



# AGROMETEOROLOGICAL BULLETIN

## The Weather of January 1990

### Summary

*Atlantic depressions and strong southwesterly winds prevailed.  
The weather was very mild and wet particularly after 20th,  
but with regional variation in sunshine*

### Meteorological Situation

Atlantic weather systems and a southwesterly airflow dominated throughout the month. Up to the 23rd the deepening Atlantic depressions moved towards Iceland as the Azores-European high remained stationary. Associated frontal troughs crossed the country in fairly regular succession. There were increased southwesterly winds on 8th, 11th, and 19th while extensive warm sector conditions occurred on 14th-16th and 20th/21st. A more westerly airflow set in on 17th and 21st/22nd.

The Azores-European high had declined by 23rd and the deepening Atlantic waves followed a more southerly track. In particular the first depression crossed over Ireland on 25th producing gales and strong winds. The second system pursued an even more southerly route reaching Britain *via* Biscay on 27th/28th. A low centre to the southeast of Iceland was drawn into phase with this last system and frontal troughs affected northwestern parts of the country. The succeeding systems retreated to slightly more northerly latitudes and a complex low developed in mid-Atlantic, its troughs affecting Ireland on 29th/30th

### Precipitation

Amounts were generally above to well above normal, varying from 233% at Glenties to 90% at Kinscally. Rain occurred on almost all days, the wettest spell occurring in the last 10 days, particularly from 22nd to 25th.

### Temperature

Mean air temperature was well above normal varying from 2.6°C above at Dublin Airport to 1.2°C above at Malin Head. The overall trend was for improving temperature to mid-month and decreasing values subsequently although there was a second very mild spell about 21st. Both the maximum and minimum values equally contributed to the high means. Air frost occurred on 8th (coldest night) and at times during spell 24th to 28th.

### Sunshine and Radiation

Amounts were above normal in the east and below normal in the west, except at Galway. Sunshine hours varied from 133% of normal at Casement Aerodrome to 68% at Belmullet. Global radiation varied from 109% at Dublin Airport to 91% at Valentia.

### Wind

Frequent days with gales occurred particularly in the west and generally throughout the country on 19th and 25th and 30th.





TABLE 1 (CONTINUED)

JANUARY 1990

STATION	PERIOD	RAINFALL (mm)				TEMPERATURE (°C)														BRIGHT SUNSHINE		WIND				
		AMOUNT	% OF AVERAGE	RAIN DAYS	WET DAYS	AIR								GROUND		SOIL (10cm)		TOTAL NO. OF HOURS	% OF AVERAGE	MEAN SPEED (ms <sup>-1</sup> )	DAYS WITH GALE GUSTS	P.E. (PENMAN) (mm)				
						MEAN MAX.	MEAN MIN.	MEAN DAILY	DIFFERENCE FROM AVERAGE	LOWEST MIN.	DATE	DAYS WITH AIR FROST	DEGREE DAYS ABOVE 4.4°C	% OF AVERAGE	DEGREE DAYS ABOVE 10.0°C	% OF AVERAGE	LOWEST "GRASS-MIN"						DATE	DAYS WITH GROUND FROST	MEAN DAILY	DIFFERENCE FROM AVERAGE
Cahirciveen (Valentia Obsy.) Co. Kerry	1-10	61.4	-	9	8	11.0	5.1	8.1	-	2.0	4	0	38	-	3	-	-0.9	8	2	7.0	-	14.3	-	5.8	7	-
	11-20	32.8	-	9	7	11.1	6.9	9.0	-	2.5	13	0	47	-	5	-	0.0	13	0	8.2	-	11.5	-	8.4	8	-
	21-END	102.9	-	11	11	9.7	4.7	7.2	-	2.8	27	0	32	-	2	-	0.0	27	0	6.5	-	9.9	-	9.8	10	-
	MONTH	197.1	122	29	26	10.6	5.5	8.1	+1.5	2.0	4	0	118	116	11	122	-0.9	8	2	7.2	+1.3	35.7	74	8.0	25	19
Ardfert (Liscahane) Co. Kerry	1-10	33.9	-	9	9	10.7	4.1	7.4	-	2.9	8	0	31	-	2	-	-1.9	9	3	-	-	23.9	-	-	-	-
	11-20	40.6	-	8	8	11.0	6.1	8.5	-	2.9	17	0	42	-	5	-	-0.9	13	2	-	-	14.2	-	-	-	-
	21-END	107.7	-	11	10	9.2	4.3	6.8	-	2.4	27	0	28	-	2	-	-3.2	28	2	-	-	16.9	-	-	-	-
	MONTH	182.2	-	28	27	10.3	4.8	7.5	-	2.4	27	0	102	-	9	-	-3.2	28	7	-	-	45.8	-	-	-	-
Lullymore Co. Kildare	1-10	N/A	-	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	-	N/A	-	N/A	N/A	N/A	-	-	N/A	-	N/A	-	-	-
	11-20	N/A	-	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	-	N/A	-	N/A	N/A	N/A	-	-	N/A	-	N/A	-	-	-
	21-END	N/A	-	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	-	N/A	-	N/A	N/A	N/A	-	-	N/A	-	N/A	-	-	-
	MONTH	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	-	N/A	-	N/A	N/A	N/A	-	-	N/A	-	N/A	-	N/A	N/A
Kilkenny Co. Kilkenny	1-10	22.8	-	6	5	10.5	2.1	6.3	-	-1.4	8	3	26	-	2	-	-7.7	7	8	6.1	-	15.7	-	2.5	1	-
	11-20	12.8	-	7	5	10.4	3.8	7.1	-	-2.0	13	1	32	-	4	-	-7.4	13	5	6.5	-	21.8	-	5.0	5	-
	21-END	51.4	-	10	10	8.6	2.7	5.7	-	-0.8	27	1	24	-	2	-	-4.2	27	6	5.0	-	30.3	-	6.6	7	-
	MONTH	87.0	99	23	20	9.8	2.9	6.3	+2.1	-2.0	13	5	82	126	8	-	-7.7	7	19	5.8	+1.9	67.8	123	4.8	13	6
Mooncoin (Silverspring) Co. Kilkenny	1-10	23.1	-	10	6	10.6	1.3	5.9	-	-1.5	8	3	23	-	2	-	-7.4	7	8	-	-	12.5	-	-	-	-
	11-20	20.6	-	7	5	11.0	3.2	7.1	-	-3.4	13	3	34	-	5	-	-8.2	6	6	-	-	29.9	-	-	-	-
	21-END	78.8	-	9	9	9.1	2.9	6.0	-	-0.6	28	3	26	-	1	-	-7.8	28	6	-	-	30.6	-	-	-	-
	MONTH	122.5	109	26	20	10.2	2.5	6.3	-	-3.4	13	9	83	-	8	-	-8.2	6	20	-	-	73.0	-	-	-	-
Ballinamore Co. Leitrim	1-10	34.2	-	9	7	9.2	0.8	5.0	-	-2.2	10	4	16	-	1	-	-7.0	2	7	-	-	14.8	-	2.2	-	-
	11-20	36.6	-	9	7	9.2	2.9	6.1	-	-1.2	13	1	24	-	2	-	-4.1	18	7	-	-	12.4	-	3.7	-	-
	21-END	91.5	-	11	10	7.6	1.5	4.5	-	-0.4	29	5	14	-	1	-	-4.7	28	5	-	-	16.3	-	4.7	-	-
	MONTH	162.3	138	29	24	8.6	1.7	5.2	-	-2.2	10	10	54	-	3	-	-7.0	2	19	-	-	43.5	-	3.5	-	-1
Ardee (Boharnamoe) Co. Louth	1-10	14.2	-	7	6	N/A	3.9	N/A	-	-1.9	8	1	N/A	-	N/A	-	N/A	N/A	-	-	-	-	-	-	-	-
	11-20	14.1	-	8	4	10.0	4.0	7.0	-	-0.2	13	1	31	-	3	-	N/A	N/A	-	-	-	-	-	-	-	-
	21-END	54.3	-	9	9	7.9	1.7	4.8	-	-1.0	28	2	15	-	0	-	N/A	N/A	-	-	-	-	-	-	-	-
	MONTH	82.6	95	24	19	N/A	3.2	N/A	-	-1.9	8	4	N/A	-	N/A	-	N/A	N/A	-	-	-	-	-	-	-	-

TABLE 1 (CONTINUED)

JANUARY 1990

STATION	PERIOD	RAINFALL (mm)				TEMPERATURE (°C)														BRIGHT SUNSHINE		WIND		P.E. (PENMAN) (mm)												
		AMOUNT	% OF AVERAGE	RAIN DAYS	WET DAYS	AIR							GROUND			SOIL (10cm)				TOTAL NO. OF HOURS	% OF AVERAGE	MEAN SPEED (ms <sup>-1</sup> )	DAYS WITH GALE GUSTS													
						MEAN MAX.	MEAN MIN.	MEAN DAILY	DIFFERENCE FROM AVERAGE	LOWEST MIN.	DATE	DAYS WITH AIR FROST	DEGREE DAYS ABOVE 4.4°C	% OF AVERAGE	DEGREE DAYS ABOVE 10.0°C	% OF AVERAGE	LOWEST "GRASS-MIN"	DATE	DAYS WITH GROUND FROST						MEAN DAILY	DIFFERENCE FROM AVERAGE										
Ballinrobe (Creagh) Co. Mayo	1-10	N/A	-	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	-	N/A	-	N/A	N/A	-	-	N/A	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	11-20	N/A	-	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	-	N/A	-	N/A	N/A	-	-	N/A	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	
	21-END	N/A	-	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	-	N/A	-	N/A	N/A	-	-	N/A	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	
	MONTH	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	-	N/A	-	N/A	N/A	-	-	N/A	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	
Belmullet Co. Mayo	1-10	34.7	-	8	7	9.6	4.4	7.0	-	2.9	4	0	28	-	1	-	-2.4	8	5	5.5	-	14.1	-	7.7	8	-	-	-	-	-	-	-	-	-	-	
	11-20	50.0	-	9	9	10.5	6.0	8.3	-	3.2	17	0	39	-	3	-	-1.0	13	1	7.0	-	7.6	-	11.5	10	-	-	-	-	-	-	-	-	-	-	
	21-END	130.5	-	11	11	8.6	3.2	5.9	-	0.7	24	0	21	-	0	-	-1.0	28	2	5.2	-	11.2	-	10.8	11	-	-	-	-	-	-	-	-	-	-	
	MONTH	215.2	181	28	27	9.5	4.5	7.0	+1.3	0.7	24	0	88	117	4	-	-2.4	8	8	5.9	+0.9	32.9	68	10.0	29	24	-	-	-	-	-	-	-	-		
Claremorris Co. Mayo	1-10	44.3	-	7	7	9.1	2.1	5.6	-	-1.4	3	2	19	-	0	-	-3.8	8	3	4.8	-	21.7	-	4.9	2	-	-	-	-	-	-	-	-	-	-	
	11-20	48.9	-	9	8	9.8	4.6	7.2	-	1.6	13	0	31	-	2	-	-0.8	13	1	6.3	-	12.0	-	7.7	7	-	-	-	-	-	-	-	-	-	-	
	21-END	110.0	-	11	11	8.0	1.9	4.9	-	-0.4	28	1	16	-	0	-	-5.3	28	3	4.3	-	14.9	-	7.0	9	-	-	-	-	-	-	-	-	-	-	
	MONTH	203.2	175	27	26	8.9	2.8	5.9	+1.9	-1.4	3	3	67	122	3	-	-5.3	28	7	5.1	+1.3	48.6	97	6.6	18	8	-	-	-	-	-	-	-	-	-	
Glenamoy Co. Mayo	1-10	50.8	-	9	7	10.0	4.6	7.3	-	1.8	8	0	31	-	1	-	-3.6	4	5	-	-	13.9	-	4.1	-	-	-	-	-	-	-	-	-	-	-	
	11-20	58.8	-	10	8	10.5	4.7	7.6	-	2.0	12	0	34	-	3	-	-0.8	13	2	-	-	6.0	-	6.8	-	-	-	-	-	-	-	-	-	-	-	
	21-END	125.7	-	11	11	7.9	2.5	5.2	-	0.2	28	0	16	-	1	-	-1.8	28	4	-	-	12.9	-	7.7	-	-	-	-	-	-	-	-	-	-	-	
	MONTH	235.3	156	30	26	9.4	3.9	6.7	-	0.2	28	0	81	-	5	-	-3.6	4	11	-	-	32.8	-	6.2	-	1	-	-	-	-	-	-	-	-		
Dunsany (Grange) Co. Meath	1-10	17.2	-	10	5	9.4	2.9	6.2	-	0.0	8	0	22	-	1	-	-5.3	8	5	-	-	15.2	-	-	-	-	-	-	-	-	-	-	-	-	-	
	11-20	18.8	-	8	6	9.3	4.0	6.7	-	-0.3	13	1	27	-	3	-	-3.2	13	1	-	-	23.4	-	-	-	-	-	-	-	-	-	-	-	-	-	
	21-END	45.2	-	10	8	8.2	1.7	4.9	-	-1.1	28	2	17	-	1	-	-2.0	28	5	-	-	26.6	-	-	-	-	-	-	-	-	-	-	-	-	-	
	MONTH	81.2	102	28	19	8.9	2.8	5.9	-	-1.1	28	3	66	-	4	-	-5.3	8	11	-	-	65.2	-	-	-	-	-	-	-	-	-	-	-	-	-	
Clones Co. Monaghan	1-10	20.9	-	9	6	9.4	3.1	6.2	-	-1.6	8	1	22	-	0	-	-6.6	8	4	5.3	-	15.4	-	3.6	2	-	-	-	-	-	-	-	-	-	-	
	11-20	25.3	-	8	7	9.4	4.2	6.8	-	0.6	13	0	28	-	2	-	-1.3	13	2	6.0	-	15.3	-	6.2	7	-	-	-	-	-	-	-	-	-	-	
	21-END	60.2	-	10	9	7.7	2.3	5.0	-	0.0	28	0	17	-	1	-	-4.3	28	5	4.3	-	19.7	-	6.5	8	-	-	-	-	-	-	-	-	-	-	
	MONTH	106.4	121	27	22	8.8	3.2	6.0	+2.2	-1.6	8	1	68	139	4	-	-6.6	8	11	5.2	+1.7	50.4	105	5.5	17	4	-	-	-	-	-	-	-	-	-	
Birr Co. Offaly	1-10	20.2	-	7	4	10.0	3.4	6.7	-	0.3	8	0	26	-	1	-	-3.4	8	6	5.6	-	17.7	-	3.2	2	-	-	-	-	-	-	-	-	-	-	
	11-20	15.4	-	9	5	10.5	4.9	7.7	-	1.0	13	0	36	-	4	-	-3.8	13	2	6.5	-	15.6	-	5.2	6	-	-	-	-	-	-	-	-	-	-	
	21-END	69.2	-	10	10	8.3	2.8	5.6	-	-0.4	28	1	22	-	2	-	-2.6	28	6	4.6	-	21.0	-	5.6	9	-	-	-	-	-	-	-	-	-	-	
	MONTH	104.8	138	26	19	9.6	3.7	6.6	+2.2	-0.4	28	1	84	133	8	-	-3.8	13	14	5.5	+1.5	54.3	99	4.7	17	6	-	-	-	-	-	-	-	-	-	

NOTES ON THE TABLES IN JANUARY ISSUE



TABLE 2 GLOBAL RADIATION

STATION	PERIOD	AMOUNT MJ/m <sup>2</sup>
Malin Head Co. Donegal	1-10	17.88
	11-20	16.32
	21-end	23.16
	Month	57.36
Dublin Airport Co. Dublin	1-10	20.25
	11-20	26.22
	21-end	36.39
	Month	82.86
Cahirciveen (Valentia Obs.) Co. Kerry	1-10	18.87
	11-20	22.70
	21-end	25.90
	Month	67.47
Kilkenny Co. Kilkenny	1-10	21.21
	11-20	27.40
	21-end	38.92
	Month	87.53
Belmullet Co. Mayo	1-10	16.53
	11-20	14.68
	21-end	22.06
	Month	53.27
Clones Co. Monaghan	1-10	18.81
	11-20	19.77
	21-end	31.25
	Month	69.83
Birr Co. Offaly	1-10	20.86
	11-20	23.33
	21-end	34.40
	Month	78.59

TABLE 3 POTENTIAL EVAPOTRANSPIRATION (P.E.) AND SOIL MOISTURE

STATION	PERIOD	SOIL MOISTURE (mm)			
		P.E.(mm)	Deficit	Accumulated Deficit	Surplus
Carlow (Oak Park) Co. Carlow	1-10	(-8.4)	-	0	22
	11-20	1.9	-	0	13
	21-end	4.2	-	0	58
	Month	---	-	-	---
Kinsealy Co. Dublin	1-10	(-0.9)	-	0	23
	11-20	3.3	-	0	6
	21-end	2.6	-	0	25
	Month	---	-	-	---
Cahirciveen (Valentia Obs.) Co. Kerry	1-10	(-11.5)	-	0	69
	11-20	(-2.9)	-	0	37
	21-end	(-4.2)	-	0	112
	Month	---	-	-	---
Ballinamore Co. Leitrim	1-10	2.4	-	0	32
	11-20	3.9	-	0	33
	21-end	( 22.7)	-	0	69
	Month	---	-	-	---
Glenamoy Co. Mayo	1-10	---	-	0	34
	11-20	---	-	0	47
	21-end	---	-	0	63
	Month	---	-	-	---
Johnstown Castle Co. Wexford	1-10	(-0.9)	-	0	39
	11-20	0.8	-	0	27
	21-end	(10.0)	-	0	47
	Month	---	-	-	---

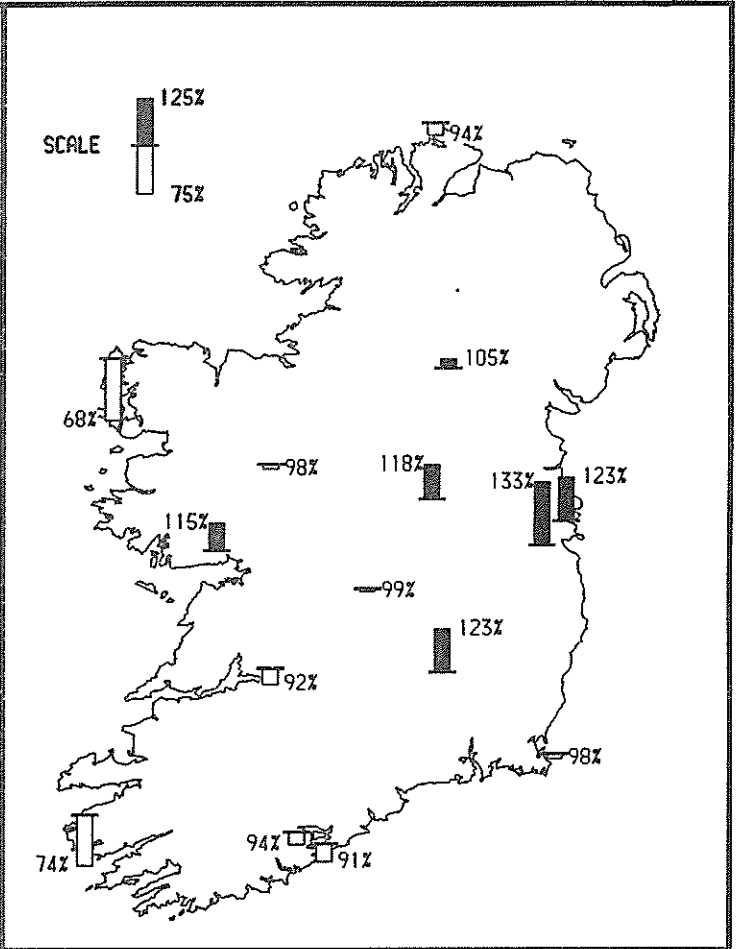
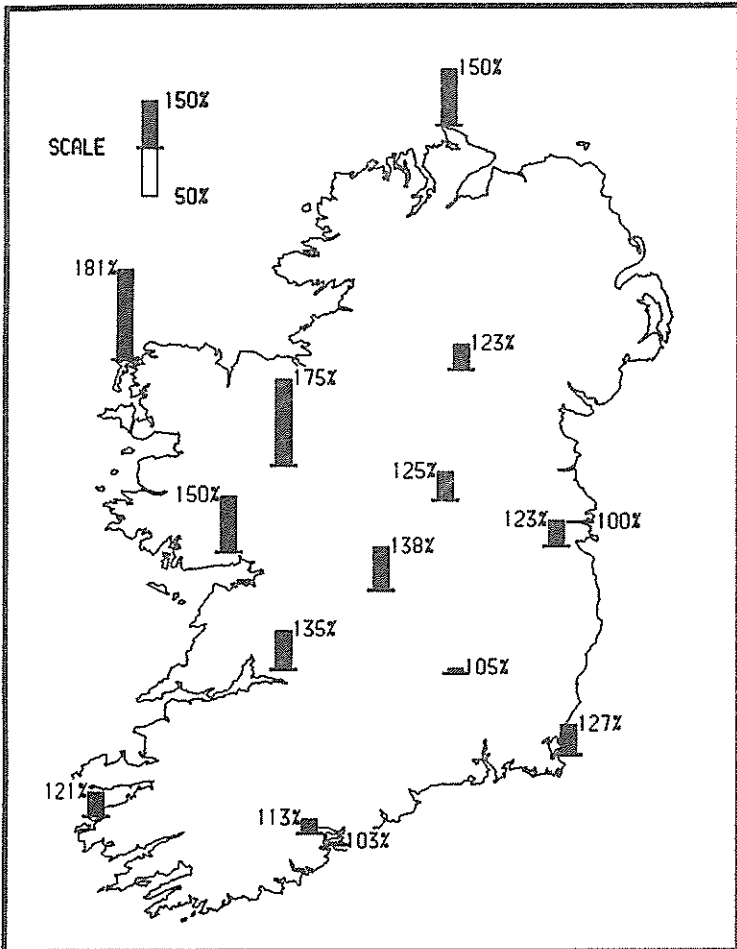
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Notes on the tables in January issue

TABLE 4 SOIL CLIMATE (MULLINGAR)

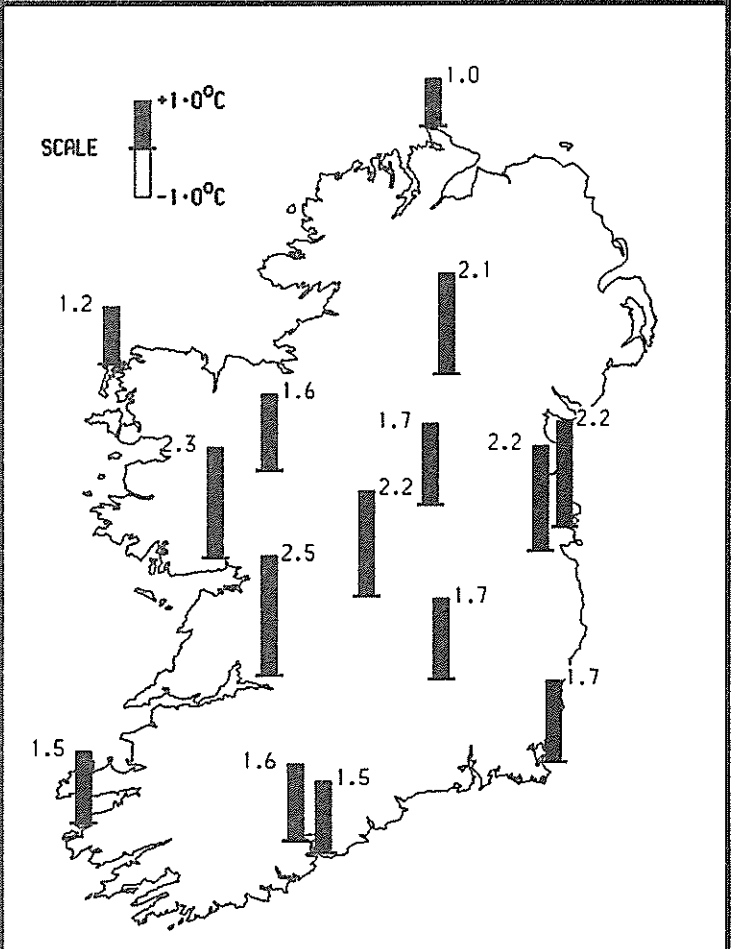
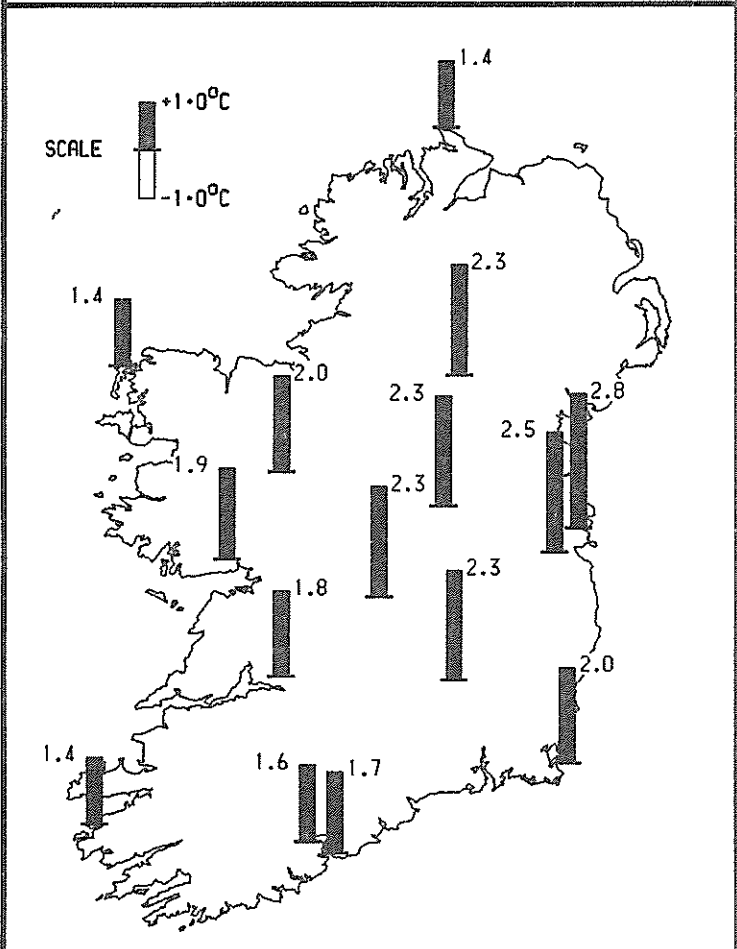
BARE SOIL TYPE	PERIOD	MEAN TEMPERATURE (°C at 100mm)			TEMPERATURE GRADIENT (to 200mm)	SOIL WATER POTENTIAL (hPa) (at depths)	
		Max.	Daily	Min.		75mm	200mm
		Peat	1-10	5.8	5.1	4.1	0.3
11-20	7.1		6.0	4.9	0.2	48.5	119.9
21-end	5.6		4.2	3.3	0.7	50.0	67.9
Mineral	1-10	6.4	5.1	3.3	0.0	66.8	60.5
	11-20	6.7	6.0	4.2	0.2	58.0	48.7
	21-end	6.1	4.2	2.8	-0.1	63.2	56.5

Differences from average



RAINFALL (Percentage of 1951-1980 normals)

SUNSHINE (Percentage of 1951-1980 normals)



MEAN MAX. TEMPERATURE (Deviation from 1951-1980 normals)

MEAN MIN. TEMPERATURE (Deviation from 1951-1980 normals)



# PRECIPITATION VALUES FOR January 1990

MARKREE ( CO. SLIGO )					LETTERKENNY ( CO. DONEGAL )			
PERIOD	AMOUNT	% OF AVERAGE	RAIN DAYS NO.	WET DAYS NO.	AMOUNT	% OF AVERAGE	RAIN DAYS NO.	WET DAYS NO.
1 - 10	29.0		8	6	20.0		7	7
11 - 20	33.8		10	6	54.8		9	9
21 - END	86.6		11	11	125.3		11	11
MONTH	149.4	129	29	23	200.1	148	27	27

## Outlook for February 13th - 22nd

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Remaining unsettled but with gradually decreasing rainfall amounts later in the period. A westerly airflow initially with frontal waves from mid-Atlantic giving way by 16th to milder conditions and further rain . South to southwest airflow , continuing fresh to strong . As the Azores high recovers , pressure will tend to rise from 19th. Becoming colder with some frost but good dry periods.

# NOTES ON AGROMETEOROLOGICAL BULLETIN

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1. The term rainfall includes all forms of precipitation (snow,hail,dew)measured as equivalent rain
2. "Rain days" and "wet days" are days during which the total rainfall is not less than 0.2mm and 1.0mm respectively.
3. 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).
4. Degree day totals are calculated using the method set out in an article by I.F.C. McVicker in the Journal of Heating and Ventilating Engineers (Vol. 14 No. 18, Nov-Dec 1946).
5. Monthly averages of degree days at stations marked "e" refer to the 25-year period 1958-1982 except at Casement Aerodrome (1964-1982) and Cork Airport (1962-1982). Percentages are not calculated for degree day totals less than 10.
6. Days with air frost are those during which the minimum air temperature was equal to or below 0.0°C.
7. "Ground" temperatures refer to temperatures measured with a thermometer placed horizontally on pegs just above the tips of short grass.
8. Days with ground frost are those during which the minimum "ground" temperature was equal to or below 0.0°C.
9. The mean daily soil temperature (at 100mm depth under a bare soil surface) over a period is taken as the average of the mean of four daily readings (at 0300, 0900, 1500 and 2100 UTC ) over the period.
10. Mean daily wind speed over a period ( $\text{ms}^{-1}$ ) is taken as the average of hourly values during the period at stations marked "e". Days with gale-gusts are those during which the wind speed exceeded  $17.4 \text{ ms}^{-1}$  at any time during the day. At other stations, mean daily wind speeds computed from once-daily readings of run-of-the-wind.
11. All wind speeds refer to the wind at an effective height of 10 metres above the ground. Where measurements are made at other heights, the wind speed readings are corrected to a height of 10 metres.
12. Deviations of monthly values of rainfall, soil temperature and bright sunshine from long-term averages are shown in Table 1 in the case of stations for which those averages are known. Averages of air temperature, bright sunshine and rainfall refer to the period 1951-1980. Averages of soil temperature refer to the period 1958-1982.
13. Four figures showing the differences from average at synoptic stations of precipitation, sunshine, mean maximum and mean minimum temperature are included in the Bulletin .
14. Potential Evapotranspiration (P.E.) values given in Table 1 are calculated from 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 Table 1 by zero. P.E. values given in Table 3 are those measured by means of soil-filled tanks sunk into the ground with their upper grass-covered ends at surface level.
15. Soil moisture deficits and surpluses (in Table 3) 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, however, 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; dates of the end/beginning of such adjusted periods are encircled.
16. In cases where elements are not normally measured or where long-term averages are not available, a dash (-) is inserted in the appropriate space in the tables.If, in a particular month, some data which are normally given are not included in the Bulletin, this omission will be indicated by the letters N/A in the appropriate space in the tables.
17. Data on the soil climate of Mullingar is included in Table 4. Temperature (°C) and soil water potential (hPa) are measured daily in peat and mineral bare soil patches to depths of up to 200mm. The mean daily temperature is readings (0300,0900,1500, and 2100 GMT) taken at 100mm depth. The temperature gradient is given in °C/100mm, positive values increasing with depth.
18. Global Radiation is given in  $\text{MJm}^{-1}$  correct to two decimal places ( $3.6\text{MJ}=1\text{kWh}$ )
19. Precipitation values ( as in Table 1 ) for Letterkenny and Markee Castle are given in a separate table
20. A ten-day outlook is also given in the Bulletin beginning date of going to press.