

# Monthly Weather Bulletin

No. 197

SEPTEMBER 2002



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**Record September mean maximum at Belmullet**

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**Around the world boat race**

Produced by Met Éireann,  
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Annual subscription €60



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Notes on the tables and map  
showing location of stations  
appear in each January issue



*A dramatic evening picture of lenticular altocumulus cloud taken from on board the Irish sail training vessel, Asgard II, near the eastern entrance into Scotland's Caledonian Canal. (picture courtesy Finn Goggin)*

## WARMER, SUNNIER THAN NORMAL EVERYWHERE; VERY DRY IN PLACES

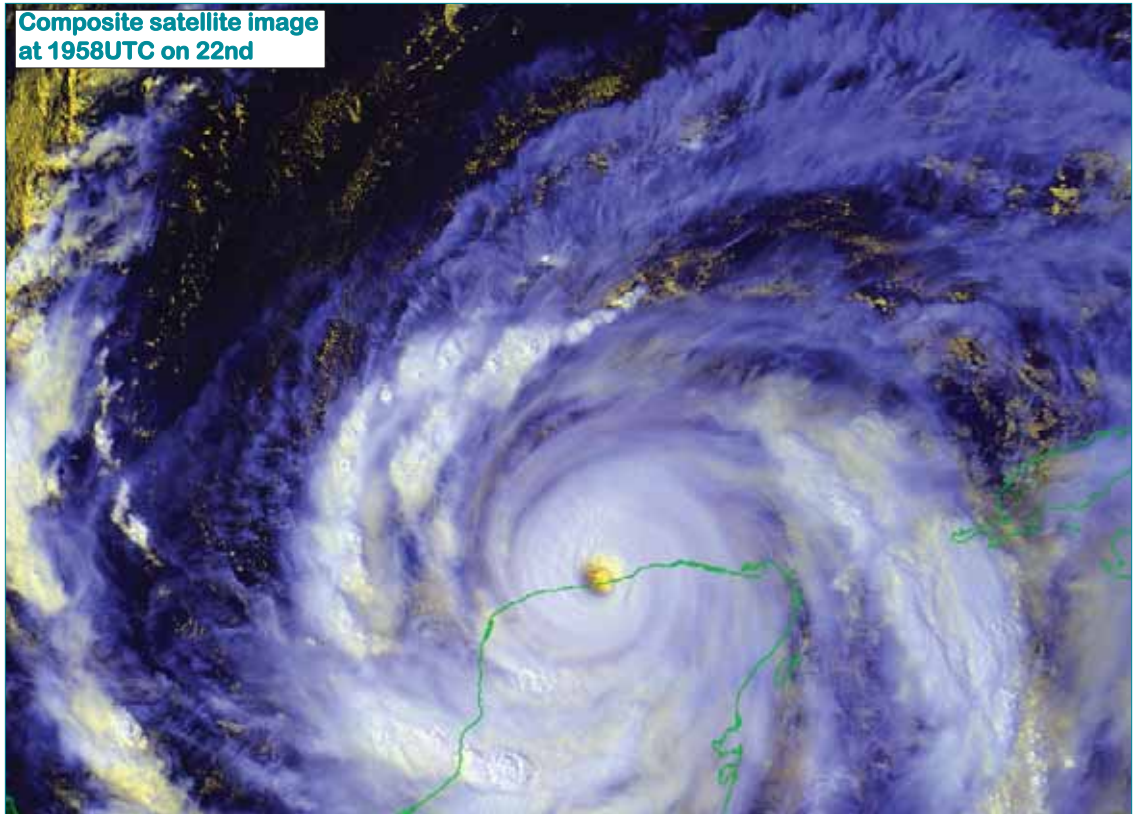
**Summary:** High pressure over or near the country during most of the month gave dry and sunny weather on most days, with very light winds. Although rainfall totals for the month were well below normal in places, at no station was it as dry as September 1986, when no measurable rainfall was recorded at some stations. Totals this month of between 9mm and 119mm represent between 15 and 95% of normal, with most stations receiving less than half of their normal totals for September. At both Rosslare and Casement Aerodrome, no measurable rainfall was recorded between the 10th and 28th, a period of 19 consecutive days. Overall there were between 2 and 9 wetdays recorded (*days with 1mm or more*

*of rainfall*) compared with the normal range for September of 11 to 17. Despite the dry weather throughout most of the month, there were isolated heavy falls in places; there were 3 days during the month at Valentia Observatory with falls of between 20mm and 40mm. Mean air temperatures for the month were above normal everywhere, by over a degree in places, but they were closer to normal in parts of Leinster and Munster, where cool nights towards the end of the month led to the first ground frosts of the season developing. It was the warmest September since 1971 at Rosslare, but it was also the coolest September since 1995 at several stations,

**Right**

Hurricane *Isidore* developed as a tropical depression in the western tropical Atlantic and tracked northwestward across the Caribbean Sea, reaching tropical storm strength on the 18th as it passed near Jamaica. *Isidore* reached hurricane status on the 19th as it brushed the Cayman Islands and crossed into western Cuba by the 21st, giving falls locally of over 600 mm of rain along with maximum sustained winds of 90 knots (105 mph). *Isidore* then moved westward, making landfall along the northern Yucatan Peninsula in Mexico on the 22nd (see picture right), reaching maximum sustained winds of 110 knots (125 mph). Over 300,000 were left homeless as strong winds and flooding rains caused significant damage. (picture: NOAA-NESDIS, US Department of Commerce)

Composite satellite image at 1958UTC on 22nd

**Below**

Although dry overall, the month ended with some heavy thundery rain in places on the 30th, especially parts of Leinster and Munster. This was the wettest day of the month in the east and southeast.

reflecting the sequence of warm Septembers in recent years. Despite some dull weather at times, sunshine totals for the month were more than 20% above normal generally.

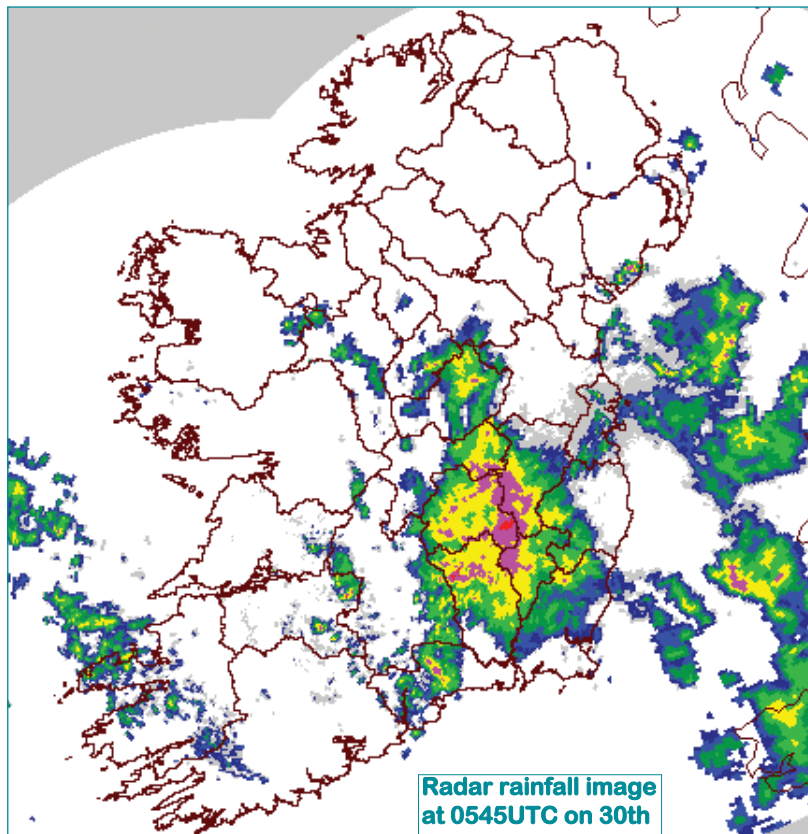
Belmullet's total of 173 hours was its highest for September since 1959. Apart from a short spell of unsettled weather

during the second week, winds were light throughout almost all of September, with most stations recording no gale gusts during the month.

**1st to 4th:** High pressure centred to the east of Ireland gave a dry, warm and mostly sunny start to the month with light southeasterly winds.

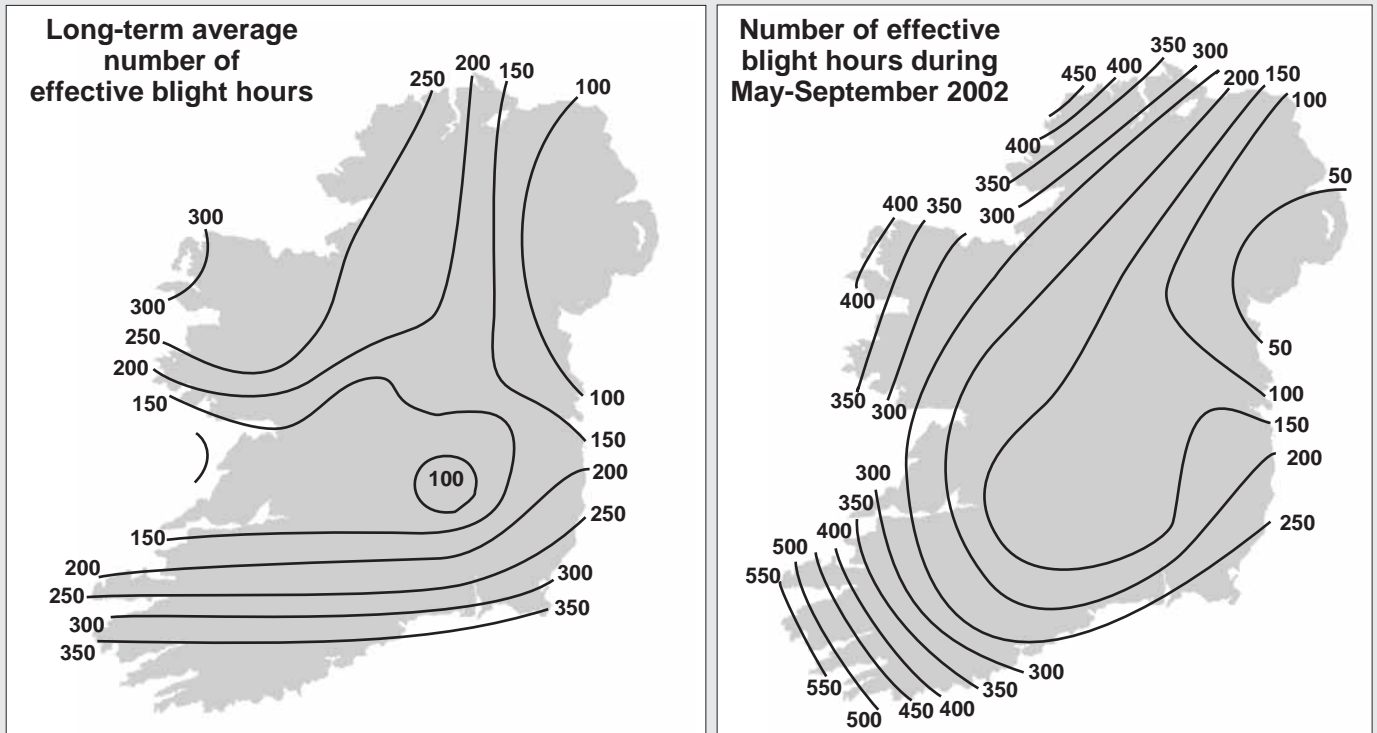
**5th to 11th:** A slow-moving depression crossed southeastwards over Ireland, bringing a spell of wet and sometimes windy weather. Rain or showers were heavy and thundery at times in the southwest, west and northwest, but rainfall amounts in the east and southeast were small.

**12th to 28th:** A large anticyclone over or close to the country dominated the weather, maintaining dry and relatively calm conditions throughout the period. After warm and sunny weather at first, a weak cold front around mid-month introduced cooler and cloudier conditions. Clearer weather returned after the 20th and while daytime temperatures were near normal, the nights became cool; Valentia Observatory's grass minimum temperature



Radar rainfall image at 0545UTC on 30th

## Summer blight hours well above normal in the west



Met Éireann issued eleven potato blight warnings between May and September 2002. These warnings give an indication of the start and duration of each blight spell, with updates issued during the spell. The warning system is based on effective blight hours calculated according to the Irish rules, using input data from numerical weather prediction models. Warnings were made available to the public on RTE television and radio, on Weatherdial and on the Met Éireann website [www.met.ie](http://www.met.ie). The charts above show that blight hours were well above the long-term average in the west of the country, reflecting the wet and humid conditions during much of the early summer in particular. The number of blight hours was closer to normal in eastern areas.

of  $-1.5^{\circ}\text{C}$  on the 27th was its lowest for September since 1942.

**29th to 30th:** Outbreaks of showery rain developed, locally heavy and thundery, in a moderate southerly airflow.

**Wind and elements:** Mean windspeeds for the month of between 5 and 11 knots (6 and 13 m.p.h.) were below normal

everywhere and were the lowest for September for 30 years or more in several places. Both Belmullet and Malin Head measured the highest gust of the month, 43 knots (50 m.p.h.) on the 6th. There was thunderstorm activity in the periods 6th to 10th and 29th to 30th, but there were no reports of hail. Fog was widespread in the periods 14th to 15th and 21st to 27th.



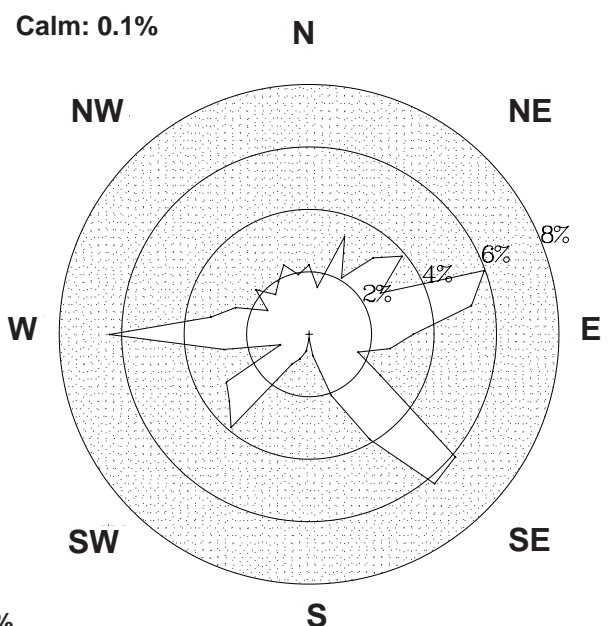
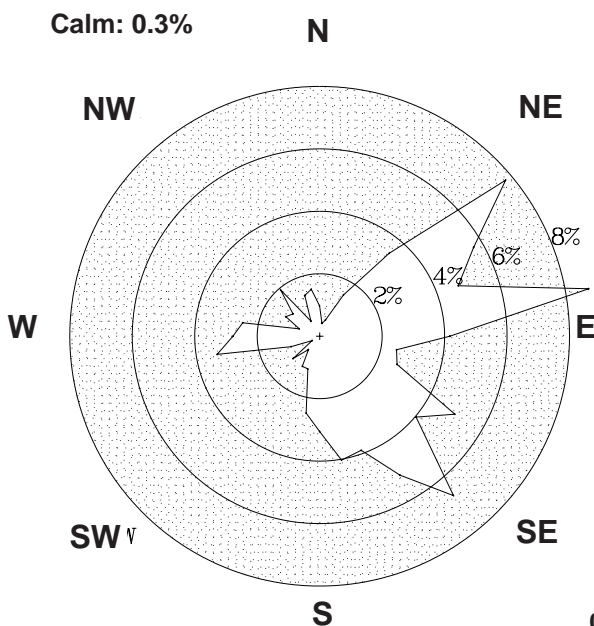
**Right:**

The Director of Met Éireann, Declan Murphy, addressing the Eumetsat Meteorological Satellite Conference, held in Dublin Castle during the first week of the month.

County / Station	WIND (KNOTS)									ELEMENTS				
	Mean speed	Max. 10-min. dir.	Max. 10-min. mean speed	Max. 10-min. mean date/hour	Max. Gust dir.	Max. Gust speed	Max. Gust date/time	Days with gales	Days with gale gusts	Hours with gale gusts	Snow	Snow Lying	Hail	Thunder
<b>CO. CLARE</b> SHANNON AIRPORT	6.1	170°	21	10/19	290°	32	7/1158	0	0	0	0	0	0	2
<b>CO. CORK</b> CORK AIRPORT	7.9	300°	20	7/17	300°	30	7/1637	0	0	0	0	0	0	5
					170°	30	10/1657							
<b>CO. DONEGAL</b> MALIN HEAD	11.0	230°	32	6/16	230°	43	6/1509	0	6	26	0	0	0	2
<b>CO. DUBLIN</b> CASEMENT AERODROME	5.5	260°	23	7/14	250°	33	7/1239	0	0	0	0	0	1	5
DUBLIN AIRPORT	7.0	240°	23	5/11	250°	34	7/1130	0	1	1	0	0	0	5
		250°	23	6/16										
<b>CO. KERRY</b> VALENTIA OBSERVATORY	6.7	180°	21	10/15	180°	35	10/1444	0	2	2	0	0	0	2
					140°	35	11/1837							
<b>CO. KILKENNY</b> KILKENNY	4.9	190°	18	10/13	300°	27	7/1617	0	0	0	n/a	0	----	n/a
<b>CO. MAYO</b> BELMULLET	9.9	260°	28	6/16	260°	43	6/1553	0	3	19	0	0	0	2
CONNACHT AIRPORT	7.4	340°	26	7/14	330°	38	7/1320	0	2	4	0	0	0	11
<b>CO. MONAGHAN</b> CLONES	5.6	250°	17	6/14	330°	29	7/1524	0	0	0	n/a	0	----	n/a
		320°	17	7/14										
<b>CO. OFFALY</b> BIRR	5.2	180°	17	11/14	190°	28	11/1311	0	0	0	n/a	0	----	n/a
		170°	17	29/13	160°	28	29/1420							
<b>CO. WESTMEATH</b> MULLINGAR II	5.0	160°	17	10/17	280°	29	7/1219	0	0	0	n/a	0	----	n/a
		170°	17	29/16										
<b>CO. WEXFORD</b> ROSSLARE	9.4	40°	22	14/18	230°	35	5/1210	0	1	2	0	0	0	0

Valentia Observatory

Dublin Airport

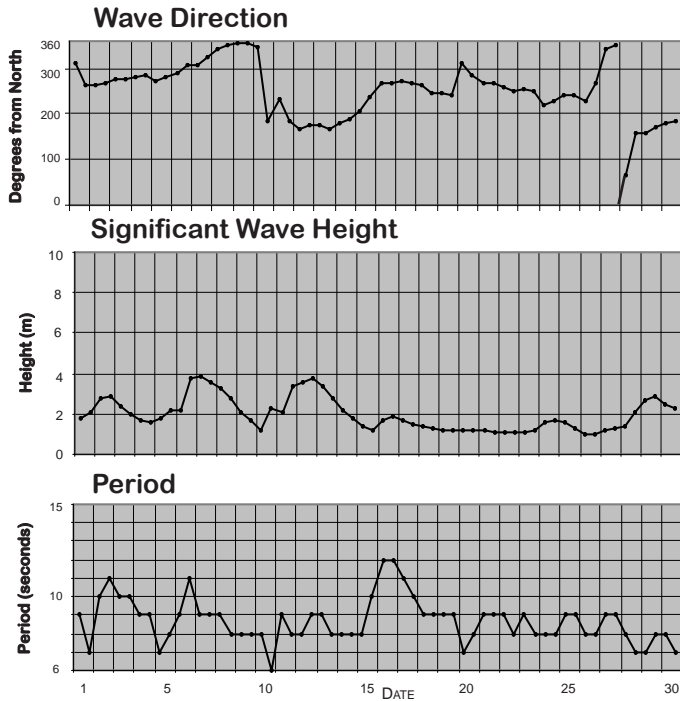


0 1 2 3 4%

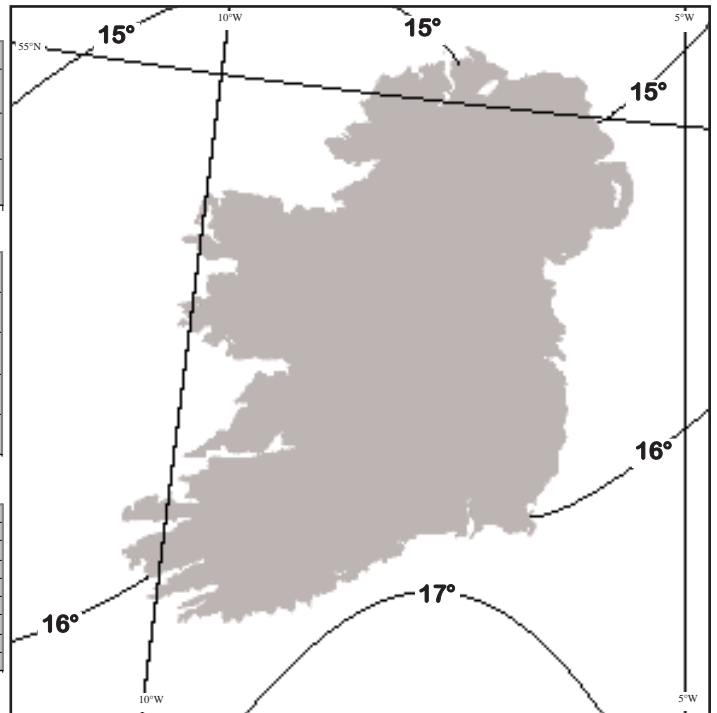
FREQUENCY OF WIND DIRECTION

### SEA TEMPERATURES

Sea temperatures reached their highest levels of the year around mid-September, when values were close to 15°C off the north coast and reached almost 17°C in the south. These values represent temperatures of around one degree higher than normal everywhere. At Malin Head the mean sea temperature for the month was 14.7°C compared with its normal value for September of 14.1°C.



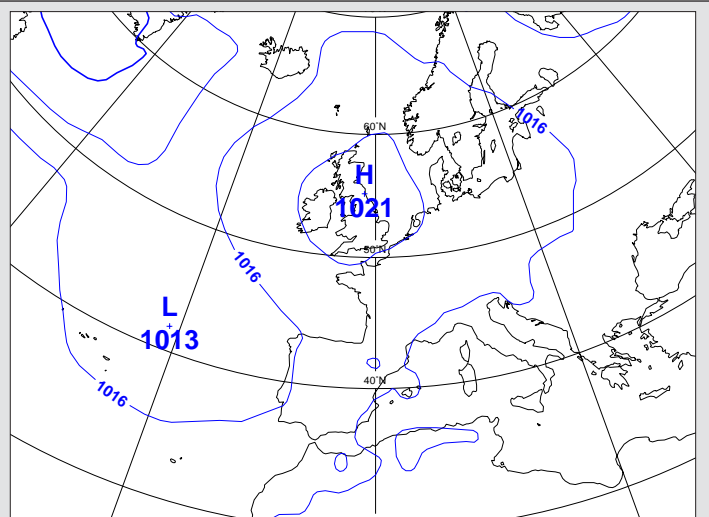
Wave conditions at 52.5°N, 12°W based on WAM model



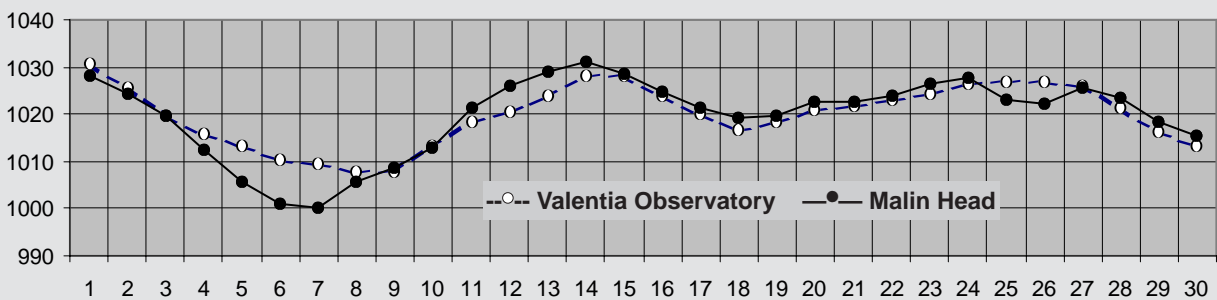
Sea Temperatures (°C) around mid-month

### MEAN ATMOSPHERIC PRESSURE

As indicated by the chart on the right, anticyclones dominated the weather over Ireland during September. Mean sea level pressure for the month was almost uniform over the country, with values between 1020hPa and 1021hPa everywhere, representing values of between 5 and 8hPa above normal for September. Pressure was at its highest at the beginning of the month, with Kilkenny measuring the highest value of the month on the 1st, 1033.3hPa. Pressure values remained above 1000hPa at almost every station, but were at their lowest in the period 6th/7th; Malin Head recorded the lowest value of the month, 994.3hPa on the 7th.

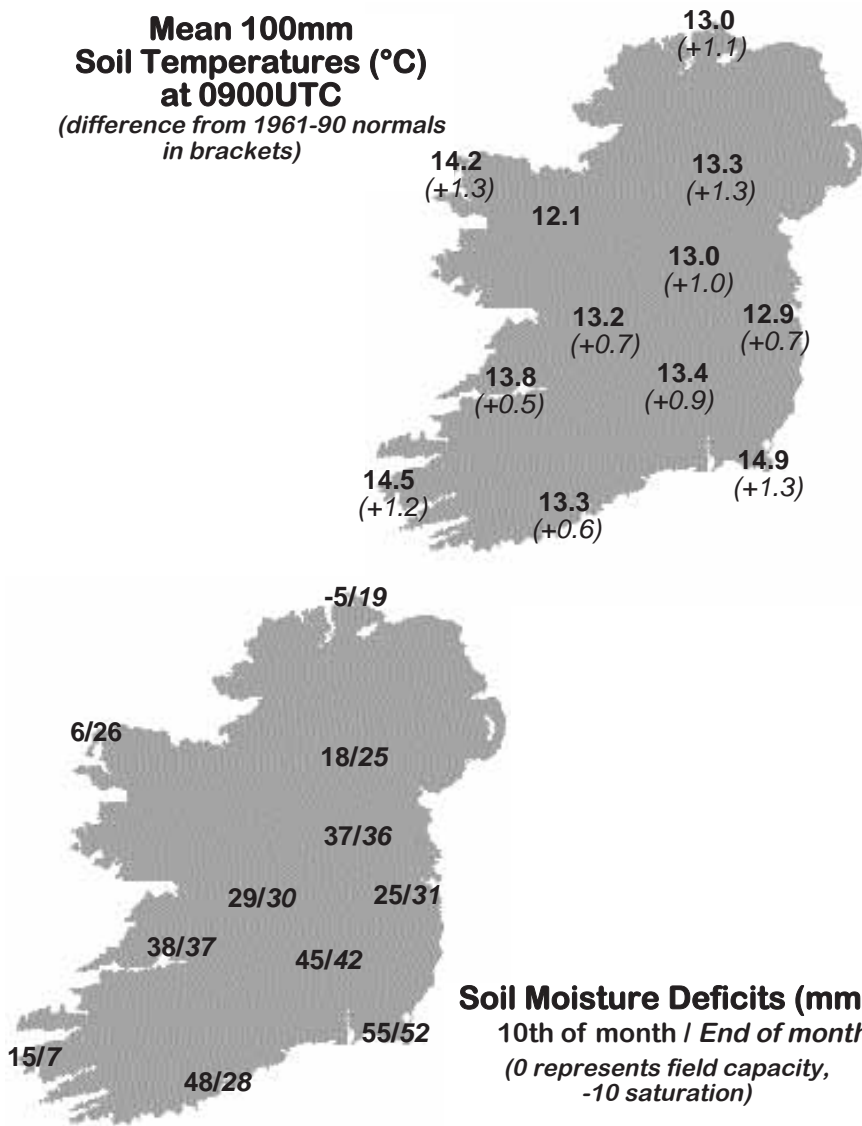


The above map is based on monthly means of 1200 UTC values



Mean daily M.S.L. pressure (hPa)

**Mean 100mm Soil Temperatures (°C) at 0900UTC**  
(difference from 1961-90 normals in brackets)



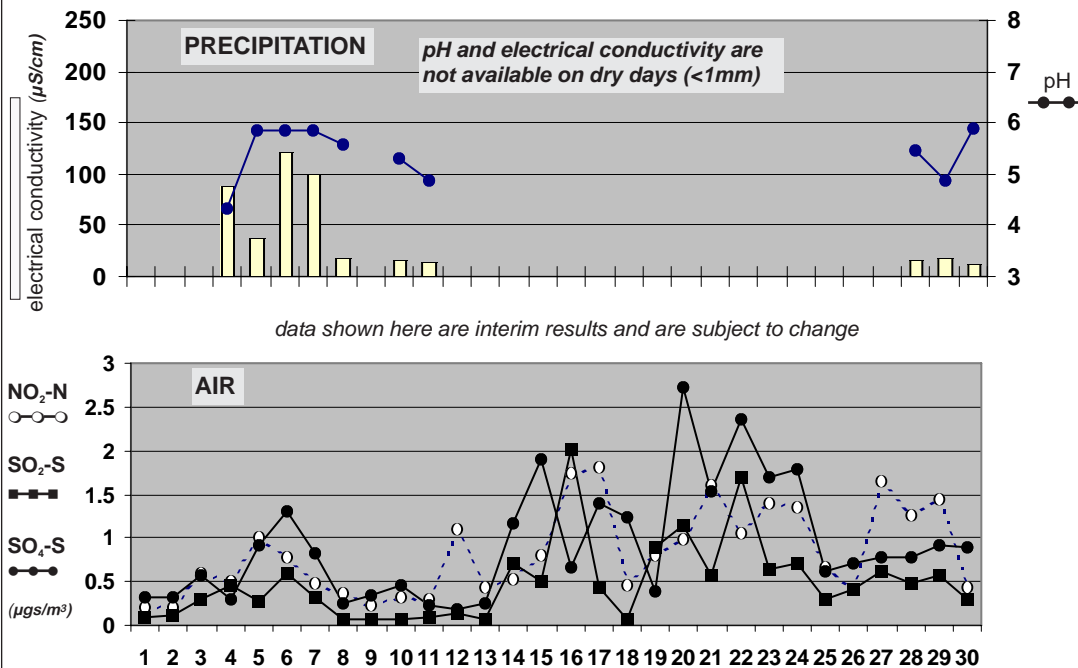
**Soil Temperatures at 0900UTC**

County/ Station	°C		
	100mm	200mm	300mm
<b>CO. CLARE</b>			
SHANNON AIRPORT	13.8	15.0	15.3
CARRON	14.2		15.2
<b>CO. CORK</b>			
PERMOY (MOORE PARK)	13.5	13.8	14.4
CORK AIRPORT	13.3	14.1	14.8
SHERKIN ISLAND	15.1		15.7
BALLINCURRIG (PEAFIELD)	12.6	13.3	13.9
<b>CO. DONEGAL</b>			
MALIN HEAD	13.0	13.9	15.0
<b>CO. DUBLIN</b>			
DUBLIN AIRPORT	12.8	13.3	14.0
CASEMENT AERODROME	12.9	13.8	14.7
<b>CO. KERRY</b>			
VALENTIA OBSERVATORY	14.5	15.1	16.1
<b>CO. KILKENNY</b>			
KILKENNY	13.4	14.4	15.2
<b>CO. LEITRIM</b>			
BALLINAMORE	13.0	13.9	14.9
<b>CO. LIMERICK</b>			
MOUNT RUSSELL	12.3	13.3	
<b>CO. LOUTH</b>			
ARDEE (BOHARNAMOE)	14.1	14.8	15.1
<b>CO. MAYO</b>			
BELMULLET	14.2	15.1	16.4
STRAIDE	13.6		
CONNACHT AIRPORT	12.1	12.6	14.0
<b>CO. MEATH</b>			
WARRENSTOWN	13.2	14.6	15.1
<b>CO. MONAGHAN</b>			
CLONES	13.3	13.8	14.8
<b>CO. OFFALY</b>			
BIRR	13.2	14.4	15.6
<b>CO. TIPPERARY</b>			
FETHARD (PARSONSHILL)	13.6	14.0	
<b>CO. WATERFORD</b>			
DUNGARVAN (CARRIGLEA)		14.6	15.3
<b>CO. WESTMEATH</b>			
MULLINGAR II	13.0	13.8	15.5
<b>CO. WEXFORD</b>			
JOHNSTOWN CASTLE	14.3	14.6	15.0
ROSSLARE	14.9	15.5	16.6
CLONROCHE	12.5	14.0	15.2
JOHN F. KENNEDY PARK	14.1	14.8	16.0

**Soil Moisture Deficits (mm)**  
10th of month / End of month  
(0 represents field capacity, -10 saturation)



**Chemical Analysis of Precipitation and Air Samples at Valentia Observatory**



Acid rain occurs when pollutants combine with moisture in the air to form sulphuric or nitric acid. pH is the simplest way of measuring the acidity of precipitation. Usually pH of 7.00 is considered neutral but this is not the case in rainfall samples. Pure water in the atmosphere has an equilibrium pH value of 5.65 at 20°C owing to carbon dioxide in the air dissolving to form carbonic acid. Any value below pH 5.65 is considered acid while any value above is considered alkaline.

Sulphur dioxide and sulphate in air contribute to the formation of sulphuric acid; nitrate in air contributes to the formation of nitric acid.

Conductivity measures the total ion activity in the rainfall, i.e. the higher the conductivity the greater the number of ions present.

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 a.g.l.	P.E. (Penman) (mm)
Fermoy	11-20	0.0	-	0	0	18.6	9.3	14.0	-	4.4	20	0	95	44	1.3	20	0	14.0	14.8	-	-	1.5	-
	21-end	9.3	-	2	2	17.5	7.2	12.4	-	0.7	25	0	81	33	-0.7	24	1	12.5	13.5	-	-	1.5	-
	month	21.2	27	4	4	18.0	7.9	13.0	0.2	0.7	25	0	260	110	-0.7	24	1	13.5	14.5	-	-	1.7	-
<b>Co. Donegal</b>	1-10	47.7	-	7	7	17.6	8.9	13.3	-	5.5	1	0	89	36	3.9	4	0	-	-	-	-	-	-
Glenties	11-20	0.1	-	0	0	18.4	10.4	14.4	-	3.9	20	0	100	47	3.0	20	0	-	-	-	-	-	-
	21-end	14.1	-	3	2	17.9	7.7	12.8	-	2.2	25	0	85	36	0.1	25	0	-	-	-	-	-	-
	month	61.9	43	10	9	18.0	9.0	13.5	1.2	2.2	25	0	273	119	0.1	25	0	-	-	-	-	-	-
<b>Co. Kerry</b>	1-10	30.3	-	6	6	18.4	9.7	14.1	-	7.3	9	0	96	43	5.1	9	0	-	-	60.7	-	-	-
Ardfert	11-20	1.3	-	1	1	19.8	9.0	14.4	-	5.9	20	0	100	48	2.5	20	0	-	-	53.7	-	-	-
	21-end	7.9	-	2	1	19.2	8.9	14.1	-	6.0	25	0	97	45	2.3	24	0	-	-	57.5	-	-	-
	month	39.5	-	9	8	19.1	9.2	14.2	0.9	5.9	20	0	293	136	2.3	24	0	-	-	171.9	-	-	-
<b>Co. Leitrim</b>	1-10	18.1	-	7	5	17.6	7.8	12.7	-	3.6	1	0	83	33	2.6	2	0	13.1	15.3	57.9	-	-	-
Ballinamore	11-20	0.4	-	1	0	18.1	9.8	14.0	-	4.8	15	0	96	42	5.0	15	0	13.8	15.2	27.6	-	-	-
	21-end	19.7	-	3	2	17.2	7.0	12.1	-	1.8	25	0	78	30	0.4	24	0	12.1	14.2	30.1	-	-	-
	month	38.2	37	11	7	17.6	8.2	12.9	0.7	1.8	25	0	257	105	0.4	24	0	13.0	14.9	115.6	121	-	-
<b>Co. Louth</b>	1-10	28.5	-	7	3	18.6	7.5	13.1	-	4.9	1	0	86	37	0.8	9	0	14.4	15.9	-	-	-	-
Ardee	11-20	0.0	-	0	0	18.4	9.6	14.0	-	7.4	12	0	96	42	2.9	12	0	15.0	15.5	-	-	-	-
	21-end	5.8	-	2	2	18.5	5.2	11.9	-	0.5	24	0	77	32	-1.5	24	3	12.8	14.1	-	-	-	-
	month	34.3	49	9	5	18.5	7.4	13.0	0.6	0.5	24	0	259	110	-1.5	24	3	14.1	15.1	-	-	-	-
<b>Co. Waterford</b>	1-10	21.6	-	6	4	18.7	7.9	13.3	-	4.8	10	0	89	39	4.2	10	0	-	15.6	57.8	-	0.7	-
Dungarvan	11-20	0.0	-	0	0	18.7	10.4	14.6	-	6.0	15	0	101	47	5.8	15	0	-	15.6	38.4	-	1.0	-
	21-end	21.9	-	2	2	17.9	9.6	13.8	-	4.5	25	0	94	42	3.1	25	0	-	14.8	46.0	-	0.9	-
	month	43.5	-	8	6	18.4	9.3	13.9	0.5	4.5	25	0	283	128	3.1	25	0	-	15.3	142.2	107	0.9	36
<b>Co. Wexford</b>	1-10	1.5	-	3	0	17.8	9.7	13.8	-	8.1	2	0	94	40	3.5	9	0	14.3	15.3	52.2	-	0.5	-
Johnstown Castle	11-20	0.3	-	1	0	17.6	12.0	14.8	-	10.4	11	0	104	48	6.3	19	0	15.0	15.3	33.6	-	0.8	-
	21-end	8.8	-	2	2	17.3	10.8	14.1	-	6.8	25	0	97	42	1.2	25	0	13.6	14.4	53.3	-	0.6	-
	month	10.6	12	6	2	17.6	10.8	14.2	0.9	6.8	25	0	294	129	1.2	25	0	14.3	15.0	139.1	107	0.6	37

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

SEE BACK PAGE OF JANUARY ISSUE FOR NOTES ON THE DATA

County/Station	Period	P.E. (mm) Amount	Soil Moisture (mm) Deficit	Accumulated	Surplus
<b>Co. Dublin</b>	1-10	11.3	-	51	1
Kinsealy	11-20	16.8	13	64	-
	21-end	20.6	3	67	-
	month	48.7			
<b>Co. Kerry</b>	1-10	14.9	-	6	7
Valentia Obs.	11-20	15.8	-	0	40
	21-end	29.7	-	0	4
	month	60.4			
<b>Co. Leitrim</b>	1-10	21.1	3	8	-
Ballinamore	11-20	6.1	6	14	-
	21-end	26.2	7	21	-
	month	53.4			
<b>Co. Wexford</b>	1-10	22.5	19	58	-
Johnstown Castle	11-20	8.1	5	63	-
	21-end	23.2	6	69	-
	month	54.8			

County/Station	GLOBAL SOLAR RADIATION (MJ/sq. m)				P.E. (Penman) total for month(mm)
	10-day totals 1-10	11-20	21-end	total for month	
<b>Co. Donegal</b>					
Malin Head	126.55	97.97	90.23	314.75	47
<b>Co. Dublin</b>					
Dublin Airport	120.69	91.75	97.68	310.12	38
<b>Co. Kerry</b>					
Valentia Obs.	132.91	115.89	101.88	350.68	53
<b>Co. Kilkenny</b>					
Kilkenny	n/a	111.26	n/a	n/a	43
<b>Co. Mayo</b>					
Belmullet	144.87	115.07	106.07	366.01	53
<b>Co. Monaghan</b>					
Clones	126.69	81.81	79.90	288.40	41
<b>Co. Offaly</b>					
Birr	129.80	105.48	95.96	331.24	44

**Sunday 1st:** An anticyclone of 1032hPa centred over Wales maintained a southwesterly airstream across Ireland, while a weak warm front passed near the northwest coast. A cool, clear night was followed by a dry day with temperatures rising above normal. Cloud increased during the day, although in most parts it was mainly high cloud and there were long spells of sunshine at most stations, especially in the southeast.

**Rainfall:** nil or trace

**Temperature:** max. 16°C to 21°C, min. 4°C to 11°C, ground temperature down to -1°C at Kilkenny

**Sunshine:** 5 to 13 hours, sunniest at Rosslare

**Monday 2nd:** The anticyclone drifted eastwards, extending a ridge of high pressure across Ireland, while a cold front to the west was slow-moving. Clear skies combined with light winds led to a touch of ground frost in south midland areas. A dry and sunny day almost everywhere, but cloudier in the southwest, with some hill fog and mist in places also. Afternoon temperatures near or above normal, but becoming cool again after dark.

**Rainfall:** nil or trace

**Temperature:** max. 16°C to 20°C, min. 8°C to 12°C, ground temperature down to 0°C at Kilkenny

**Sunshine:** 4 to 12 hours, sunniest in southeast

**Tuesday 3rd:** A ridge of high pressure over Ireland declined. Dry and mild overnight with some mist patches, followed by another dry, warm and mostly sunny day with afternoon temperatures slightly above normal. Remaining mild after dark with fog patches in the west. Winds were mostly light and variable but were moderate northeasterly at times in eastern coastal areas.

**Rainfall:** nil

**Temperature:** max. 19°C to 21°C, min. 7°C to 15°C, ground temperature down to 0°C at Kilkenny

**Sunshine:** 5 to 11 hours, sunniest in northwest

**Wednesday 4th:** A weakening ridge of high pressure over the country, with embedded weak fronts. Cloudy and misty at first in many places with some fog patches. Some sunny spells during the day, but cloudier than recently, especially in the east. Generally dry throughout the day, but rain later along the northwest coast. Light winds, between northwesterly and northeasterly in direction.

**Rainfall:** nil generally, 2mm at Clones

**Temperature:** max. 18°C to 21°C, min. 9°C to 12°C, no ground frost

**Sunshine:** 0 to 10 hours, sunniest at Shannon Airport

**Thursday 5th:** Ireland lay in a west to southwesterly airflow. A frontal trough over the northwest moved slowly southeastwards during the period. Rain in the west and northwest spread to all areas, but amounts of rainfall were generally small. Some sunny spells in the western half of the country, generally cloudy elsewhere. Cooler than recent days. Light to moderate southwesterly winds, occasionally stronger in coastal areas.

**Rainfall:** 1 to 3mm generally, 7mm at Malin Head

**Temperature:** max. 15°C to 19°C, min. 8°C to 12°C, no ground frost

**Sunshine:** 0 to 6 hours

**Friday 6th:** A large area of low pressure off the north coast, with its associated weak fronts crossing Ireland during the period. Some light rain and drizzle in most areas at times, although rainfall amounts were quite small except in the far northwest. Some sunny periods also, but most places were cool. Southwest to westerly winds were moderate to strong with some gale gusts.

**Rainfall:** nil in south and southeast, up to 8mm at Malin Head

**Temperature:** max. 14°C to 18°C, min. 8°C to 11°C, no ground frost

**Sunshine:** 3 to 8 hours

**Saturday 7th:** A depression centred to the north of Ireland moved southwards during the night, becoming slow-moving in the north Irish Sea. A dry start in the south and southeast, but heavy blustery showers in the north and west extended to all areas by late morning, but with sunny periods also. Showers died out after dark except near western coasts. Southwest to westerly winds veered northwesterly during the day, strong at times.

**Rainfall:** 1 to 4mm generally, 20mm at Malin Head

**Temperature:** max. 13°C to 18°C, min. 8°C to 12°C, no ground frost

**Sunshine:** 6 to 9 hours

**Sunday 8th:** A depression moved slowly westwards across the country during the afternoon. Showers in the west and north at first spread to all areas by

afternoon, some heavy and prolonged; showers died out after dark away from western coasts. Winds generally light and variable.

**Rainfall:** 1 to 4mm generally, 11mm at Connacht Airport

**Temperature:** max. 14°C to 17°C, min. 7°C to 12°C, ground temperature down to -1°C at Kilkenny

**Sunshine:** 0 to 9 hours, sunniest in southeast

**Monday 9th:** Showers along southern and eastern coasts during the morning, merging to give more persistent rain at times. Mainly dry with long sunny spells in other areas. Light southeast to easterly winds.

**Rainfall:** nil to 3mm

**Temperature:** max. 16°C to 19°C, min. 7°C to 11°C, ground temperature down to -2°C at Kilkenny

**Sunshine:** 2 to 10 hours, highest in southwest

**Tuesday 10th:** A southerly airflow over the country. Frontal troughs moved into western areas during the afternoon, weakening as they moved eastwards. Dry in all except extreme northern areas overnight, with some dense fog patches in midland areas. Rain soon became heavy and prolonged in the west, but eastern areas had only small amounts with some sunny spells. Moderate southeast to southwesterly winds, with gale gusts at times.

**Rainfall:** nil to 4mm generally, up to 20mm at Valentia Observatory

**Temperature:** max. 16°C to 19°C, min. 6°C to 12°C, ground temperature down to -3°C at Kilkenny

**Sunshine:** 1 to 9 hours, highest in north

**Wednesday 11th:** A moderate southerly airflow over Ireland. Rain was heavy at times along southern, southwestern and western coasts, but it was mainly dry elsewhere with clear or sunny spells. Warm. Rain dying out in the west by evening. Mist in places after dark.

**Rainfall:** nil in east and southeast, up to 40mm at Valentia Observatory

**Temperature:** max. 17°C to 22°C, min. 10°C to 15°C, no ground frost

**Sunshine:** 0 to 7 hours, highest in east

**Thursday 12th:** A light southeasterly airflow over Ireland, between an anticyclone over Scandinavia and a depression in the North Atlantic. Light rain in the northwest at first, but generally dry throughout with sunny spells, especially in southern and southwestern parts. Mist or haze patches developed in many eastern and midland areas.

**Rainfall:** nil or trace

**Temperature:** max. 19°C to 22°C, min. 9°C to 15°C, no ground frost

**Sunshine:** nil to 9 hours, highest in southwest

**Friday 13th:** An anticyclone to the north of Scotland maintained an easterly airflow over Ireland. Mild and misty overnight with some fog patches and the odd spot of drizzle in places. Fog cleared during the morning but mist and haze lingered in many places to give a dry, warm day with long spells of sunshine except in southern areas. Winds generally were light to moderate easterly, gusty at times.

**Rainfall:** <1mm everywhere

**Temperature:** max. 17°C to 23°C, min. 11°C to 17°C, no ground frost

**Sunshine:** 4 to 11 hours

**Saturday 14th:** An anticyclone to the north of Scotland maintained an east to northeasterly airflow over Ireland. Dry with mist and haze and fog in places. Sunny in the west from early morning, but cloudier further east with fog persisting in places until late morning. Temperatures rose well above normal over the west of the country but cloudier eastern areas were considerably cooler. Mist and fog returned in many places after dark. Light north to northeasterly winds throughout.

**Rainfall:** <1mm everywhere

**Temperature:** max. 17°C to 22°C, min. 6°C to 14°C, ground temperature down to 0°C at Kilkenny

**Sunshine:** 3 to 12 hours, highest in northwest

**Sunday 15th:** An anticyclone to the northwest of Ireland maintained a ridge of high pressure over the country. Cool inland at first with widespread mist and fog, lingering in many places through the morning. A mainly dry day with variable sunshine amounts. Light to moderate east or northeasterly winds.

**Rainfall:** <1mm everywhere

**Temperature:** max. 14°C to 20°C, min. 5°C to 14°C, ground temperature down to -1°C at Kilkenny

**Sunshine:** nil to 3 hours generally, up to 8 hours at Connacht Airport



**Monday 16th:** An anticyclone to the northwest declined very slowly. Mild overnight with some drizzle in the extreme southwest. Apart from a few spots of drizzle in the west and northwest it was a dry, warm but cloudy day generally with only short sunny spells in places. Light to moderate winds were between northerly and easterly in direction.

**Rainfall:** <1mm everywhere

**Temperature:** max. 14°C to 18°C, min. 9°C to 13°C, no ground frost

**Sunshine:** nil to 2 hours generally, 8 hours at Valentia Observatory

**Tuesday 17th:** Anticyclonic conditions prevailed over Ireland. A little rain in the northwest overnight, with mist and fog in many areas. Dry during the rest of the period but cloudy and dull throughout with only a few sunny spells, mainly in coastal areas. Mild. Light variable or northeasterly winds.

**Rainfall:** nil or trace

**Temperature:** max. 15°C to 18°C, min. 9°C to 13°C, no ground frost

**Sunshine:** nil to 5 hours, highest in north

**Wednesday 18th:** Anticyclonic conditions prevailed through the period. Dry, cloudy and misty overnight, followed by a mild, dry day with short sunny spells, mainly in the south and southeast. Light variable or northeasterly winds. Mist returned again after dark, remaining mild.

**Rainfall:** nil

**Temperature:** max. 14°C to 20°C, min. 9°C to 12°C, ground temperature down to 0°C at Kilkenny

**Sunshine:** nil to 5 hours, highest in southeast

**Thursday 19th:** An area of high pressure of 1021hPa lay to the northwest of Ireland. Apart from some drizzle in the north it was a dry, warm day with long sunny spells in the southern half of the country but remaining cloudy elsewhere. Light northeasterly winds, moderate at times in the southeast.

**Rainfall:** nil

**Temperature:** max. 16°C to 19°C, min. 7°C to 14°C, ground temperature down to -1°C at Kilkenny

**Sunshine:** dull in north, up to 10 hours in south and southeast

**Friday 20th:** High pressure prevailed to the northwest of Ireland. Cool overnight with grass temperatures dipping below freezing inland, but becoming warm during the afternoon. Dry throughout with sunny periods generally, but the south and southeast remained duller. Light east to northeasterly winds.

**Rainfall:** nil

**Temperature:** max. 16°C to 20°C, min. 5°C to 14°C, mildest in southeast, ground temperature down to -2°C at Kilkenny

**Sunshine:** 4 to 9 hours generally

**Saturday 21st:** High pressure continued to dominate Ireland's weather. Overnight mist or fog in many areas was slow to clear in some places. A dry, warm day in all areas with long sunny spells. Light variable or northwesterly winds throughout. Mist or fog returned again after dark in some areas, with slight to sharp ground frost.

**Rainfall:** nil

**Temperature:** max. 15°C to 20°C, min. 4°C to 13°C, mildest in southeast, ground temperature down to -2°C inland

**Sunshine:** 6 to 11 hours, highest in northwest

**Sunday 22nd:** Anticyclonic conditions continued through the period. Mist or fog patches overnight in inland areas with some ground frost. A little patchy drizzle in western areas during the early morning, but otherwise dry and mostly cloudy, except in the north and west which were sunny. Continuing mild. Light variable or northerly winds, stronger off the south and southeast coast.

**Rainfall:** nil or trace

**Temperature:** max. 16°C to 19°C, min. 6°C to 12°C, ground temperature down to -1°C at Kilkenny

**Sunshine:** dull in southeast, up to 9 hours in north

**Monday 23rd:** High pressure continued over the country in an easterly airflow. Dry and cool during the night with light easterly winds. Continuing dry during the day with sunny spells developing in all areas, but with scattered light showers along the east coast. Light east to southeasterly winds. Becoming cool again after dark under clear skies.

**Rainfall:** nil or trace

**Temperature:** max. 15°C to 19°C, min. 3°C to 12°C, ground temperature down to -4°C at Kilkenny

**Sunshine:** 4 to 11 hours, sunniest in southeast

**Tuesday 24th:** An anticyclone moved southwards over the country, as a light east to southeasterly airflow persisted. Cool and clear at first, but mist or fog developed in places later in the morning. The fog persisted in places until early afternoon in some areas. Sunny everywhere for the afternoon and evening with light, mainly easterly winds. Becoming cool after nightfall with fog again developing in places.

**Rainfall:** nil or trace

**Temperature:** max. 15°C to 20°C, min. 2°C to 11°C, ground temperature down to -3°C at Kilkenny

**Sunshine:** 6 to 11 hours

**Wednesday 25th:** An anticyclone of 1027hPa centred just off the southwest coast established a northwesterly airflow over the country. Clear overnight with frost and fog in places. Another dry, sunny day generally, but cloudier in the northeastern half of the country. Afternoon temperatures near or above normal. Cloud increased after dark and there were showers in parts of the north, with occasional spots of drizzle in other places.

**Rainfall:** <1mm

**Temperature:** max. 15°C to 19°C, min. 1°C to 9°C, ground temperature down to -1°C inland

**Sunshine:** 5 to 10 hours generally

**Thursday 26th:** A mild west to northwest airflow covered Ireland. An anticyclone of 1026hPa lay just to the southwest of the country. Cloudy in the north and west at first with patches of drizzle in places. Elsewhere skies were clear and mist patches developed. The north remained dull all day but elsewhere there were sunny spells, most frequent in coastal areas and in the south. Daytime temperatures again near or above normal.

**Rainfall:** <1mm

**Temperature:** max. 15°C to 18°C, min. 7°C to 12°C, ground temperature down to -1°C at Valentia Observatory

**Sunshine:** nil to 7 hours

**Friday 27th:** An anticyclone of 1027hPa over Ireland moved slowly eastwards. Mist and fog patches overnight with isolated light showers on northwest coasts. Cool with slight ground frost where skies cleared. Mist and fog cleared slowly during the morning and it turned out to be another dry, warm day with variable cloud amounts; some places remained cloudy all day but others had spells of sunshine, especially in the northwest. Winds were generally light and variable.

**Rainfall:** nil to 1mm

**Temperature:** max. 16°C to 19°C, min. 6°C to 13°C, mildest in north, ground temperature down to -2°C at Valentia Observatory

**Sunshine:** nil to 8 hours, highest in northwest

**Saturday 28th:** An anticyclone of 1028hPa over England moved away eastwards, while frontal troughs approached from the southwest. Mild overnight with some mist patches. The day was dry and warm with some short sunny spells. Afternoon temperatures were again near normal or above. Continuing mild during the evening with mist returning to some places. Light southeasterly winds were moderate at times along southern coasts.

**Rainfall:** nil or trace

**Temperature:** max. 16°C to 19°C, min. 10°C to 14°C, no ground frost

**Sunshine:** nil to 5 hours, highest in southeast

**Sunday 29th:** The anticyclone over England drifted further east, maintaining a south to southeasterly airflow over Ireland. A few spells of light rain or drizzle in the west during the early part of the day but most areas remained dry. Some mist or fog patches during the hours of darkness and the early morning. Drizzle and light rain became more extensive during the day, with more persistent and heavy rain reaching the west and southwest. Warm with a few sunny spells, mostly in the east. Light south to southeasterly winds.

**Rainfall:** nil to 3mm generally, 26mm at Valentia Observatory

**Temperature:** max. 17°C to 21°C, min. 10°C to 15°C, mildest in southwest, no ground frost

**Sunshine:** nil to 5 hours, highest in southeast

**Monday 30th:** Showery outbreaks of rain throughout the day, some heavy and thundery. Warm and mostly cloudy, but with some sunny spells in eastern areas. Light south to southeasterly winds.

**Rainfall:** 2 to 19mm, highest in southeast

**Temperature:** max. 16°C to 22°C, min. 11°C to 16°C, no ground frost

**Sunshine:** nil to 5 hours, highest in east

## Drier than normal almost everywhere; less than a quarter of normal in places

Rainfall totals for September were below normal almost everywhere, with less than 25% of normal measured over most of Leinster and parts of Munster. Totals were much closer to normal at some stations in County Kerry, however, due to heavy falls on individual days. Totals ranged from 9mm at Casement Aerodrome to 125mm at Valentia Observatory, with percentage of normal values between 12% at Johnstown Castle, Co. Wexford and 100% at Valentia. It was the driest September for between 12 and 16 years at most stations.

As indicated by the chart of daily rainfall on the opposite page, rainfall during the month was concentrated in the periods 4th to 11th and 28th to 30th, while little or no rain was recorded at most stations in the period 12th to 27th. The number of wetdays during the month (*days with 1.0mm or more of rainfall*) varied between 4 and 9 generally, compared with the normal range for September of 12 to 17. The heaviest daily falls at all stations were in either of the periods 6th to 11th or 29th to 30th. Valentia Observatory recorded a fall of 38.9mm up to midnight on the 11th, the highest daily fall of the month.

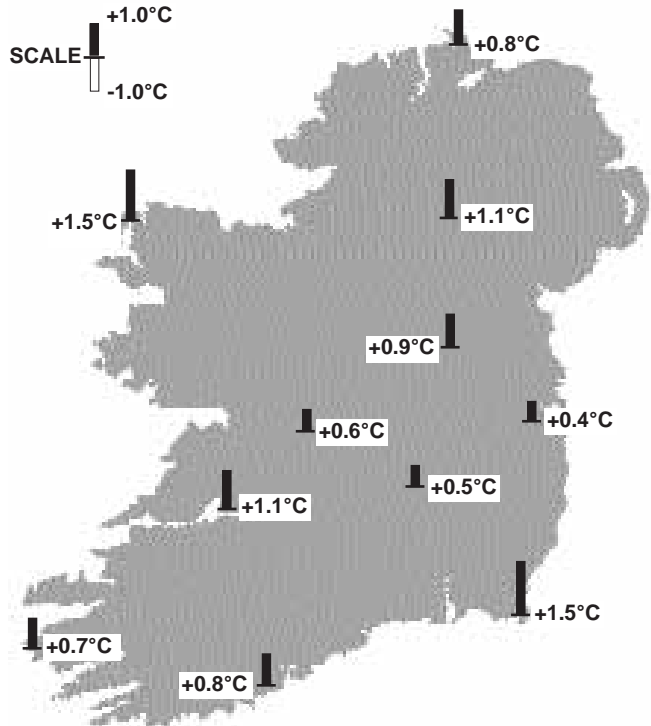
<i>County/ Station</i>	Total Amount (mm)	% of 1961-90 average	Most in a day / date		Number of Raindays (>0.2mm)	Wetdays (>1mm)
<b>CO. CLARE</b>						
SHANNON AIRPORT	16.3	20	4.8	10	6	5
CARRON	45.9	32	13.2	8	8	8
<b>CO. CORK</b>						
FERMOY (MOORE PARK)	21.2	27	8.5	10	4	4
CORK AIRPORT	37.5	38	18.2	10	8	5
SHERKIN ISLAND	51.3	53	19.1	10	8	6
BALLINCURRIG (PEAFIELD)	37.6		16.2	10	6	4
<b>CO. DONEGAL</b>						
MALIN HEAD	61.6	60	20.5	6	11	8
BALLYSHANNON (CATHLEEN'S FALL)	40.5	39	9.4	6	9	8
GLENTIES	61.9	43	17.6	7	10	9
<b>CO. DUBLIN</b>						
DUBLIN (PHOENIX PARK)	16.7	25	7.7	30	7	4
DUBLIN AIRPORT	22.8		7.4	30	8	5
CASEMENT AERODROME	9.3	15	4.9	30	5	4
DUBLIN (MERRION SQUARE)	20.1	32	6.4	30	6	4
<b>CO. GALWAY</b>						
GALWAY (UNIV. COLL.)	47.2	43	9.5	10	9	9
MAM VALLEY	61.6		15.4	6	10	9
CONNEMARA NATIONAL PARK	53.8	35	16.8	8	10	8
BALLYGAR	30.8	33	10.0	30	9	6
<b>CO. KERRY</b>						
VALENTIA OBSERVATORY	124.8	100	29.5	10	12	9
ARDFERT (LISCAHANE)	39.5		10.8	10	9	8
<b>CO. KILKENNY</b>						
KILKENNY	26.3	36	15.9	29	9	5
<b>CO. LETTRIM</b>						
BALLINAMORE	38.2	37	17.2	30	11	7
<b>CO. LIMERICK</b>						
MOUNT RUSSELL	48.3		12.8	10	8	8
<b>CO. LOUTH</b>						
ARDEE (BOHARNAMOE)	34.3	49	21.0	8	9	5
<b>CO. MAYO</b>						
BELMULLET	34.1	31	10.0	10	13	8
STRAIDE	39.9	38	20.9	7	8	7
CONNACHT AIRPORT	38.3		12.3	7	14	7
<b>CO. MEATH</b>						
WARRENTOWN	13.3	17	5.4	30	5	4
<b>CO. MONAGHAN</b>						
CLONES	24.6	29	9.6	30	10	7
<b>CO. OFFALY</b>						
BIRR	23.5	33	7.4	7	9	6
DERRYGREENAGH	18.7	23	5.2	29	8	5
<b>CO. SLIGO</b>						
ARDTARMON	33.0		11.2	7	9	6
<b>CO. TIPPERARY</b>						
FETHARD (PARSONSHILL)	47.6		20.3	29	8	7
<b>CO. WATERFORD</b>						
WATERFORD (TYCOR)	43.6	51	26.7	29	8	5
DUNGARVAN (CARRIGLEA)	43.5		17.1	29	8	6
<b>CO. WESTMEATH</b>						
MULLINGAR II	18.9	22	5.8	30	11	7
<b>CO. WEXFORD</b>						
JOHNSTOWN CASTLE	10.6	12	4.6	30	6	2
ROSSLARE	12.4	17	7.5	30	4	3
CLONROCHE	22.4	22	7.5	30	7	6
JOHN F. KENNEDY PARK	22.2	26	12.6	30	5	4



# Warmer than normal everywhere

September was a warmer than normal month everywhere, with daytime temperatures rising well above normal during the first half of the month. Mean air temperatures ranged from 12.9°C at Ballinamore, Co. Leitrim, to 15.2°C at Rosslare. Although warmer than normal everywhere, it was the coolest September for 7 or 8 years at a number of stations, reflecting the frequency of warm Septembers over recent years; it was, however, the warmest September since 1971 at Rosslare.

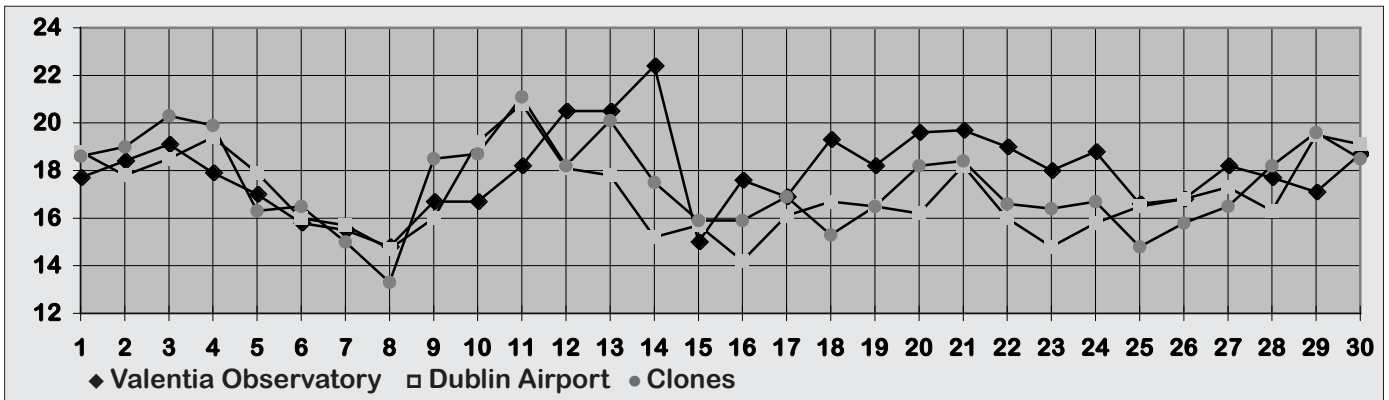
Mean maximum temperatures for the month were well above normal in western areas, as a result of consistently high daytime temperatures, especially during the first two weeks; Belmullet's mean maximum temperature for the month of 18.2°C was its highest for September in 45 years of record. Ardee (Boharnamoe), Co. Louth, measured the highest temperature of the month, 22.8°C on the 11th. Ground temperatures fell below freezing at many stations towards the end of the month. Ardee also recorded the lowest air temperature of the



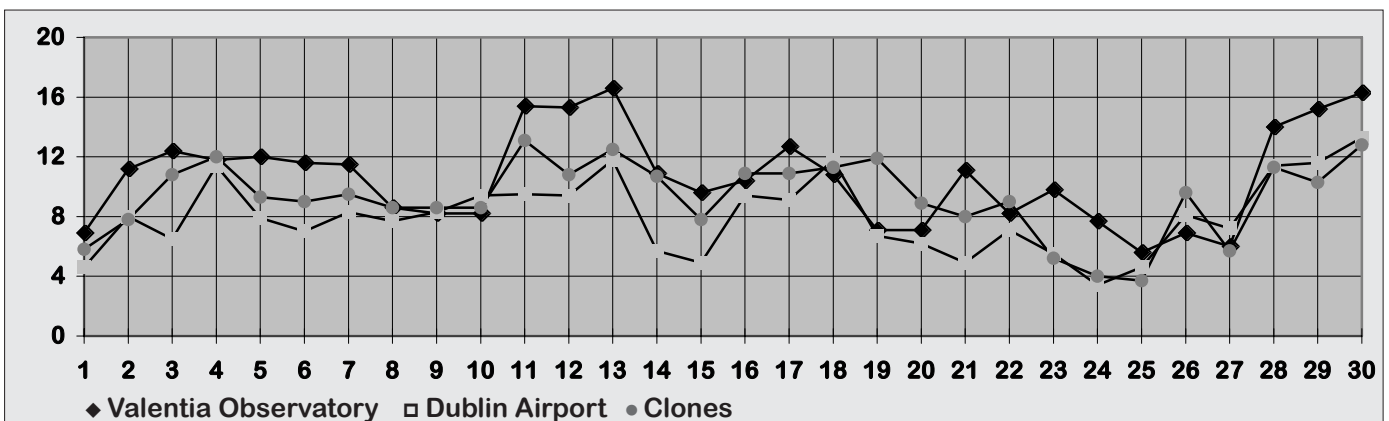
**Mean Temperature**  
(difference from 1961-90 normals)

month, 0.5°C on the 24th, while Kilkenny recorded the lowest grass minimum temperature, -4.2°C on the 5th.

## Daily 0-24h maximum temperatures (°C)



## Daily 0-24h minimum temperatures (°C)



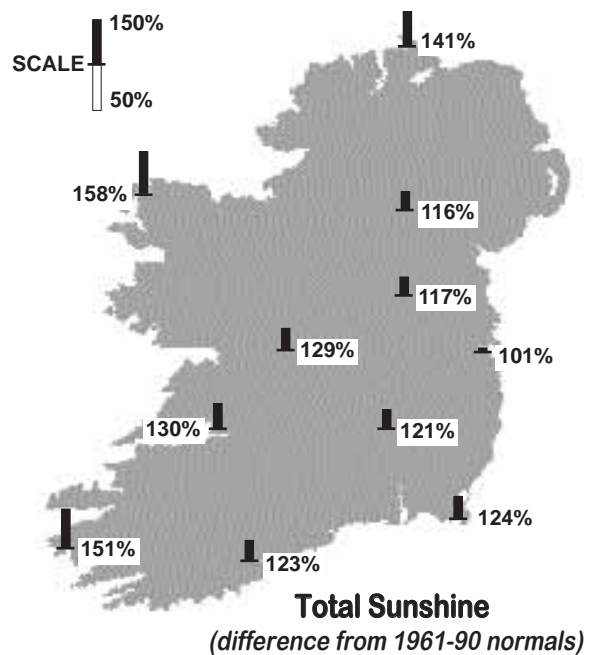
County/ Station	°C											
	Mean max.	Mean min.	Mean/ deviation from 1961-90 average		Highest max./date		Lowest min./date		Lowest grass min./date		Days with air frost ground frost	
<b>CO. CLARE</b>												
SHANNON AIRPORT	19.2	10.4	14.8	1.1	21.8	11	6.4	24	-0.6	24	0	2
CARRON	17.4	9.2	13.3	1.0	20.4	12	4.8	25	-0.9	24	0	2
<b>CO. CORK</b>												
FERMOY (MOORE PARK)	18.0	7.9	13.0	0.2	20.5	12	0.7	25	-0.7	24	0	1
CORK AIRPORT	16.8	10.4	13.6	0.8	19.7	4	7.1	25	2.3	9	0	0
SHERKIN ISLAND	17.9	11.9	14.9	1.2	19.8	3 4	7.5	9	4.1	26	0	0
BALLINCURRIG (PEAFIELD)	17.6	9.3	13.5		20.0	4	5.5	25	4.0	25	0	0
<b>CO. DONEGAL</b>												
MALIN HEAD	16.1	11.1	13.6	0.8	20.2	11	6.0	23	4.0	23	0	0
BALLYSHANNON (CATHLEEN'S FALL)	17.3	9.0	13.2	0.5	20.3	11	4.4	24			0	
GLENTIES	18.0	9.0	13.5	1.2	22.7	14	2.2	25	0.1	25	0	0
<b>CO. DUBLIN</b>												
DUBLIN (PHOENIX PARK)	18.1	9.1	13.6	0.6	22.0	29	3.8	25	-0.9	25	0	1
DUBLIN AIRPORT	17.1	8.9	13.0		20.8	11	3.4	24	-1.4	24	0	2
CASEMENT AERODROME	17.6	9.0	13.3	0.4	21.5	30	2.6	25	0.9	25	0	0
DUBLIN (MERRION SQUARE)	17.3	11.6	14.5	0.4	21.7	11	7.1	25			0	
<b>CO. GALWAY</b>												
GALWAY (UNIV. COLL.)	18.9	9.7	14.3	0.9	21.7	13	4.0	25	0.5	25	0	0
MAAM VALLEY	18.4	9.7	14.1		21.8	15	5.9	24	1.2	25	0	0
CONNEMARA NATIONAL PARK	18.2	10.5	14.4	1.6	21.7	14	7.9	22			0	
BALLYGAR	18.4	9.0	13.7		22.0	11	2.6	25	2.1	25	0	0
<b>CO. KERRY</b>												
VALENTIA OBSERVATORY	18.0	10.8	14.4	0.7	22.4	14	5.6	25	-1.5	27	0	1
ARDFERT (LISCAHANE)	19.1	9.2	14.2	0.9	22.4	14	5.9	20	2.3	24	0	0
<b>CO. KILKENNY</b>												
KILKENNY	18.5	8.0	13.3	0.5	21.7	3 14	1.4	25	-4.2	25	0	12
<b>CO. LEITRIM</b>												
BALLINAMORE	17.6	8.2	12.9	0.7	20.7	3	1.8	25	0.4	24	0	0
<b>CO. LIMERICK</b>												
MOUNT RUSSELL	17.2	9.6	13.4		20.8	13	6.8	20	2.7	20 24	0	0
<b>CO. LOUTH</b>												
ARDEE (BOHARNAMOE)	18.5	7.4	13.0	0.6	22.8	11	0.5	24	-1.5	24	0	3
<b>CO. MAYO</b>												
BELMULLET	18.2	10.8	14.5	1.5	22.0	13	4.8	25	1.6	25	0	0
STRAIDE	18.1	8.5	13.3	0.8	21.3	11	2.5	10	-1.8	10 24	0	5
CONNACHT AIRPORT	16.5	9.4	13.0		20.0	11	6.5	1	4.0	1	0	0
<b>CO. MEATH</b>												
WARRENTOWN	18.0	8.8	13.4	0.8	21.7	11	2.9	25	0.6	24	0	0
<b>CO. MONAGHAN</b>												
CLONES	17.5	9.3	13.4	1.1	21.1	11	3.7	25	2.0	1	0	0
<b>CO. OFFALY</b>												
BIRR	18.0	8.8	13.4	0.6	22.6	13	3.0	24	-2.0	23	0	4
DERRYGREENAGH	17.8	8.2	13.0	0.8	21.0	13	3.0	24	-1.9	24	0	4
<b>CO. SLIGO</b>												
ARDTARMON	18.0	10.6	14.3		21.2	13	7.3	25	1.3	25	0	0
<b>CO. TIPPERARY</b>												
FETHARD (PARSONSHILL)	17.8	8.6	13.2		20.8	3	5.0	25	-4.0	25	0	7
<b>CO. WATERFORD</b>												
WATERFORD (TYCOR)	19.2	10.5	14.9	1.6	21.9	3	5.9	25			0	
DUNGARVAN (CARRIGLEA)	18.4	9.3	13.9	0.5	21.2	4	4.5	25	3.1	25	0	0
<b>CO. WESTMEATH</b>												
MULLINGAR II	17.6	8.7	13.2	0.9	20.5	13	2.4	25	-0.7	25	0	1
<b>CO. WEXFORD</b>												
JOHNSTOWN CASTLE	17.6	10.8	14.2	0.9	19.5	9	6.8	25	1.2	25	0	0
ROSSLARE	17.5	12.8	15.2	1.5	19.7	12	9.0	25	4.1	1	0	0
CLONROCHE	17.9	9.0	13.5	0.8	20.5	3	3.3	25	-2.7	25	0	4
JOHN F. KENNEDY PARK	17.9	10.2	14.1	1.1	20.0	3 13	3.8	25	-0.5	25	0	1

County/ Station	Daily mean (hours/day)	% of average	% of possible	Most in a day/date	
<b>CO. CLARE</b>					
SHANNON AIRPORT	4.79	130	38	10.4	4
<b>CO. CORK</b>					
CORK AIRPORT	5.06	123	40	11.4	1
SHERKIN ISLAND	5.27	120	42	11.2	2
BALLINCURRIG (PEAFIELD)	5.31		36	11.9	2
<b>CO. DONEGAL</b>					
MALIN HEAD	4.90	141	38	10.7	14
BALLYSHANNON (CATHLEEN'S FALL)	4.60	134	36	9.5	13
<b>CO. DUBLIN</b>					
DUBLIN AIRPORT	4.33	101	34	11.3	13
CASEMENT AERODROME	4.13	101	32	10.8	1
<b>CO. GALWAY</b>					
GALWAY (UNIV. COLL.)	4.78	130	38	9.5	4
<b>CO. KERRY</b>					
VALENTIA OBSERVATORY	5.47	151	43	10.5	1
ARDFERT (LISCAHANE)	5.73		45	10.4	1 14
<b>CO. KILKENNY</b>					
KILKENNY	4.61	121	36	10.4	21
<b>CO. LEITRIM</b>					
BALLINAMORE	3.85	121	30	9.0	24
<b>CO. MAYO</b>					
BELMULLET	5.77	158	45	11.6	14
STRAIDE	4.86			10.9	14
CONNACHT AIRPORT	4.60		36	10.0	21
<b>CO. MONAGHAN</b>					
CLONES	3.86	116	30	10.0	2
<b>CO. OFFALY</b>					
BIRR	4.62	129	36	10.0	21
<b>CO. WATERFORD</b>					
DUNGARVAN (CARRIGLEA)	4.74	107	45	11.8	1
<b>CO. WESTMEATH</b>					
MULLINGAR II	4.32	117	34	11.2	13
<b>CO. WEXFORD</b>					
JOHNSTOWN CASTLE	4.64	107	37	11.6	1
ROSSLARE	5.96	124	47	12.6	1
CLONROCHE	4.74	118	37	11.5	2
JOHN F. KENNEDY PARK	5.03	131	40	11.5	1

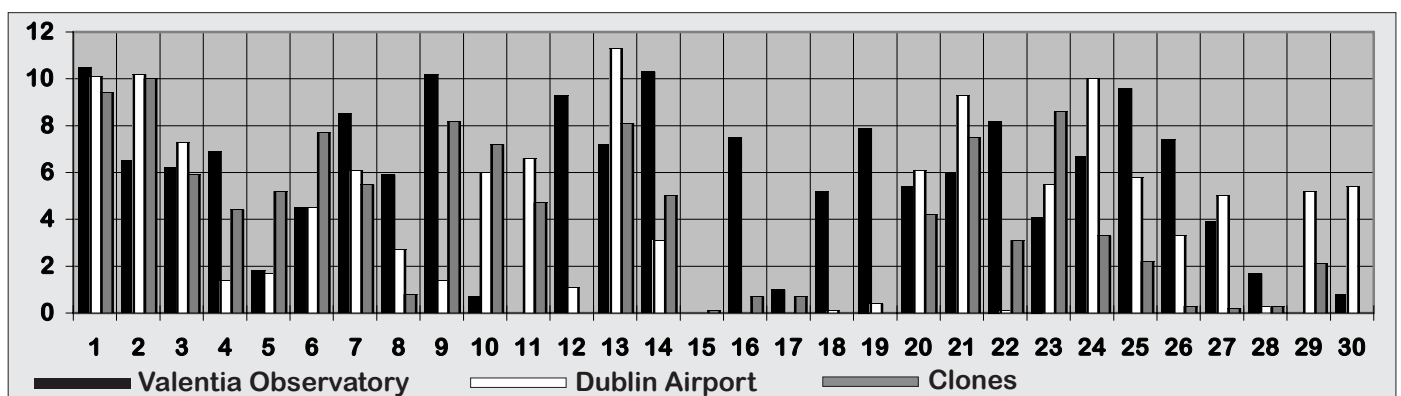
### Sunny everywhere

**Sunshine totals were above normal everywhere for the first time since last December. Totals ranged from 116 hours at Ballinamore, Co. Leitrim, to 179 hours at Rosslare. It was a particularly sunny month relative to normal in the west and southwest, with over 50% more sunshine than average here; Belmullet had its sunniest September since 1959.**

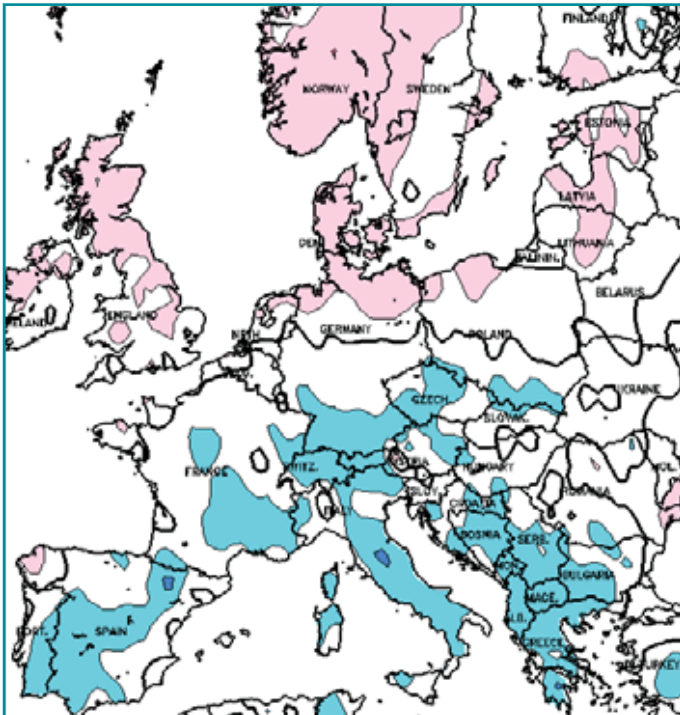
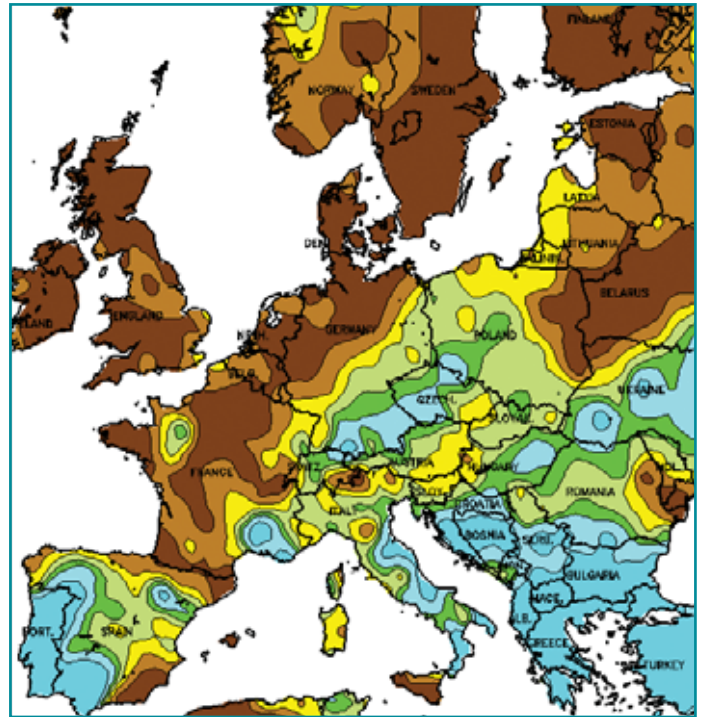
Although sunshine was fairly evenly distributed through the month, most stations recorded their highest values during the first week. The highest daily sunshine, 12.6 hours, was measured at Rosslare on the 1st; this was the sunniest September day at the station since 1982. Global solar radiation totals for the month were also above normal everywhere, particularly in the west; they ranged from 102% of normal at Clones to 132% at Belmullet.



### Daily sunshine values (hours)



**SEPTEMBER RAINFALL**  
(Percentage of 1961-1990 normal)



**SEPTEMBER MEAN TEMPERATURES**  
(difference from 1961-1990 normal)

Data supplied by NOAA  
Climate Prediction Centre,  
US Department of Commerce

A world map with several text boxes providing highlights of global weather events from September 2002.

- North America:** Severe thunderstorms over northern Wisconsin on the 2nd generated several tornadoes, accompanied by large hail. A tornado rated F3 on the Fujita scale struck the town of Ladysmith, causing extensive damage. The storm was responsible for 40 injuries and caused \$40 million in damage in the town of 4,000 people.
- Europe:** Showers and thunderstorms which developed along a cold front affected much of southern France during September 7th-9th. The storms caused flooding that claimed 26 lives, including at least one lightning fatality. The hardest hit areas were near the cities of Nimes and Orange, where the monthly total of 426mm was almost six times the September normal.
- China:** An estimated 900,000 people are affected by drought and water shortages in the northern Hebei province of China. Around 163,000 acres of crops have failed and 160,000 machine-operated wells have been shut down to prevent the over-extraction of ground water.
- Australia:** Drought continues to seriously affect parts of Australia, specifically areas of New South Wales, South Australia and Western Australia. As a result, the Australian Bureau of Agricultural and Resource Economics reduced its crop production estimates for 2002 by 40 percent. However, some heavy rains did fall in parts of New South Wales during the week of September 16th.

**Global weather highlights of the month**

## A race around the world's oceans



Met Éireann staff member Willemien van Hoeve (*pictured left*) was on board one of eight boats which took part in the Volvo Ocean Race, beginning in September of last year. Willemien, who is a native of The Netherlands and is currently working in Met Éireann headquarters in Glasnevin, was one of twelve members of the all-female crew aboard *Amer Sports Too* (*shown below left in foreground leaving Miami*). Willemien brought her meteorological expertise to the journey of 32,700 nautical miles (*see map below*), witnessing weather extremes from tropical heat to polar ice. Shown below right is the departure from Capetown last November, when the fleet sailed into a dense field of fog, causing the boats' sails to leave contrails in the shallow cloud. Later, as the boats left Sydney Harbour on December 26th under a cloud of ash from forest fires, a waterspout (tornado) developed during a severe thunderstorm, inflicting considerable damage on one of the boats in the race. After leaving Southampton a year ago and visiting ten ports around the world, the boats crossed the finishing line in Kiel last June (*bottom right*).

