage of 1951-80 normals)

SUMMARY OF SIGNIFICANT WEATHER WORLDWIDE
DURING DECEMBER 1994

Notable rainfalls at end of month

The eastern Mediterranean and the Middle East continued where November left off with more wet and often cold weather. In Jordan temperatures plummeted to -4°C on the 5th while further east, Kuwait city had a chilly week with the maximum temperature only reaching 11°C on the 8th. Jerusalem had 89mm of rain in the 30 hours up to midday on the 10th. On the other side of the world the Texan town of Victoria received 88mm of rain in six hours, double the December average. Atrocious weather over Scotland dominated the headlines on the weekend of the 10th and 11th, when Glasgow Airport recorded 108mm of rain in 42 hours, the average fall for the whole of December being 127mm. It was little consolation that the Airport's minimum temperature on the 10th did not fall below 12°C, making it the mildest December night on record. Flooding subsequently affected several parts of southern Scotland.

In the second half of the month, the southern hemisphere summer brought temperatures of 45°C near Woomera, southeast Australia on the 22nd and at Mount Magnet near Perth on the 30th. In South Africa, Kimberley reported 39°C, equalling their highest known temperature. At the other extreme, freezing fog was a problem in southern Britain coming up to Christmas, with the temperature at Lyneham down to -10°C. One of the wettest places in the second half of the month was the Uruguayan town of Artigas where there was 114mm of rain in the 24 hours up to midday on the 24th - the December average is 104mm. In Madagascar, Mananjury had 102mm in the 24 hours up to 0600 on the 22nd while Mersa Matruh, northern Egypt, had 30 mm between the 24th and 26th. Yet more rain, with snow in the mountains, fell in Turkey, with 94mm at Adana on the 23rd. Nearby in the Lebanon, Beirut recorded 67mm of rain in just 6 hours on

Christmas Day. Just after Christmas, torrential rain fell over Wales causing serious flooding. Treherbert in the mountains measured 164mm between 0900 on the 26th and 0500 on the 28th. Axel, a late season typhoon moved west across the Philippines on the 22nd dumping over 300mm of rain on Infanta. Perhaps the most impressive rainfall event of the month was at Balgair, western Australia where 165mm of rain - an amazing eleven times the monthly average - fell in a three day period in the first part of last week. Santiago in northwest Spain had its wettest 24 hours on record when 138mm of rain fell on the 31st. Some of the months notable low temperatures occurred at Moscow, the lowest of which was -27°C on the 19th; at Oymyakon, Siberia, the temperature fell to -45°C on Christmas morning. Just a few days later though, Moscow was enjoying almost record warmth with 4°C on the 28th.

British Meteorological Office

EUROPEAN WEATHER
DURING 1994

Heatwave in Central Europe

The most notable feature of Europe's weather in 1994 was the exceptionally hot summer. Central Europe was particularly affected, with parts of Germany, Austria and the Czech Republic having mean summer temperatures an incredible 5°C or more above normal. While parts of southern Britain also came under the influence of the heatwave, Ireland was unaffected with summer temperatures near normal. Daily maximum temperatures also set new records over Continental Europe; temperatures in the high thirties were recorded on several days in July and early August, with Murcia in southern Spain reaching 46.1°C on August 4th. The hot spell was accompanied by predominantly dry weather, but there were scattered thundery showers, some of which were very heavy and caused flooding. In many places, however, dry conditions had persisted since late May, which adversely affected agriculture. The dryness, combined with the high temperatures, caused water shortages and led to fires which scorched huge land areas, especially in Spain and Poland. In an attempt to reduce smog conditions, motorists in Britain and Germany were asked to curtail driving and, in Germany, speed limits were imposed on motorways.

(WMO World Climate News, Jan. 1995)

THE WEATHER OF SEPTEMBER, OCTOBER AND NOVEMBER

Dry and Mild

Rainfall was below normal everywhere, ranging from 67% of normal at Mullingar, where it was the driest autumn since 1972, to 99% of normal at Rosslare. There were also fewer wetdays (days with 1.0mm of rain or more) than normal, the range of between 29 and 52 wetdays being generally around 90% of normal. Mean temperature values ranged from 10.2°C at Mullingar to 12.1°C at Valentia Observatory. While September was relatively cool and October's temperatures were close to normal, the exceptionally mild conditions of November led to mean temperatures for autumn being close to a degree above

normal everywhere. It was the warmest autumn since 1978 at most stations. The first day of autumn was the warmest of the season; Claremorris recorded the highest value of 21.0°C on the 1st of September. Unusually, the lowest temperature of the season was recorded in early October, Birr recording -2.0°C on the 4th of this month. Sunshine totals were close to normal for autumn, ranging from 89% of normal at Rosslare to 116% at Clones. Valentia Observatory recorded the highest daily amount of the season when it measured 11.8 hours on the 1st of September, its sunniest autumn day since 1975.

September - wet in east and midlands, cool with near normal sunshine everywhere

October - sunny and mostly dry, near normal temperatures

November - exceptionally mild, mostly dry but wet and very dull in south

Notes: (i) This summary is based on an analysis of data from the Meteorological Service's thirteen synoptic weather stations.

(ii) Whereas popular seasons are determined by reference to length of day, meteorological seasons are based on mean monthly temperatures. The difference in approach accounts for the fact that meteorological seasons start and finish a month later than their popular equivalents.

County/ Station	RAINFALL (mm)			TEMPERATURE (°C)				SUNSHINE (HOURS)			NO. OF DAYS WITH						
	Total	as % of average	most in a day amount date(s)	Mean	diff. from average	Extremes Highest	Lowest	Daily mean	% of average	most in a day amount date(s)	Rain	Snow	Air frost	Hail	Thunder	Fog	Gale gusts
CO. CLARE SHANNON AIRPORT	198.7	73	16.3 29 Oct	11.7	+0.9	20.7 1.8		2.90	103	9.4 1 Sep	56	0	0	0	0	15	10
CO. CORK CORK AIRPORT	306.0	87	28.2 13 Nov	10.8	+0.6	19.6 0.2		3.24	102	11.6 1 Sep	59	0	0	0	0	37	9
CO. DONEGAL MALIN HEAD	267.1	82	20.3 3 Sep	11.2	+0.7	20.9 3.5		2.83	111	10.8 2 Sep	61	0	0	8	3	2	50
CO. DUBLIN DUBLIN AIRPORT	190.7		13.6 8 Sep	10.5		20.2 -0.8		3.21	98	10.2 4 Oct	51	0	1	1	1	12	11
CASEMENT AERODROME	153.3	74	17.1 2 Oct	10.8	+0.8	20.6 -1.1		3.21	103	10.5 2 Sep	42	0	1	0	0	7	17
CO. KERRY VALENTIA OBSERVATORY	384.9	93	23.7 29 Oct	12.1	+0.6	20.0 1.9		2.87	107	11.8 1 Sep	67	0	0	2	0	1	24
CO. KILKENNY KILKENNY	219.4	91	24.7 18 Sep	10.7	+0.8	20.3 -1.7		2.85	98	9.5 1 Sep	55	0	4	0	1	15	7
CO. MAYO CLAREMORRIS	262.6	77	21.9 13 Nov	10.4	+0.7	21.0 -0.5		2.44	96	9.3 23 Sep	63	0	1	0	0	17	11
BELMULLET	258.6	75	17.4 30 Sep	11.5	+0.6	19.3 2.6		2.85	105	10.9 1 Sep	66	1	0	1	1	5	33
CO. MONAGHAN CLONES	204.6	78	21.9 13 Nov	10.5	+1.1	20.6 0.1		2.89	116	9.8 1 Sep	51	0	0	0	0	13	12
CO. OFFALY BIRR	198.3	84	16.2 18 Sep	10.6	+0.6	20.1 -2.0		2.71	97	9.1 9 Oct	53	0	1	1	0	8	7
CO. WESTMEREATH MULLINGAR II	182.1	67	15.3 13 Nov	10.2	+0.9	20.2 -0.2		3.02	106	11.6 1 Sep	48	0	1	0	0	21	6
CO. WEXFORD ROSSLARE	264.4	99	33.7 22 Oct	11.9	+0.7	17.7 3.9		3.24	89	10.0 4 Oct	54	0	0	1	0	11	25

THE WEATHER OF 1994

Mild, Dull and Wet

Mean air temperatures for 1994 were around half a degree above normal in most places, ranging from 9.2°C at Mullingar to 11.0°C at Valentia Observatory. The year began and ended with warmer than normal months; January and December were mild while November was the warmest on record almost everywhere. The period from April to September was cool relative to normal with the exception of July which was around normal. The highest temperature of the year, 25.1°C, was recorded at Casement Aerodrome on July 23rd, while the lowest, -6.4°C, was recorded at Birr on February 16th, the coldest night of the year in many places. Birr also recorded the lowest grass minimum temperature of -13.5°C on the same date. Rainfall was above normal everywhere and was well above in parts of the south and west. Annual

rainfall percentages of normal ranged from 110% at Mullingar to 130% at Shannon Airport. February and December were the wettest months compared to normal; there was no month with below normal rainfall everywhere. Mean daily sunshine ranged from 2.7 hours at Claremorris to 3.9 hours at Rosslare and was below normal everywhere; it was between 80% and 90% of normal in most places. Sunshine totals for the summer months were disappointing. Only October had above normal sunshine everywhere - it was the sunniest on record at a couple of stations. Rosslare recorded 15.3 hours sunshine on June 15th, the highest daily total of the year. Malin Head recorded the highest wind speeds of the year; a gust of 80 knots was recorded there on both January 27th and February 3rd.

● Mildest November on record - cool summer months

● Below normal sunshine during summer

● Very wet months begin and end the year - no month drier than normal everywhere

County/ Station	RAINFALL (mm)				TEMPERATURE (°C)				SUNSHINE (HOURS)			NO. OF DAYS WITH							
	Total	% of average	most in a day amount	date(s)	Mean	diff. from average	Extremes Highest	Lowest	daily average	% of average	most in a day amount	date(s)	Plan	Snow	Air frost	Hail	Thunder	Fog	Gale gusts
CO. CLARE SHANNON AIRPORT	1194.3	130	25.2	26 Dec	10.7	+0.5	23.0	-5.0	3.06	84	14.4	30 May	236	10	11	25	4	30	69
CO. CORK CORK AIRPORT	1450.2	118	37.4	19 Feb	9.8	+0.3	23.1	-2.7	3.39	86	15.0	15 Jun	246	9	12	12	3	123	75
CO. DONEGAL MALIN HEAD	1190.1	114	27.2	25 Feb	9.7	+0.3	22.5	-2.6	3.25	92	15.0	29 May	262	29	3	66	7	8	219
CO. DUBLIN DUBLIN AIRPORT	786.6	111	25.6	15 May	9.7	+0.3	22.1	-2.1	3.56	89	14.6	13 Jun	215	12	11	7	3	42	94
CASEMENT AERODROME	808.6	111	42.8	3 Feb	9.7	+0.3	25.1	-5.5	3.50	91	14.7	13 Jun	201	14	23	8	1	18	116
CO. KERRY VALENTIA OBSERVATORY	1806.3	129	38.0	31 Jul	11.0	+0.4	23.4	-3.0	3.13	88	14.9	12 Jun	273	2	4	24	5	2	135
CO. KILKENNY KILKENNY	1002.6	121	24.7	18 Sep	9.9	+0.5	23.3	-4.5	3.21	88	14.9	15 Jun	235	12	38	9	1	27	70
CO. MAYO CLAREMORRIS	1358.6	122	39.9	22 Aug	9.3	+0.3	21.5	-5.6	2.70	82	14.6	22 Jun	254	19	24	35	5	33	100
BELMULLET	1316.0	120	29.3	15 Aug	10.2	+0.4	22.9	-2.0	3.06	82	14.7	26 May	258	16	3	58	6	10	177
CO. MONAGHAN CLONES	1033.5	113	35.8	24 Jun	9.4	+0.6	23.2	-5.4	3.00	92	13.5	22 Jun	241	26	20	11	1	33	89
CO. OFFALY BIRR	949.5	116	18.8	19 Apr	9.7	+0.3	23.6	-6.4	2.88	81	14.3	15 Jun	220	12	29	10	2	18	78
CO. WESTMEATH MULLINGAR II	1016.7	110	22.2	24 Jun	9.2	+0.5	23.0	-6.0	3.25	90	14.6	15 Jun	224	18	34	7	3	39	86
CO. WEXFORD ROSSLARE	1039.1	117	33.7	22 Oct	10.5	+0.3	21.0	-1.3	3.93	88	15.3	15 Jun	214	7	2	10	4	35	138

Station	period	RAINFALL				TEMPERATURE										SUNSHINE		mean wind speed (m/s) (mag.) P.E. (Penman) (mm)				
		amount	% of average	rain days	wet days	mean max.	mean min.	mean daily	diff. from average	lowest min.	date	days with air frost	degree days > 4 °C	degree days > 10 °C	lowest "grass-min."	date	days with ground frost		mean 10cm at 0900h	mean 30cm at 0900h	total no. of hours	% of average
Co. Cork Fermoy	1-10	68.1	-	8	7	11.9	4.4	8.2	-	-0.5	9	1	42	7	-5.0	9	4	8.1	9.0	14.9	-	4.2
	11-20	15.9	-	10	5	10.6	3.3	7.0	-	-1.0	14	5	35	9	-5.0	16	7	8.0	8.8	7.2	-	2.3
	21-end	34.7	-	7	5	10.7	5.0	7.9	-	1.0	22	0	40	4	-2.1	22	2	7.6	7.9	14.0	-	4.0
	month	118.7	105	25	17	11.1	4.2	7.7	1.8	-1.0	14	6	116	20	-5.0	9	13	7.9	8.5	36.1	88	3.5
Co. Donegal Letterkenny	1-10	98.8	-	9	9	10.0	4.8	7.4	-	0.5	5	0	33	5	-	-	-	-	-	-	-	-
	11-20	35.2	-	7	6	9.7	3.1	6.4	-	-2.0	15	2	28	5	-	-	-	-	-	-	-	-
	21-end	67.9	-	11	9	8.2	2.3	5.2	-	-2.8	22	2	19	1	-	-	-	-	-	-	-	-
	month	201.9	-	27	24	9.3	3.3	6.3	-	-2.8	22	4	80	11	-	-	-	-	-	-	-	-
Co. Kerry Ardferret	1-10	109.4	-	10	10	11.1	5.5	8.3	-	1.9	7	0	41	7	-1.7	5	3	-	-	-	-	-
	11-20	50.2	-	9	7	10.9	4.4	7.7	-	-1.3	14	2	37	7	-5.6	14	4	-	-	-	-	-
	21-end	89.3	-	9	9	9.9	6.8	8.4	-	3.6	31	0	44	4	1.8	31	0	-	-	-	-	-
	month	248.9	-	28	26	10.6	5.6	8.1	-	-1.3	14	2	121	18	-5.6	14	7	-	-	-	-	-
Co. Leitrim Ballinamore	1-10	73.2	-	10	8	10.0	3.3	6.7	-	-0.6	5	2	30	4	-1.6	5	6	7.5	8.4	10.5	-	4.3
	11-20	42.3	-	10	7	8.7	1.8	5.3	-	-3.2	15	5	23	4	-8.3	14	6	6.2	7.4	12.9	-	2.4
	21-end	68.8	-	10	9	7.7	2.2	5.0	-	-1.1	21	3	17	1	-4.2	22	4	5.5	6.2	6.2	-	3.2
	month	184.3	145	30	24	8.8	2.4	5.6	0.8	-3.2	15	10	70	10	-8.3	14	16	6.4	7.3	29.6	82	3.3
Co. Louth Ardee	1-10	41.5	-	9	8	10.8	3.8	7.3	-	-0.1	5	1	34	5	-5.4	5	6	7.1	8.1	-	-	-
	11-20	23.2	-	8	5	9.5	2.6	6.1	-	-2.2	15	3	27	6	-7.2	15	7	6.6	7.2	-	-	-
	21-end	40.8	-	9	7	9.3	1.8	5.6	-	-3.7	22	4	25	2	-7.2	22	4	5.1	5.5	-	-	-
	month	105.5	117	26	20	9.9	2.7	6.3	-	-3.7	22	8	86	14	-7.2	15	18	6.2	6.9	-	-	-
Co. Waterford Dungarvan	1-10	83.1	-	9	6	12.1	4.5	8.3	-	-1.1	9	1	44	8	-5.6	9	5	-	9.2	17.0	-	4.7
	11-20	8.8	-	7	4	10.9	4.3	7.6	-	-0.4	16	1	38	9	-4.8	16	6	-	8.9	5.8	-	1.9
	21-end	48.4	-	8	8	10.3	5.5	7.9	-	-0.4	22	1	42	6	-4.4	22	3	-	8.1	8.5	-	3.7
	month	140.3	-	24	18	11.1	4.8	8.0	-	-1.1	9	3	124	23	-5.6	9	14	-	8.7	31.3	-	3.5
Co. Wexford Johnstown Castle	1-10	65.0	-	8	8	11.8	5.9	8.9	-	2.2	9	0	46	7	-4.8	9	5	8.3	9.3	15.5	-	-
	11-20	11.6	-	6	2	10.5	4.9	7.7	-	0.7	20	0	37	7	-4.0	20	6	8.0	8.9	11.3	-	-
	21-end	39.7	-	8	5	9.5	4.9	7.2	-	1.5	22	0	33	3	-4.6	22	5	6.6	7.5	20.9	-	-
	month	116.3	105	22	15	10.5	5.2	7.9	1.6	0.7	20	0	116	17	-4.8	9	16	7.6	8.6	47.7	92	n/a

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

County/ Station	Period	P.E. (mm)		Soil Moisture (mm)	
		Amount	Deficit	Accumulated	Surplus/Deficit
Co. Carlow Carlow (Oak Park)	1-10	3.5	-	-	26
	11-20	7.1	-	-	23
	21-end	5.0	-	-	22
	month	15.6	-	-	-
Co. Dublin Kinsealy	1-10	9.0	-	-	103
	11-20	12.7	-	-	30
	21-end	-5.5	-	-	98
	month	16.2	-	-	-
Co. Kerry Valentia Obs.	1-10	7.3	-	-	66
	11-20	1.4	-	-	41
	21-end	1.6	-	-	67
	month	10.3	-	-	-
Co. Wexford Johnstown Castle	1-10	8.8	-	-	62
	11-20	2.8	-	-	9
	21-end	0.3	-	-	39
	month	11.9	-	-	-

SEE BACK PAGE FOR NOTES ON THE DATA

County/ Station	GLOBAL SOLAR RADIATION (MJ/sq. m.)			P.E. (Penman)	
	10-day totals	total for month	total for month	total for month	total for month
Co. Donegal Malin Head	14.78	11.72	14.29	40.79	17
Co. Dublin Dublin Airport	20.77	19.43	20.74	60.94	0
Co. Kerry Valentia Obs.	18.42	17.37	18.35	54.14	8
Co. Kilkenny Kilkenny	19.95	16.03	17.97	53.95	0
Co. Mayo Belmullet	14.92	13.98	14.03	42.93	10
Co. Monaghan Clones	15.12	14.34	14.45	43.91	2
Co. Offaly Birr	20.14	16.43	19.66	56.23	0

Thursday 1st: Mild, mostly cloudy and humid with moderate to fresh southerly airstream and gale gusts along the Atlantic coast.

Rainfall: nil to 2mm

Temperature: max. 12°C to 15°C, min. 9°C to 12°C

Sunshine: nil or trace generally, up to 3 hours in Belmullet

Friday 2nd: A strengthening southerly flow covered the country as a deepening depression off the west coast tracked northeastwards bringing rainbelts in over the west and southwest during the afternoon and evening. Fresh to strong southerly winds gusted to 45 knots in many areas and over 50 knots at Atlantic coastal stations. Some locally heavy rain in the west and southwest.

Rainfall: nil to 3mm generally, 7mm to 25mm in the south and southwest

Temperature: max. 12°C to 16°C, min. 10°C to 12°C

Sunshine: nil or trace generally, 2 hours at Casement Aerodrome

Saturday 3rd: A depression to the southwest moved northeastwards. Its cold front crossed the country giving a spell of rain, heavy in places overnight. A showery southwesterly windflow then developed.

Rainfall: 6mm to 14mm

Temperature: max. 11°C to 14°C, min. 4°C to 8°C; ground frost down to -2°C in Kilkenny

Sunshine: 2 to 6 hours

Sunday 4th: A complex depression with centres to the south and west of Ireland moved eastward. An unstable westnorthwesterly airflow then became established. A front skirted along the south coast and brought some early rain. Another front moved northeastwards during the morning clearing most of the country before noon. The front brought some heavy rain and was followed by sunshine and some wintry showers.

Rainfall: 1mm to 3mm in the east, 4mm to 9mm in the southwest and west, up to 13mm in Roslare

Temperature: max. 7°C to 11°C, min. 1°C to 5°C; ground frost down to -3°C in Claramorris

Sunshine: nil to 3 hours

Monday 8th: A deepening depression moving northeastwards near Ireland brought gale to storm force winds to all areas particularly the west and northwest. Rain for a time with southerly winds was followed by a cold westerly with squally showers and bright spells.

Rainfall: 2mm to 9mm in the east and southeast, 9mm to 15mm in the southwest and west

Temperature: max. 9°C to 11°C, min. 0°C to 4°C; ground frost down to -6°C in Kilkenny

Sunshine: trace to 2 hours

Tuesday 6th: A strong and showery westerly airstream gave way to a weak ridge in the forenoon but winds backed southeasterly in the afternoon and increased strong to gale force ahead of a trough which moved eastwards quickly during the evening, giving heavy rain in places, including 16mm in one hour at Valentia Observatory.

Rainfall: 3mm to 10mm generally, up to 26mm in Valentia

Temperature: max. 9°C to 11°C, min. 2°C to 5°C; ground frost down to -3°C in Kilkenny

Sunshine: nil to 3 hours

Wednesday 7th: A strong unstable airstream gave showers of hail, sleet or snow throughout the day with scattered thunderstorms. Winds backing southerly late in the day as a depression approached the southwest.

Rainfall: 1mm to 11mm in the east and southeast, up to 18mm in the southwest and west

Temperature: max. 6°C to 10°C, min. 0°C to 4°C

Sunshine: trace to 3 hours

Thursday 8th: A depression moved rapidly northeastwards across the country and was followed by a westerly airstream. Rain in the southwest at first moved rapidly northeastwards followed by showers and sunny spells. Very strong winds early in the south and southeast but winds slackened enough to give frost in many areas as skies cleared during the evening.

Rainfall: 5mm to 8mm in the east and southeast, 10mm to 17mm in the west and southwest

Temperature: max. 6°C to 12°C, min. 2°C to 6°C; ground frost down to -4°C in Kilkenny

Sunshine: 1 to 4 hours

Friday 9th: The westerly flow continued but backed southwesterly late in the day as a warm front approached Kerry. Winds moderate to fresh westerly backed southwesterly as rain reached the southwest before midnight. Short sunny spells in all areas and some showers mostly in the north and west.

Rainfall: nil to 4mm

Temperature: max. 8°C to 11°C, min. 1°C to 7°C; ground frost down to -5°C in Kilkenny

Sunshine: 1 to 4 hours

Saturday 10th: A warm frontal rainbelt crossed eastwards during the night. A cloudy day with outbreaks of rain and drizzle followed but it was very mild. The heaviest rain was in the north and northwest. Winds southwesterly, fresh to strong and very gusty; gusts up to 51 knots recorded, highest along the north and northwest coasts and in Casement — dying down in the evening in the southern half of the country.

Rainfall: nil to 4mm generally, 12mm to 25mm in the west and northwest

Temperature: max. 13°C to 16°C, min. 8°C to 9°C inland, up to 11°C coastal

Sunshine: nil

Sunday 11th: A cloudy day with outbreaks of rain and drizzle almost everywhere. The heaviest of these were in the north and northwest: here rain was more persistent than in the south and southeast where some dry spells occurred. Wind southwesterly fresh to strong and gusty — gusting 40 to 49 knots in places. Very mild and humid.

Rainfall: nil to 4mm in the south, up to 14mm in the east and west

Temperature: max. 13°C to 15°C, min. 11°C to 14°C

Sunshine: nil

Monday 12th: With a weak front slow-moving over Ireland it remained cloudy with outbreaks of rain. Winds were light, southwesterly in the south, westnorthwesterly in the north.

Rainfall: nil to 3mm

Temperature: max. 12°C to 14°C, min. 8°C to 11°C

Sunshine: nil to 1 hour generally, 3 hours in Clones

Tuesday 13th: A wave depression off the southwest coast moved eastward across Munster during the morning bringing rain, heavy on the northern side of the depression. A clearance to colder clearer weather during the afternoon and evening brought mist and frost to many areas by midnight as a centre of high pressure came in over the west late in the day.

Rainfall: trace to 4mm in the south, 4mm to 16mm in the west, up to 24mm in the east

Temperature: max. 8°C to 14°C, min. -1°C to 3°C inland, up to 7°C coastal; ground frost down to -6°C at Birr

Sunshine: nil to 3 hours

Wednesday 14th: An anticyclone of 1034 hPa drifted eastwards over Ireland during the course of the day. Frost and fog was widespread during the early part of the day clearing most areas by noon but fog persisted in the Shannon area for most of the day. It was generally a clear bright day when the fog cleared. Frost in places in the evening.

Rainfall: nil or trace

Temperature: max. 3°C to 9°C, min. -3°C to 0°C inland, up to 6°C coastal; ground frost down to -8°C in Clones

Sunshine: nil to 6 hours

Thursday 15th: Temperatures rose gradually during the early hours as a southerly airflow developed. Winds turned southwesterly and then westerly during the day as weak troughs crossed the country giving spells of light rain.

Rainfall: trace to 3mm

Temperature: max. 9°C to 11°C, min. zero to 6°C inland, up to 8°C coastal; ground frost down to -3°C in Mullingar

Sunshine: nil to 1 hour

Friday 16th: A ridge of high pressure drifted eastwards as frontal systems approached from the Atlantic bringing strong to gale force winds late in the day. It was a mostly dry day but there was a little rain at times, mostly in the evening.

Rainfall: nil to 2mm

Temperature: max. 8°C to 13°C, min. -1°C to 4°C; ground frost down to -7°C in Kilkenny

Sunshine: nil to 2 hours

Saturday 17th: A deep depression was slow moving near Iceland for most of the day while its associated frontal systems crossed Ireland. Strong to gale force southerly winds and rain for a time before a clearance to brighter weather with showers followed from the west during the afternoon. With the clearance winds turned southwesterly and decreased.

Rainfall: 2mm to 6mm generally, up to 12mm in the west and southwest

Temperature: max. 11°C to 14°C, min. 3°C to 5°C inland, up to 7°C coastal; ground frost down to -2°C in Kilkenny

Sunshine: nil to 1 hour

Sunday 18th: A strong, cold and unstable westsouthwesterly airstream over Ireland with showery troughs moving eastwards throughout the day and waterspouts reported in Galway Bay.

Rainfall: 2mm to 6mm generally, up to 14mm in the northwest

Temperature: max. 5°C to 10°C, min. 1°C to 4°C; ground frost down to -4°C in Kilkenny

Sunshine: trace to 5 hours

Monday 19th: A cold, unstable mainly westerly airstream persisted. There were scattered showers in many areas, some wintry in the west and north.

Rainfall: nil to 6mm

Temperature: max. 4°C to 9°C, min. 1°C to 3°C inland, up to 5°C coastal; ground frost down to -3°C in Mullingar

Sunshine: 1 to 6 hours

Tuesday 20th: A few showers early near the north coast but rainbelts began to affect the southwest and west during the morning. Pressure built up steadily during the day and forced the rain southwards to clear all but southwest Munster by midnight. At this stage clear skies and calm conditions over the rest of the country allowed extensive fog and frost to form. There was considerable rain in the southwest and south but little or none in the east and north.

Rainfall: nil to 3mm generally, 14mm to 23mm in the southwest

Temperature: max. 5°C to 9°C, min. -1°C to 4°C inland, up to 7°C coastal; ground frost down to -5°C in Kilkenny

Sunshine: nil to 1 hour

Wednesday 21st: Pressure continued to rise during the day. Some rain lingered in the southwest for a few hours but otherwise it was a cold, clear day with light variable winds. Frost and fog in many places, especially the midlands, early and late.

Rainfall: nil to 2mm

Temperature: max. 3°C to 11°C, min. -3°C to 5°C inland, up to 9°C coastal; ground frost down to -8°C at Birr

Sunshine: nil to 5 hours

Thursday 22nd: High pressure over the north of England maintained a slack southeasterly airflow over Ireland. Frost and fog in some eastern areas at first. A mostly cloudy day with some scattered outbreaks of rain and drizzle in the west but some sunny spells in the south and east. Milder with winds light southeasterly increasing moderate in the northwest and north later in the day.

Rainfall: nil to 2mm

Temperature: max. 6°C to 10°C, min. -3°C to 6°C inland, up to 9°C coastal; ground frost down to -9°C in Kilkenny

Sunshine: nil to 5 hours

Friday 23rd: A dull cloudy day except in the southeast. A front gave some rain and drizzle along Atlantic coastal areas mainly during the evening. Winds were south-southwesterly, light to moderate generally, becoming moderate to fresh and gusts in the west, northwest and north of the country. 40 to 44 knots reported. Becoming milder.

Rainfall: nil to 6mm

Temperature: max. 9°C to 12°C, min. 2°C to 10°C

Sunshine: nil to 3 hours

Saturday 24th: A weak front moved southeastwards during the morning becoming slow moving over Leinster and not clearing the southeast until evening. Winds moderate to fresh south-southwesterly becoming light and variable after the passage of the front with some mist or fog patches developing.

Rainfall: nil to 3mm generally, up to 8mm in the south

Temperature: max. 9°C to 11°C, min. 3°C to 7°C inland, up to 9°C coastal

Sunshine: nil to 4 hours

Sunday 25th: A cold front crossed the country southeastwards during the morning in a strong and gusty southwesterly flow. Strongest gust 54 knots at Malin. A colder unstable west to northwesterly flow became established over the country during the late morning/early afternoon.

Rainfall: 2mm to 6mm generally, 10mm to 12mm in the west and northwest

Temperature: max. 8°C to 11°C, min. 2°C to 6°C

Sunshine: trace to 3 hours

Monday 26th: A depression of 986 hPa crossed over the northern part of the country during the day giving spells of rain. The winds were generally from a southwesterly direction, strongest off the south. Frontal troughs came in over over the extreme south bringing some heavy rain late in the day.

Rainfall: 5mm to 16mm generally, 22mm to 25mm in the southwest

Temperature: max. 6°C to 12°C, min. 2°C to 5°C inland, up to 7°C coastal

Sunshine: nil

Tuesday 27th: Dull day with spells of rain as a warm front moved very slowly northwards over Ireland. Colder in north but relatively mild in the south. Heavy rain also in south.

Rainfall: 4mm to 7mm in the southeast and west, 13mm to 20mm in the southwest and east

Temperature: max. 6°C to 13°C, min. 3°C to 10°C inland, up to 12°C coastal

Sunshine: nil

Wednesday 28th: As a cold front crossed the country in the afternoon, the mild southwesterly with rain and drizzle was replaced by a cooler westerly with squally showers.

Rainfall: 2mm to 5mm in the east and southeast, 6mm to 13mm in the west and southwest, 21mm in Cork Airport

Temperature: max. 12°C to 14°C, min. 6°C to 8°C inland, up to 10°C coastal

Sunshine: nil to 1 hour

Thursday 29th: A depression of 942 hPa tracked northeastwards off the Donegal coast and up to Scandinavia. Over Ireland we had strong to gale force southwesterly winds and heavy showers, some of hail and accompanied by thunder in places. Also some sunny spells.

Rainfall: 1mm to 9mm generally

Temperature: max. 7°C to 11°C, min. 5°C to 6°C

Sunshine: trace to 4 hours

Friday 30th: A strong cold and unstable westerly airflow with a trough approaching the north coast in the evening. Showers in many areas, especially in the west and north but also some sunny intervals.

Rainfall: 1mm to 8mm generally, up to 13mm in the west and northwest

Temperature: max. 7°C to 9°C, min. 2°C to 6°C

Sunshine: 1 to 3 hours

Saturday 31st: A showery trough moved southwards overnight and brought rain and sleet to all areas and some snow, especially to high ground. A very cold northerly airstream followed with wintry showers in the north. Frost was widespread after dark.

Rainfall: trace to 1mm in the southeast, 2mm to 8mm generally, 11mm in Belmullet

Temperature: max. 4°C to 6°C, min. -2°C to 0°C inland, 1°C to 2°C coastal; ground frost down to -6°C at Shannon Airport

Sunshine: 1 to 6 hours

TABLES

County / Station	TEMPERATURE (°C)							
	Mean max.	Mean min.	Mean/ deviation from average	Highest max./date	Lowest min./date	Lowest grass min./date		
CO. CARLOW								
CARLOW (OAK PARK)	10.8	3.8	7.3 1.8	16.7 11	-2.8 22	-6.2 22		
CO. CLARE								
SHANNON AIRPORT	10.7	5.2	8.0 1.8	15.2 11	-1.1 14	-5.5 14		
CARRON	9.3	3.7	6.5	13.6 10	-0.9 14	-5.8 14		
CO. CORK								
FERMOY (MOORE PARK)	11.1	4.2	7.7 1.8	15.0 10	-1.0 14	-5.0 9 16		
CORK AIRPORT	10.1	5.0	7.6 1.6	13.0 10	-0.4 14	-1.7 5		
SHERKIN ISLAND	11.1	7.3	9.2 1.4	13.2 11	1.3 14	-0.5 14		
CO. DONEGAL								
MALIN HEAD	9.5	4.7	7.1 0.7	13.7 10 11	1.1 22	-1.6 14		
BALLYSHANNON (CATHLEEN'S FALL)	9.4	4.2	6.8 1.0	14.5 10	-1.0 14			
LETTERKENNY (MAGHERENAN)	9.3	3.3	6.3	14.5 10	-2.8 22			
CO. DUBLIN								
DUBLIN AIRPORT	9.7	3.9	6.8	14.6 11	-1.4 22	-4.7 22		
CASEMENT AERODROME	9.8	4.1	7.0 1.7	14.5 10 11	-1.6 22	-5.9 22		
DUBLIN (MERRION SQUARE)	10.9	5.6	8.3 1.5	15.9 11	0.5 22	0.0 2		
CO. GALWAY								
GALWAY (UNIV. COLL.)	10.4	5.0	7.7 1.5	13.9 11	-0.8 22	0.0 13		
MAAM VALLEY	10.3	5.1	7.7	13.9 9	0.1 14	-4.3 14		
BALLYGAR	9.1	3.2	6.2	14.0 10	-2.2 14	-5.5 14		
CO. KERRY								
VALENTIA OBSERVATORY	11.4	6.7	9.1 1.4	15.5 1	0.2 14 15	-2.4 14		
ARDFERT (LISCAHANE)	10.6	5.6	8.1	14.5 11	-1.3 14	-5.6 14		
CO. KILDARE								
NAAS (GOWRAN GRANGE)	9.4	3.6	6.5	14.2 10	-2.6 22	-5.2 22		
CO. KILKENNY								
KILKENNY	10.4	3.6	7.0 1.7	15.5 10	-2.7 22	-8.5 22		
CO. LEITRIM								
BALLINAMORE	8.8	2.4	5.6 0.8	14.0 10	-3.2 15	-8.3 14		
CO. LIMERICK								
MOUNT RUSSELL	9.6	4.7	7.2	14.8 10	-1.5 14	-4.2 14		
CO. LOUTH								
ARDEE (BOHARNAMOE)	9.9	2.7	6.3	14.7 11	-3.7 22	-7.2 15 22		
CO. MAYO								
CLAREMORRIS	9.2	3.3	6.3 1.1	14.0 10	-2.8 14	-7.0 14		
BELMULLET	10.4	5.3	7.9 1.0	13.6 1	0.5 14	-4.3 14		
NEWPORT (FURNACE)	9.9	4.8	7.4 0.8	13.5 16	1.0 14	-1.0 22		
CO. MEATH								
WARRENSTOWN	9.3	3.6	6.5 1.5	14.5 10 11	-1.2 22	-5.6 22		
CO. MONAGHAN								
CLONES	8.7	3.2	6.0 1.2	13.8 10	-3.0 22	-7.6 14		
CO. OFFALY								
BIRR	9.7	3.7	6.7 1.3	14.7 11	-3.0 22	-7.6 22		
DERRYGREENAGH	9.3	3.0	6.2 1.6	14.7 11	-2.8 22	-9.8 15		
CO. SLIGO								
MARKREE CASTLE	9.2	2.7	6.0 0.9	14.2 10	-4.0 14			
CO. TIPPERARY								
FETHARD (PARSONSHILL)	9.4	3.9	6.7	14.0 9	-1.5 22	-2.3 14		
CO. WATERFORD								
WATERFORD (TYCOR)	10.6	4.4	7.5 1.4	14.6 10	-1.6 22	-6.9 22		
DUNGARVAN (CARRIGLEA)	11.1	4.8	8.0	15.1 10	-1.1 9	-5.6 9		
CO. WESTMEATH								
MULLINGAR II	9.1	3.0	6.1 1.4	14.1 10	-2.9 22	-5.0 22		
CO. WEXFORD								
JOHNSTOWN CASTLE	10.5	5.2	7.9 1.6	13.3 2 12	0.7 20	-4.8 9		
ROSSLARE	10.7	6.4	8.6 1.5	13.5 2	2.0 20	-0.5 20		
CLONROCHE	9.8	4.4	7.1 1.5	14.1 10	-0.2 22	-5.0 22		
JOHN F. KENNEDY PARK	10.3	4.7	7.5 1.6	14.0 10 11	-1.5 22	-5.5 22		

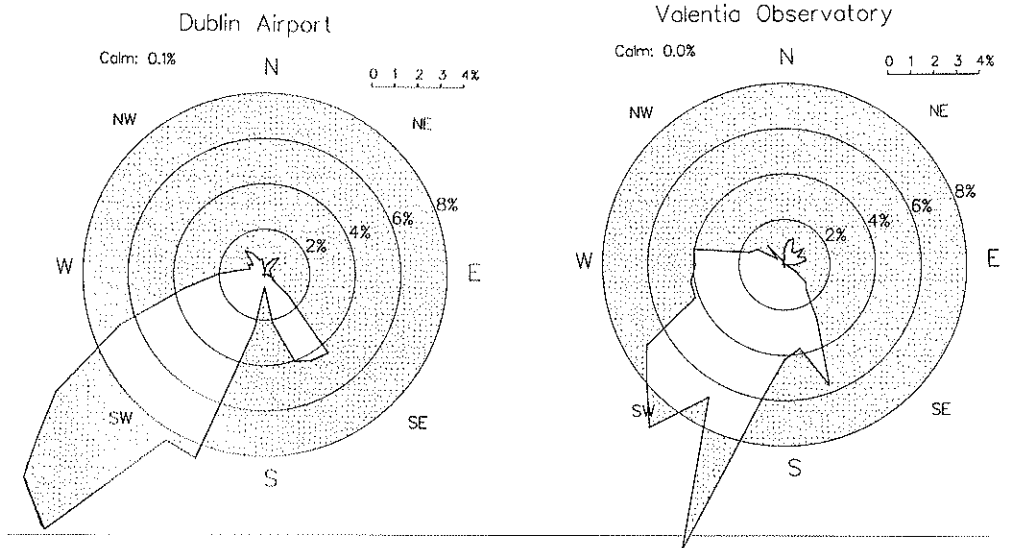
TABLES

County / Station	RAINFALL (MM)				SUNSHINE (HRS)			
	Total amount	% of average	Most in a day/date		Daily mean (hrs./day)	% of average	% of possible	Most in a day/date
CO. CARLOW								
CARLOW (OAK PARK)	98.1	113	20.0 26		1.59	113	21	5.9 3
CO. CLARE								
SHANNON AIRPORT	181.1	171	25.1 26		0.98	68	13	6.4 31
CARRON	316.5	184	56.4 26					
CO. CORK								
FERMOY (MOORE PARK)	118.7	105	18.1 2		1.16	88	15	4.7 31
CORK AIRPORT	191.1	137	28.0 7		1.71	107	22	5.4 31
SHERKIN ISLAND	188.6	147	27.8 26		1.29	78	16	6.4 14
CO. DONEGAL								
MALIN HEAD	159.9	143	25.5 10		1.14	122	16	4.9 3
BALLYSHANNON (CATHLEEN'S FALL)	189.4	169	18.2 27		0.95	95	13	4.4 14
LETTERKENNY (MAGHERENAN)	201.9		23.9 10					
CO. DUBLIN								
DUBLIN AIRPORT	88.9		21.8 13		1.87	111	25	6.4 31
CASEMENT AERODROME	102.5	133	21.5 13		1.70	112	22	5.4 22
DUBLIN (MERRION SQUARE)	87.7	115	23.2 28					
CO. GALWAY								
GALWAY (UNIV. COLL.)	219.1	173	33.3 26		1.07	79	14	3.6 31
MAAM VALLEY	478.6		51.8 27					
BALLYGAR	205.3	188	24.2 7					
CO. KERRY								
VALENTIA OBSERVATORY	250.2	157	27.6 26		1.00	82	13	6.1 14
ARDFERT (LISCAHANE)	248.9		32.9 2					
CO. KILDARE								
NAAS (GOWRAN GRANGE)	122.2		23.4 26					
CO. KILKENNY								
KILKENNY	88.2	96	15.1 26		1.44	97	19	6.2 3
CO. LEITRIM								
BALLINAMORE	184.3	145	17.2 27		0.95	82	13	3.9 8
CO. LIMERICK								
MOUNT RUSSELL	137.9		22.8 26					
CO. LOUTH								
ARDEE (BOHARNAMOE)	105.5	117	15.0 27					
CO. MAYO								
CLAREMORRIS	216.2	174	32.8 2		0.99	81	13	4.2 24
BELMULLET	196.2	160	16.6 7		0.93	85	13	4.2 21
NEWPORT (FURNACE)	250.0	137	18.3 27					
CO. MEATH								
WARRENSTOWN	112.7	119	17.6 7					
CO. MONAGHAN								
CLONES	148.9	155	17.1 27		1.06	91	14	4.3 31
CO. OFFALY								
BIRR	139.2	162	22.5 26		1.38	97	18	5.8 31
DERRYGREENAGH	139.4	153	19.3 7					
CO. SLIGO								
MARKREE CASTLE	185.3	148	16.2 9					
CO. TIPPERARY								
FETHARD (PARSONSHILL)	96.6		23.2 26					
CO. WATERFORD								
WATERFORD (TYCOR)	113.6	103	17.7 7					
DUNGARVAN (CARRIGLEA)	140.3		26.0 7		1.01		13	5.0 3
CO. WESTMEATH								
MULLINGAR I	143.7	147	19.5 26		1.68	109	22	6.3 31
CO. WEXFORD								
JOHNSTOWN CASTLE	116.3	105	17.6 28		1.54	92	20	4.9 31
ROSSLARE	100.4	102	14.8 7		1.48	81	19	5.4 22
CLONROCHE	121.4	98	22.2 26		1.38	90	18	3.8 3
JOHN F. KENNEDY PARK	104.7	94	18.1 7		1.76	120	23	5.1 19 22

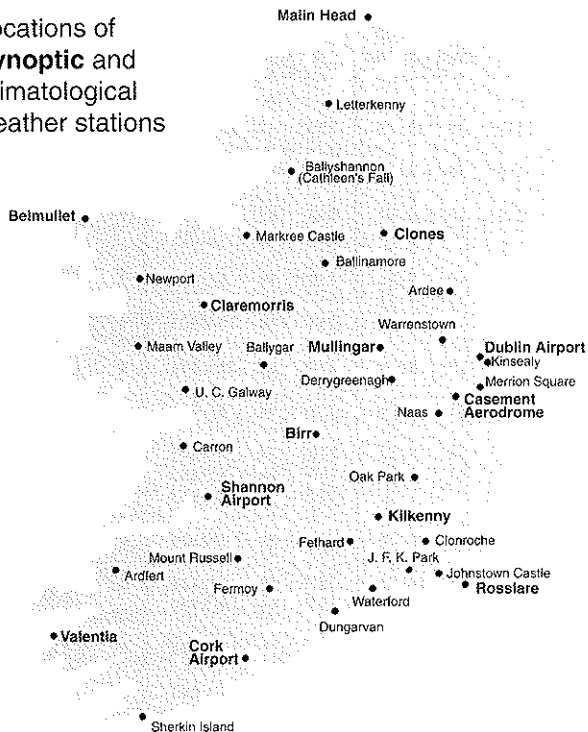
County / Station	WEATHER — No. OF DAYS WITH									MEAN 0900 SOIL TEMPERATURES (°C)		
	Rain days	Wet days	Air frost	Ground frost	Snow	Snow lying	Hail	Thunder	Fog	10cm	20cm	30cm
CO. CARLOW												
CARLOW (OAK PARK)	23	18	3	14						5.8	6.3	7.5
CO. CLARE												
SHANNON AIRPORT	24	20	2	9	0	0	4	2	4	7.7	8.4	8.7
CARRON	27	26	2	12						6.2		7.1
CO. CORK												
FERMOY (MOORE PARK)	25	17	6	13						7.9	8.2	8.5
CORK AIRPORT	26	22	1	11	0	0	3	2	7	7.2	7.7	8.9
SHERKIN ISLAND	25	20	0	2							10.5	10.1
CO. DONEGAL												
MALIN HEAD	26	25	0	3	5	0	11	2	0	5.9	6.5	8.2
BALLYSHANNON (CATHLEEN'S FALL)	27	25	2									
LETTERKENNY (MAGHERENAN)	27	24	4									
CO. DUBLIN												
DUBLIN AIRPORT	22	18	2	12	1	0	0	0	1	6.4	7.0	7.9
CASEMENT AERODROME	23	17	3	10	1	0	0	0	1	5.4	6.4	7.2
DUBLIN (MERRION SQUARE)	16	15	0	0								
CO. GALWAY												
GALWAY (UNIV. COLL.)	28	25	3	0								
MAAM VALLEY	30	28	0	10								
BALLYGAR	28	24	5	17								
CO. KERRY												
VALENTIA OBSERVATORY	29	24	0	3	0	0	6	2	1	8.2	8.6	10.0
ARDFERT (LISCAHANE)	28	26	2	7								
CO. KILDARE												
NAAS (GOWRAN GRANGE)	25	18	5	12						6.0		
CO. KILKENNY												
KILKENNY	24	16	7	19	0	0	0	0	2	6.3	7.2	8.0
CO. LETTRIM												
BALLINAMORE	30	24	10	16						6.4	7.3	7.3
CO. LIMERICK												
MOUNT RUSSELL	26	22	2	10						6.3	7.2	
CO. LOUTH												
ARDEE (BOHARNAMOE)	26	20	8	18						6.2	6.7	6.9
CO. MAYO												
CLAREMORRIS	27	25	4	11	2	0	10	3	3	5.6	6.4	7.1
BELMULLET	29	27	0	5	2	0	14	2	0	6.6	7.2	8.2
NEWPORT (FURNACE)	30	27	0	7								
CO. MEATH												
WARRENSTOWN	22	19	3	17						5.3	6.2	6.9
CO. MONAGHAN												
CLONES	25	19	4	17	4	1	0	0	4	6.1	6.7	7.7
CO. OFFALY												
BIRR	21	18	6	14	1	0	0	0	4	6.1	6.8	7.9
DERRYGREENAGH	24	19	7	20								
CO. SLIGO												
MARKREE CASTLE	30	26	6									
CO. TIPPERARY												
FETHARD (PARSONSHILL)	22	19	2	11						7.8	7.4	
CO. WATERFORD												
WATERFORD (TYCOR)	27	15	1	15								
DUNGARVAN (CARRIGLEA)	24	18	3	14							8.3	8.7
CO. WESTMEATH												
MULLINGAR II	23	20	7	17	3	0	1	0	4	5.4	6.2	7.3
CO. WEXFORD												
JOHNSTOWN CASTLE	22	15	0	16						7.6	8.4	8.6
ROSSLARE	19	15	0	2	0	0	3	2	1	7.3	8.1	9.4
CLONROCHE	24	16	1	17						6.7	7.2	7.8
JOHN F. KENNEDY PARK	22	16	1	17						6.9	7.5	9.0

County / Station	WIND (KTS)									
	Mean speed	Max. 10-min. mean dir. speed date/hour			Max. Gust dir. speed date/time			Days with gales	gale gusts	Hours with gale gusts
CO. CLARE										
SHANNON AIRPORT	11.6	230°	38	29/ 3	230°	57	29/ 245	2	13	69
CO. CORK										
CORK AIRPORT	12.4	170°	39	6/18	180°	63	5/ 840	2	16	112
CO. DONEGAL										
MALIN HEAD	21.6	210°	50	5/17	240°	69	5/1705	16	27	432
					220°	69	17/1000			
CO. DUBLIN										
CASEMENT AERODROME	16.2	190°	40	5/11	190°	58	5/1053	7	19	173
		210°	40	17/11						
DUBLIN AIRPORT	13.5	240°	33	10/16	240°	48	10/1421	0	16	118
CO. KERRY										
VALENTIA OBSERVATORY	14.2	210°	39	8/ 2	220°	61	29/ 141	4	22	268
CO. KILKENNY										
KILKENNY	8.9	220°	35	8/ 4	210°	54	8/ 325	1	15	83
CO. MAYO										
BELMULLET	18.9	220°	54	5/13	230°	74	5/1305	7	24	357
CLAREMORRIS	12.1	260°	34	5/19	250°	56	5/1450	1	16	139
					200°	56	17/ 815			
CO. MONAGHAN										
CLONES	10.9	150°	38	6/20	150°	61	6/1924	1	16	103
CO. OFFALY										
BIRR	9.0	210°	27	29/ 2	240°	49	5/1414	0	14	94
					150°	49	6/1720			
CO. WESTMEATH										
MULLINGAR II	9.8	150°	28	6/19	200°	45	17/ 831	0	12	55
CO. WEXFORD										
ROSSLARE	15.7	210°	42	8/ 3	210°	71	8/ 240	4	21	270

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. Rainfall amounts are measured at climatological stations at 0900GMT and credited to the previous day. At synoptic stations daily totals refer to the 24-hour period ending at 0600GMT 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 0900GMT on a particular day to 0900GMT on the following day. (This is because climatological stations make their daily observations at 0900GMT.)
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 0900GMT.
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, 1969). 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 Heating and Ventilating Engineers (Vol. 14 No. 18, Nov-Dec 1946).
14. Global solar radiation values are given in MJ/sq.m. correct to two decimal places (3.6MJ=1kWh).

The **MONTHLY WEATHER BULLETIN** is produced by the Climatology and Applications Division of the Meteorological Service. An annual subscription to the bulletin costs £36. Further climatological information is available from the Climate Enquiries Office, Glasnevin Hill, Dublin 9, telephone 01-8375436, fax 01-8369115.