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Monthly Weather Bulletin January 1994

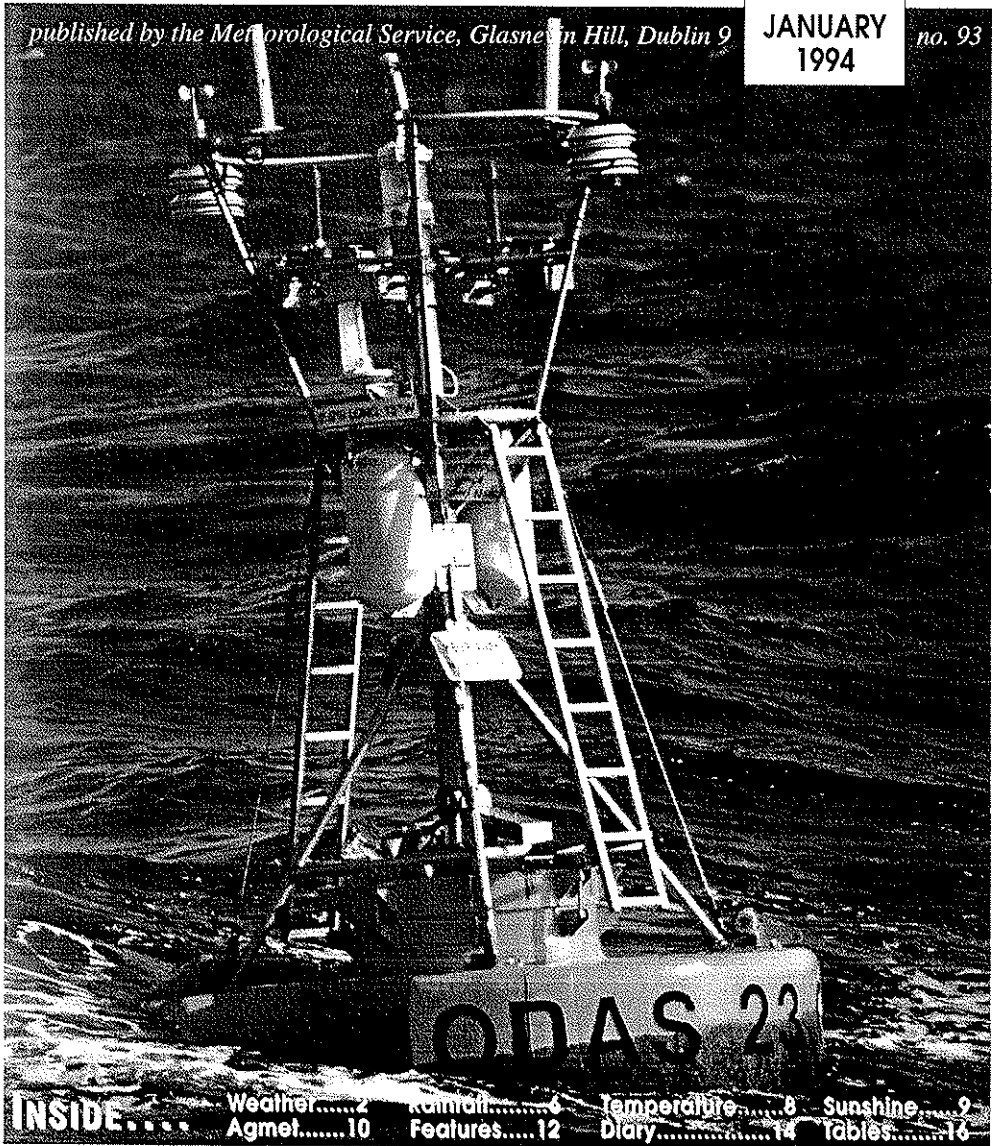
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Monthly Weather Bulletin

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1994

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It came from the west.....

Cover

A moored ocean weather buoy, located in the Atlantic to the west of Ireland. A network of five such buoys are operated by the UK Meteorological Office - see the feature article on page 12 for further details. (photo courtesy UK Met. Office)

Following an unsettled November and a wet and windy December, January continued winter's pattern of changeable, unsettled weather. The wind blew from a westerly or southwesterly direction most of the time, reaching gale force in northwestern coastal areas on between eleven and sixteen days during the month. Although there were no gales at some midland and southern stations it was quite windy everywhere at times, the wind gusting to gale force or stronger on between eight and seventeen days over most of the country, while gale gusts were an almost daily feature in the northwest.

Below

Me too! Snow can cause plenty of problems for the grown-ups but for some members of the population it can be great fun. (picture Irish Times)



STORMS IN THE NORTHWEST

The period from the 25th to the 27th was undoubtedly the windiest of the month. Winds of up to storm force 10 gusted to 79 knots at Belmullet on the 25th and to 80 knots - more than 90mph - at Malin Head on the 27th. The wind speed at

Malin Head averaged 38.7 knots for the whole day of the 27th, while the daily average wind speed at Belmullet on each of those three days was in excess of 30 knots. (A mean wind speed over ten minutes of 34 knots or more is a gale.) All stations bar Cork Airport reported gusts of 50 knots or more on the 25th, many of those gusts exceeding 60 knots. At Malin Head the wind gusted to 50 knots or more on six days in a row, starting on the 25th. The other days with strong winds were the 9th, the 12th and 13th, the 18th, and the 29th.

SNOW IN THE EAST

The storms of the 25th brought thunder and lightning to many northern and western areas, while earlier in the month parts of the east were badly affected by snow on the morning of the 6th. Snow was also reported from a number of stations on the 19th and 27th. Altogether there were four to six days with snow at northern and western stations and just a couple of such days elsewhere, excepting Valentia which stayed snow-free throughout. Hail showers were a



Above
A snowfall in Marley Park in south Dublin following the snowfalls of the 6th. (picture Irish Times)

frequent occurrence in the northwest, where Belmullet had fifteen days with hail during the month; there were no reports of hail from midland and eastern stations and between two and seven such days elsewhere. There was some fog during the first eight days and again on the 24th.

ATLANTIC LOWS

A deep depression moved eastwards across the North Atlantic, pushing frontal troughs ahead of it across Ireland on the 1st, 2nd and 3rd, bringing mild and breezy conditions with periods of rain followed by bright spells and showers. The depression itself moved in over northern counties on the 4th while joining up with another depression in the Atlantic to give a complex low pressure area between 55° and 60°N across the Atlantic. This low pressure area gradually consolidated to give a sloppy low centre over Ireland and the UK on

the 6th. Temperatures were low right up through the atmosphere and as the low centre moved away eastwards the airflow became northerly and it began to snow mainly in east Ulster and north Leinster. The 7th was a changeover day as one low pressure area moved away eastwards while another was deepening in the Atlantic and approaching.

On the 8th several low centres dominated the North Atlantic. Frontal troughs associated with these lows passed over Ireland giving spells of rain on the 8th and 9th and strong and gusty mainly south-easterly winds on the 9th. On the 10th the deep low off the northwest coast moved back out into the Atlantic to join several other low pressure centres. From the 10th to the 13th a moderate to fresh occasionally strong mainly southwesterly airflow was brought in over Ireland with periods of frontal rain followed by periods with

occasional showers, some of hail and thunder on the 12th and 13th. However it was relatively mild throughout with some sunny spells. As this low pressure area moved away northeastwards on the 14th, more northerly winds originating close to the poles were brought in over Ireland.

COLD SPELL

A shallow depression moved eastwards south of Ireland on the 15th which kept southern counties milder than the rest of the country but also gave a lot of rain along the southern seaboard. As it moved away, the cold northerly winds came down across the whole country giving some air and ground frost overnight. This cold, northerly flow persisted throughout the 16th but a ridge of high pressure, an extension of the Azores high, moved eastwards across the country on the 17th. This deflected Atlantic frontal troughs to the north of Ireland for a time on the 17th but troughs crossed the country on the 18th bringing rain and strong and gusty southwesterly later westerly winds. The frontal troughs cleared away eastwards overnight and some hail and snow showers followed in the early morning with good sunny spells on the 19th.

MORE LOWS AND TROUGHS

Despite an upper-air high pressure area over the country and repeated attempts of the Azores high to move northwards it was continually kept at bay by the low pressure areas to the north of Iceland and near Greenland. A mild southwesterly airflow was maintained over Ireland on the 20th and 21st with a warm front crossing the country early on the 20th, followed by a broad warm sector which lasted until the cold front followed southeastwards on the 21st. A cold blast followed this front but was quickly replaced on the 22nd by a mild, moist airflow from southern latitudes, swept up over the country by a series of low pressure areas which moved northeastwards across the Atlantic bringing frontal troughs with them. However a large area of high pressure built up in the Atlantic and cut off this

flow rather abruptly on the 23rd so that after a mild wet night, the 23rd was a cold bright day with showers, some of hail, and strong, gusty west to northwesterly winds.

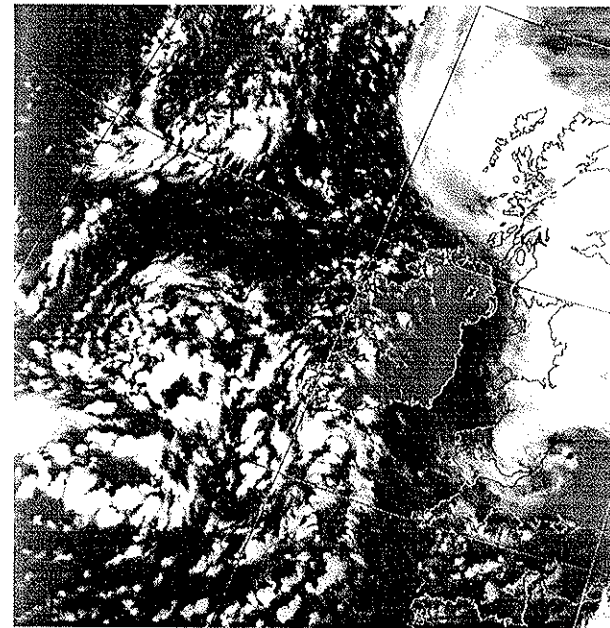
The low pressure systems in the Atlantic came to the fore again on the 24th as they quickly pushed the high southwards and brought a warm front northeastwards across the country on the morning of the 24th, bringing a welcome rise in temperatures but also bringing misty conditions with rain, drizzle and cloud. This milder air-mass was swept away by the arrival of a cold front early on the 25th.

THE MEAT IN THE SANDWICH

From the 25th to the 27th Ireland lay sandwiched between the Azores high which was pushing northwards and several depressions which were tracking eastwards north of Ireland and south of Greenland and Iceland. This gave a very strong mainly westerly airflow across the country. An upper air low moved eastwards north of Ireland on the 25th with an associated deep surface depression which gave rise to great instability in the atmosphere and hail, thunder and lightning were widespread across the country. Rainbelts from a subsequent depression moved eastwards across the country on the 26th but with the Azores high stretching as far north as the Bay of Biscay, most of the rain fell in the northern half of the country. As the rainbelt cleared eastwards upper-air temperatures stayed low on the 27th and several showers of snow fell, mainly in northern areas. The Azores high again attempted to push northwards over the country on the 28th but depressions in the Atlantic brought in frontal troughs by the end of the day. It remained unsettled for the rest of the month with further periods of rain and showers and mainly southwesterly winds.

Facing

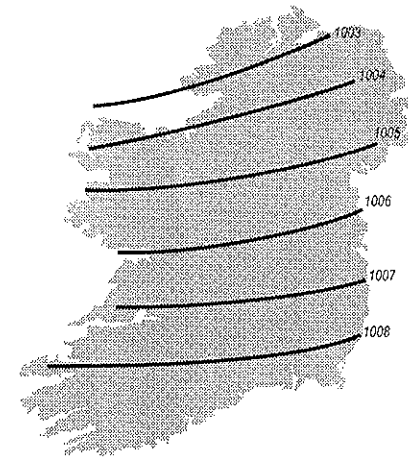
The satellite picture across shows a bright and mostly dry afternoon on the 3rd. However the area of cloud over central and northern Britain had given a wet morning over the country and the clouds to the west and southwest indicate an area of showery activity that was to affect Ireland on the 4th. (picture Dundee University)



MEAN ATMOSPHERIC PRESSURE

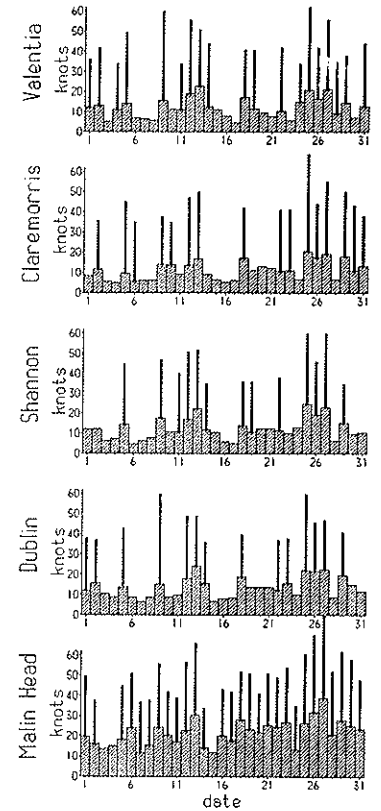
The mean pressure pattern over Ireland was similar to the normal January pattern, although values were between 4 and 6 hPa below normal. The orientation of the isobars reflects the predominance of westerly winds during the month.

Lowest pressure values were recorded during the first half of the month, mostly on the 5th, 6th, and 9th, although it was on



the 12th that the lowest value of all - 966.8hPa - occurred at Malin Head. The highest pressures occurred on the 17th in the southwest but on the 28th elsewhere, when a ridge of high pressure raised the barometer reading at Cork Airport to 1033.0hPa.

(The mean pressure map for the North Atlantic and Europe is not available this month due to a computer problem.)



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

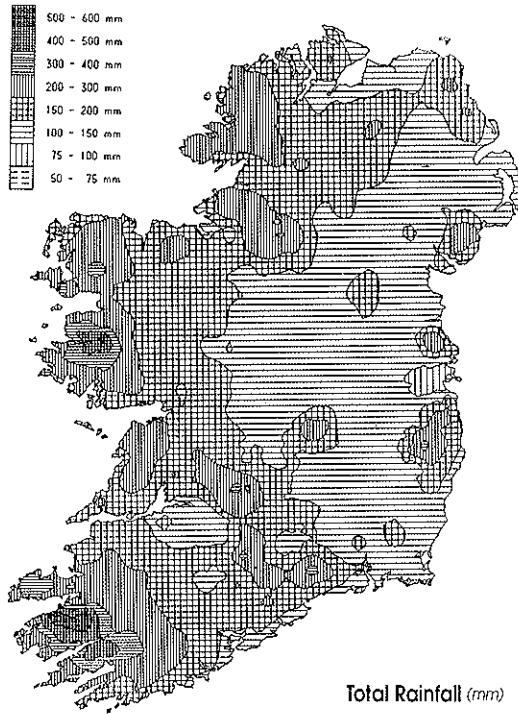
SEA TEMPERATURES

The temperature of the sea surface off the Antrim coast was around 8.5°C at the beginning of January; by the end of the month it had fallen to less than 7.5°C. Over the same period the waters off the Cork and Kerry coasts cooled from 10.5°C to 9.5°C. These values are close to the normal values for the month of January. The mean sea surface temperature off Malin Head was 7.1°C, again quite close to normal.

Another wet month

January was another wet month. Rainfall totals varied between 71mm at Merrion Square in the centre of Dublin, and 391mm at Maam Valley in Connemara. These totals are all above normal, ranging from just 5% above at Cork Airport to 77% above in the case of Shannon. The wetter areas were the mid-west and parts of the midlands, west and north. The less wet parts of the country include southern, eastern and some northern coastal areas.

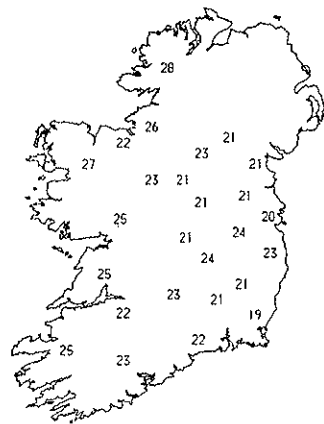
Rain fell on every day of the month at some western and northwestern stations. Newport in



Total Rainfall (mm)

Left - These radar images show the rainfall patterns as a cold front crosses the country eastwards during the night of the 24th/25th, followed by an unstable, showery westerly airflow later on the afternoon of the 25th.

but the greatest daily fall occurred on the 22nd at Maam Valley when a total of 31.1mm was recorded.

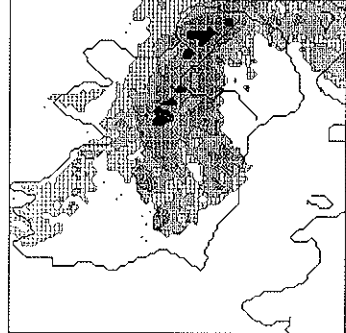


Above - The number of wet days - days with 1mm or more of rain - in each county during January 1994.

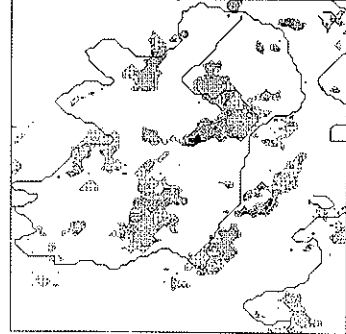
Co. Mayo was one of those stations, and on all but one of those days the amount of rain that fell equalled or exceeded 1mm, giving a total of 30 wetdays at the station, compared to 16 such days at the other end of the list, a position happily held by Merrion Square. The 16th and the 30th were the only days that were dry almost everywhere.

Many of the heavier falls occurred during the first half of the month, but the last day was also quite wet. Notable falls were recorded on the 1st, 3rd, 9th, 11th/12th, 14th, 25th and 31st,

Radar plot at 0Z on 25 Jan 1994 Opt= 19L



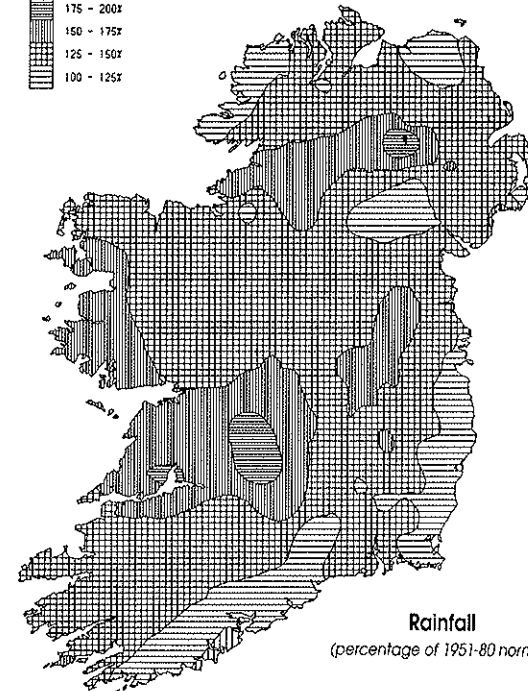
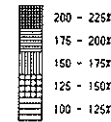
Radar plot at 15Z on 25 Jan 1994 Opt= 19L



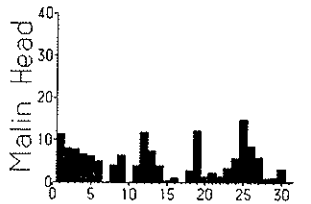
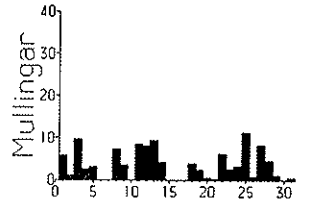
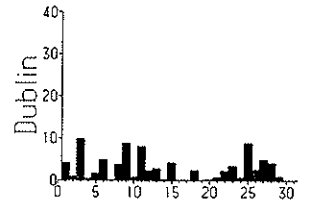
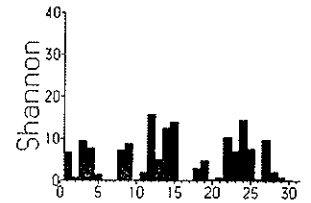
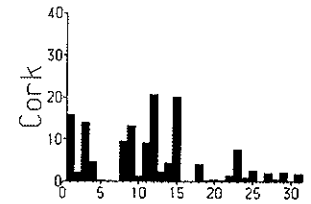
DAILY RAINFALL EXPRESSED AS % OF MONTHLY NORMAL (1951-80)

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	10	15	1	5	-	-	2	9	16	2	8	4	1	12	3	-	-	4	1	-	1	6	3	4	6	1	3	3	1	-	11	...	132
Cavan	14	6	2	6	1	1	2	7	7	2	7	5	1	-	-	2	3	6	-	1	6	-	6	10	7	7	6	3	2	14	...	141	
Clare	7	6	6	-	-	2	4	7	2	5	10	10	16	2	-	1	6	3	-	1	14	6	13	5	2	8	3	2	-	16	...	163	
Cork	11	8	3	4	-	-	4	5	9	6	7	6	3	12	4	-	4	1	-	1	5	6	3	3	-	3	1	1	-	15	...	125	
Donegal	10	4	4	7	5	2	2	4	6	1	9	5	8	3	1	-	1	6	11	1	2	3	1	10	7	7	4	3	2	1	6	...	136
Dublin	6	3	11	3	1	4	-	6	11	1	1	1	5	1	2	4	-	4	1	-	1	8	-	6	8	4	6	5	1	-	6	...	119
Galway	15	6	4	8	-	1	3	3	4	3	12	11	3	1	-	-	1	7	3	1	1	9	3	10	7	6	5	5	1	-	18	...	151
Kerry	6	8	2	4	-	-	3	12	7	6	7	8	5	11	3	-	1	5	1	-	1	7	7	2	3	3	1	1	-	16	...	134	
Midlere	4	15	6	3	-	3	1	3	12	3	11	7	2	4	-	-	1	6	1	1	10	1	7	9	4	7	4	2	-	12	...	140	
Wick	7	9	3	5	-	-	2	7	12	4	6	4	1	13	7	-	4	1	1	-	6	4	3	5	1	6	3	1	-	10	...	126	
Laois	10	12	2	7	-	1	9	5	8	4	7	6	8	10	4	-	4	1	1	1	7	4	8	6	2	5	2	2	-	14	...	152	
Leitrim	16	7	-	3	2	1	2	7	9	3	8	7	6	1	1	1	2	4	10	3	1	5	1	5	8	6	7	6	3	1	8	...	144
Limerick	3	8	4	1	-	-	1	5	4	6	4	5	6	19	7	-	4	2	-	1	11	8	10	3	1	5	-	1	-	10	...	129	
Longford	14	8	-	9	-	-	5	5	3	3	9	9	3	2	-	-	1	4	3	1	1	7	-	6	8	6	10	6	1	-	18	...	142
Louth	14	12	5	9	1	6	-	15	11	2	9	4	1	-	-	1	3	2	-	7	-	4	8	4	5	7	3	1	-	10	...	143	
Mayo	10	5	4	3	2	3	2	2	13	3	12	6	5	2	1	1	4	7	6	2	1	4	-	8	6	5	5	2	1	15	...	145	
Meath	10	12	7	5	-	4	1	16	11	3	12	8	3	-	-	1	5	1	-	1	8	1	8	2	5	6	1	-	11	...	150		
Monaghan	17	5	3	1	1	-	8	11	1	9	3	3	-	-	1	2	3	-	1	6	-	5	8	7	5	4	3	-	9	...	121		
Offaly	9	10	5	8	1	-	1	11	8	3	9	8	6	2	-	-	4	2	-	1	10	1	10	10	4	8	5	1	-	7	...	150	
Roscommon	13	6	3	5	1	2	4	5	6	4	11	8	4	1	-	1	1	4	4	1	6	-	7	8	6	5	6	2	-	12	...	137	
Sligo	17	5	-	3	-	1	4	7	6	2	7	6	4	-	-	1	5	8	1	1	5	-	7	7	6	8	6	2	-	15	...	134	
Tipperary	8	11	3	3	1	-	5	5	9	7	5	7	20	5	-	6	2	1	9	4	10	6	2	6	1	2	-	13	...	159			
Waterford	14	13	2	6	-	-	2	12	11	5	7	5	17	8	-	4	1	-	1	4	2	-	3	-	2	1	1	-	15	...	141		
Westmeath	6	3	5	5	1	-	8	4	-	14	7	11	1	-	-	1	5	1	-	9	-	10	6	1	9	4	1	-	8	...	124		
Wexford	12	9	2	6	-	-	1	10	12	3	9	5	-	12	9	-	6	1	-	1	4	3	1	3	-	2	1	1	-	10	...	123	
Wicklow	10	8	2	5	-	1	12	14	1	8	4	1	9	5	-	5	2	-	1	8	1	4	5	1	4	3	1	-	12	...	128		
YEAR	11	8	4	5	1	1	2	7	9	3	9	6	4	7	3	-	1	5	3	1	1	7	2	7	6	3	6	4	2	-	12	...	140

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, 10% of the average monthly rainfall in Co. Carlow fell on the 1st.



Rainfall (percentage of 1951-80 normals)



Daily rainfall amounts (millimetres)

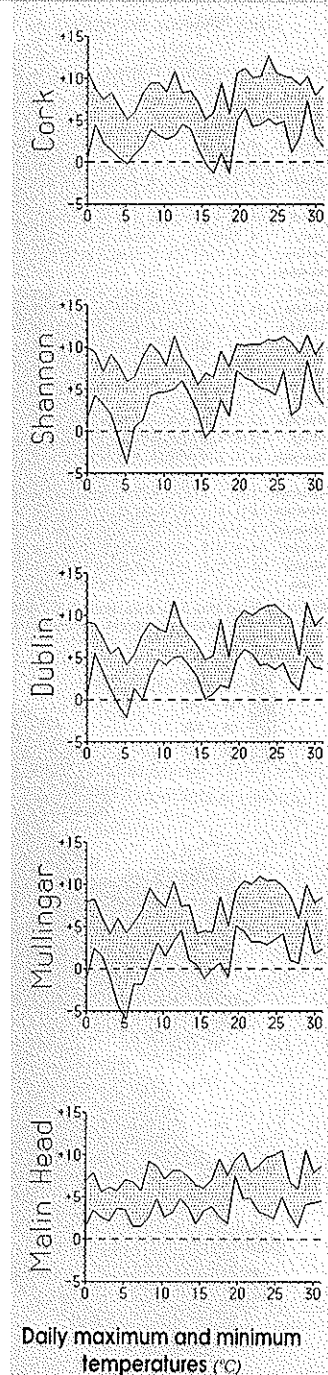
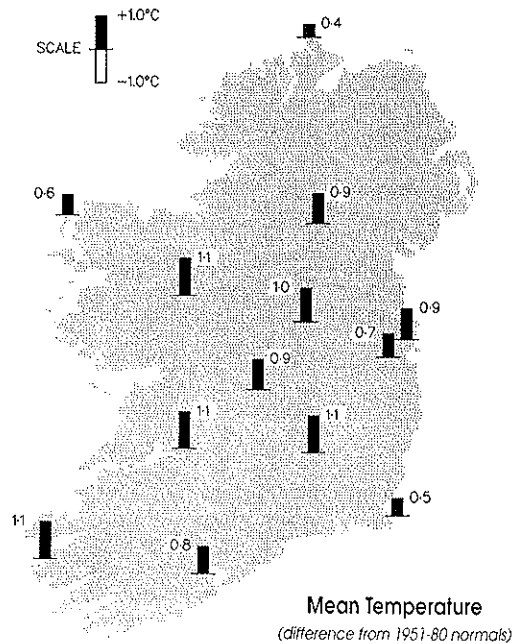
A mild month overall

January was a relatively mild month, continuing the trend of the past couple of years. Mean temperatures range from 4.4°C at Markree Castle to 7.7°C at Valentia Observatory. These values are generally between half-a-degree and a full degree above normal.

Once again the moderating influence of the relatively warm seas that surround us kept air temperatures at a number of coastal locations above freezing throughout the month, although even coastal areas were affected by ground frost at times. There were generally between four and twelve nights with air frost at

inland stations and up to twenty-nine nights with frost on the ground. The coldest periods were the 1st, from the 3rd to the 9th, from the 14th to the 19th, and the 28th. The lowest temperatures of the month occurred on the 6th when the temperature of the air fell to -6°C at Mullingar and the ground temperature at Derrygreenagh reached -15.1°C.

The highest daytime values generally occurred between the 20th and the 26th and also on the 29th, although the 11th was the mildest day of the month in Dublin. Air temperatures reached or exceeded 10°C at most stations during those periods, something that had only happened on a couple of occasions earlier in the month. The highest temperature of the month was 13.2°C, which occurred at Dungarvan on the 21st.

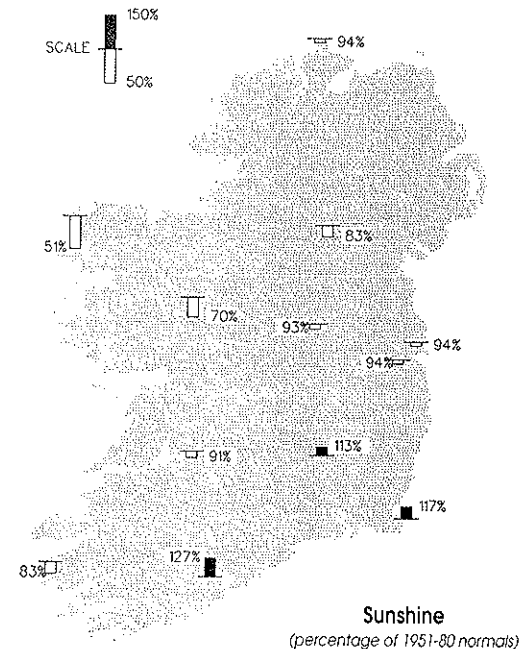
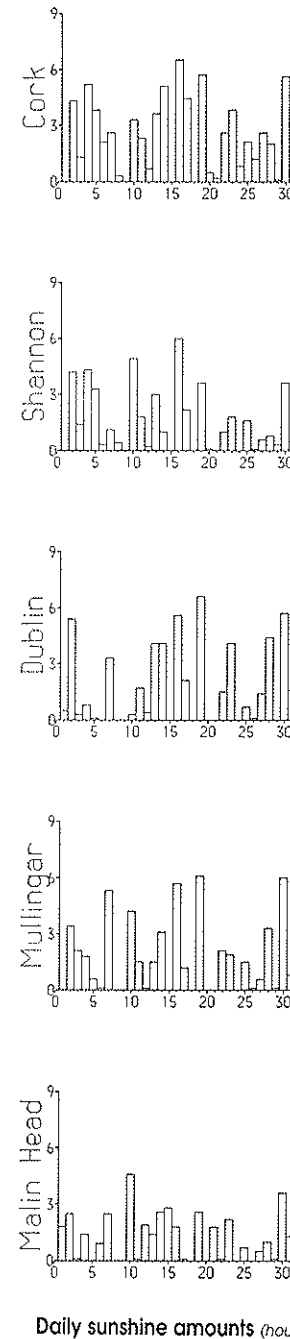


Sunniest in the south and southeast

Confirming the trend of the best of the weather during January 1994 being found in the south, January was also a fairly sunny month south of a line from Kerry to Wicklow. North of that line sunshine amounts were below normal, especially in Mayo, where Belmullet received an average of just over three-quarters of an hour of sun each day, half its normal January sunshine. Rosslare on the other hand had a daily average of 2.4 hours.

It was the sunniest January for fifteen years in Cork Airport where there was over 25% more sunshine than normal, and the

sunshine total at John F. Kennedy Park in Co. Wexford came to 35% above. The best of the sunshine occurred on the 10th in the northwest but elsewhere the sunniest days were the 16th, 19th and 30th, the most sunshine in a day being Rosslare's total of 7.2 hours on the 19th. There was plenty of cloud during January: even in Cork there were eight dull days while Belmullet had a total of seventeen such days. (A dull day is a day with less than half-an-hour of sunshine.) Sunshine totals in the south and southeast came to about a quarter of the available daylight hours, but in the case of Belmullet the sun appeared for just 10% of the time.

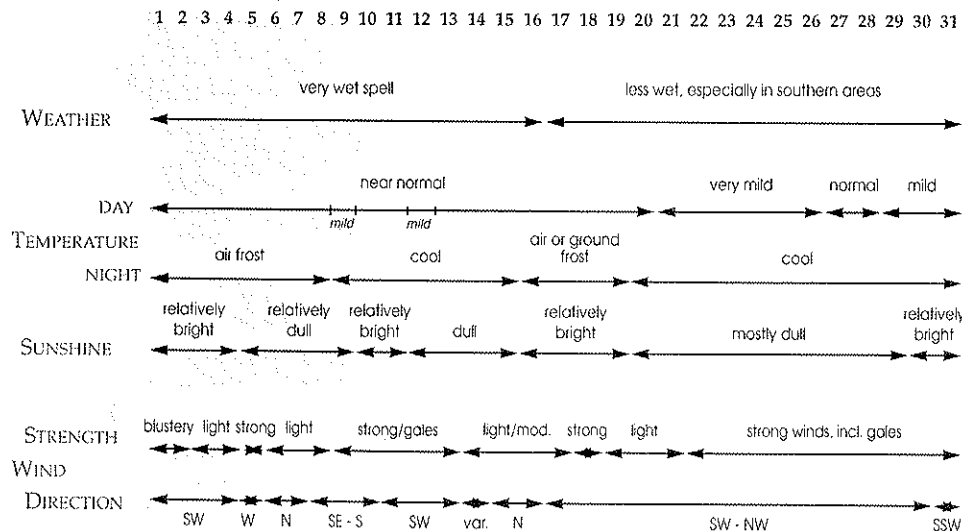


A wet and windy but mild January

1st - 16th: A series of low pressure areas in the vicinity of Ireland induced active Atlantic troughs over the country. Rainfall for the period varied from 135% in northern regions to 185% in the mid-west. The wettest days were the 1st, 3rd/4th, 12th/13th and 15th. Air temperatures tended to be a little below average and snow fell on the 6th.

17th - 31st: This was a persistently windy spell; it was mostly mild though, with only brief cold spells. A westerly to southwesterly airflow prevailed and there was a sequence of broad warm sector conditions. Rainfall for the period varied from 145% in the midwest to only 34% in southern areas. The wettest day was the 25th. Temperatures were 1.5°C to 2.0°C above average but nonetheless there were some falls of snow also, mostly on the 19th and 27th.

TIME-LINE SEQUENCES OF WEATHER IN JANUARY



10-DAY VALUES FOR SELECTED AGROMETEOROLOGICAL STATIONS		RAINFALL		TEMPERATURE										SUNSHINE		P.E. (Penman) (mm)							
Station	period	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 > 4.4°C	degree days > 10.0°C	lowest 'grass-min.'	date	days with ground frost	mean 10cm at 0900h	mean 30cm at 0900h	total no. of hours	% of average	mean wind speed (m/s) 2m agl.	P.E. (Penman) (mm)
Co. Cork Fermoy	1-10	62.5	-	8	8	8.4	0.4	4.4	-	-2.6	4	5	13	1	-8.6	4	10	3.8	4.8	17.7	-	2.9	-
	11-20	39.5	-	7	6	8.7	1.5	5.1	-	-0.8	19	3	16	1	-6.6	19	9	4.2	4.8	20.2	-	3.5	-
	21-end	45.1	-	9	7	10.9	3.9	7.4	-	1.0	28	0	36	3	-3.4	28	6	6.0	6.3	12.3	-	4.8	-
	month	147.1	129	24	21	9.4	2.0	5.7	1.0	-2.6	4	8	66	4	-8.6	4	25	4.7	5.3	50.2	108	3.7	2
Co. Donegal Letterkenny	1-10	60.7	-	10	9	7.2	0.2	3.7	-	-2.5	3	6	9	0	-	-	-	-	-	-	-	-	-
	11-20	57.1	-	10	8	8.2	1.8	5.0	-	-0.2	15	1	14	0	-	-	-	-	-	-	-	-	-
	21-end	73.8	-	11	10	9.0	3.5	6.3	-	1.2	29	0	24	1	-	-	-	-	-	-	-	-	-
	month	191.6	-	31	27	8.2	1.9	5.1	-	-2.5	3	7	47	1	-	-	-	-	-	-	-	-	-
Co. Kerry Ardferf	1-10	64.1	-	9	8	8.7	2.0	5.4	-	-2.6	6	1	16	0	-7.2	6	6	-	-	0.0	-	-	-
	11-20	55.0	-	8	7	8.9	2.7	5.8	-	-1.7	17	2	20	1	-6.2	16	4	-	-	0.0	-	-	-
	21-end	69.0	-	11	8	10.8	5.4	8.1	-	1.8	28	0	42	2	-2.0	28	2	-	-	0.0	-	-	-
	month	188.1	-	28	23	9.5	3.4	6.5	-	-2.6	6	3	79	3	-7.2	6	12	-	-	0.0	-	-	-
Co. Leitrim Ballinamore	1-10	60.3	-	10	8	7.1	-0.5	3.3	-	-3.9	6	8	8	0	-9.0	6	8	3.6	4.3	13.6	-	2.8	-
	11-20	37.4	-	8	6	7.7	1.3	4.5	-	-1.1	16	3	12	0	-6.9	16	6	3.9	4.4	13.5	-	3.1	-
	21-end	72.3	-	11	9	8.8	2.8	5.8	-	-0.1	28	1	21	0	-2.6	28	5	4.9	5.3	12.1	-	4.2	-
	month	170.0	144	29	23	7.9	1.3	4.6	0.9	-3.9	6	12	40	0	-9.0	6	19	4.1	4.7	39.2	81	3.4	0
Co. Louth Ardee	1-10	65.8	-	9	7	7.6	0.1	3.9	-	-3.9	6	5	10	0	-11.9	6	10	2.8	3.5	-	-	-	-
	11-20	37.4	-	na	na	8.1	1.0	4.6	-	-2.5	16	4	14	1	-9.9	16	3	3.1	4.0	-	-	-	-
	21-end	44.4	-	na	na	9.8	3.3	6.6	-	-0.1	29	1	28	1	-6.4	29	9	4.8	4.9	-	-	-	-
	month	127.6	147	na	na	8.5	1.5	5.0	-	-3.9	6	10	51	2	-11.9	6	29	3.6	4.2	-	-	-	-
Co. Waterford Dungarvan	1-10	72.1	-	8	8	8.8	1.4	5.1	-	-1.6	4	3	16	1	-4.4	4	6	-	5.1	16.2	-	2.6	-
	11-20	40.4	-	9	6	8.9	1.4	5.2	-	-2.4	17	3	16	1	-4.7	17	8	-	5.2	25.4	-	3.3	-
	21-end	42.1	-	9	7	11.6	4.8	7.9	-	-0.2	31	1	41	3	-1.6	31	3	-	6.8	18.8	-	3.0	-
	month	154.6	-	26	21	9.6	2.6	6.1	-	-2.4	17	7	73	5	-4.7	17	17	-	5.7	60.4	-	3.0	1
Co. Wexford Johnstown Castle	1-10	57.7	-	9	7	8.3	1.9	5.1	-	-0.3	8	3	15	0	-4.7	6	7	3.9	4.9	23.3	-	1.7	-
	11-20	46.0	-	6	6	8.4	2.3	5.4	-	0.1	17	0	16	0	-2.8	19	6	4.3	5.1	28.1	-	2.1	-
	21-end	26.5	-	10	7	10.0	4.4	7.2	-	1.9	28	0	33	1	0.6	29	0	6.0	6.4	20.1	-	2.0	-
	month	130.2	121	25	20	8.9	2.9	5.9	0.8	-0.3	8	3	64	1	-4.7	6	13	4.8	5.5	71.5	124	2.0	0

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

County/Station	Period	P.E. (mm)		Soil Moisture (mm)	
		Amount	Deficit	Accumulated Deficit	Surplus
Co. Carlow Carlow (Oak Park)	1-10	(21.7)	-	0	30
	11-20	5.9	-	0	29
	21-end	16.7	-	0	21
month	(44.3)	-	-	-	
Co. Dublin Kinsealy	1-10	(-1.7)	-	0	29
	11-20	0.3	-	0	17
	21-end	4.5	-	0	31
month	-	-	-	-	
Co. Kerry Valentia Obs.	1-10	6.4	-	0	80
	11-20	5.9	-	0	71
	21-end	2.8	-	0	35
month	15.1	-	-	-	
Co. Leitrim Ballinamore	1-10	3.3	-	0	57
	11-20	(-0.7)	-	0	38
	21-end	4.9	-	0	67
month	-	-	-	-	
Co. Wexford Johnstown Castle	1-10	10.4	-	0	47
	11-20	2.6	-	0	43
	21-end	12.7	-	0	13
month	-	-	-	-	

See back page for notes on the data

GLOBAL SOLAR RADIATION (MJ/sq.m.) P.E. (Makkink)

County/Station	10-day totals			total for month	total for month (mm)
	1-10	11-20	21-end		
Co. Donegal Main Head	12.82	17.28	22.53	52.63	7
Co. Dublin Dublin Airport	16.63	27.00	34.76	78.39	10
Co. Kerry Valentia Obs.	22.54	26.79	28.60	77.93	10
Co. Kilkenny Kilkenny	22.64	25.74	28.96	77.34	10
Co. Mayo Belmullet	15.53	20.27	19.15	54.95	7
Co. Monaghan Clones	14.77	20.55	21.66	56.98	7
Co. Offaly Birr	21.00	21.81	27.22	70.03	10

BUOY, OH BUOY!

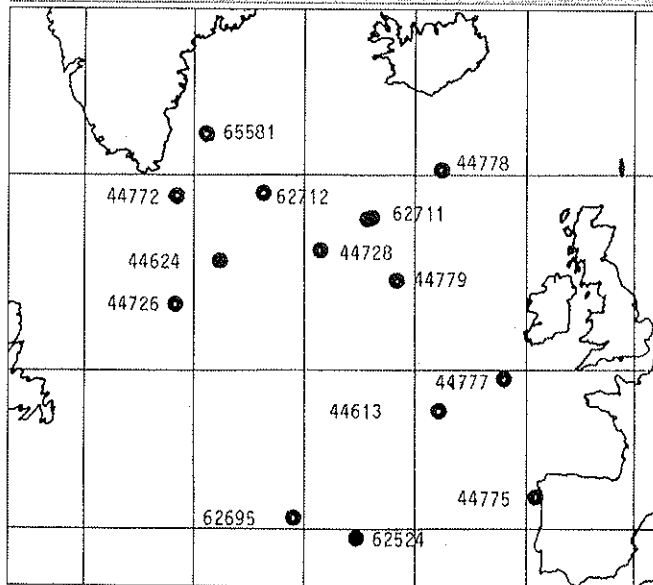
The Meteorological Service has contributed a drifting buoy to an international programme called EGOS - the European Group on Ocean Stations. The main function of EGOS is to provide quasi-real-time weather reports from data-sparse areas of the North Atlantic.

EGOS intends to have at least a dozen drifting buoys operational at any one time. The UK Met. Office provides most of these buoys, with Germany, Netherlands, Norway and now Ireland supplying the remainder. The lifetime of drifting buoys is very variable. A buoy may fail immediately after deployment or it may last for a year or more. The average lifetime was 123 days in 1991, 279 days in 1992 and 167 days in 1993. Many buoys drift ashore; they may be salvaged, refurbished and redeployed. Some buoys are damaged by high seas. Some just disappear. The fate of the Irish buoy no.65581 is awaited with interest.

The buoy was made in Norway; it weighs 123 kg and is about 2.5 m long, with a maximum diameter of 0.8 m. The hull is constructed of glass-fibre reinforced polyester with a flotation collar to keep its top above water even in extreme conditions. The sensors measure atmospheric pressure and air and water temperature. A radio

transmits a 0.5 second message every 90 seconds. When a US polar-orbiting satellite is in sight of the buoy and of a land station, the message is relayed ashore for onward transmission on the international meteorological telecommunications system. Land stations at Toulouse, Oslo and Sondre Stromsfjord are used. Using the Doppler effect on the frequency of the signal transmitted from the buoy, the French-run Argos system can calculate the location of the buoy. The Irish buoy was deployed from a Danish merchant ship en route

The map below shows the positions of the EGOS drifting buoys on the 31st of December last. The locations of the UK network of moored buoys to the west of Ireland can be seen in the map across.

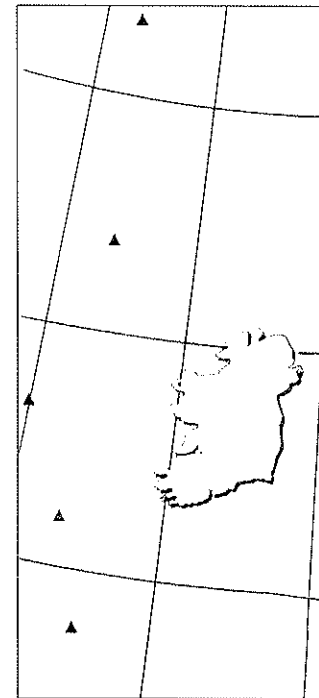


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to Greenland on November 1st last year at 60.6°N 38.0°W. Since then the buoy has drifted freely in the sea between Greenland and Iceland. The reported data have been good. Very few reports were received at 0300Z, because of the lack of a relevant satellite. Otherwise reports were received in time to be plotted on the charts in excess of 80% of the time.

The reported atmospheric pressure values from each EGOS buoy are checked against the computer-generated pressure analysis at the UK Met. Office and quality-control statistics are produced each month. The average pressure bias of our buoy was minus 0.4 hPa in November and minus 0.9 hPa in December. A day-to-day watch on the quality of the data from each EGOS buoy is maintained at the Icelandic Met. Office. The EGOS Technical Secretary takes steps to ensure that consistently bad data are not distributed.

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There is also a network of moored ocean weather buoys to the southwest, west and northwest of Ireland. These ODAS buoys (Ocean Data Acquisition System) are operated by the UK Met. Office and measure winds, waves, air and sea surface temperatures, air pressure, and humidity. The totality of all observing systems for the North Atlantic is called the Composite Observing System for the North Atlantic (COSNA). It includes surface, upper-air and satellite systems. Irish synoptic stations on the Atlantic seaboard and the upper-air station at Valentia Observatory are important elements of the COSNA. Given that so much of the weather that affects us in this part of the world arrives from the west, these various observing systems in the North Atlantic provide a vital input for the forecasters.

Summary of significant weather worldwide during January 1994

Extreme cold in eastern U.S.A.

Some sizzling temperatures occurred during the first week. At Mae Hong Son in Thailand the thermometer rose to 35°C on the 5th, beating the previously known January maximum by over a degree. This was in marked contrast to a record low of 5°C which occurred there on December 30th. Goa was another record breaker on the 8th with a maximum of 34°C. In Australia, the temperature at Sydney soared to 38.5°C on the 6th, some 13 degrees above the average maximum, and this coupled with strong winds, exacerbated the local bush fires. On a wetter note, heavy rain caused flooding over parts of southern Britain. Plymouth, which had already seen its wettest December since 1965 with 225mm of rain, caught a further 71mm during the first five days of January.

Some of the world's drier places experienced unusually wet weather in the second week. One such spot was Yefren in western Libya where 39mm fell on the 13th. This was over six times the average for January. Calcutta, with a monthly average of 10mm, experienced 13mm in three hours on the 16th, and at Sur, in Oman, 96mm was deposited during thunderstorms and hail on the 9th, almost a whole year's rainfall in just six hours! The week's warmer spots included Meekatharra in Western Australia, recording 43.4°C on the 13th, and parts of Argentina also had some hot weather, with Rivadavia recording 34.3°C on the 9th, with 38°C at Trewlew and 37°C at San Antonio.

The major story of the third week was the exceptionally cold weather across eastern parts of the United States. New York recorded a minimum of minus 19°C on the 19th, setting a new record. Marquette, Michigan, recorded minus 31.7°C on the 18th, resetting the record of minus 25°C set in 1899. The severity of the cold eased later in the week, after remaining below minus 18°C for a record 56 successive hours at Cleveland, Ohio. It was warmer in the west and southwest of the States. Salt Lake City

reported a record-breaking 12.2°C on the 17th, and Bakersfield in California registered 24°C, also setting a new January record. In Europe it was a different story, the temperature in Palma, Mallorca, dipping to minus 3°C on the 22nd and 23rd to equal the long-term record low.

During the last week of the month, the main tropical storm in the southern hemisphere was 'Sarah', which developed between Vanuatu and New Caledonia and drifted slowly south, before weakening. As 'Sarah' crossed New Caledonia, she deposited nearly 250mm of rain at Ouaham during Wednesday 26th. In the USA some further noteworthy weather occurred: in Alabama 100 to 200mm of rain in a short space of time from the 27th to 28th during some heavy thunderstorms, causing flash floods. Nearer home, the British Isles had a very windy week, with winds gusting between 70 and 100 miles per hour, the north of Scotland catching the worst. Added to this, Lerwick, on the Shetland, saw the rainfall total for January rise to 233 millimetres, a new January record.

Saturday 1st: Cold and dry at first with some air and ground frost. Cloud increased with rain in the west and southwest by noon. Slack winds in the morning increased fresh to strong south to southeasterly during the afternoon and evening as rain spread northeastwards across the country. The winds veered westerly and the rain eased later.

Rainfall: 2 to 7mm generally, 10 to 20mm in the south and north, 27 mm in the west
Temperature: max. 6°C to 12°C, min. -2°C inland, 1°C to 2°C coastal
Sunshine: nil to 2 hours

Sunday 2nd: A bright and breezy day with sunny spells and well-scattered showers. Winds generally light to moderate southwesterly.

Rainfall: nil to 14mm generally, 10 to 17mm in the southeast
Temperature: max. 8°C to 10°C, min. -2°C to 4°C inland, 3°C to 7°C coastal
Sunshine: 2 to 6 hours

Monday 3rd: Cloudy with spells of heavy rain in the early morning, brighter and mostly dry in the afternoon. Cold with little cloud but some fog.

Rainfall: 7 to 13mm generally, 13 to 15mm in the south and northwest
Temperature: max. 5°C to 9°C, min. -3°C to 2°C inland, 2°C to 5°C coastal
Sunshine: trace to 4 hours

Tuesday 4th: Patches of fog overnight with air and ground frost in places, some freezing fog. Showers of rain, hail and sleet in the late morning. Sunny spells in the afternoon with showers in the north and west. Cloudy with some rain later, and light southerly winds generally freshened a little.

Rainfall: trace to 6mm generally, 7 to 11mm in the south, 7 to 15mm in the north
Temperature: max. 4°C to 10°C, min. -3°C to zero inland, zero to 5°C coastal
Sunshine: nil to 6 hours

Wednesday 5th: A depression moved eastwards over northern countries. Dull and cloudy with spells of rain in the morning; the rain eased in the afternoon and clear spells developed during the evening with air and ground frost. Winds generally strong and gusty from a westerly direction, except in Ulster where they were mostly light.

Rainfall: trace to 3mm generally, 6 to 10mm in the north and northwest
Temperature: max. 5°C to 9°C, min. -4°C to -1°C inland, -2°C to 4°C coastal
Sunshine: nil to 4 hours

Thursday 6th: A depression moved into the Irish Sea. Cold with widespread air and ground frost in the early morning. Some rain in northern counties spread southeastwards and fell as snow, chiefly in North Leinster during the morning and early afternoon. Bright spells and showers elsewhere. Light winds increased fresh to strong northerly during the day.

Rainfall: nil to 5mm
Temperature: max. 4°C to 8°C, min. -6°C to zero inland, -6°C to 4°C coastal
Sunshine: nil to 4 hours

Friday 7th: A depression centred in the Irish Sea moved away eastwards. Bright spells. Some rain and showers in the morning but otherwise mostly dry with light variable winds. Cold with ground frost, fog and some air frost overnight. Rain in the southwest by midnight.

Rainfall: nil to 5mm generally, 11 to 12mm in the south and west
Temperature: max. 5°C to 8°C, min. -2°C to zero inland, zero to 3°C coastal
Sunshine: trace to 6 hours

Saturday 8th: A frontal system moved slowly eastwards across the country. Rain in all areas for a time, clearing in the afternoon in the west and by late evening in the east. Winds light to moderate south to southeasterly, veered west to northwesterly for a time and then backed southwest to southeasterly. Some frost later.

Rainfall: 1 to 13mm generally, 15mm in the east

Temperature: max. 6°C to 9°C, min. -3°C to zero inland, -1°C to 5°C coastal;
ground frost: -2°C to -7°C generally, southwest above zero
Sunshine: nil or trace

Sunday 9th: After some early ground frost, milder weather moved in from the Atlantic as frontal systems crossed eastwards. Rain in all areas during the day, heaviest in the south and west. Rain became more showery in the evening. Winds light to moderate southeasterly became fresh to strong and gusty.

Rainfall: 4 to 16mm generally, 17 to 22mm in the south and northwest
Temperature: max. 9°C to 11°C, -1°C to 2°C inland, 2°C to 6°C coastal; *ground frost:* down to -5°C
Sunshine: nil

Monday 10th: Bright spells and occasional showers but good dry periods also. Light to moderate mainly southerly winds but blustery in showers.

Rainfall: nil to 7mm generally, 8 to 13mm in the south and west
Temperature: max. 8°C to 11°C, min. 3°C to 4°C inland, 3°C to 7°C coastal
Sunshine: nil to 5 hours

Tuesday 11th: A light southeasterly flow was displaced during the morning as a cold front introduced an unstable moderate southwesterly flow. A narrow band of rain, some of it heavy, spread eastwards followed by bright spells, and showers during the afternoon.

Rainfall: 1 to 13mm generally, 9 to 19mm in the south, 9 to 25mm in the west
Temperature: max. 6°C to 12°C, min. 2°C to 6°C
Sunshine: trace to 3 hours

Wednesday 12th: A depression moved northeastwards across the north of the country. Associated frontal troughs moved quickly eastwards leaving the country in an unstable southwesterly airflow. Widespread rain and showers, some of hail and thunder. Fresh to strong and gusty southerly winds later veered southwesterly.

Rainfall: 2 to 12mm generally, 15 to 17mm in the south and west
Temperature: max. 8°C to 12°C, min. 2°C to 6°C
Sunshine: trace to 2 hours

Thursday 13th: A strong unstable southwest to westerly airflow covered the country, reaching strong gale force at times in the north and west. Widespread showers, some of hail in the west, and some thunder close to the south and west coasts.

Rainfall: 1 to 10mm generally, 11 to 22mm in the west
Temperature: max. 7°C to 9°C, min. 4°C to 6°C
Sunshine: 1 to 5 hours

Friday 14th: A depression to the west of Ireland reached the southwest coast by late evening. Unstable southerly airflow slackened. Frequent showers, some of hail, but some sunny spells also. Rain spread into the south later.

Rainfall: trace to 5mm generally, 13 to 27mm in the south and west
Temperature: max. 7°C to 10°C, min. 1°C to 3°C inland, 3°C to 6°C coastal
Sunshine: 1 to 5 hours

Saturday 15th: A deep depression moved eastwards south of the country. Slack airflow over the northern half of the country with fog in the morning. Breezy in the south with spells of rain. The rain and fog cleared during the afternoon and temperatures dropped as the flow became northerly.

Rainfall: nil to 5mm in the north and east, 6 to 16mm in the south
Temperature: max. 4°C to 8°C, min. -1°C to +2°C inland, 1°C to 5°C coastal
Sunshine: nil to 3 hours

Sunday 16th: A cold light northerly airflow but a mostly dry day. Isolated showers, mainly in northern coastal counties, fell as hail or snow at times. Sunny in the morning, rather more cloudy in the afternoon.

Rainfall: nil to 2mm
Temperature: max. 4°C to 8°C, min. -1°C to zero inland, -3°C to +5°C coastal
Sunshine: 2 to 7 hours

Monday 17th: A weak ridge of high pressure in the morning moved southwards and was replaced by a fresh southwesterly airflow. A cold, dry day with sunny spells in places.

Rainfall: nil to 3mm generally, 19 to 21mm in the west
Temperature: max. 4°C to 9°C, min. -1°C to 1°C inland, -2°C to +4°C coastal
Sunshine: trace to 5 hours

Tuesday 18th: Dull and cloudy with outbreaks of rain and drizzle in the morning and early afternoon gave way to showers as a cold front crossed eastwards during the afternoon. Fresh to strong southwesterly winds veered westerly.

Rainfall: nil to 8mm generally, 9 to 18mm in the southwest and west
Temperature: max. 9°C to 11°C, min. 1°C to 2°C inland, 1°C to 6°C coastal
Sunshine: nil

Wednesday 19th: A light to moderate mainly southwest to west airflow. Sunny spells, with scattered showers away from the southeast, some of the showers of snow or hail. Rain in the evening.

Rainfall: nil to 6mm generally, 7 to 17mm in the north and northwest
Temperature: max. 5°C to 9°C, min. -1°C to +1°C inland, -1°C to +3°C coastal
Sunshine: 2 to 7 hours

Thursday 20th: Rain and drizzle in most areas, mainly light, dying out slowly in the afternoon and evening. Winds west to southwesterly light to moderate, increasing fresh to strong and gusty along north and northwest coasts. Milder than of late.

Rainfall: nil to 2mm generally, 3 to 11mm in the west
Temperature: max. 9°C to 11°C, min. 5°C to 7°C inland, 4°C to 9°C coastal
Sunshine: nil to 1 hour

Friday 21st: A moderate to fresh occasionally strong, southwesterly airflow for the morning with patches of rain and drizzle. A frontal trough moved southeastwards across the country during the late morning and afternoon, clearing the southeast in the evening. Mostly dry but cloudy conditions followed but showers continued along the coast. It was relatively mild throughout the day.

Rainfall: nil to 3mm generally
Temperature: max. 10°C to 13°C, min. 4°C to 7°C
Sunshine: nil to 2 hours

Saturday 22nd: A light to moderate southwesterly flow slackened during the morning as a weak ridge crossed from the Atlantic, but increased fresh to strong later in the day as rain-belts moved eastwards.

Rainfall: nil to 10mm generally, 10 to 31mm in the west
Temperature: max. 8°C to 12°C, min. 4°C to 6°C
Sunshine: nil to 4 hours

Sunday 23rd: A cold front cleared the country southeastwards during the early morning, leaving the country in a northwesterly flow which later backed southerly and slackened to light as a further front approached from the southwest. Rain cleared to bright spells and isolated showers.

Rainfall: trace to 7mm generally, 8 to 17mm in the southwest
Temperature: max. 8°C to 11°C, min. 3°C to 6°C
Sunshine: trace to 4 hours

Monday 24th: A warm front with associated rain and drizzle crossed the country northeastwards during the day, clearing the Antrim coast during the late afternoon. It left the country in a broad, humid light to moderate westerly flow with further patches of rain and drizzle.

Rainfall: trace to 9mm generally, 10 to 23mm in the west and southwest
Temperature: max. 10°C to 13°C, min. 3°C to 5°C inland, 3°C to 9°C coastal
Sunshine: nil to 1 hour

Tuesday 25th: A cold front crossed the country, followed by a very strong unstable westerly airflow. Fresh to strong southwest to west winds veered west to northwest strong to gale force and gusty. Rain early and showers later, some of hail or snow and with thunder.

Rainfall: 2 to 8mm in the south and southeast, 8 to 16mm generally
Temperature: max. 10°C to 12°C, min. 3°C to 5°C inland, 2°C to 8°C coastal
Sunshine: 1 to 4 hours

Wednesday 26th: The strong northwesterly winds backed southwest to westerly in the morning and became very gusty in the afternoon and evening. Generally mild, dull and cloudy. Outbreaks of rain and drizzle in the northern half of the country during the day spread southwards overnight.

Rainfall: nil to 5mm generally, 4 to 18mm in the north and northwest
Temperature: max. 9°C to 12°C, min. 4°C to 5°C inland, 4°C to 8°C coastal
Sunshine: nil to 1 hour

Thursday 27th: Strong (gale force in the northwest) and gusty westerly winds by day veered northwesterly overnight and decreased a little. Rather cloudy with scattered showers, some of hail with thunder. Cool.

Rainfall: nil to 10mm generally, 10 to 13mm in the west
Temperature: max. 7°C to 11°C, min. 1°C to 2°C inland, 1°C to 5°C coastal
Sunshine: trace to 3 hours

Friday 28th: A ridge of high pressure moved eastwards over the country during the day followed by a warm front overnight. Isolated showers at first and a few sunny spells but rain and drizzle reached the northwest in the afternoon and spread to all areas overnight.

Rainfall: nil to 8mm generally, 9 to 18mm in the west
Temperature: max. 5°C to 11°C, min. zero to 1°C inland, 1°C to 7°C coastal
Sunshine: nil to 4 hours

Saturday 29th: A strong mild southwesterly airflow. A cold front moved southeastwards across the country overnight. Mild and rather cloudy with patches of rain and drizzle mainly in the afternoon.

Rainfall: nil to 4mm generally, 5 to 14mm in the west
Temperature: max. 10°C to 12°C, min. -5°C to 8°C inland, 4°C to 9°C coastal
Sunshine: nil to 1 hour.

Sunday 30th: A west to northwesterly flow followed the cold front. Some showers in the west. Mostly dry and sunny elsewhere. Winds were fresh on exposed coasts but decreased later and backed southwesterly.

Rainfall: nil to 3mm generally
Temperature: max. 8°C to 10°C, min. 1°C to 4°C inland, 3°C to 6°C coastal
Sunshine: 2 to 6 hours.

Monday 31st: Winds backed southerly during the morning, generally light to moderate but fresh to strong along the coast. Custy. Rather cloudy with occasional rain or showers.

Rainfall: nil to 14mm in the northwest, east and southeast, 13 to 31mm in the west and southwest
Temperature: max. 8°C to 12°C, min. 1°C to 3°C inland, 2°C to 6°C coastal
Sunshine: nil to 2 hours

TABLES

County / Station	TEMPERATURE (°C)							
	Mean max.	Mean min.	Mean/ deviation from average		Highest max./date	Lowest min./date	Lowest gross min./date	
CO. CARLOW								
CARLOW (OAK PARK)	9.0	2.0	5.5	1.2	12.0 29	-2.7 6	-6.3 6	
CO. CLARE								
SHANNON AIRPORT	9.1	3.3	6.2	1.1	11.4 29	-3.9 6	-10.9 6	
CARRON	8.2	2.4	5.3		10.5 24	-3.3 6	-8.0 6	
CO. CORK								
FERMOY (MOORE PARK)	9.4	2.0	5.7	1.0	12.1 24	-2.6 4	-8.6 4	
CORK AIRPORT	8.9	2.6	5.8	0.8	12.7 24	-1.3 17 19	-5.9 17	
SHERKIN ISLAND	9.8	5.6	7.7	1.1	11.3 1	0.9 17	-4.7 17	
CO. DONEGAL								
MALIN HEAD	8.0	3.3	5.7	0.4	10.6 29	1.0 1	-1.7 8	
CATHLEEN'S FALL	8.1	2.2	5.2	0.7	12.0 29	-1.9 1 6		
LETTERKENNY (MAGHERENAN)	8.2	1.9	5.1		11.2 29	-2.5 3		
CO. DUBLIN								
DUBLIN AIRPORT	8.4	2.8	5.6	0.9	11.7 11	-2.1 6	-8.2 6	
CASEMENT AERODROME	8.1	2.1	5.1	0.7	11.0 11 24	-5.5 6	-8.5 6	
DUBLIN (MERRION SQUARE)	9.1	3.7	6.4	0.7	12.4 11	-1.2 6		
CO. GALWAY								
GALWAY (UNIV. COLL.)	9.1	3.8	6.5	1.6	10.8 9	0.1 6		
MAAM VALLEY	8.9	3.6	6.3		11.5 24	-1.7 6	-4.3 6	
BALLYGAR	8.0	1.5	4.8		10.5 24 29	-5.1 6	-8.0 6	
CO. KERRY								
VALENTIA OBSERVATORY	10.2	5.2	7.7	1.1	11.9 1	-0.8 6	-3.8 6	
ARDFERT (LISCAHANE)	9.5	3.4	6.5		11.6 24	-2.6 6	-7.2 6	
CO. KILDARE								
NAAS (GOWRAN GRANGE)	8.0	1.7	4.9		10.7 24	-4.4 6	-9.5 6	
CO. KILKENNY								
KILKENNY	8.9	1.7	5.3	1.1	12.2 24	-3.1 4	-8.2 6	
CO. LEITRIM								
BALLINAMORE	7.9	1.3	4.6	0.9	10.4 25	-3.9 6	-9.0 6	
CO. LIMERICK								
MOUNT RUSSELL	8.4	2.9	5.7		11.3 24	-1.6 6	-7.4 6	
CO. LOUTH								
ARDEE (BOHARNAMOE)	8.5	1.5	5.0		11.4 20	-3.9 6	-11.9 6	
CO. MAYO								
CLAREMORRIS	8.3	1.8	5.1	1.1	10.6 24	-4.5 6	-8.4 6	
BELMULLET	8.9	3.6	6.3	0.6	10.8 20	0.5 28 29	-4.5 28 29	
NEWPORT (FURNACE)	8.5	3.2	5.9	0.6	10.5 21 24	-0.5 1	-5.0 6	
CO. MEATH								
WARRENTOWN	7.8	1.7	4.8	0.8	10.8 29	-4.1 6	-11.2 6	
CO. MONAGHAN								
CLONES	7.5	1.9	4.7	0.9	10.7 29	-2.4 6	-8.2 6	
CO. OFFALY								
BIRR	8.5	2.1	5.3	0.9	11.6 11	-5.4 6	-12.5 6	
DERRYGREENAGH	8.0	1.1	4.6	1.0	11.0 11	-4.6 6	-15.1 6	
CO. SLIGO								
MARKREE CASTLE	7.7	1.1	4.4	0.5	11.2 29	-4.9 6		
CO. TIPPERARY								
FETHARD (PARSONSHILL)	7.8	1.8	4.8		10.8 24	-2.6 6	-5.2 6	
CO. WATERFORD								
WATERFORD (TYCOR)	9.2	2.7	6.0	0.9	13.0 24	-1.1 4	-6.9 4	
DUNGARVAN (CARRIGLEA)	9.6	2.6	6.1		13.2 21	-2.4 17	-4.7 17	
CO. WESTMEATH								
MULLINGAR II	7.8	1.3	4.6	1.0	10.9 22	-6.0 6	-8.5 6	
CO. WEXFORD								
JOHNSTOWN CASTLE	8.9	2.9	5.9	0.8	11.7 24	-0.3 8	-4.7 6	
ROSSLARE	9.0	4.0	6.5	0.5	11.1 24	1.0 1	-3.0 8	
CLONROCHE	8.2	2.4	5.3	0.9	11.5 24	-0.9 6	-5.5 6	
JOHN F. KENNEDY PARK	9.1	2.5	5.8	0.9	11.9 24	-0.6 4 17	-6.1 17	

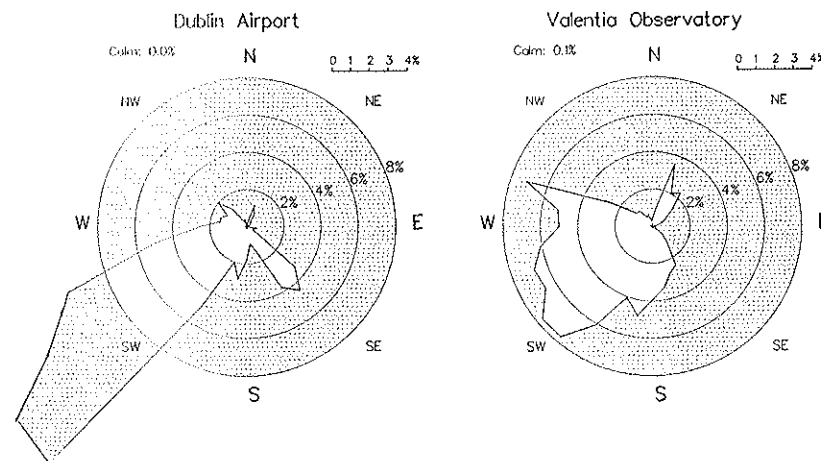
TABLES

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)	124.1	153	15.0	9	1.91	118	23	6.1 19
CO. CLARE								
SHANNON AIRPORT	164.8	177	17.7	14	1.55	91	19	6.0 16
CARRON	257.9	166	27.8	31				
CO. CORK								
FERMOY (MOORE PARK)	147.1	129	22.9	31	1.62	108	20	4.9 19
CORK AIRPORT	154.7	105	18.7	11	2.35	127	28	6.5 16
SHERKIN ISLAND	159.9	122	16.6	23	2.01	106	24	6.7 16
CO. DONEGAL								
MALIN HEAD	145.1	137	11.3	26	1.24	94	16	4.6 10
CATHLEEN'S FALL	155.3	154	16.7	19	1.00	71	13	4.8 10
LETTERKENNY (MAGHERENAN)	191.6		15.3	4				
CO. DUBLIN								
DUBLIN AIRPORT	83.3	123	9.8	3	1.77	94	22	6.6 19
CASEMENT AERODROME	85.6	130	12.9	3	1.66	94	21	6.7 19
DUBLIN (MERRION SQUARE)	70.6	109	10.6	9				
CO. GALWAY								
GALWAY (UNIV. COLL.)	185.4	163	21.1	31	1.48	93	18	5.4 16
MAAM VALLEY	390.5		31.1	22				
BALLYGAR	150.3	149	19.3	31				
CO. KERRY								
VALENTIA OBSERVATORY	218.0	135	26.6	31	1.30	83	16	4.3 16
ARDFERT (LISCAHANE)	188.1		20.3	31				
CO. KILDARE								
NAAS (GOWRAN GRANGE)	108.2		11.3	2				
CO. KILKENNY								
KILKENNY	122.4	139	12.7	9	2.02	113	25	6.9 19
CO. LEITRIM								
BALLINAMORE	170.0	144	20.4	1	1.26	82	16	4.9 10
CO. LIMERICK								
MOUNT RUSSELL	167.2		27.2	14				
CO. LOUTH								
ARDEE (BOHARNAMOE)	127.6	147	15.0	9				
CO. MAYO								
CLAREMORRIS	159.9	138	20.8	31	1.13	70	14	3.8 16 30
BELMULLET	171.4	144	23.2	9	0.80	51	10	3.1 30
NEWPORT (FURNACE)	245.5	152	22.9	24				
CO. MEATH								
WARRENTOWN	122.7	148	15.4	8				
CO. MONAGHAN								
CLONES	108.3	123	17.1	1	1.28	83	16	5.3 16
CO. OFFALY								
BIRR	110.3	145	10.3	25				
DERRYGREENAGH	132.9	156	11.2	2				
CO. SLIGO								
MARKREE CASTLE	152.8	133	19.1	1				
CO. TIPPERARY								
FETHARD (PARSONSHILL)	136.3		18.0	14				
CO. WATERFORD								
WATERFORD (TYCOR)	155.3	142	18.9	14				
DUNGARVAN (CARRIGLEA)	154.6		23.6	31	1.95		23	6.2 19
CO. WESTMEATH								
MULLINGAR II	113.5	125	13.0	11	1.71	93	21	6.1 19
CO. WEXFORD								
JOHNSTOWN CASTLE	130.2	121	14.6	9	2.31	124	28	6.9 19
ROSSLARE	106.9	113	15.5	15	2.39	117	29	7.2 19
CLONROCHE	164.6	130	21.2	14	1.79	103	22	5.6 19
JOHN F. KENNEDY PARK	143.3	131	17.5	14	2.26	135	27	7.0 16

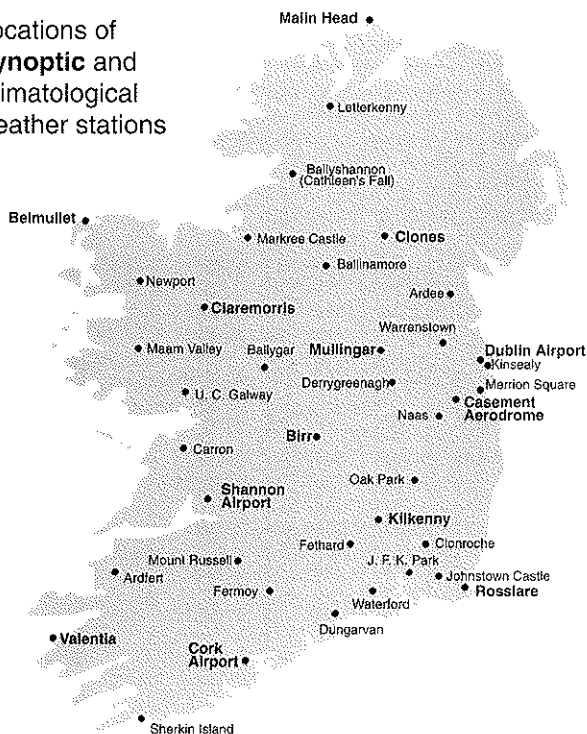
County / Station	WEATHER — No. OF DAYS WITH									MEAN 0900 SOIL TEMPERATURES (°C)		
	Rain days	Wet days	Air frost	Ground frost	Snow lying	Snow	Hail	Thunder	Fog	10cm	20cm	30cm
CO. CARLOW												
CARLOW (OAK PARK)	24	21	7	14						3.5	3.9	4.5
CO. CLARE												
SHANNON AIRPORT	25	23	4	11	2	0	6	1	0	4.6	5.4	5.9
CARRON	29	27	1	13						4.1		4.6
CO. CORK												
FERMOY (MOORE PARK)	24	21	8	25						4.7	5.0	5.3
CORK AIRPORT	26	19	4	11	1	0	1	0	8	4.5	5.0	6.0
SHERKIN ISLAND	27	24	0	7								
CO. DONEGAL												
MALIN HEAD	28	25	0	3	6	0	12	1	0	4.1	4.6	5.6
CATHLEEN'S FALL	30	24	4									
LETTERKENNY (MAGHERENAN)	31	27	7									
CO. DUBLIN												
DUBLIN AIRPORT	24	17	2	15	3	0	1	0	3	4.1	4.7	5.2
CASEMENT AERODROME	23	17	5	13	3	0	0	0	1	3.2	4.0	4.4
DUBLIN (MERRION SQUARE)	18	16	2									
CO. GALWAY												
GALWAY (UNIV. COLL.)	28	26	0									
MAAM VALLEY	31	27	3	8								
BALLYGAR	28	21	9	17								
CO. KERRY												
VALENTIA OBSERVATORY	28	24	1	3	0	0	4	0	0	6.1	6.8	7.9
ARDFERT (LISCAHANE)	28	23	3	12								
CO. KILDARE												
NAAS (GOWRAN GRANGE)	28	24	7	18						3.5		
CO. KILKENNY												
KILKENNY	27	19	12	21	2	0	1	0	4	3.9	4.2	5.0
CO. LEITRIM												
BALLINAMORE	29	23	12	19						4.1	4.7	4.7
CO. LIMERICK												
MOUNT RUSSELL	27	22	4	9						4.0	4.6	
CO. LOUTH												
ARDEE (BOHANNAMOE)	25	18	10	29						3.6	3.7	4.2
CO. MAYO												
CLAREMORRIS	30	23	7	13	3	0	8	1	4	3.6	4.2	4.4
BELMULLET	30	27	0	10	4	0	15	1	0	4.9	5.3	6.0
NEWPORT (FURNACE)	31	30	1	13								
CO. MEATH												
WARRENSTOWN	26	21	6	20						3.2	3.7	3.8
CO. MONAGHAN												
CLONES	28	19	7	15	5	0	0	0	5	3.6	4.1	4.8
CO. OFFALY												
BIRR	25	20	7	15	2	0	0	1	0	3.9	4.4	5.1
DERRYGREENAGH	28	22	11	28								
CO. SLIGO												
MARKREE CASTLE	29	23	11									
CO. TIPPERARY												
FETHARD (PARSONSHILL)	28	22	9	17						4.4	4.5	
CO. WATERFORD												
WATERFORD (TYCOR)	25	21	5	19								
DUNGARVAN (CARRIGLEA)	26	21	7	17							5.4	5.7
CO. WESTMEATH												
MULLINGAR II	24	19	10	19	3	0	0	1	3	3.2	3.6	4.3
CO. WEXFORD												
JOHNSTOWN CASTLE	25	20	3	13						4.8	5.2	5.5
ROSSLARE	25	18	0	12	1	0	2	1	3	5.1	5.6	6.3
CLONROCHE	24	21	4	20						4.4	4.7	5.1
JOHN F. KENNEDY PARK	25	19	6	22						4.4	4.9	5.7

County / Station	WIND (KTS)									
	Mean speed	Max. 10-min. mean dir. speed date/hour			Max. Gust dir. speed date/time		Days with gales		Hours with gale gusts	
CO. CLARE										
SHANNON AIRPORT	12.0	230°	37	12/ 5	270°	60	25/2052	4	13	88
		280°	37	25/23	260°	60	27/1347			
		280°	37	27/17						
CO. CORK										
CORK AIRPORT	11.5	260°	36	27/14	260°	56	27/1340	2	12	89
CO. DONEGAL										
MALIN HEAD	21.5	270°	54	27/ 8	270°	80	27/ 728	17	28	356
CO. DUBLIN										
CASEMENT	15.4	210°	39	12/ 6	260°	61	25/2152	7	17	164
		270°	39	25/23						
DUBLIN AIRPORT	13.5	260°	42	25/23	150°	60	9/1017	3	14	117
		260°	60	25/2222						
CO. KERRY										
VALENTIA OBSERVATORY	11.9	200°	35	12/ 4	260°	62	25/1320	1	19	142
CO. KILKENNY										
KILKENNY	8.8	280°	41	25/22	280°	68	25/2126	1	8	67
CO. MAYO										
BELMULLET	20.3	280°	47	25/20	270°	79	25/1822	11	29	346
CLAREMORRIS	11.0	290°	40	25/20	290°	69	25/1915	1	16	103
CO. MONAGHAN										
CLONES	9.3	300°	37	25/23	230°	58	12/ 713	1	12	73
CO. OFFALY										
BIRR	8.9	240°	30	12/ 6	290°	58	25/2027	0	10	80
CO. WESTMEATH										
MULLINGAR	10.9	150°	30	9/16	280°	55	25/2015	0	13	97
		230°	30	12/ 7						
		280°	30	25/22						
		290°	30	25/21						
CO. WEXFORD										
ROSSLARE	10.6	40°	29	15/18	290°	63	25/2155	0	18	126

FREQUENCY OF WIND DIRECTION



Locations of Synoptic and Climatological weather stations



The MONTHLY WEATHER BULLETIN is produced by the Climatology and Applications Division of the Meteorological Service. An annual subscription to the bulletin costs £25. Further climatological information is available from the Climate Enquiries Office, Glasnevin Hill, Dublin 9, telephone 01-8375436, fax 01-8369115.

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, 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 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).