



# AGROMETEOROLOGICAL BULLETIN

NOVEMBER 1976

## The Weather during November

From 1st to 10th the weather was a mixture of sunshine and showers. Some of the showers were heavy on 1st, 5th, 6th and 7th. Daytime temperatures were about normal but nights were cold. During the period 10th to 13th air frost and fog were widespread. Where fog persisted maximum temperatures during the day were only a few degrees above freezing point. From 14th to 17th there were spells of rain and temperatures were about normal. A high pressure area dominated our weather between 18th and 24th, giving mostly dry but dull and hazy conditions. Air temperatures were just a little below normal overall. On 23rd and 24th skies cleared during the night, in some areas, and ground frost and fog resulted. Where there was sun during the day temperatures rose above normal as was evidenced by the highest air temperature of the month ( $14.5^{\circ}\text{C}$ ), recorded at Valentia Observatory on 19th. From 25th to 28th it was windy with rain or showers as low pressure areas passed by to the north of Ireland. On 29th and 30th the track of the Atlantic depressions shifted to the south of the country. This caused a marked drop in temperature especially in Ulster where freezing fog reappeared on 30th. Near the south coast the rain of the last few days brought monthly totals up to normal.

Mean Monthly Rainfall was highest in the north-west where amounts ranged from 115% to 135% of normal. On the south and west coasts totals were between 100% and 115% of normal. In most areas, however, rainfall amounts were below normal, the general variation being from about 90% at Shannon Airport and Claremorris to between 50% and 60% near the east coast.

Mean Monthly Air Temperatures were below normal by from  $0.4^{\circ}\text{C}$  to  $1.4^{\circ}\text{C}$ . Daytime temperatures were a little below normal and night-time temperatures were low. The worst air frosts of the month occurred on 12th and 13th when Ballinamore and Mullingar recorded  $6^{\circ}\text{C}$  of air frost. Days with less widespread air frost were 3rd, 7th, 8th, 10th and 30th. Ten centimetre (four inch) soil temperatures ranged from  $0.2^{\circ}\text{C}$  above normal at Shannon Airport to  $0.9^{\circ}\text{C}$  below normal at Kilkenny. Except in some coastal districts grass growth was very slow as ten centimetre soil temperatures were near or below the threshold value of  $6^{\circ}\text{C}$  inland.

Totals of Bright Sunshine for the month ranged from sixty to ninety hours generally but Rosslare had just over one hundred hours. Except at Kilkenny (99%) amounts of sunshine were above normal due to bright weather in the first thirteen days of the month.

Strong Winds were infrequent. Gales occurred near coasts in Ulster and Connaught on 27th and 28th when gusts of 60 to 70 kts were recorded.

Summary. November was cold with below normal rainfall in most areas.

The data contained in this Bulletin are provisional. Some of the material in Table 1 will be published in its final form later in the Monthly Weather Report; final values of Solar Radiation at stations, marked "e" in Table 2 will be published in the Annual Summary of Solar Radiation.

TABLE 1.

## RAINFALL, TEMPERATURE, SUNSHINE AND WIND

NOVEMBER, 1976

STATION	PERIOD	RAINFALL				TEMPERATURE										BRIGHT SHININE		WIND			
		Amount	Percentage of Average	No. of Rain Days	No. of Wet Days	AIR					GROUND		SOIL(10cm)			Mean Daily	Percentage of Average	Mean Speed	No. of Days with Gale Gusts		
						Mean Daily	Difference from Average	Lowest Minimum	Day	No. of Days with Air Frost	Degree Days Above 4.4°C	Degree Days Above 10.0°C	Lowest Grass Minimum	Day	No. of Days with Ground Frost					Mean Daily	Difference from Average
Carlow (Oak Park) Co. Carlow	1-10	15.1	-	7	5	6.2	-	-1.2	03	2	18	0	-5.0	03	7	-	-	3.33	-	5	-
	11-20	17.7	-	4	4	5.2	-	-2.8	13	4	18	0	-3.8	12	7	-	-	1.43	-	4	-
	21-end	17.9	-	6	4	6.0	-	-1.0	30	1	20	0	-4.5	30	5	-	-	1.34	-	7	-
	Month	50.7	-	17	13	5.8	-	-2.8	13	7	56	0	-5.0	03	19	-	-	2.03	-	5	-
Shannon Airport Co. Clare	1-10	37.2	-	10	9	7.7	-	3.4	03	0	33	0	-1.5	03	3	7.6	-	3.34	-	9	2
	11-20	16.8	-	3	3	6.9	-	-1.9	12	2	24	0	-2.2	12	5	7.3	-	2.11	-	5	0
	21-end	33.4	-	6	6	7.7	-	2.5	30	0	34	0	-1.0	30	2	7.6	-	0.85	-	9	2
	Month	87.4	94	19	18	7.4	-0.2	-1.9	12	2	91	0	-2.2	12	10	7.5	+0.2	2.10	102	8	4
Fermoy (Moore Park) Co. Cork	1-10	18.2	-	7	6	5.7	-	-4.0	10	2	15	0	-6.0	10	8	-	-	3.68	-	4	-
	11-20	19.7	-	4	3	5.9	-	-4.5	13	4	20	0	-5.4	13	6	-	-	1.83	-	3	-
	21-end	33.7	-	6	6	6.4	-	-0.6	27	1	21	0	-4.9	27	5	-	-	1.12	-	5	-
	Month	71.6	-	17	15	6.0	-	-4.5	13	7	56	0	-5.4	13	19	-	-	2.21	-	4	-
Mallow Co. Cork	1-10	18.1	-	8	3	6.6	-	-2.8	10	1	23	0	-4.4	10	5	-	-	3.64	-	-	-
	11-20	17.2	-	5	2	6.4	-	-2.6	11	4	24	0	-3.3	11	7	-	-	2.16	-	-	-
	21-end	37.4	-	7	7	6.9	-	0.7	27	0	26	0	-1.1	27	4	-	-	1.14	-	-	-
	Month	72.7	69	20	12	6.6	-	-2.8	10	5	73	0	-4.4	10	16	-	-	2.31	-	-	-
Roche's Point Co. Cork	1-10	24.3	-	7	5	8.0	-	2.3	03	0	37	0	-1.0	10	1	7.7	-	4.32	-	11	3
	11-20	20.4	-	4	4	8.3	-	2.0	12	0	28	1	-2.5	13	3	8.1	-	3.19	-	9	1
	21-end	48.7	-	6	5	7.8	-	3.9	30	0	35	0	-0.6	27	1	7.7	-	1.44	-	13	5
	Month	93.4	103	17	14	8.1	-0.7	2.0	12	0	100	1	-2.5	13	5	7.8	-0.4	2.98	133	11	9
Glencolumbkille Co. Donegal	1-10	65.3	-	10	10	7.1	-	3.0	09	0	28	0	0.3	10	0	-	-	1.70	-	7	-
	11-20	65.0	-	7	6	7.5	-	1.0	13	0	32	0	-2.0	13	2	-	-	1.42	-	6	-
	21-end	88.0	-	10	9	7.5	-	0.5	30	0	33	0	-1.2	29	2	-	-	0.60	-	9	-
	Month	218.3	-	27	25	7.4	-	0.5	30	0	93	0	-2.0	13	4	-	-	1.24	-	7	-
Glenties Co. Donegal	1-10	72.5	-	10	10	NA	-	1.7	09	0	NA	NA	-3.0	10	4	-	-	2.18	-	-	-
	11-20	45.0	-	6	4	5.8	-	-2.2	13	3	17	0	-8.5	13	9	-	-	1.76	-	-	-
	21-end	73.1	-	10	8	6.4	-	-0.5	30	1	23	0	-1.2	21	3	-	-	0.60	-	-	-
	Month	190.6	123	26	22	-	-	-2.2	13	4	-	-	-8.5	13	16	-	-	1.51	-	-	-

See January issue of Bulletin for explanatory notes on the tables.

TABLE 1. (Continued)

## RAINFALL, TEMPERATURE, SUNSHINE AND WIND

NOVEMBER, 1976

STATION	PERIOD	RAINFALL				TEMPERATURE											BRIGHT SUNSHINE		WIND		
		Amount mm	Percentage of Average %	No. of Rain Days	No. of Wet Days	AIR						GROUND		SOIL(10cm)			Mean Daily Hr	Percentage of Average %	Mean Speed Kt	No. of Days with Gale Gusts	
						Mean Daily °C	Difference from Average °C	Lowest Minimum °C	Day	No. of Days with Air Frost	Degree Days Above 4.4°C	Degree Days Above 10.0°C	Lowest Grass Minimum °C	Day	No. of Days with Ground Frost	Mean Daily °C					Difference from Average °C
Malin Head Co. Donegal	1-10	32.6	-	8	6	7.1	-	3.4	09	0	27	0	1.1	09	0	6.1	-	3.58	-	16	6
	11-20	26.3	-	3	3	7.0	-	1.1	13	0	22	0	-0.7	13	3	6.1	-	2.26	-	10	3
	21-end	64.4	-	8	7	7.8	-	0.9	30	0	35	0	-1.1	30	1	6.7	-	0.71	-	17	6
	Month	123.3	116	19	16	7.3	-0.6	0.9	30	0	84	0	-1.1	30	4	6.3	-	2.18	128	14	15
Dublin Airport Co. Dublin	1-10	6.7	-	4	2	6.7	-	1.2	03	0	24	0	-1.7	09	4	6.2	-	4.31	-	9	0
	11-20	23.7	-	3	3	6.2	-	-2.9	12	3	22	0	-3.3	13	5	6.3	-	2.07	-	6	0
	21-end	8.7	-	5	3	6.4	-	0.1	30	0	24	0	-3.1	30	3	6.3	-	2.18	-	12	3
	Month	39.1	57	12	8	6.5	-0.9	-2.9	12	3	70	0	-3.3	13	12	6.2	-0.4	2.85	131	9	3
Kinsealy Co. Dublin	1-10	4.6	-	3	2	7.2	-	1.8	03	0	28	0	-4.4	08	8	-	-	4.44	-	7	-
	11-20	22.7	-	3	3	6.7	-	-2.4	13	4	23	0	-6.5	13	6	-	-	NA	-	5	-
	21-end	9.5	-	4	3	6.6	-	-0.9	30	1	26	1	-6.0	30	3	-	-	2.25	-	9	-
	Month	36.8	-	10	8	6.8	-	-2.4	13	5	77	1	-6.5	13	17	-	-	-	-	7	-
Lucan (U.C.D. Field Stn.) Co. Dublin	1-10	9.3	-	3	3	6.7	-	1.1	10	0	23	0	-3.9	10	5	-	-	4.24	-	5	-
	11-20	13.2	-	4	3	5.7	-	-3.8	13	3	20	0	-5.5	14	6	-	-	1.98	-	4	-
	21-end	13.6	-	3	3	6.0	-	-1.9	30	1	22	0	-4.9	30	4	-	-	1.93	-	8	-
	Month	36.1	-	10	9	6.1	-	-3.8	13	4	65	0	-5.5	14	15	-	-	2.72	-	6	-
Galway (Univ. Coll.) Co. Galway	1-10	37.0	-	10	8	7.7	-	3.0	03	0	33	0	-4.3	10	4	-	-	3.87	-	NA	-
	11-20	27.7	-	5	4	6.4	-	-2.4	13	3	26	0	-7.2	11	7	-	-	1.96	-	-	-
	21-end	36.6	-	7	5	7.9	-	2.3	30	0	35	0	-3.0	27	5	-	-	1.25	-	-	-
	Month	101.3	-	22	17	7.3	-	-2.4	13	3	94	0	-7.2	11	16	-	-	2.36	-	-	-
Killarney (Muckross Hse) Co. Kerry	1-10	55.9	-	9	9	6.9	-	-2.0	10	1	26	0	-5.0	10	8	-	-	2.89	-	-	-
	11-20	22.5	-	4	2	7.0	-	-2.5	12	3	24	1	-7.0	12	7	-	-	2.25	-	-	-
	21-end	85.9	-	10	7	7.3	-	2.8	29	0	30	0	-3.8	23	6	-	-	0.53	-	-	-
	Month	164.3	-	23	18	7.1	-	-2.5	12	4	80	1	-7.0	12	21	-	-	1.89	-	-	-
Gahiroiveen (Valentia Obsy.) Co. Kerry	1-10	65.0	-	10	10	8.2	-	1.4	09	0	38	0	-1.0	09	2	7.8	-	2.82	-	12	4
	11-20	44.7	-	5	4	7.8	-	-1.4	12	1	26	1	-3.6	12	2	7.9	-	2.74	-	7	1
	21-end	60.1	-	9	8	8.5	-	3.0	30	0	41	1	2.9	30	0	8.1	-	1.04	-	10	3
	Month	169.8	112	24	22	8.2	-0.9	-1.4	12	1	105	2	-3.6	12	4	7.9	-0.3	2.20	112	10	8

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TABLE I. (Continued)

## RAINFALL, TEMPERATURE, SUNSHINE AND WIND

NOVEMBER, 1976

STATION	PERIOD	RAINFALL				TEMPERATURE											BRIGHT SUNSHINE		WIND		
		Amount	Percentage of Average	No. of Rain Days	No. of Wet Days	AIR						GROUND		SOIL(10cm)			Mean Daily	Percentage of Average	Mean Speed	No. of Days with Gale Gusts	
						Mean Daily	Difference from Average	Lowest Minimum	Day	No. of Days with Air Frost	Degree Days Above 4.4°C	Degree Days Above 10.0°C	Lowest Grass Minimum	Day	No. of Days with Ground Frost	Mean Daily					Difference from Average
mm	%			°C	°C	°C					°C	°C	°C	°C	Hr	%	Kt				
Tralee (Caherweesheen) Co. Kerry	1-10	61.5	-	10	10	6.5	-	-1.1	03	1	21	0	-3.6	03	7	-	-	2.77	-	-	-
	11-20	21.5	-	3	3	6.4	-	-3.8	12	3	22	1	-6.2	12	7	-	-	2.52	-	-	-
	21-end	71.1	-	9	7	7.2	-	1.1	30	0	29	0	-3.7	30	4	-	-	0.74	-	-	-
	Month	154.1	-	22	20	6.7	-	-3.8	12	4	72	1	-6.2	12	18	-	-	2.01	-	-	-
Lullymore Co. Kildare	1-10	16.4	-	5	4	NA	-	-0.5	03	3	NA	NA	-6.5	10	6	-	-	4.32	-	7	-
	11-20	25.2	-	5	4	4.4	-	-4.8	13	5	11	0	-8.1	11	7	-	-	1.40	-	5	-
	21-end	17.3	-	5	3	5.1	-	-1.4	30	2	14	0	-6.1	30	6	-	-	1.62	-	9	-
	Month	58.9	-	15	11	-	-	-4.8	13	10	-	-	-8.1	11	19	-	-	2.45	-	7	-
Kilkenny Co. Kilkenny	1-10	13.1	-	6	4	5.5	-	-4.3	10	5	14	0	-7.4	10	8	5.4	-	4.19	-	4	1
	11-20	19.3	-	5	3	5.1	-	-3.5	13	4	17	0	-5.6	12	7	5.7	-	0.92	-	3	0
	21-end	20.8	-	5	4	5.8	-	-1.6	30	1	18	0	-3.8	30	5	5.8	-	1.12	-	5	1
	Month	53.2	62	16	11	5.5	-1.4	-4.3	10	10	49	0	-7.4	10	20	5.6	-0.9	2.08	99	4	2
Mooncoin (Silverspring) Co. Kilkenny	1-10	16.8	-	7	5	6.0	-	-4.1	10	3	18	0	-6.5	10	9	-	-	3.89	-	-	-
	11-20	20.3	-	4	4	5.8	-	-5.3	13	3	20	0	-6.9	13	8	-	-	1.96	-	-	-
	21-end	28.8	-	6	5	6.2	-	-1.0	30	3	21	0	-4.8	30	6	-	-	1.22	-	-	-
	Month	65.9	-	17	14	6.0	-	-5.3	13	9	59	0	-6.9	13	23	-	-	2.36	-	-	-
Ballinamore Co. Leitrim	1-10	20.6	-	6	5	5.4	-	-1.1	03	2	10	0	-5.6	03	9	-	-	3.64	-	4	-
	11-20	41.7	-	5	5	4.7	-	-6.0	12	4	16	0	-8.5	12	7	-	-	1.05	-	3	-
	21-end	27.9	-	8	6	6.0	-	-1.8	30	1	20	0	-3.5	30	6	-	-	1.49	-	7	-
	Month	90.2	-	19	16	5.4	-	-6.0	12	7	46	0	-8.5	12	22	-	-	2.06	-	5	-
Ardee (Boharnamee) Co. Louth	1-10	6.5	-	6	3	6.0	-	-0.9	09	3	16	0	-5.4	10	7	-	-	-	-	-	-
	11-20	20.8	-	5	5	5.0	-	-4.3	14	5	13	0	-5.7	14	7	-	-	-	-	-	-
	21-end	12.3	-	4	3	NA	-	NA	NA	NA	NA	NA	NA	NA	NA	-	-	-	-	-	-
	Month	39.6	-	15	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ballinrobe (Creagh) Co. Mayo	1-10	36.5	-	10	9	6.9	-	1.1	09	0	25	0	-5.2	03	9	-	-	3.50	-	5	-
	11-20	32.3	-	5	4	6.0	-	-5.6	13	4	19	0	-9.8	13	8	-	-	1.61	-	4	-
	21-end	58.0	-	8	5	7.5	-	-1.1	30	1	32	0	-4.9	30	6	-	-	1.48	-	7	-
	Month	126.8	-	23	18	6.8	-	-5.6	13	5	76	0	-9.8	13	23	-	-	2.20	-	5	-

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TABLE 1. (Continued)

## RAINFALL, TEMPERATURE, SUNSHINE and WIND

NOVEMBER, 1976

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		Amount	Percentage of Average	No. of Rain Days	No. of Wet Days	AIR					GROUND			SOIL (10cm)		Mean Daily	Percentage of Average	Mean Speed	No. of Days with Gale Gusts		
						Mean Daily	Difference from Average	Lowest Minimum	Day	No. of Days with Air Frost	Degree Days Above 4.0°C	Degree Days Above 10.0°C	Lowest Grass Minimum	Day	No. of Days with Ground Frost					Mean Daily	Difference from Average
mm	%	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	Hr	%	Kt					
Dungarvan (Ballygagin) Co. Waterford	1-10	25.3	-	8	7	-	-	-1.3	10	3			-6.2	10	10	-	-	4.31	-	3	-
	11-20	22.7	-	4	4	NA	-	-1.7	13	2	NA	NA	-6.6	13	7	-	-	2.47	-	3	-
	21-end	50.8	-	7	5	-	-	0.7	31	0	-	-	-5.7	30	6	-	-	1.30	-	4	-
	Month	98.8	-	19	16	-	-	-1.7	13	5	-	-	-6.6	13	23	-	-	2.69	-	3	-
Mullingar Co. Westmeath	1-10	14.6	-	5	3	5.6	-	-1.3	03	2	12	0	-4.8	10	5	5.6	-	4.01	-	8	0
	11-20	27.4	-	4	3	4.9	-	-6.0	13	3	15	0	-7.4	13	7	5.7	-	1.31	-	4	0
	21-end	23.3	-	6	4	5.5	-	-1.5	30	1	16	0	-5.8	30	5	5.9	-	1.32	-	8	3
	Month	65.3	77	15	10	5.3	-1.1	-6.0	13	6	43	0	-7.4	13	17	5.7	-0.4	2.21	110	7	3
Castle (Ballytop) Co. Wexford	1-10	27.1	-	7	7	6.7	-	-0.4	03	1	23	0	-6.4	10	9	-	-	3.89	-	NA	-
	11-20	21.7	-	4	4	6.2	-	-3.6	13	2	23	0	-9.0	13	7	-	-	2.26	-	NA	-
	21-end	36.9	-	6	5	6.4	-	1.8	23	0	20	0	-4.5	23	5	-	-	1.72	-	NA	-
	Month	85.7	-	17	16	6.4	-	-3.6	13	3	66	0	-9.0	13	21	-	-	2.62	-	NA	-
Clonroche Co. Wexford	1-10	25.6	-	9	7	5.8	-	-0.9	03	2	15	0	-4.9	03	7	-	-	4.38	-	3	-
	11-20	25.5	-	5	3	5.9	-	-3.3	13	3	18	0	-8.6	13	7	-	-	2.63	-	3	-
	21-end	37.2	-	6	4	6.2	-	-0.3	30	1	20	0	-4.0	30	5	-	-	1.46	-	5	-
	Month	89.3	-	20	14	6.0	-	-3.3	13	6	53	0	-8.6	13	19	-	-	2.82	-	4	-
Johnstown Castle Co. Wexford	1-10	32.7	-	8	7	7.2	-	0.8	03	0	29	0	-4.8	03	6	-	-	4.11	-	5	-
	11-20	27.0	-	3	3	7.0	-	-1.8	13	1	26	0	-6.5	13	6	-	-	2.85	-	3	-
	21-end	35.2	-	6	5	6.7	-	2.0	28	0	24	0	-2.2	24	6	-	-	2.27	-	8	-
	Month	94.9	86	17	15	7.0	-	-1.8	13	1	79	0	-6.5	13	18	-	-	3.08	-	5	-
Rosslare Co. Wexford	1-10	39.7	-	6	6	8.1	-	2.0	03	0	35	0	-1.8	03	2	7.2	-	4.35	-	8	2
	11-20	21.0	-	3	3	8.2	-	1.2	13	0	29	1	-2.6	13	4	7.5	-	3.02	-	8	0
	21-end	28.2	-	5	4	7.5	-	1.5	30	0	31	0	-0.1	27	1	7.1	-	2.69	-	11	6
	Month	88.9	95	14	13	7.9	-0.7	1.2	13	0	95	1	-2.6	13	7	7.3	-0.6	3.35	136	9	8

See January issue of Bulletin for explanatory notes on the tables.

TABLE 2.

SOLAR RADIATION (GLOBAL), POTENTIAL EVAPOTRANSPIRATION (P.E.) AND SOIL MOISTURE NOVEMBER, 1976

STATION	PERIOD	SOLAR RADIATION	P.E.	SOIL MOISTURE		
		Amount	Amount	Deficit	Accumulated Deficit	Surplus
Carlow (Oak Park) Co. Carlow	1-10	-	-1	-	0	16
	11-20	-	-3	-	0	21
	21-end	-	1	-	0	17
	Month	-	-3	-	-	-
Kinsealy * Co. Dublin	1-10	4527	2	-	0	3
	11-20	2833	3	-	0	19
	21-end	2607	6	-	0	3
	Month	9967	11	-	-	-
Cahiriveen e (Valentia Obsy.) Co. Kerry	1-10	4451	-9	-	0	75
	11-20	3415	-2	-	0	47
	21-end	2119	8	-	0	51
	Month	9985	-3	-	-	-
Kilkenny e Co. Kilkenny	1-10	5192	-	-	-	-
	11-20	2639	-	-	-	-
	21-end	2222	-	-	-	-
	Month	10053	-	-	-	-
Ballinamore Co. Leitrim	1-10		-3	-	0	24
	11-20	NA	0	-	0	42
	21-end		1	-	0	27
	Month		-2	-	-	-
Glenamoy Co. Mayo	1-10	-	-2	-	0	68
	11-20	-	-2	-	0	35
	21-end	-	1	-	0	65
	Month	-	-3	-	-	-
Birr e Co. Offaly	1-10	5172	-	-	-	-
	11-20	3279	-	-	-	-
	21-end	2066	-	-	-	-
	Month	10517	-	-	-	-
Johnstown Castle Co. Wexford	1-10	-	2	-	0	31
	11-20	-	2	-	0	25
	21-end	-	8	-	0	27
	Month	-	12	-	-	-

See January issue of Bulletin for explanatory notes on the tables. \* Solar Radiation values for Dublin Airport.