

**Meteorological data summary for February 2020 and the three months of summer (December to February) for the Blenheim Meteorological station located at the Grovetown Park campus of the Marlborough Research Centre.**

**Table 1: Weekly temperatures, rainfall and sunshine during February 2020**

	Mean Max (°C)	Mean Min (°C)	Mean (°C)	Rainfall (mm)	Sunshine (hours)
1 <sup>st</sup> - 7 <sup>th</sup>	26.0 (+2.8)	14.7 (+2.2)	20.4 (+2.5)	0.0	53.9
8 <sup>th</sup> - 14 <sup>th</sup>	24.0 (+0.8)	11.4 (-1.1)	17.7 (-0.2)	0.0	76.5
15 <sup>th</sup> - 21 <sup>st</sup>	26.2 (+3.0)	15.8 (+3.3)	21.0 (+3.1)	0.8	51.3
22 <sup>nd</sup> - 29 <sup>th</sup>	23.6 (+0.4)	12.4 (-0.1)	18.0 (+0.1)	7.8	89.2
<b>1<sup>st</sup> – 29<sup>th</sup> February</b>	<b>24.9 (+1.7°C)</b>	<b>13.5 (+1.0°C)</b>	<b>19.2 (+1.3°C)</b>	<b>8.6 16%</b>	<b>270.9 118%</b>
LTA 1986-2019	23.2	12.5	17.9	47.7	229.4

### Temperature

February 2020 mean temperature of 19.2°C was 1.3°C above the long-term average temperature for February (1986-2019).

February 2019 mean temperature was 18.9°C.

February 2018 mean temperature was 18.8°C.

February 2017 mean temperature was 18.0°C.

February 2016 mean temperature was 20.0°C. 2<sup>nd</sup> warmest on record

February 1998 mean temperature was 20.7°C. Warmest on record

The weekly maximum temperatures during February were all above average (Table 1). The second week of February experienced three days with cool overnight minimum temperatures which dragged the mean minimum for the week down, consequently the mean temperature for the second week of the month was slightly below average.

The hottest maximum temperature recorded in Blenheim was 33.0°C on 2 February. This was the hottest February maximum temperature since 6 February 2011, which recorded 33.4°C.

The coolest minimum temperature recorded in Blenheim was 6.8°C on 9 February.

Four days during February 2020 recorded temperatures of 30°C or higher. February 2019 recorded five days above 30.0°C. The average number of days above 30°C during February over the 73 years 1947 to 2019 is only one; i.e. February 2019 and 2020 are the exception rather than the rule.

February 2020 was by far the warmest month of the summer of 2019/20. February 2020 was 2.5°C warmer than December 2019 and 1.7°C warmer than January 2020.

### Summer temperatures

The summer of 2019/20 will also be remembered as OK, but much cooler than in the previous two years. The December 2019 mean temperature was slightly below average. However, December started out very warm in the first week, but the rest of the month saw average to below average temperatures. The first three weeks of December also recorded well above rainfall. However, from 21 December 2019 through until the end of February 2020 Blenheim has recorded extremely low rainfall.

The first three weeks of January 2020 were much cooler than average. Summer temperatures finally turned up in the last 10 days of January.

February temperatures were largely much more stable and above average than in December and January.

February's warm mean temperature dragged the overall mean temperature for summer up so that it was 0.1°C above average.

**Table 2: Monthly mean temperatures over the summers of 2015-16, 2016-17, 2017-18 and 2019-20**

	Long-term Average °C	1934-35 Mean °C	2015-16 Mean °C	2016-17 Mean °C	2017-18 Mean °C	2018-19 Mean °C	2019-20 Mean °C
December	16.8	20.1	15.9	16.7	18.7	17.4	16.7
January	18.2	20.6	18.8	18.4	20.7	20.7	17.5
February	17.9	19.9	20.0	18.0	18.8	18.9	19.2
<b>Mean +/-LTA</b>	<b>17.7</b>	<b>20.2 +2.6</b>	<b>18.2 +0.7</b>	<b>17.7 +0.2</b>	<b>19.4 +1.8</b>	<b>19.0 +1.4</b>	<b>17.8 +0.17</b>

**Sunshine**

270.9 hours sunshine for February was 118% of the long-term average (1986-2019).

February 2019 recorded 289.4 hours sunshine

February 2018 recorded 226.4 hours sunshine

February 2017 recorded 246.3 hours sunshine

**Table 4: Sunshine hours over the summers of 2016-17, 2017-18, 2018-19 and 2019-20**

	Long-term Average	2016-17 % of LTA	2017-18 % of LTA	2018-19 % of LTA	2019-20 % of LTA
December	250.6	253.0 101%	319.1 128%	213.2 85%	272.6 109%
January	263.5	282.0 108%	243.6 93%	317.9 121%	245.0 93%
February	229.4	246.3 108%	226.4 100%	289.4 127%	270.9 118%
<b>Total</b>	<b>743.5</b>	<b>781.3 106%</b>	<b>789.1 107%</b>	<b>820.5 111%</b>	<b>788.5 106%</b>

**Rainfall**

February rainfall total of 8.6 mm was 16% of the long-term average (1986-2019). This is the 10<sup>th</sup> lowest February rainfall on record for Blenheim (1930-2020).

February 2019 rainfall was mm 8.0 mm (9<sup>th</sup> lowest on record)

February 2018 rainfall was 181.4 mm (highest on record 1930 to 2019)

February 2017 rainfall was 61.8 mm

February 2016 rainfall was 18.0 mm

After the highest February rainfall on record in 2018, both 2019 and 2020 have recorded very low February rainfall. Of the 20 years 2001 to 2020, February has recorded less than 50% of average rainfall in 11 of the 20 years and above average rainfall in only four of the 20 years.

**Table 5: Rainfall for the summers of 2015-16, 2016-17, 2017-18 and 2018-19**

	Long-term Average	2016-17 % of mm LTA	2017-18 % of mm LTA	2018-19 % of mm LTA	2019-20 % of mm LTA
December	48.1	20.2 42%	21.6 45%	53.6 111%	91.2 190%
January	44.5	27.2 61%	80.4 181%	3.8 9%	0.2 0.5%
February	47.7	61.8 130%	181.4 380%	8.0 17%	8.6 16%
<b>Total</b>	<b>140.3 mm</b>	<b>109.2mm 787%</b>	<b>283.4mm 202%</b>	<b>65.4 mm 46%</b>	<b>100.0 mm 71%</b>

Total summer rainfall in 2019-20 (Table 5) of 100.0 mm was 71% of the long-term average total. However, almost all of the three month total occurred in the first 20 days of December (91.2 mm). **From 21 December to 21 February only 1.0 mm of rain was recorded. A further 7.8 mm was recorded between 22 and 29 February; i.e. in the 71 days from 21 December to 29 February only 8.8 mm rain was recorded. This is the lowest consecutive 71 day rainfall total over the 80 years 1941 to 2020.**

However, there have been other previous drought years that have recorded low rainfall over a much longer extended period of time; e.g. The 5 month period (151 days) from November 2000 to March 2001 recorded only 56.6 mm rain.

### Wind Run

Average daily wind run for February was 245.7 km, 98% the long-term average (1996-2018) of 251.3 km. Although the average daily wind-run during February 2020 was slightly below average, this was the highest average daily wind-run since February 2005. The 15 years 2006-2020 have all recorded lower than average wind-run during February. Conversely most of the 10 years from 1996 to 2005 recorded well above average wind-run.

### Shallow Soil Moisture

Average shallow soil moisture (5–35 cm depth) at the Grovetown Park weather station for February was 14.9%. Given the fact that January 2020 only recorded 0.2 mm rain, the soil moisture was very dry at the beginning of February (15.6%) and only dropped by 1% during the month to be 14.6% on 29 February; i.e. the topsoil was bone dry during most of February.

### Potential Evapotranspiration

Potential evapotranspiration for February was 140.3 mm, 123% of February's long-term average of 114.1 mm.

**Table 6: Potential evapotranspiration for the summers of 2016-17, 2017-18, 2018-19 and 2019-20**

	Long-term Average	2016-17 mm	% of LTA	2017-18 mm	% of LTA	2018-19 mm	% of LTA	2019-20 mm	% of LTA
December	140.3	153.7	110%	177.8	127%	114.9	82%	140.1	100 %
January	143.9	181.5	126%	135.6	94%	186.9	130%	133.9	93%
February	114.1	121.9	107%	122.4	107%	151.0	132%	140.3	123%
<b>Total</b>	<b>398.3 mm</b>	<b>457.1 mm</b>	<b>115%</b>	<b>435.8 mm</b>	<b>110%</b>	<b>452.8 mm</b>	<b>114%</b>	<b>414.3 mm</b>	<b>104%</b>

### Potential Water Deficit

Potential water deficit (Table 7) is the difference between monthly rainfall received (Table 5) and potential monthly evapotranspiration lost (Table 6).

Potential water deficit for February 2020 was -131.7 mm.

Potential water deficit for the three summer months December 2019 – February 2020 was -314.3 mm. While the potential water deficit this summer was well above average, it was well below the very high potential water deficit in the previous summer (2018/19).

**Table 7: Potential Water Deficit for the summers of 2016-17, 2017-18, 2018-19 and 2019-20**

	Long-term Average	2016-17 mm	% of LTA	2017-18 mm	% of LTA	2018-19 mm	% of LTA	2019-20 mm	% of LTA
December	-92.4	-133.5	144%	-156.2	169%	-61.3	66%	-48.9	53%
January	-101.4	-154.1	152%	-55.2	54%	-183.1	181%	-133.7	132%
February	-75.3	-60.1	80%	+59.0	-178%	-143.0	190%	-131.7	175%
<b>Total</b>	<b>-269.1 mm</b>	<b>-347.7 mm</b>	<b>129%</b>	<b>-152.4 mm</b>	<b>57%</b>	<b>-387.4 mm</b>	<b>144%</b>	<b>-314.3 mm</b>	<b>117%</b>