



# Monana

THE OFFICIAL PUBLICATION OF THE AUSTRALIAN METEOROLOGICAL  
ASSOCIATION INC August2020

## From the President's Pen

### MEMBERSHIP FEES WAIVED FOR YEAR 2020 - 2021

It has been a bumpy year all round because of the COVID pandemic. In recognition of this, your Committee has decided to waive the membership fee for the 2020 – 2021 membership year. In the words of the TV commercials “But wait, there’s more!”. This offer extends to everyone. Your family and friends can join and receive free membership for the 2020 – 2021 year as well.

When the arrangements for the August meeting were being discussed, it looked like a second wave of infection might spill into South Australia, so a decision was made to do a virtual meeting. This leaves only the October meeting as a possibility for a physical meeting, but it will probably be prudent to wait until next year to get serious about resuming physical general meetings.

On the other hand, not everything is gloomy. A recent article in The Advertiser recognised the AMetA for digitising an 1843 to 1856 diary to fill gaps in one of the extensive historical observational records in the Southern Hemisphere. Although I did not get to see the entire article, it is gratifying to hear that Mac and the Volunteers are not only working to provide as complete an historical record as possible, they are getting the public recognition that they justly deserve.

As indicated in the editorial in the July edition of the PWS magazine, the National Library of Australia (NLA) has been asking for copies of our magazine for its historical records. According to their information, the South Australian State Library holds old copies of the Monana magazine. This caught my interest, so I looked at their catalogues. Sure enough, I found this entry in the catalogue.

Lib. Has	Vol. 1, no. 1 (Aug. 1973)-v. 2, no. 4 (Nov. 1974) ; June 1975-Mar. 1983 ; Feb. 1986
Description/Quantity	v. ; 21-34 cm.
Notes	After Vol. 2, no. 4 (Nov. 1974) the newsletter was no longer called Newsletter and no longer numbered. It simply became a notice to members of meetings and topics for discussion.

At some time in the future, I expect that the catalogue will contain the recent editions that the Library asked for. If you contribute to your Association’s magazine, you may achieve a very small slice of immortality by becoming part of the historical record of this wonderful state. Your article may be extracted by future historians, just as the old weather observations are now. At the very least, you will also help the Monana achieve a better epitaph than “It simply became a notice to members”.

### Keep Happy, Keep Safe,

Mark Little. President.

Email: [president@ameta.org.au](mailto:president@ameta.org.au)

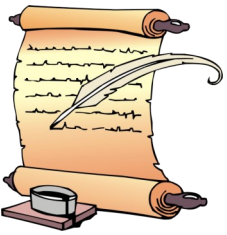
Mobile: 0434 602 091

**WIN PRIZES!**

# Article Competition

**WIN PRIZES!**

The Australian Meteorological Association (AMetA) magazine *Monana* is running an article writing competition until October 2020. The competition has the following conditions:



- (1) The article must have a **weather related theme**;
- (2) The article size should be between 250 words and 500 words (½ to 1 A4 page of normal text). Accompanying photos encouraged, but not essential.
- (3) The competition is open to all financial AMetA members (excluding Committee members);

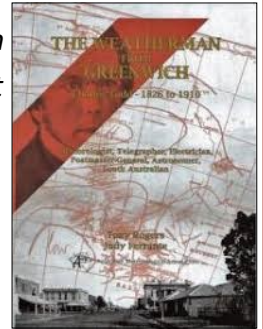


- (4) Only one prize per edition will be awarded. If multiple articles are published, the final decision for awarding prizes will rest with the magazine editors.

- (5) Subject to availability, the winner may select either an Arduino with prototype shield, or a copy of the AMetA publication "**The Weatherman from Greenwich**".



- (6) Entries are to be emailed to [monana@ameta.org.au](mailto:monana@ameta.org.au) as plain text, word or Publisher files with photos as .png, .jpg or .gif (if not included in the file).



## MEMBERSHIP FEES WAIVED FOR YEAR 2020 - 2021

See "FROM THE PRESIDENT'S PEN", (page 1)

## AMETA WEBSITE RE-CONSTRUCTION

The AMETA website ([ameta.org.au](http://ameta.org.au)) is currently under re-construction following an earlier problem. It can be reached by clicking on [ameta.org.au](http://ameta.org.au) or by typing the address into your browser.

Sections of the old website are still available and can be reached by a link on the bottom of the new "Members Area" page.

Comments/suggestions (constructive please) on the new website would be greatly appreciated. They can be sent to [webmaster@ameta.org.au](mailto:webmaster@ameta.org.au).

Members are encouraged to submit weather related photos to [monana@ameta.org.au](mailto:monana@ameta.org.au) for publication in *Monana*.

Please Note: Several images used in this magazine are from external sources and many are acknowledged via a hyperlink to the source of the image. Click the image to visit its source. *The AMetA does not have control over the content of linked sites, or the changes that may be made. It is your responsibility to make your own decisions about visiting those sites and determining if that information is suitable for your purposes.*

If you have seen World War1 (WW1) photographs of soldiers and animals clambering through mud, then the chances are that they were taken at **the Battle of Passchendaele** (also known as the Third Battle of Ypres) which was a series of Allied offensives which occurred from 31 July to 10 November 1917.



*Figure 1 : Passchendaele ridge faintly on the horizon (8 km away) taken from where the Allies started their offensive (now part of Tyne Cot cemetery) - May 2019. Photo courtesy of the author.*

The object of the assault was to eventually take the ridge above the village of Passchendaele which was about 13 km north east of Ypres. Although only 50 metres high, it is still the highest ground around. From there the Allies intended to push onwards to the North Sea to take the German-held ports, thereby eliminating the threats of German U boats operating from Belgian ports.

The area around Ypres was in general just 6 metres above sea level and in 1914 the area was full of small streams, rivers and canals which needed constant maintenance as the water table was only 35cm below ground level. After the near constant shelling of the area in the years before 1917, the system had broken down and the surface in front of the ridge was a muddy morass as the water table had been brought to ground level.



*Figure 2: The Quagmire of Passchendaele Battlefield*



*Source: Australian War Memorial*



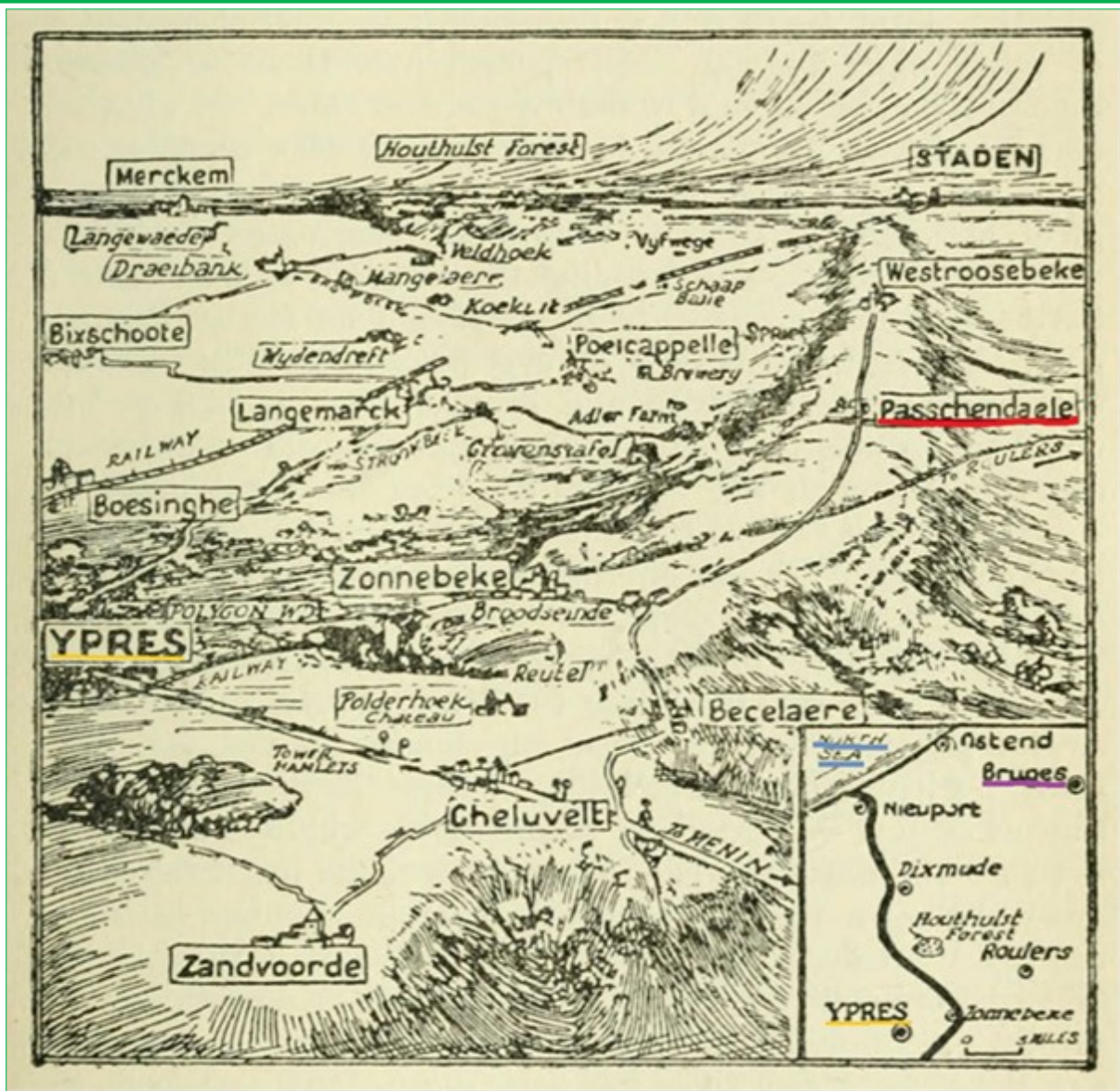


Figure 3: The Passchendaele ridge Source: Project Gutenberg's From Bapaume to Paschendaele, 1917, by Philip Gibbs

The decision was made by General Haigh, head of the British forces, to begin the battle in August as traditionally this was a month when usually there was little precipitation. However in 1917 huge torrential rainstorms in the fortnight before the battle (the heaviest rain in 75 years) turned the ground into a complete quagmire. (For a detailed description of the precipitation and reasons why August was chosen for the attack, see the section entitled "Weather" [https://en.wikipedia.org/wiki/Battle\\_of\\_Passchendaele](https://en.wikipedia.org/wiki/Battle_of_Passchendaele))



Figure 4: Stretcher Bearers Struggle in the Mud Source: IWM

Figure 5: Bringing Supplies Through The Mud Source: AWM



Although duckboards were laid down for men and vehicles, the weight of the big guns and tanks was too great for them to be manoeuvred into position. Rifles were clogged with mud and if anything - men, horses pulling guns, donkeys carrying munitions and ambulances carrying the wounded - slipped from the duckboards, they were drowned in the mud.

On November 10, 1917 the Allies secured the high ground they sought and kept it for the length of the war.

Actual casualty numbers from the battle are unknown because so many men just disappeared and no-one knows what happened to them. The estimated figure of casualties is around 500,000 - of whom 275,000 were British and Allies and 200,000 were Germans.

The nearby cemetery of Tyne Cot now holds the graves of 11,900 men of whom over 8000 are unidentified. As well, on the walls surrounding it are the names of a further 35,000 Allied men who were lost in the battle but who have no known remains and many are presumed to have drowned.

Australian casualties from the battle were 38,000 with a total of some 12,000 dead or missing. In all there were 3.75 Australian dead or wounded for every metre of ground gained in the battle.

Another weather-related issue of the Battle of Passchendaele was that it was during this offensive that the Germans first used mustard gas in World War 1. This gas is heavier than air and the Germans were on the higher ground with the prevailing wind behind them. The mustard gas was delivered over British lines using aerial bombardment *i.e.* via shells, mortars and rockets, and had a deadly effect as it drifted down. In addition, once released, it remains dangerous for as long as a week and it is absorbed through the skin making it particularly lethal - especially as the respirators used earlier against chlorine gas were largely ineffective.

No battle in WW1 was other than appalling, but at The Battle of Passchendaele the deep mud caused by the unprecedented rain beforehand, made it the epitome of horror and senseless slaughter.

As the WW1 poet Siegfried Sassoon who fought in Flanders wrote:

*"I died in Hell. (They called it Passchendaele)....  
.... I fell into the bottomless mud, and lost the light"*

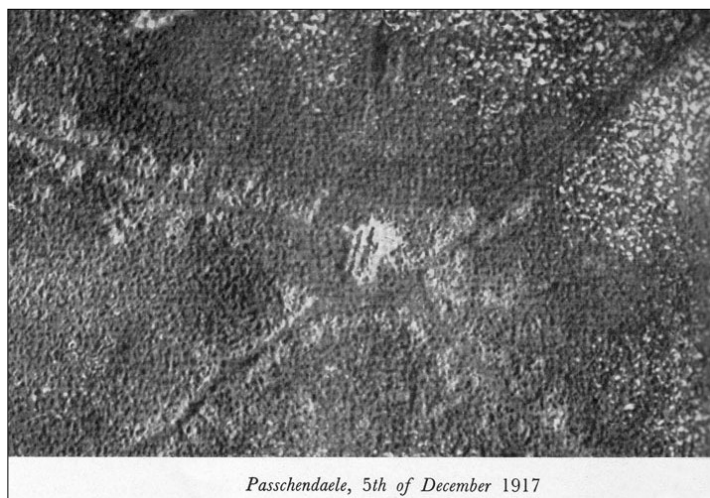
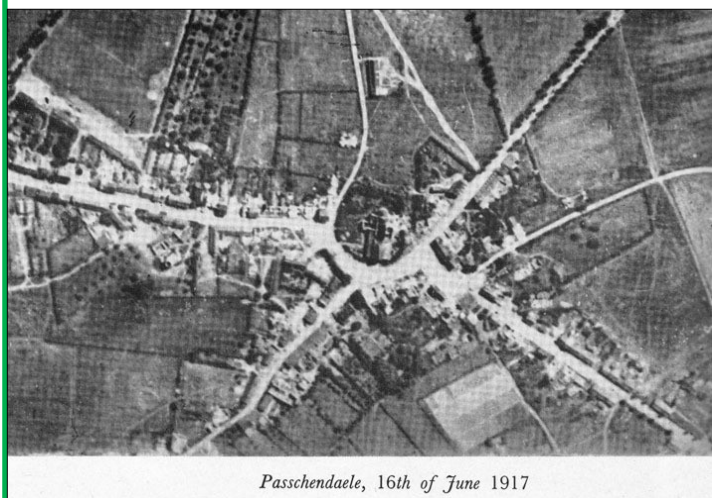


Figure 6 Aerial Photograph of the Passchendaele Village: June 16th and December 5th 1917. (Source Imperial War Museum)

#### REFERENCES.

1. The whole Wikipedia article: The Battle of Passchendaele (as mentioned earlier relation to 'Weather') ([https://en.wikipedia.org/wiki/Battle\\_of\\_Passchendaele](https://en.wikipedia.org/wiki/Battle_of_Passchendaele))
2. A short history of the whole campaign listing all the battles can be found at the Australian War Memorial site <https://www.awm.gov.au/collection/E84367lists>.
3. There is also an account of the battles and its consequences for Australia in the **Sydney Morning Herald** from 31 July 2017 at <https://www.smh.com.au/world/passchendaele-100-years-on-the-wwi-battle-that-claimed-12000-australian-lives-20170731-qxlwyn.html>.
4. **Official History** by C. E. W. Bean, Vol. IV, Chapters XVII - XXII This is the Official Historical Version of WW1 as commissioned by the Australian Government

## The Pressure Altimeter - Part 2

by Bruce Davis

In the June issue I wrote about the history, workings and some errors of the pressure altimeter. In this issue I will look at altimeter settings, the errors resulting from properties of the atmosphere and alternatives to the pressure altimeter.

If you recall the altimeter actually measures static pressure and this is presented to the pilot as a height above the pressure level set on the altimeter subscale. At the altitude where static pressure equals subscale setting, the altimeter will read zero ft height.

Several types of subscale pressure settings are used in Australia. First is **QNH** which represents **Mean Sea Level Pressure**. With QNH set the reading is called **Indicated Altitude**.

QNH can be for an aerodrome (local QNH) or an area (Area QNH). Local QNH can be a forecast value, or pressure measured at ground level and corrected for aerodrome elevation. Area QNH, as its name suggests, is a forecast value representative of the MSL pressures throughout an area.

Other settings available are Standard MSL Pressure (**1013.25 hpa**) and **QFE** which is ground level pressure. With QFE set the altimeter indicates **Height Above Ground Level**. QFE is virtually unused in Australia.

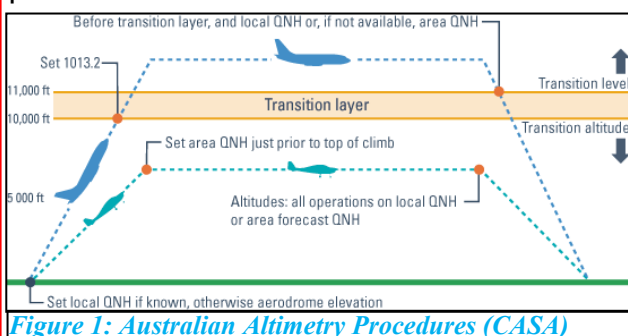


Figure 1: Australian Altimetry Procedures (CASA)

Normal procedure in Australia is to set local QNH for departure and climb to 10000 ft then, if cruising at or below 10000 feet, set area QNH. 1013 is set on climbing through 10000 ft and the indication is now called a **Flight Level** (e.g. FL300 is roughly 30000 ft) or **Pressure Height**. (see Figure 1)

Altimeters are calibrated for **ICAO Standard Atmosphere** conditions (**ISA**). This assumes a MSL pressure of 1013.25 hpa, a MSL temperature of 15<sup>0</sup> C, pressure lapse rates as indicated in Figure 2 and a tropospheric temperature lapse rate of 1.98<sup>0</sup>C / 1000 ft. The real atmosphere is often quite different and this creates errors.

First, MSL pressure is very rarely 1013 hpa. This is allowed for by the subscale setting.

Second, MSL pressure changes with horizontal distance. Hence the use of area QNH. However, the area QNH can vary by 5 hpa from local QNH. This means an error of about 150 ft at lower altitudes. So if a pilot is flying towards a region of lower pressure the aeroplane is actually descending even with a constant indicated altitude. (see Fig. 3). The altimeter over reads. This is not a problem in good weather but can be an issue with a descent in bad weather, especially when turbulence and pilot error are also considered. The problem is compounded by an allowable (but unlikely) altimeter error of 75 ft in bad weather. Hence safety factors are applied in such situations. Similar errors also occur with localised areas of low pressure such as lee troughs.

Third, if the atmosphere is colder than ISA (i.e. air is more dense) then the altimeter will also over read (see Fig 4).

Both of these are summarised in the dictum given to all student pilots - "high to low, look out below".

Altitude	Pressure
45000 ft	147 hpa
40000 ft	188 hpa
35000 ft	238 hpa
30000 ft	301 hpa
25000 ft	376 hpa
20000 ft	466 hpa
15000 ft	572 hpa
10000 ft	697 hpa
9000 ft	724 hpa
8000 ft	753 hpa
7000 ft	782 hpa
6000 ft	812 hpa
5000 ft	843 hpa
4500 ft	859 hpa
4000 ft	875 hpa
3500 ft	891 hpa
3000 ft	908 hpa
2500 ft	925 hpa
2000 ft	942 hpa
1500 ft	960 hpa
1000 ft	977 hpa
500 ft	995 hpa
0 ft	1013 hpa

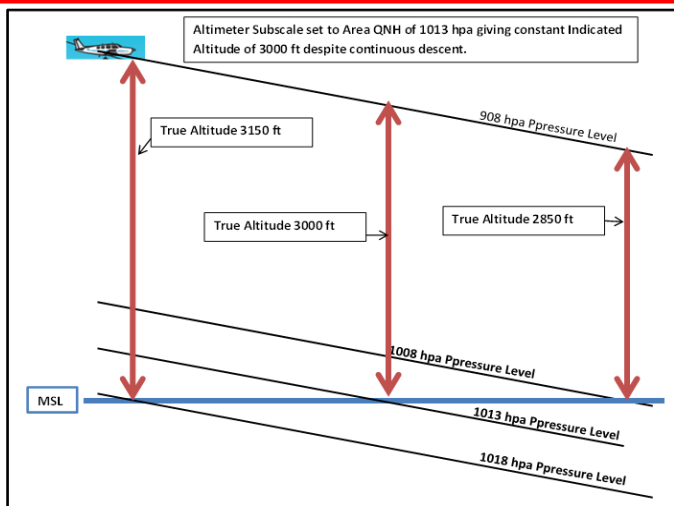


Figure 3: Effect of varying MSL pressure with distance  
 The extension of pressure levels below sea level is for illustrative purposes only, to show how the altimeter “sees” the pressure level

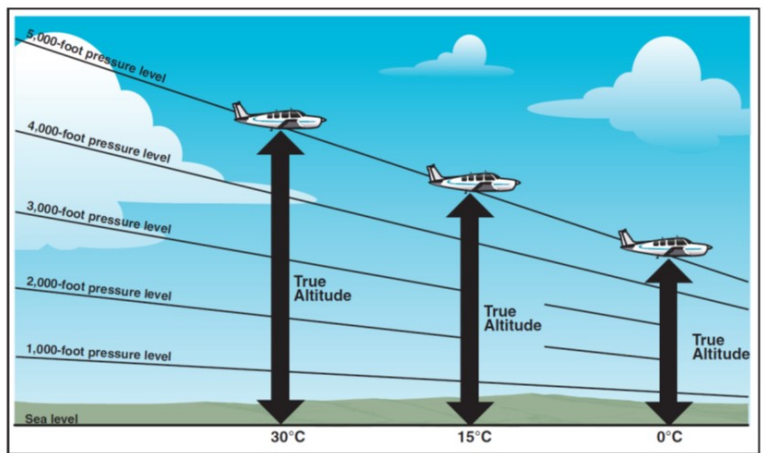


Figure 4: Effects of non-standard temperature on an altimeter for a given indicated altitude (Source: FAA)

So, if the Pressure Altimeter is so inaccurate are there any alternatives and why is it still used?

First, there are accurate alternatives for terrain clearance. The first is the radio (or radar) altimeter which was actually invented in 1924 - before Kollsman (see Fig. 5). A GPS can also be used to provide altitude and terrain clearance. However, these are primarily used for **Terrain Awareness Warning Systems** (commonly called **Ground Proximity Warning Systems**), often coupled with a GPS terrain database which can “look forward” of the aircraft.



Figure 5: Radio Altimeter

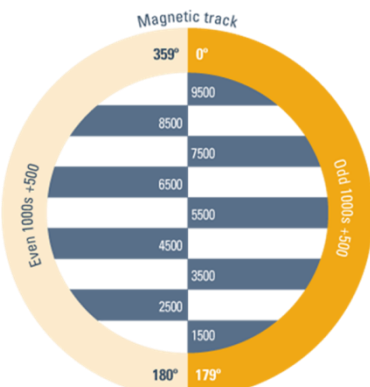


Figure 6 Australian VFR Cruising Level Source - CASA

So why then the Pressure Altimeter? The prime reason is aircraft separation. Depending on the track (direction) flown, aircraft are required to use specific altitudes (see Fig. 6) and for separation purposes it is important that all aircraft are using the same datum. Hence if GPS was used it would require all aircraft to have an approved GPS fitted - not so much of a problem you would think these days. However, at present GPS by itself is not considered as reliable as the pressure altimeter. If a radio altimeter was used the aircraft would be continually climbing and descending rather than maintaining a relatively constant level, to say nothing of the fact that a radio altimeter normally can only be used up to 2500 ft AGL. So the pressure altimeter is here to stay, at least for the time being.

**All the detail you could possibly want and more is available on the BoM website.**  
 Visit <http://www.bom.gov.au/climate> and wander through the various archived climate reports and summaries which are available in text and graphical forms.  
 Another useful website is <https://www.theweatherclub.org.uk/index.php/>



# Greater Adelaide in June 2020: wetter than average, with some cold nights

Rainfall in June was generally above average across Adelaide and the Hills, with several significant rain events during the month. Daytime temperatures were generally close to average across Adelaide and the Hills, while nights were cooler than average in most suburbs and included several frosty mornings.

For more information plus a summary of April's statistics please see:  
<http://www.bom.gov.au/climate/current/month/sa/archive/202006.adelaide.shtml>



## Adelaide (West Terrace / Ngayirdapira), South Australia June 2020 Daily Weather Observations

The official site for Adelaide, having reopened in May 2017.

Date	Day	Temps		Rain	Evap	Sun	Max wind gust			9am			3pm									
		Min	Max				Dirn	Spd	Time	Temp	RH	Cid	Dirn	Spd	MSLP	Temp	RH	Cid	Dirn	Spd	MSLP	
		°C	°C	mm	mm	hours	km/h	km/h	local	°C	%	eighths	km/h	km/h	hPa	°C	%	eighths	km/h	km/h	hPa	
1	Mo	9.6	14.5	12.0			SW	57	00:13	9.8	85		SSW	15	1017.8	13.8	65		SSW	17	1019.4	
2	Tu	9.8	16.7	0.4			WSW	39	15:10	13.5	87		WNW	17	1024.8	15.0	78		WSW	19	1024.8	
3	We	11.6	15.8	1.0			SE	24	10:22	12.9	68		SSW	7	1032.8	14.5	57		SE	9	1031.6	
4	Th	3.6	16.4	0			NE	19	09:47	9.5	78		NNE	2	1034.4	14.5	62		SW	9	1030.9	
5	Fr	3.7	16.1	0.2			WSW	20	14:17	9.5	69		NNE	7	1030.5	14.4	55		WSW	9	1027.4	
6	Sa	4.9	14.4	0			WSW	24	13:24	8.4	85			Calm	1026.6	13.7	59		SW	13	1024.2	
7	Su	4.2	13.3	0			ESE	26	10:49	10.8	71		E	11	1028.1	12.7	54		SSE	11	1027.3	
8	Mo	1.7	14.3	0			N	17	11:41	7.1	82			Calm	1032.6	12.9	57		WSW	9	1030.4	
9	Tu	1.7	14.7	0			N	20	12:34	7.5	74		NNE	6	1031.0	12.9	56		W	9	1027.6	
10	We	0.9	15.1	0			W	19	13:13	6.5	78			Calm	1028.0	14.6	49		W	4	1024.5	
11	Th	1.3	17.4	0			ENE	22	23:35	8.1	64			Calm	1025.4	15.1	46		WSW	9	1022.7	
12	Fr	6.8	20.0	0			NNE	41	22:52	12.7	50		NE	11	1020.8	19.5	36		N	13	1014.6	
13	Sa	12.6	15.8	0.6			NE	57	10:52	13.3	65		NE	17	1007.5	12.8	93		NW	15	1006.8	
14	Su	8.7	15.3	6.8			NW	37	16:12	9.7	86		N	13	1018.8	13.7	91		NW	13	1017.7	
15	Mo	9.6	17.9	6.8			NW	39	15:04	12.6	92		N	13	1022.9	17.4	72		NW	20	1021.1	
16	Tu	12.5	16.4	1.0			W	28	15:00	12.9	94		N	13	1025.6	13.9	93		W	17	1026.1	
17	We	9.2	17.1	3.8			NE	20	18:47	11.9	92		NE	7	1033.1	16.2	59		ENE	9	1030.5	
18	Th	11.9	18.8	0			N	43	09:39	14.8	52		NNE	13	1029.0	18.5	44		N	20	1023.8	
19	Fr	13.0	16.4	0			NNE	39	01:45	14.5	46		NNE	15	1018.8	13.3	71		NNW	15	1016.5	
20	Sa	9.7	14.8	1.8			NW	48	14:18	10.5	95		N	13	1016.8	12.2	75		WNW	11	1014.0	
21	Su	9.6	14.6	14.6			WNW	48	00:24	13.1	77		SW	13	1013.5	13.7	72		WSW	17	1014.4	
22	Mo	8.6	14.5	13.0			S	44	08:29	11.3	82		SSW	13	1018.3	12.0	80		SSW	17	1018.3	
23	Tu	11.0	13.8	5.8			SW	43	03:17	11.8	96		WSW	11	1021.5	12.6	88		WSW	13	1020.5	
24	We	10.4	14.6	3.0			NE	22	23:20	10.7	97		N	9	1021.5	14.2	56		NNW	7	1019.1	
25	Th	8.9	16.7	0			NE	24	02:56	10.3	72		NE	13	1022.3	16.1	64		WSW	9	1022.9	
26	Fr	8.4	15.9	0.2			ENE	17	23:56	10.8	87		NNE	9	1027.4	15.3	58		NW	6	1025.4	
27	Sa	5.2	16.9	0			N	20	11:44	8.1	85			Calm	1027.8	16.6	40		NNW	9	1025.9	
28	Su	5.1	16.7	0			NNW	19	10:32	10.3	64		NE	7	1028.2	15.8	41		NW	9	1026.8	
29	Mo	4.2	14.7	0			NE	30	23:04	9.2	64		NE	13	1024.9	14.3	51		NNE	19	1019.5	
30	Tu	8.6	15.8	0			NNW	39	13:01	10.4	53		NNE	17	1016.1	15.6	47		NNW	13	1013.8	
<b>Statistics for June 2020</b>																						
Mean		7.6		15.8						10.8	76			9	1024.2	14.6	62				12	1022.3
Lowest		0.9		13.3						6.5	46			Calm	1007.5	12.0	36		W	4	1006.8	
Highest		13.0		20.0	14.6		#	57		14.8	97		#	17	1034.4	19.5	93		#	20	1031.6	
Total					71.0																	

Observations were drawn from Adelaide (West Terrace / Ngayirdapira) (station 023000) This is the "official" site for Adelaide, having reopened in May 2017. Observations are available from the Kent Town site (station number 023090) up until 31 July 2020.  
 IDC/JDW081.202006 Prepared at 16:02 UTC on 2 Aug 2020  
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<http://www.bom.gov.au/climate/dwo/IDC-JDW0000.pdf>

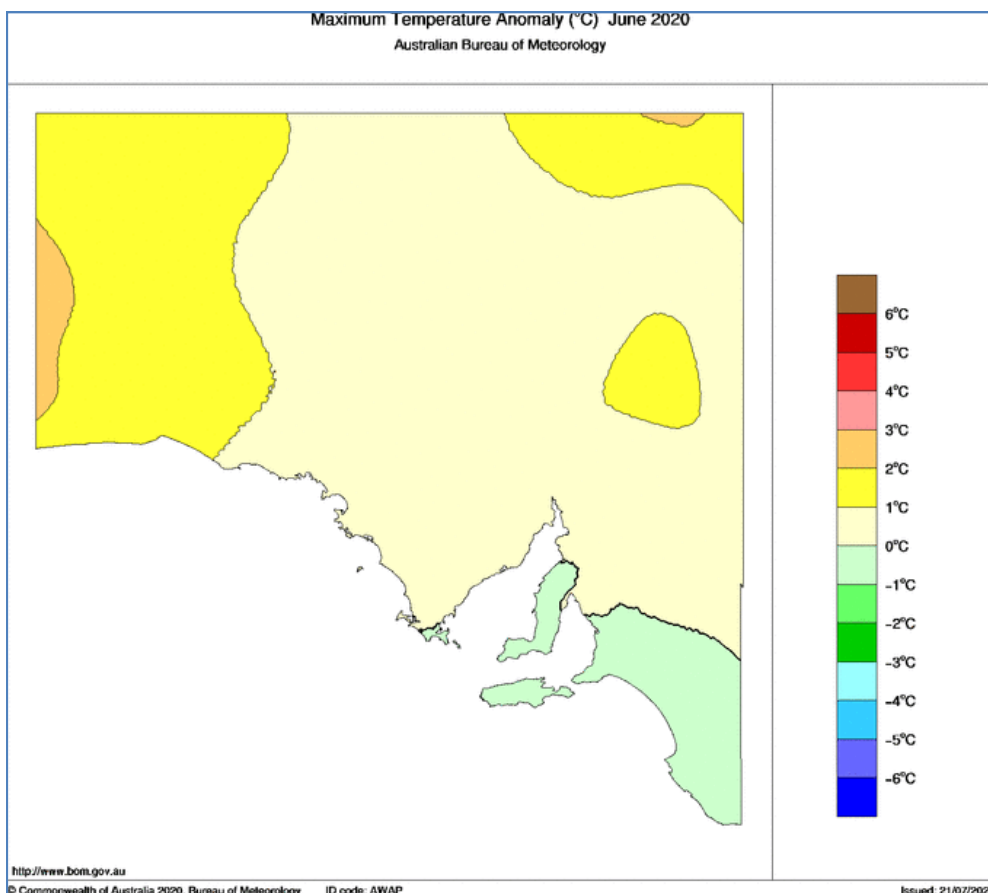
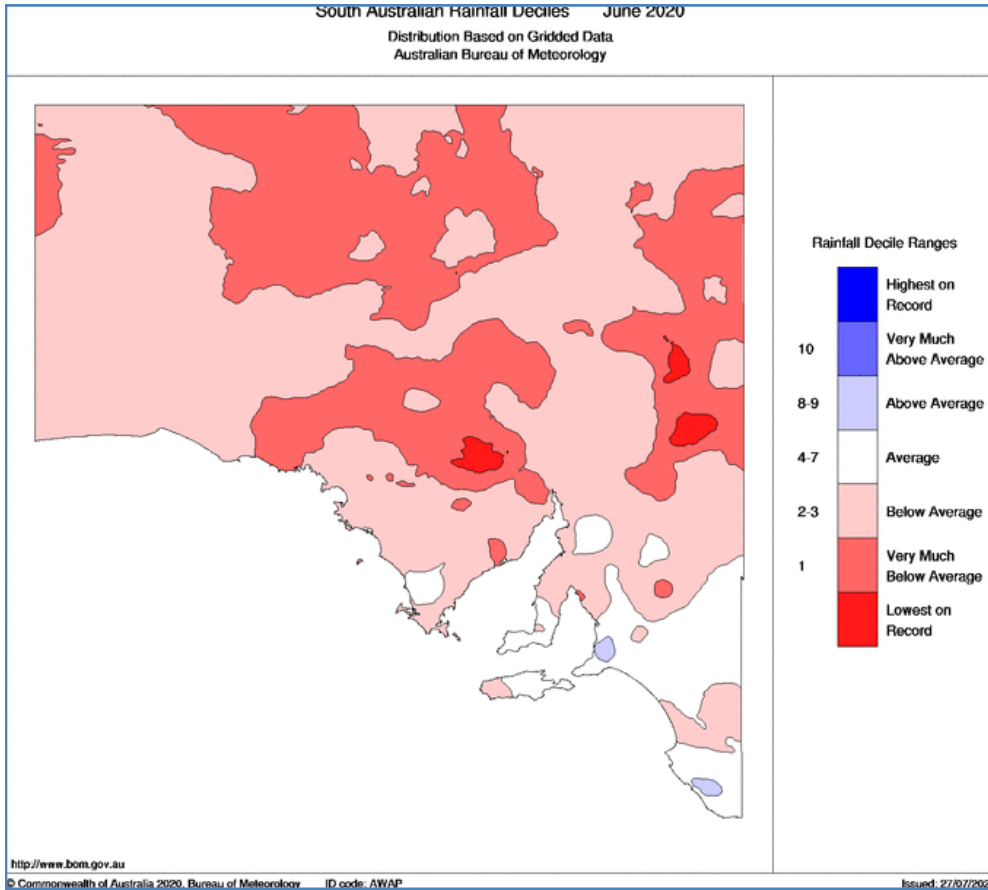


## South Australia in June 2020: dry, with cold nights

Rainfall in June was below to very much below average across most of South Australia, making it the State's driest June since 2007. Daytime temperatures were generally warmer than average in the north and west of the State, but night-time temperatures were below to very much below average in most areas, particularly in the east and central areas.

**For more information plus a summary of June's statistics please see:**

<http://www.bom.gov.au/climate/current/month/sa/archive/202006.summary.shtml>

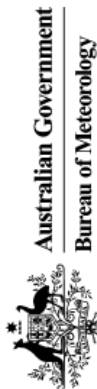


# Greater Adelaide in July 2020: very dry, warm days and cool nights

Rainfall in July was below to very much below average at all sites across Adelaide and the Hills. Daytime temperatures were warmer than average at most sites in Greater Adelaide, while night-time temperatures tended to be cooler than average, including several very cold nights later in the month.

For more information plus a summary of April's statistics please see:

<http://www.bom.gov.au/climate/current/month/sa/archive/202007.adelaide.shtml>



## Adelaide (West Terrace / Ngayirdapira), South Australia July 2020 Daily Weather Observations

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		Min	Max				Dirn	Spd	Time	Temp	RH	Cld	Dirn	Spd	MSLP	Temp	RH	Cld	Dirn
		°C	°C	mm	mm	hours	km/h	local	°C	%	eighths	km/h	hPa	°C	%	eighths	km/h	hPa	
1	We	10.3	20.2	0			W	52	13.7	42		N	17	1011.4	18.8	41	NNW	22	1006.0
2	Th	9.7	14.2				SW	50	11.9	69		W	9	1017.0	12.7	74	WSW	17	1018.4
3	Fr	9.2	13.9	3.0			W	30	12.2	94		WNW	11	1023.2	13.1	59	SW	20	1025.8
4	Sa	7.9	15.2	1.6			WSW	28	11.7	91		SW	4	1031.2	14.5	78	WSW	15	1030.1
5	Su	9.1	15.2	0			E	22	11.5	88		S	9	1031.9	14.6	74	WSW	15	1029.7
6	Mo	7.8	14.9	0			E	22	11.1	71			Calm	1033.9	12.9	61	E	11	1032.5
7	Tu	8.3	12.8	0			E	22	10.7	64		NE	7	1032.9	12.0	59	NNW	7	1029.7
8	We	6.0	15.1	0			N	24	10.34	73		NNE	9	1028.3	14.1	52	NNE	11	1024.2
9	Th	5.9	15.7	0			N	26	10.59	62		NE	11	1024.9	14.7	48	NNW	13	1021.6
10	Fr	9.5	15.4	0			NE	24	12.3	54		NE	9	1020.5	13.6	68	WNW	11	1018.2
11	Sa	7.6	13.8	1.6			N	22	8.9	92		NE	11	1017.0	11.4	77	SSW	9	1015.6
12	Su	7.2	16.0	2.6			S	30	10.8	87		S	11	1020.4	14.8	61	SSE	13	1020.9
13	Mo	4.1	14.8	0.2			SW	19	8.5	98		NNE	4	1028.1	13.4	81	WSW	9	1026.2
14	Tu	4.4	12.2	0			W	15	6.8	99		S	2	1029.2	11.1	87	SW	9	1026.3
15	We	4.9	16.6	0.2			NW	26	10.1	70		NE	13	1024.0	15.9	45	NW	15	1021.8
16	Th	5.0	17.7	0			SW	20	10.2	67		SW	Calm	1025.1	14.8	60	SW	11	1022.8
17	Fr	7.5	16.2	0			NNE	39	12.5	59		NE	15	1021.6	19.3	34	NNW	13	1018.4
18	Sa	12.2	16.2	0			WSW	46	13.7	45		NNE	20	1013.8	16.0	40	NNW	20	1011.6
19	Su	9.1	15.2	0.8			WSW	46	10.3	98		N	7	1016.2	14.7	59	WSW	22	1017.7
20	Mo	5.5	14.0	0.2			W	20	10.3	80		N	7	1027.6	13.4	69	WSW	11	1027.5
21	Tu	3.3	13.7	0.6			SW	19	9.6	85			Calm	1032.6	12.3	70	WSW	11	1030.7
22	We	4.4	12.4	0			WSW	20	9.3	74		ENE	7	1031.6	11.6	73	SSW	11	1029.0
23	Th	3.3	15.3	0			NNW	26	9.6	68		NE	9	1027.6	14.7	51	N	11	1023.6
24	Fr	8.8	18.7	0			NE	35	9.9	58		NE	11	1021.4	17.6	35	N	13	1017.8
25	Sa	5.9	17.2	0			ENE	20	11.0	66		NE	Calm	1022.3	16.0	63	WSW	11	1021.8
26	Su	4.9	17.0	0			WNW	17	9.0	81		NNW	6	1023.9	13.7	64	WNW	11	1021.2
27	Mo	7.6	15.9	0.8			SSE	31	11.6	99		SW	6	1023.9	15.1	52	S	17	1022.8
28	Tu	1.5	13.1	0			W	20	7.0	88		SE	4	1023.1	10.9	77	WSW	9	1022.4
29	We	2.8	16.9	0.2			N	20	9.6	73		NE	9	1023.1	15.4	70	WNW	6	1021.7
30	Th	7.1	15.1	0			WSW	20	10.8	91		NNE	4	1029.7	14.1	76	WSW	9	1027.8
31	Fr	5.4	15.4	0			WSW	20	10.7	79		NNW	2	1027.3	18.2	44	NNW	15	1023.4
<b>Statistics for July 2020</b>																			
Mean		6.7	15.3						10.5	76			7	1024.7	14.4	61		12	1022.8
Lowest		1.5	12.2						6.8	42			Calm	1011.4	10.9	34		6	1006.0
Highest		12.2	20.2	3.0			W	52	13.7	99		NNE	20	1033.9	19.3	87	#	22	1032.5
Total				11.8															

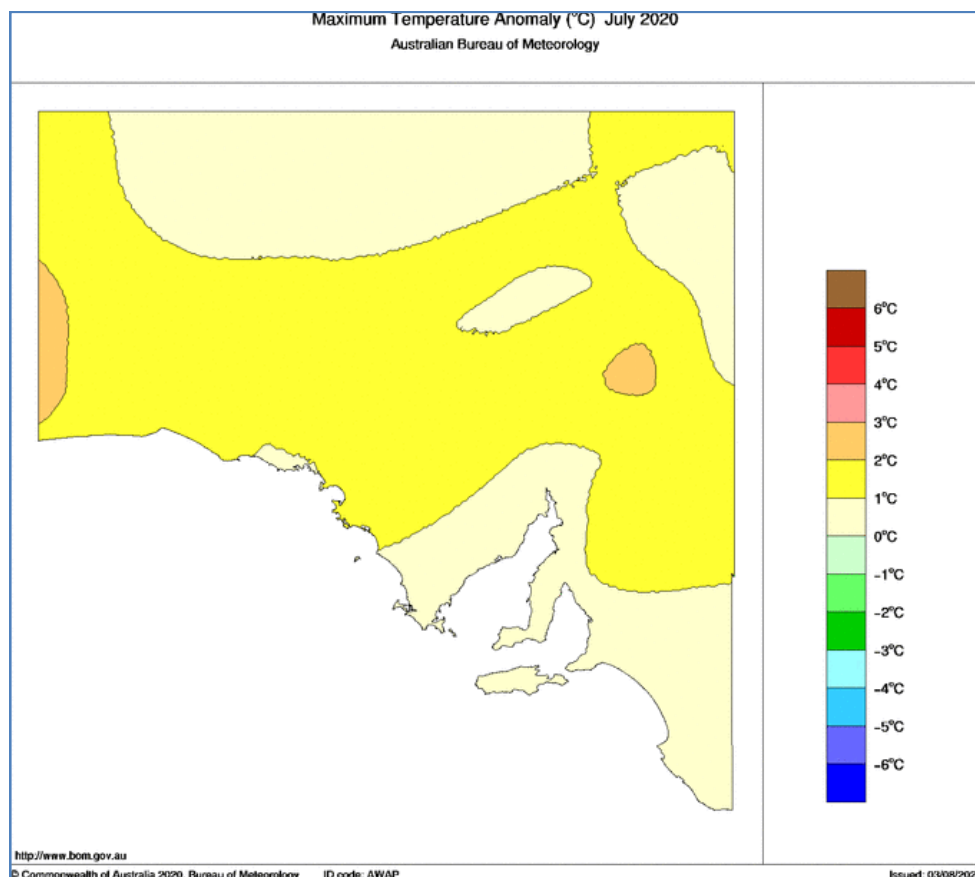
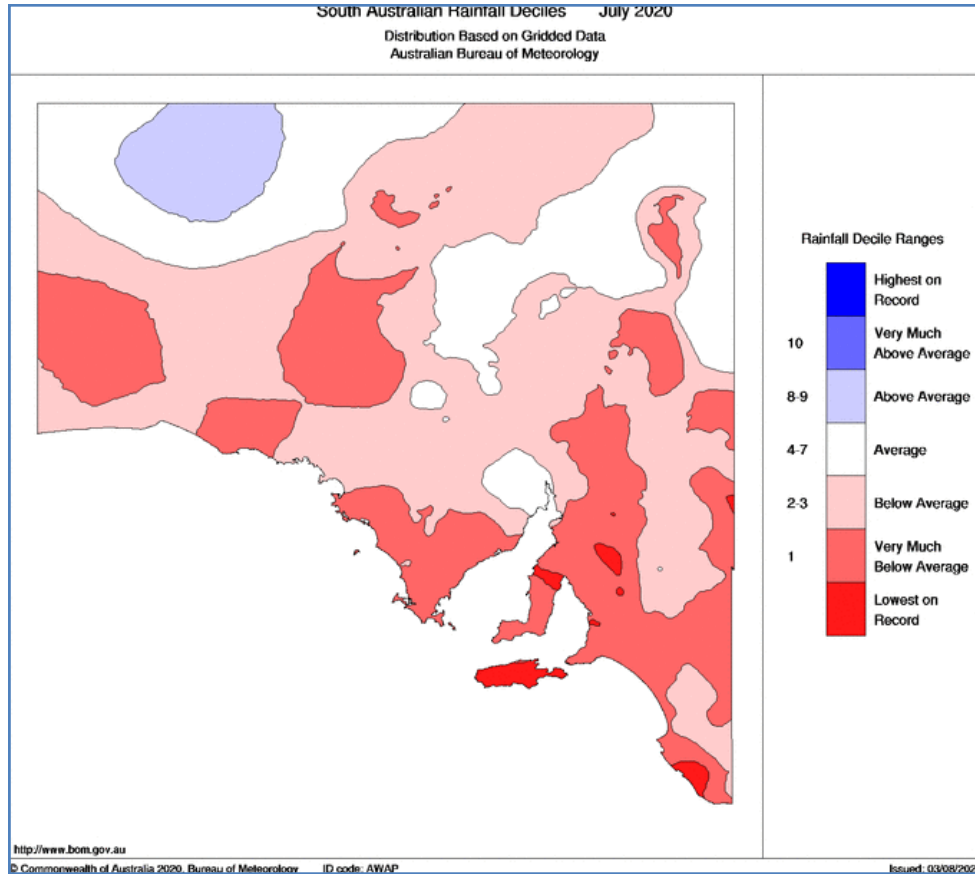
Observations were drawn from Adelaide (West Terrace / Ngayirdapira) (station 0230000)  
This is the "official" site for Adelaide, having reopened in May 2017. Observations are available from the Kent Town site (station number 0230900) up until 31 July 2020.  
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Prepared at 13:02 UTC on 2 Aug 2020  
Users of this product are deemed to have read the information and accepted the conditions described in the notes at <http://www.bom.gov.au/climate/dwo/IDCJDW0000.pdf>

## South Australia in July 2020: very dry, warm days and cold nights

Rainfall in July was below to very much below average across large parts of South Australia and overall it was the state's driest July since 1997. Daytime temperatures were warmer than average throughout the state, including large areas of very much above average maximum temperatures, however night-time temperatures were below to very much below average across most of central and eastern South Australia.

**For more information plus a summary of June's statistics please see:**

<http://www.bom.gov.au/climate/current/month/sa/archive/202007.summary.shtml>







## NEXT MEETING WEBINAR

**Tuesday, August 18, 2020**

**7:00 PM – 8:00 PM**

**Presentation : Fifteen Years of Detective Work SA's Climate Record Uncovered**

**SPEAKER: Mac Benoy, AMeta Citizen Science Team Leader**

*The state's colonial settlers were obsessed about the weather and started measuring and recording it within days of arriving on the Fleurieu Peninsula. Eight years later, Charles Todd was appointed Australia's first official meteorologist. For 50 years he kept meticulous records and narratives about the weather which were documented in 62 large folios. These were continued by his successors into the 1990's, giving Adelaide and South Australia a unique record that is being mined by climate scientists.*

*The AMeta Citizen Science team have uncovered and imaged well over a dozen comprehensive collections. They start with pre-settlement ship logbook observations, including those of Flinders and Baudin, and continue to 1957 when the Adelaide office of the Weather Bureau was publishing 7 synoptic maps a day, many covering an incredible 18% of the surface of the Earth.*

*The team has created a unique online Image Portal of 100,000+ pages containing the stories of major weather events and the hard data that explains them. This webinar will cover how researchers and the general public can access this resource. We will track several developments in climate science, cover interesting weather narratives and examine how this resource is being used in climate change analysis.*

*Before closing, a brief introduction will be given for budding citizen scientists who want to help in this process. The Australian National University will soon launch an online project to help create the longest daily weather record for Australia. Volunteers will be asked to digitise the Weather Register 1843-1856 kept by the Survey Department on Victoria Square. The resulting data will assist researchers to further illuminate Australia's pre-industrial weather history.*

*To register for this event go to <https://www.eventbrite.com/e/fifteen-years-of-detective-work-sas-climate-record-uncovered-tickets-115016800346>*

*(Once registered, a few minutes before the commencement of the meeting go to :<https://zoom.us/j/98322990774?pwd=VThuUU1vUi9zbURYSk15Q2FCdVBqdz09> to join online).*

For further information about AMETA & meeting details please contact:

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