



## AGROMETEOROLOGICAL BULLETIN

NOVEMBER 1983

### The Weather of November

The very mild weather which set in during the final days of October continued through the first week of November. There were outbreaks of rain in many areas from the 1st-3rd; the 4th to 6th was cloudy but dry because of high pressure, and frontal systems were weak. A strengthening southerly airstream developed over the country on the 6th ahead of a trough which moved to the west of Ireland; associated frontal rainbelts moved northwards over the country giving rain outbreaks in some areas up to 11th, particularly in southern areas.

High pressure dominated subsequently. Centred over Scandinavia, it first extended westwards towards Scotland and Iceland and later towards Ireland. The weather was mostly dry and temperatures gradually fell to near or below normal. The spell was generally dull but with improved sunshine on some days. Ground frost occurred in the period 14th-24th where skies cleared, the spell from 18th to 28th being mainly free of frost.

As the high declined into Europe, a southerly airflow developed over the country on 23rd and veered to the southwest on 24th, increasing in strength and becoming moderate to fresh. Outbreaks of rain occurred in all areas from 24th to 27th/28th and these outbreaks were particularly widespread and heavy on the 25th and 26th. There were showers in a northwesterly airflow on 27th. Southwesterly winds again set in on 28th and occasional light rain or drizzle occurred on the 30th.

Monthly Amounts of Precipitation were well below normal in all areas. Amounts varied from 18% at Casement Aerodrome to 62% at Claremorris. Amounts were particularly small over the first three weeks in most areas, except in parts of the south and southwest which had a short spell of wet days from 7th to 11th. Daily amounts of over 15mm occurred at many stations on 25th in a generally wet period from 24th to 27th.

Mean Monthly Air Temperature was above normal everywhere, varying from 1.4C° above at a number of stations in the south-midlands, to 0.4C° above at Belmullet. Widespread ground frost occurred on 5th/6th, 14th/17th, 21st to 24th (with generally severe ground frost) and 29th. Soil temperatures (100mm) varied from 3-4C° above average from 6-10th of the month to 1C° below average from 21-25th. Degree-day totals were well above average for the month, particularly the totals with 10C° as threshold, which were generally over 200% of average.

Mean Duration of Bright Sunshine was well below normal everywhere. Values varied from 27% of normal at Clones to 78% at Valentia. Global radiation was 79% of average (1971-82) at Blr and 128% of average at Valentia.

Strong Winds with gale gusts in exposed places occurred in the southwest and west on 8-10th, and more generally on 24-28th.

Summary. Dry and mild but very dull.

TABLE 1

NOVEMBER 1983

STATION	PERIOD	RAINFALL (mm)				TEMPERATURE (°C)														BRIGHT SUNSHINE		WIND				
		AMOUNT	% OF AVERAGE	RAIN DAYS	WET DAYS	AIR							GROUND				SOIL (10cm)			MEAN DAILY (HRS.)	% 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
Carlow (Oak Park) Co. Carlow	1-10	3.5	-	4	3	13.4	7.6	10.5	-	-0.5	5	1	63	-	15	-	-4.5	5	2	-	-	0.94	-	2.7	-	-
	11-20	1.1	-	2	0	8.6	4.1	6.3	-	-2.0	15	1	24	-	2	-	-8.0	15	3	-	-	0.85	-	2.0	-	-
	21-END	16.9	-	4	4	10.0	2.8	6.4	-	-5.0	23	4	32	-	5	-	-9.0	23	5	-	-	0.59	-	0.9	-	-
	MONTH	21.5	29	10	7	10.7	4.8	7.7	-	-5.0	23	6	118	-	22	-	-9.0	23	10	-	-	0.73	-	1.9	-	0
Shannon Airport Co. Clare	1-10	2.4	-	2	1	13.7	9.1	11.4	-	4.0	5	0	70	-	20	-	-1.0	5	1	10.6	-	0.41	-	4.5	0	-
	11-20	1.6	-	2	0	9.8	5.2	7.5	-	-0.7	15	1	34	-	4	-	-4.0	15	3	7.7	-	1.26	-	3.1	0	-
	21-END	40.3	-	6	5	10.5	5.8	8.1	-	0.3	22	0	42	-	7	-	-4.8	21	4	7.4	-	1.26	-	4.8	2	-
	MONTH	44.3	48	10	6	11.3	6.7	9.0	+1.4	-0.7	15	1	146	134	31	207	-4.8	21	8	8.6	+1.2	0.97	47	4.1	2	8
Fermoy (Coolnakilla) Co. Cork	1-10	19.8	-	6	6	12.4	7.3	9.9	-	0.7	5	0	56	-	10	-	-3.0	5	2	-	-	1.23	-	5.1	-	-
	11-20	10.9	-	3	2	8.3	N/A	N/A	-	N/A	N/A	N/A	-	N/A	-	N/A	-	N/A	N/A	-	-	0.70	-	3.3	-	-
	21-END	43.1	-	7	7	10.0	N/A	N/A	-	N/A	N/A	N/A	-	N/A	-	N/A	-	-2.8	22	5	-	0.99	-	5.6	-	-
	MONTH	73.8	-	16	15	10.2	N/A	N/A	-	N/A	N/A	N/A	-	N/A	-	N/A	-	N/A	N/A	-	-	0.97	-	4.6	-	N/A
Fermoy (Moore Park) Co. Cork	1-10	15.4	-	6	4	13.4	7.1	10.2	-	-1.1	5	1	60	-	15	-	-6.6	5	3	-	-	1.11	-	2.2	-	-
	11-20	0.2	-	0	0	8.9	5.0	6.9	-	-0.3	16	1	30	-	3	-	-5.2	15	4	-	-	0.91	-	2.2	-	-
	21-END	34.6	-	8	6	10.9	4.8	7.8	-	-0.8	23	1	39	-	7	-	-6.3	23	5	-	-	0.88	-	3.3	-	-
	MONTH	50.2	50	14	10	11.0	5.6	8.3	-	-1.1	5	3	128	-	25	-	-6.6	5	12	-	-	0.97	-	2.5	-	2
Mallow Co. Cork	1-10	7.6	-	5	4	13.9	4.5	9.2	-	-1.0	5	2	51	-	13	-	-4.0	6	N/A	-	-	0.76	-	-	-	-
	11-20	0.7	-	2	0	9.0	3.0	6.0	-	-3.5	14	2	26	-	4	-	N/A	N/A	-	-	-	0.74	-	-	-	-
	21-END	20.6	-	N/A	N/A	11.2	4.3	7.8	-	-1.4	21	2	41	-	9	-	-5.5	21	2	-	-	1.05	-	-	-	-
	MONTH	28.9	27	N/A	N/A	11.4	3.9	7.7	-	-3.5	14	6	118	-	25	-	N/A	N/A	-	-	-	0.85	-	-	-	-
Roches Point Co. Cork	1-10	13.8	-	5	3	13.0	9.4	11.2	-	4.3	5	0	68	-	16	-	1.6	6	0	11.0	-	1.07	-	4.1	1	-
	11-20	0.0	-	0	0	9.7	6.5	8.1	-	1.7	15	0	38	-	4	-	-0.9	15	1	8.7	-	1.15	-	3.5	1	-
	21-END	41.6	-	7	6	11.2	7.5	9.3	-	3.0	21	0	50	-	7	-	1.1	21	0	9.0	-	0.96	-	5.9	4	-
	MONTH	55.4	59	12	9	11.3	7.8	9.6	+0.8	1.7	15	0	156	124	27	159	-0.9	15	1	9.6	+1.3	1.06	47	4.5	6	8
Glencolumbkille Co. Donegal	1-10	8.5	-	6	4	13.0	8.1	10.6	-	2.8	4	0	62	-	13	-	-2.0	4	1	-	-	0.52	-	4.4	-	-
	11-20	6.3	-	5	3	10.1	5.5	7.8	-	0.0	15	0	36	-	1	-	-5.0	15	2	-	-	1.30	-	2.3	-	-
	21-END	25.5	-	8	6	10.9	0.4	5.7	-	-5.0	29	5	24	-	4	-	-7.0	29	7	-	-	1.14	-	4.1	-	-
	MONTH	40.3	-	19	13	11.4	4.7	8.0	-	-5.0	29	5	122	-	19	-	-7.0	29	10	-	-	0.99	-	3.6	-	1

NOTES ON THE TABLES IN JANUARY ISSUE

TABLE 1 (CONTINUED)

NOVEMBER 1983

STATION	PERIOD	RAINFALL (mm)				TEMPERATURE (°C)														BRIGHT SUNSHINE		WIND		P.E. (PENMAN) (mm)								
		AMOUNT	% OF AVERAGE	RAIN DAYS	WET DAYS	AIR							GROUND				SOIL (10cm)			MEAN DAILY (HRS.)	% 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						
																											MEAN DAILY	DIFFERENCE FROM AVERAGE	MEAN DAILY	DIFFERENCE FROM AVERAGE		
Glenties Co. Donegal	1-10	7.8	-	7	4	12.8	7.4	10.1	-	0.1	4	0	58	-	12	-	-1.4	4	1	-	-	0.60	-	-	-	-	-	-	-	-	-	
	11-20	3.2	-	3	1	9.9	4.1	7.0	-	-3.6	15	2	30	-	2	-	-4.9	15	3	-	-	1.26	-	-	-	-	-	-	-	-	-	
	21-END	28.6	-	6	5	9.9	2.1	6.0	-	-4.8	23	4	29	-	3	-	-7.0	23	6	-	-	0.81	-	-	-	-	-	-	-	-	-	
	MONTH	39.5	27	16	10	10.8	4.5	7.7	-	-4.8	23	6	116	-	17	-	-7.0	23	10	-	-	0.89	-	-	-	-	-	-	-	-	-	
Malin Head Co. Donegal	1-10	7.4	-	4	2	12.7	8.1	10.4	-	4.2	4	0	60	-	12	-	2.0	4	0	9.7	-	0.99	-	8.1	6	-	-	-	-	-	-	
	11-20	5.2	-	3	1	10.5	7.2	8.8	-	3.4	14	0	44	-	2	-	-0.6	15	1	7.9	-	1.13	-	8.2	5	-	-	-	-	-	-	-
	21-END	12.1	-	6	3	9.7	5.5	7.6	-	-0.1	23	1	36	-	4	-	-3.0	24	3	6.7	-	1.02	-	8.3	5	-	-	-	-	-	-	-
	MONTH	24.7	24	13	6	11.0	6.9	8.9	+1.0	-0.1	23	1	141	141	18	225	-3.0	24	4	8.1	+1.2	1.05	62	8.2	16	17	-	-	-	-	-	
Casement Aerodrome Co. Dublin	1-10	0.8	-	3	0	13.1	7.8	10.4	-	1.1	5	0	62	-	17	-	-2.0	5	3	9.7	-	1.41	-	4.9	2	-	-	-	-	-	-	-
	11-20	0.4	-	1	0	9.1	4.3	6.7	-	-0.3	15	1	26	-	2	-	-4.5	15	4	7.4	-	0.66	-	3.8	2	-	-	-	-	-	-	-
	21-END	11.3	-	4	3	9.6	3.9	6.7	-	-4.4	23	2	34	-	6	-	-7.8	23	5	6.9	-	0.33	-	5.2	4	-	-	-	-	-	-	-
	MONTH	12.5	18	8	3	10.6	5.3	8.0	+1.1	-4.4	23	3	122	139	25	208	-7.8	23	12	8.0	-	0.80	37	4.6	8	4	-	-	-	-	-	-
Dublin Airport Co. Dublin	1-10	1.2	-	1	1	13.1	9.0	11.1	-	3.5	5	0	67	-	17	-	0.3	6	0	10.0	-	1.20	-	3.8	1	-	-	-	-	-	-	-
	11-20	1.6	-	2	1	9.3	5.7	7.5	-	1.6	15	0	32	-	1	-	-2.3	15	2	7.4	-	0.61	-	4.2	0	-	-	-	-	-	-	-
	21-END	18.5	-	4	3	9.8	5.0	7.4	-	-1.4	23	1	35	-	6	-	-6.4	23	3	6.9	-	0.53	-	4.9	3	-	-	-	-	-	-	-
	MONTH	21.3	30	7	5	10.7	6.6	8.7	+1.3	-1.4	23	1	134	140	24	200	-6.4	23	5	8.1	+1.6	0.78	36	4.3	4	8	-	-	-	-	-	
Kinsealy Co. Dublin	1-10	1.0	-	2	0	13.3	7.3	10.3	-	1.5	5	0	60	-	14	-	-5.0	5	3	-	-	1.12	-	3.0	-	-	-	-	-	-	-	-
	11-20	1.0	-	1	1	9.2	5.2	7.2	-	1.0	15	0	30	-	1	-	-4.0	15	3	-	-	0.72	-	3.2	-	-	-	-	-	-	-	-
	21-END	18.4	-	4	3	10.5	3.7	7.1	-	-3.0	23	2	34	-	6	-	-6.5	23	4	-	-	0.46	-	3.6	-	-	-	-	-	-	-	-
	MONTH	20.4	30	7	4	11.0	5.4	8.2	-	-3.0	23	2	124	-	21	-	-6.5	23	10	-	-	0.77	-	3.3	-	-	-	-	-	-	-	-
Galway Co. Galway	1-10	2.4	-	5	1	12.8	8.9	10.9	-	5.0	6	0	65	-	15	-	1.5	5	0	10.8	-	0.33	-	4.5	1	-	-	-	-	-	-	-
	11-20	1.7	-	3	1	9.7	4.9	7.3	-	-0.2	15	1	32	-	3	-	-0.6	15	1	8.2	-	2.19	-	3.2	0	-	-	-	-	-	-	-
	21-END	37.1	-	5	5	10.0	4.6	7.3	-	-2.0	22	2	37	-	5	-	-4.2	22	4	7.2	-	2.12	-	4.9	1	-	-	-	-	-	-	-
	MONTH	41.2	41	13	7	10.8	6.1	8.5	+0.9	-2.0	22	3	133	-	24	-	-4.2	22	5	8.7	-	1.55	72	4.2	2	3	-	-	-	-	-	-
Killarney (Muckross House) Co. Kerry	1-10	35.6	-	5	3	14.1	8.2	11.2	-	0.4	5	0	69	-	21	-	-0.7	5	1	-	-	0.88	-	-	-	-	-	-	-	-	-	-
	11-20	0.8	-	1	0	9.3	5.5	7.4	-	-0.8	15	2	34	-	5	-	-4.4	15	2	-	-	0.98	-	-	-	-	-	-	-	-	-	-
	21-END	53.0	-	8	6	12.2	6.3	9.3	-	-0.4	21	1	52	-	12	-	-3.3	21	2	-	-	0.68	-	-	-	-	-	-	-	-	-	-
	MONTH	89.4	-	14	9	11.9	6.7	9.3	-	-0.8	15	3	155	-	38	-	-4.4	15	5	-	-	0.85	-	-	-	-	-	-	-	-	-	-

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				WET	DAYS	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	30.8	-	6	5	14.2	9.5	11.8	-	2.0	5	0	75	-	23	-	-1.3	5	1	11.4	-	0.94	-	5.5	5	-
	11-20	1.4	-	1	1	11.4	5.9	8.6	-	0.4	15	0	44	-	8	-	-5.0	15	2	8.7	-	2.76	-	4.1	2	-
	21-END	56.0	-	9	7	11.9	8.1	10.0	-	3.0	21	0	56	-	11	-	-0.6	21	1	9.3	-	0.87	-	6.8	5	-
	MONTH	88.2	61	16	13	12.5	7.8	10.1	+1.0	0.4	15	0	175	129	42	200	-5.0	15	4	9.8	+1.5	1.52	78	5.5	12	13
Ardfert (Lis Cahane) Co. Kerry	1-10	16.3	-	2	2	14.0	8.5	11.3	-	2.4	5	0	69	-	20	-	-4.0	5	2	-	-	0.86	-	-	-	-
	11-20	0.1	-	0	0	9.6	4.6	7.1	-	-2.2	15	2	33	-	4	-	-8.2	15	4	-	-	2.00	-	-	-	-
	21-END	30.0	-	6	4	11.8	5.9	8.9	-	-0.1	22	1	49	-	11	-	-5.5	22	4	-	-	1.04	-	-	-	-
	MONTH	46.4	-	8	6	11.8	6.3	9.1	-	-2.2	15	3	150	-	35	-	-8.2	15	10	-	-	1.30	-	-	-	-
Lullymore Co. Kildare	1-10	2.7	-	2	1	13.1	7.2	10.1	-	3.2	6	0	58	-	12	-	-3.7	5	3	-	-	0.61	-	14.3	-	-
	11-20	0.0	-	0	0	8.8	3.3	6.0	-	-2.1	16	1	22	-	2	-	-7.5	15	4	-	-	0.83	-	2.0	-	-
	21-END	27.4	-	6	4	9.9	2.5	6.2	-	-5.3	23	3	29	-	4	-	-10.1	23	6	-	-	0.28	-	3.6	-	-
	MONTH	30.1	39	8	5	10.6	4.3	7.4	-	-5.3	23	4	110	-	18	-	-10.1	23	13	-	-	0.57	-	6.7	-	5
Kilkenny Co. Kilkenny	1-10	3.8	-	6	1	13.4	7.1	10.3	-	-1.2	5	1	61	-	16	-	-4.3	6	2	9.9	-	0.88	-	2.3	0	-
	11-20	0.6	-	1	0	9.4	4.9	7.1	-	-1.3	15	1	31	-	4	-	-5.3	15	3	7.8	-	1.17	-	2.2	0	-
	21-END	22.5	-	6	3	10.2	4.8	7.5	-	-4.7	23	1	38	-	6	-	-9.8	23	5	7.0	-	0.79	-	3.4	1	-
	MONTH	26.9	34	13	4	11.0	5.6	8.3	+1.4	-4.7	23	3	130	143	26	200	-9.8	23	10	8.2	+1.9	0.95	45	2.6	1	4
Mooncoin (Silverspring) Co. Kilkenny	1-10	12.3	-	5	5	13.7	6.7	10.2	-	-1.2	5	1	60	-	16	-	-5.0	5	4	-	-	1.12	-	-	-	-
	11-20	0.5	-	2	0	9.1	5.3	7.2	-	-1.1	15	1	31	-	3	-	-7.9	15	3	-	-	0.76	-	-	-	-
	21-END	28.3	-	7	6	10.8	4.4	7.6	-	-2.0	24	2	38	-	7	-	-8.3	23	5	-	-	0.37	-	-	-	-
	MONTH	41.1	44	14	11	11.2	5.5	8.3	-	-2.0	24	4	129	-	26	-	-8.3	23	12	-	-	0.75	-	-	-	-
Ballinamore Co. Leitrim	1-10	6.2	-	5	1	12.9	6.5	9.7	-	2.8	5	0	54	-	11	-	-3.2	5	3	-	-	0.84	-	2.2	-	-
	11-20	0.8	-	1	0	9.7	4.4	7.0	-	-0.7	15	1	29	-	2	-	-5.1	15	4	-	-	1.53	-	1.5	-	-
	21-END	55.7	-	8	7	9.5	2.1	5.8	-	-6.4	23	4	29	-	4	-	-10.6	23	6	-	-	0.29	-	2.3	-	-
	MONTH	62.7	59	14	8	10.7	4.3	7.5	-	-6.4	23	5	113	-	17	-	-10.6	23	13	-	-	0.89	-	2.0	-	0
Ardee (Boharnamoe) Co. Louth	1-10	2.3	-	3	2	13.9	N/A	N/A	-	N/A		N/A	N/A	-	N/A	-	1.7	6	0	-	-	-	-	-	-	-
	11-20	1.1	-	2	0	9.6	4.2	6.9	-	-2.2	15	2	29	-	2	-	N/A		N/A	-	-	-	-	-	-	-
	21-END	20.0	-	5	5	10.6	N/A	N/A	-	N/A		N/A	N/A	-	N/A	-	N/A		N/A	-	-	-	-	-	-	-
	MONTH	23.4	-	10	7	11.4	N/A	N/A	-	N/A		N/A	N/A	-	N/A	-	N/A		N/A	-	-	-	-	-	-	-

NOTES ON THE TABLES IN JANUARY ISSUE



TABLE 1 (CONTINUED)

NOVEMBER 1983

STATION	PERIOD	RAINFALL (mm)				TEMPERATURE (°C)															BRIGHT SUNSHINE		WIND					
		AMOUNT	% OF AVERAGE	RAIN DAYS	WET DAYS	AIR							GROUND			SOIL (10cm)		MEAN DAILY (HRS.)	% 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		
Dundrum (Knockavilla) Co. Tipperary	1-10	4.2	-	5	2	13.3	6.4	9.8	-	0.4	6	0	56	-	13	-	-4.1	6	2	-	-	-	-	-	-	-	-	-
	11-20	0.4	-	1	0	8.9	4.5	6.7	-	-1.7	15	1	29	-	3	-	-7.0	15	4	-	-	-	-	-	-	-	-	-
	21-END	25.2	-	6	3	10.7	2.9	6.8	-	-2.7	23	3	33	-	6	-	-5.6	23	6	-	-	-	-	-	-	-	-	-
	MONTH	29.8	-	12	5	10.9	4.6	7.7	-	-2.7	23	4	117	-	21	-	-7.0	15	12	-	-	-	-	-	-	-	-	-
Dungarvan (Carriglea) Co. Waterford	1-10	16.4	-	6	6	13.8	6.8	10.3	-	0.5	5	0	60	-	16	-	-0.8	5	1	-	-	1.42	-	1.8	-	-	-	-
	11-20	0.0	-	0	0	9.6	5.7	7.6	-	0.5	15	0	34	-	4	-	-1.7	15	1	-	-	0.99	-	1.4	-	-	-	-
	21-END	38.2	-	7	5	11.2	4.2	7.7	-	-4.0	23	2	40	-	9	-	-2.8	23	3	-	-	0.68	-	2.6	-	-	-	-
	MONTH	54.6	50	13	11	11.5	5.6	8.5	-	-4.0	23	2	134	-	28	-	-2.8	23	5	-	-	1.03	-	2.0	-	-1	-	-
Mullingar Co. Westmeath	1-10	3.1	-	4	1	12.4	7.2	9.8	-	1.1	5	0	55	-	12	-	-1.4	5	2	9.9	-	0.96	-	4.2	0	-	-	-
	11-20	1.2	-	3	0	9.0	4.1	6.6	-	0.3	15	0	25	-	1	-	-3.8	16	3	7.0	-	1.10	-	3.0	0	-	-	-
	21-END	36.7	-	6	5	9.2	3.6	6.4	-	-2.9	23	3	31	-	4	-	-6.3	23	5	6.4	-	0.92	-	4.3	0	-	-	-
	MONTH	41.0	46	13	6	10.2	5.0	7.6	+1.3	-2.9	23	3	111	144	17	213	-6.3	23	10	7.8	+1.8	0.99	49	3.8	0	2	-	-
J.F.K. Park Co. Wexford	1-10	10.1	-	6	3	13.3	7.7	10.5	-	1.4	5	0	62	-	14	-	-6.1	5	2	-	-	1.06	-	3.8	-	-	-	-
	11-20	0.6	-	1	0	9.7	5.9	7.8	-	1.5	15	0	35	-	5	-	-5.2	14	4	-	-	0.94	-	3.0	-	-	-	-
	21-END	29.5	-	6	5	10.2	5.3	7.8	-	-0.6	23	1	37	-	5	-	-9.3	23	4	-	-	0.32	-	4.9	-	-	-	-
	MONTH	40.2	38	13	8	11.1	6.3	8.7	-	-0.6	23	1	134	-	25	-	-9.3	23	10	-	-	0.77	-	3.9	-	5	-	-
Clonroche Co. Wexford	1-10	10.8	-	6	6	13.2	6.9	10.1	-	0.7	5	0	58	-	13	-	-4.8	5	3	-	-	0.92	-	1.5	-	-	-	-
	11-20	0.3	-	1	0	8.9	5.4	7.2	-	0.6	15	0	29	-	2	-	-4.4	15	4	-	-	0.95	-	1.2	-	-	-	-
	21-END	27.8	-	6	5	9.8	3.8	6.8	-	-1.9	23	1	30	-	3	-	-8.4	23	5	-	-	0.43	-	1.9	-	-	-	-
	MONTH	38.9	33	13	11	10.6	5.4	8.0	-	-1.9	23	1	118	-	18	-	-8.4	23	12	-	-	0.77	-	1.5	-	N/A	-	-
Johnstown Castle Co. Wexford	1-10	7.0	-	5	3	13.3	8.4	10.8	-	3.0	5	0	65	-	15	-	-3.0	5	3	-	-	1.24	-	3.3	-	-	-	-
	11-20	0.1	-	0	0	9.2	6.1	7.7	-	1.9	15	0	33	-	2	-	-2.5	15	2	-	-	1.41	-	3.3	-	-	-	-
	21-END	29.7	-	6	5	10.5	5.0	7.7	-	-1.0	23	1	37	-	5	-	-6.1	23	4	-	-	0.47	-	3.9	-	-	-	-
	MONTH	36.8	33	11	8	11.0	6.5	8.7	-	-1.0	23	1	135	-	22	-	-6.1	23	9	-	-	1.04	-	3.5	-	2	-	-
Rosslare Co. Wexford	1-10	3.5	-	4	1	13.4	9.5	11.5	-	4.8	5	0	71	-	18	-	-0.9	5	1	11.0	-	1.28	-	4.0	0	-	-	-
	11-20	0.5	-	1	0	10.2	7.5	8.8	-	5.3	15	0	44	-	4	-	3.5	15	0	8.8	-	1.69	-	5.0	1	-	-	-
	21-END	30.6	-	5	4	11.0	7.3	9.1	-	2.6	23	0	48	-	7	-	-2.4	23	1	8.6	-	0.68	-	5.1	2	-	-	-
	MONTH	34.6	33	10	5	11.5	8.1	9.8	+1.2	2.6	23	0	163	133	28	175	-2.4	23	2	9.5	+1.7	1.22	49	4.7	3	11	-	-

NOTES ON THE TABLES IN JANUARY ISSUE

TABLE 2 GLOBAL SOLAR RADIATION

STATION	PERIOD	AMOUNT
		Joule/cm <sup>2</sup>
Malin Head Co. Donegal	1-10	2384
	11-20	1995
	21-end	1663
	Month	6012
Dublin Airport Co. Dublin	1-10	2625
	11-20	1762
	21-end	1510
	Month	5897
Cahirciveen (Valentia Obs.) Co. Kerry	1-10	3480
	11-20	3548
	21-end	1834
	Month	8862
Kilkenny Co. Kilkenny	1-10	2641
	11-20	2103
	21-end	1879
	Month	6623
Belmullet Co. Mayo	1-10	2404
	11-20	2661
	21-end	2072
	Month	7137
Clones Co. Monaghan	1-10	2768
	11-20	1942
	21-end	1612
	Month	6322
Birr Co. Offaly	1-10	2748
	11-20	2479
	21-end	2321
	Month	7548

Notes on the tables in January issue

Table 4: Notes

\* Mean of readings at 0300, 0900, 1500, 2100GMT at 100mm depth.

\*\* °C/100mm to 200mm depth; positive, temperature increasing with depth.

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

STATION	PERIOD	P.E. (mm)		SOIL MOISTURE (mm)	
		Amount	Deficit	Accumulated Deficit	Surplus
Carlow (Oak Park) Co. Carlow	1-10	4.6	1	3	-
	11-20	0.0	-	2	1
	21-end	1.5	-	0	15
	Month	6.1	-	-	-
Kinsealy Co. Dublin	1-10	8.7	8	13	-
	11-20	4.2	4	17	-
	21-end	2.3	-	1	16
	Month	15.2	-	-	-
Cahirciveen (Valentia Obs.) Co. Kerry	1-10	1.9	-	0	16
	11-20	4.5	-	0	13
	21-end	7.6	-	0	41
	Month	14.0	-	-	-
Ballinamore Co. Leitrim	1-10	5.9	-	0	0
	11-20	2.1	1	1	-
	21-end	1.7	-	0	54
	Month	9.7	-	-	-
Glenamoy Co. Mayo	1-10	4.6	-	0	17
	11-20	2.1	-	0	4
	21-end	1.0	-	0	34
	Month	7.7	-	-	-
Johnstown Castle Co. Wexford	1-10	5.9	-	5	1
	11-20	11.9	12	17	-
	21-end	5.5	-	0	24
	Month	23.3	-	-	-

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TABLE 4 SOIL CLIMATE (MULLINGAR)

Bare Soil Type	Period	MEANS*			Temperature Gradient**	Soil Water Potential (hPa) (at depths)	
		Max.	Daily	Min.		75mm	150mm
		Peat	1-10	10.2	9.7	8.7	+0.5
	11-20	7.9	7.8	6.8	+1.8	79	79
	21-end	6.9	6.4	5.3	+1.2	71	71
Mineral (Sandy clay loam)	1-10	10.7	9.8	8.4	+0.2	127	82
	11-20	8.5	7.1	6.4	+1.4	137	87
	21-end	7.6	6.7	5.4	+0.9	107	72

## special topic

### SOLAR RADIATION

Recording of solar radiation data by the Irish Meteorological Service commenced at Valentia Observatory, Co. Kerry in September 1954. At that time, a Kipp and Zonen pyranometer and a recording millivoltmeter were installed and have, since then, provided a continuous record of Global Solar Radiation. This global radiation is the radiation incident on a horizontal surface and consists of two components: (1) the direct component - the component of the radiation from the solid angle of the sun's disc on a horizontal surface and (2) the diffuse component - the component of the radiation received on a horizontal surface resulting from scattering and reflection by cloud, particles and the air molecules.

Solar radiation should not be confused with bright sunshine, the duration of which is recorded at all the synoptic weather stations in the Meteorological Service network. Solar radiation is the electromagnetic radiation of the sun. The solar radiation incident on the top of the terrestrial atmosphere is called extraterrestrial solar radiation. 97% of this radiation is confined to the spectral range 0.29µm to 3.0µm and is called short-wave radiation. The flux of radiant energy per unit area on a surface is known as the irradiance while the amount of energy per unit area on a surface is called the irradiation. The units now used are Watts/m<sup>2</sup> and Joules/m<sup>2</sup> respectively.

In 1962, a second pyranometer was installed at Valentia Observatory. In this case, a shading ring was fitted to the pyranometer. The purpose of the shading ring is to screen the thermopile sensor of the pyranometer from the direct sun and thereby monitor the Diffuse Sky Radiation only. The position of the shading ring is adjusted as necessary.

A Funk-type Net Pyrradiometer installed in late 1970 provides data on the radiation balance i.e. the difference between the total incoming and outgoing radiation, both short-wave and long-wave (greater than 3.0µm). The pyranometers used for recording global and diffuse radiation register only the short-wave radiation but there is also incoming and outgoing long-wave radiation. The incoming long-wave terrestrial radiation component comes from the downward emission by atmospheric gases while the outgoing long-wave component results from the upward emission and reflection by the ground surface and the atmospheric gases. The Funk pyrradiometer consists simply of two sensors, one facing upwards and the other downwards.

Measurements of Direct Sun Radiation, using an Eppley Normal Incidence pyrliometer, and of long-wave radiation only, using an Eppley Precision Radiometer (Pyrgeometer) were introduced at Valentia on a routine basis as and from 1st January 1979. The pyrliometer is mounted on an Eppley Precision Radiometer (Pyrgeometer) were introduced at Valentia on a routine basis as and from 1st January 1979. The pyrliometer is mounted on an Eppley Solar Tracker - a power driven equatorial mount with provision for adjusting the elevation and azimuth settings as necessary to keep the pyrliometer sensor directed at the sun.

Valentia Observatory is the national radiation centre for Ireland and, since the late 1960's has supervised the gradual extension of the network of stations monitoring solar radiation data. These stations and dates of commencement of radiation measurements are as follows:-

- Global - Valentia (1954); Kilkenny (1969); Birr (1971); Dublin Airport (1976); Belmullet (1977); Clones and Malin Head (1981).
- Diffuse - Valentia (1962); Dublin Airport (1976); Kilkenny and Birr (1979); Clones and Malin Head (1981).

Hourly values of solar radiation have been published for each year up to 1975. As and from January 1976 only daily totals are published but hourly data are available on magnetic tape.

#### AVERAGE VALUES OF GLOBAL RADIATION (JOULES/CM<sup>2</sup>) (1971 - 1982)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
Valentia	7175	12776	25769	42034	52692	52819	50159	43701	29752	17841	8928	5466	349112
Birr	7923	12501	26638	39805	51550	51968	48266	42009	30331	18362	9445	6009	344807
Kilkenny	7957	12306	26532	40852	52293	53962	50547	43536	30733	18206	9580	5824	352328

E.J. Murphy

Valentia Observatory