

## Met Data summary for September 2019 for the Blenheim Meteorological station located at the Grovetown Park campus of the Marlborough Research Centre.

September 2019 recorded an average temperature, close to average number of frosts, above average rainfall, above average sunshine hours, and slightly below average wind-run.

However, September was a month of two distinct halves. The first two weeks were cool, wet and relatively calm, whereas the latter two weeks were warmer, dry and fairly windy.

**Table 1: Weekly weather data during September 2019**

	Mean Max (°C)	Mean Min (°C)	Mean (°C) Deviation	Ground Frosts	Air Frosts	Rainfall (mm)	Sunshine (hours)
1 <sup>st</sup> - 7 <sup>th</sup>	14.7	6.0	10.4 (-0.7)	0	0	39.2	37.0
8 <sup>th</sup> - 14 <sup>th</sup>	14.0	4.6	9.3 (-1.8)	2	0	23.8	41.6
15 <sup>th</sup> - 21 <sup>st</sup>	17.2	5.5	11.3 (+0.2)	1	0	0.2	65.7
22 <sup>nd</sup> - 28 <sup>th</sup>	17.7	5.7	11.7 (+0.6)	1	0	0.2	60.8
29 <sup>th</sup> - 30 <sup>th</sup> (2 days)	19.9	13.1	16.5 (+5.4)	0	0	0.0	10.3
1 <sup>st</sup> - 30 <sup>th</sup> September 2019	16.2 (=)	5.9 (-0.1)	11.1 (=)	4 (0.6 less)	0 (0.8 less)	63.4 (121%)	215.4 (118%)
September LTA (1986 - 2018)	16.2	6.0	11.1	4.6	0.8	52.2	192.7

LTA – Long Term Average

### Temperature

Mean temperature of 11.1°C was equal to the long-term average temperature for September (1986-2018) of 11.1°C. However, as indicated in Table 1, the mean temperature over the first two weeks of September was well below average, whereas the mean temperature over the latter half of the month was much warmer. The final two days of September were very warm with maximum temperatures 3-4°C above average and minimum temperatures 7-8°C above average.

September 2018 mean temperature was 11.1°C.

September 2017 mean temperature was 11.9°C.

September 2016 mean temperature was 11.6°C.

September 2015 mean temperature was 9.7°C.

The average daily maximum temperature for September 2019 was 16.2°C; equal to the long-term average. The average daily minimum temperature was 5.9°C; 0.1°C below average.

The coldest day in September was 11<sup>th</sup> which recorded an air minimum temperatures of +1.2°C and grass minimum temperature of -3.3°C. The warmest days were 28<sup>th</sup> and 29<sup>th</sup> September both of which recorded maximum air temperatures of 20.6°C.

### 9am Soil Temperatures

10 cm mean temperature was 8.9°C; 0.4°C below the long-term average for September

20 cm mean temperature was 9.5°C; 0.6°C below the long-term average for September

30 cm mean temperature was 10.5°C; 0.3°C below the long-term average for September

100 cm mean temperature was 11.5°C; 0.3°C above the long-term average for September

### Frosts

4 ground frosts were recorded during September 2019 and no air frosts (slightly below average).

3 ground frosts were recorded during September 2018 and no air frosts

4 ground frosts were recorded during September 2017 and no air frosts

7 ground frosts were recorded during September 2016 and 1 air frosts

The long-term average (1986-2018) is 4.6 ground frosts and 0.8 air frosts

## **Sunshine**

215.4 hours sunshine for September is 118% of the long term average for September of 192.7 hours. While this was a sunny month it didn't set any records. September 2018 was a lot sunnier. As was August 2019.

September 2018 recorded 231.8 hours sunshine.

September 2017 recorded 183.9 hours sunshine.

September 2016 recorded 164.9 hours sunshine.

September 2015 recorded 225.3 hours sunshine.

Total sunshine for January to September 2019 is 2003.4 hours; 113% of the long-term average.

## **Rainfall**

Rainfall total of 63.4 mm is 121% of the long-term average for September of 52.2 mm.

Almost the entire month's rainfall fell between 1 and 15 September. The only rain from 16 to 30 September was 0.2 mm on the 23<sup>rd</sup>.

September 2018 rainfall was 36.2 mm.

September 2017 rainfall was 49.8 mm.

September 2016 rainfall was 26.4 mm.

September 2015 rainfall was 54.4 mm.

Total rainfall for January to September 2019 was 499.2 mm; 103% of the long-term average total (485.9 mm)

Total rainfall for January to September 2018 was 659.6 mm; 137% of the long-term average total

Total rainfall for January to September 2017 was 521 mm; 108% of the long-term average total

Total rainfall for January to September 2016 was 425.6 mm; 89% of the long-term average total

Total rainfall for January to September 2015 was 355.4 mm; 74% of the long-term average total

## **Wind**

Average daily wind-run for Blenheim during September 2019 was 261.1 km, slightly below the long-term average of 274.7 km. Average wind speed for September 2019 was 10.9 km/hr compared to the long-term average of 11.45 km/hr. September's wind run and average wind speed were the highest since January 2019. However, even though wind-run was below the long-term average, it was still the windiest September since 2013. All five years 2014 to 2018 recorded well below average September wind-run.

September 2019 was also a month of two halves with regard to wind-run.

Average daily wind-run from 1 to 15 September was 205 km (75% of average)

Average daily wind-run from 16 to 30 September was 317 km (115% of average)

## **Soil Moisture**

Shallow soil moisture at the start of September was close to the long-term average of 34.4%. However, with all the rain in the first two weeks of the month the soil moisture quickly rose to be above field capacity from about the 4<sup>th</sup> to the 17<sup>th</sup> of the month; i.e. there would have been a lot of water draining through the topsoil to recharge soil moisture at lower depths in the soil profile.

With almost no rain in the second half of the month the moisture in the topsoil fell from 38.5% (about field capacity) on 17 September to 31.7% on 30 September. The moisture in the topsoil at the end of September was lower than in any of the previous six years (2013-2018). The warmer temperatures and dry weather in the latter half of September were responsible for this fairly quick drop in soil moisture.

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