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Tina Donaldson: 'A Season Forecasting on the Ice'



Tina Donaldson, a meteorologist at the South Australian Regional Forecasting Centre, of the Bureau of Meteorology gave us an engaging view of forecasting in the Antarctic and aspects of daily life from her summer of 2013/14 at Davis Station. After graduating from UNSW Tina was attracted in to the NZ Met Service. Two years later she was back in Australia with the Bureau and in Adelaide for the past 5 years. Perhaps these years were all preparation for an adventurous sojourn to the southern ice land – with more to come. And indeed, the day after the talk Tina found out that she would be going back to Antarctica in the coming summer.

One reiterated message was that in Antarctica, despite planning and contingencies, the weather usually causes things to go awry and always with potentially lethal consequences.

As an initial example, the voyage from Hobart to Davis of the Aurora Australis, a purpose built icebreaker, was scheduled to take 10 days. Because of a prolonged storm and unusually extensive sea ice it took 3 weeks. And indeed, the returning vessel was subsequently stuck in the ice for the next 2 weeks not far from Davis.

During the 3 weeks en route, Tina was providing forecasts for the ship, its helicopter and any mid-ocean experiments although these were necessarily curtailed. A marvellous collage-type video compiled by one of the expeditioners showed life aboard. Seas of 8 to 12m and ice bound deck and superstructure being memorable images.



Special forecasting requirements include those for visibility for differentiation of the horizon and for surface features. This is important generally - and Tina related how it was easy to misread the surface topography travelling on a quad bike as an example - and for aviation in particular. A feature of the high latitudes are the extreme katabatics and their effects. These were described and briefly explained.

Numerical models were limited in performance and availability and needed to be augmented with rapidly acquired local knowledge and interpretative skill with satellite imagery.

Nearly all of us would like to go to the Antarctic: this talk was the next best thing – and without the fierce cold and uncomfortable voyage.

Warwick Grace AMETA Committee

New Seasonal forecasts from the Bureau of Meteorology

In August 2014 the Bureau of Meteorology released a major upgrade to its seasonal forecasting information. This can be seen at

http://www.bom.gov.au/climate/outlooks/#/overview/summary/

The new webpage has a map enable interface allowing users to zoom in on a particular area of interest. Clicking on the map brings up a summary box for that location of the mean or average conditions and the likelihood of being above or below that over the coming month or season.

The product also utilises new capabilities that come from the ocean-atmosphere dynamical modelling system that now underpins the Bureau's seasonal outlooks, showing month by month breakdowns for the first 2 months of the 3 month period, as well as the 3 month outlook as a whole. This provides a whole new level of information!!

Looking at the current outlook for example, it indicates October is very likely to be hotter and drier for 2014, with November being as likely to be wetter than average for many areas, as it is likely to be drier.

And you are encouraged to use the Feedback button on the top right of the page.



Adelaide Metro & Hills in August 2014

- Adelaide observes it coldest August night in 126 years
- Some sites had their lowest August mean daily minimum temperature on record.
- Very much below average rainfall with some sites having their lowest total August rainfall on record.
- Day time temperatures near average

August was very dry across the Adelaide region, with rainfall generally very much below average for most locations. The Kent Town office recorded 20.8 mm (30% of the long-term August average) on just 5 rain days, against the August average of 16 days. The heaviest rainfall event occurred on 1 August, when a vigorous cold front to the south of the Great Australian Bight produced isolated squally showers and strong wind gusts across the Adelaide region, delivering daily totals in excess of 15 mm for most locations. Monthly rainfall totals were generally between 10 and 20 mm across metropolitan locations while locations in the Adelaide Hills received totals in excess of 30 mm. The wettest location was Heathfield Works Depot, in the Adelaide Hills, with a monthly total of 48.2 mm, with 40.6 mm observed in the 24 hours to 9am on 1 August.

Monthly mean maximum temperatures were above average while minimum temperatures were below average across the Adelaide metro and hills region, with most locations observing particularly cold nights. A run of cold nights during the first week of August saw Adelaide observed 0.9°C on August 4, which is only the second time that Adelaide had seen a daily August minimum temperature that cold, the previous being August 7, 1888. Mount Barker recorded the coldest night on the 4th, with a minimum of just -1.4 °C, which was the coldest August night for Mount Barker in 8 years. The cold nights resulted in several locations observing their lowest August mean daily minimum temperature on record.

Extremes in August 2014

Hottest day	25.2 °C at Parafield Airport on the 30th
Warmest days on average	17.6 °C at Parafield Airport
Coolest days on average	11.8 °C at Mount Lofty
Coldest day	6.3 °C at Mount Lofty on the 1st
Coldest night	-1.4 °C at Mount Barker on the 4th
Coolest nights on average	3.8 °C at Edinburgh RAAF
Warmest nights on average	7.8 °C at Noarlunga
Warmest night	15.5 °C at Noarlunga on the 31st
Warmest on average overall	12.1 °C at Adelaide (Kent Town)
	12.1 °C at Noarlunga
Coolest on average overall	8.5 °C at Mount Lofty
Wettest overall	48.2 mm at Heathfield Works Depot
Driest overall	0 mm at Uraidla (Sutton Creek)

August 2014 Daily Weather Observations art 2 km aget of the Adelaide, South Australia



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2	Tu	3.0	16.9	0	1.2	9.9	MSM	20	12:39	9.4	8		
9	We	3.3	16.1	0	1.6	9.5	WSW	22	13:58	9.6	75		
7	f	9.4	17.2	0	1.8	7.2	z	28	12:23	12.2	61		2
80	ŗ	3.9	18.3	0	1.0	5.7	S	57	11:26	9.3	79		2
6	Sa	7.8	18.3	0		2.9	z	30	10:46	13.9	47		2
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18	Mo	6.2	14.7	0	5.2	4.2	SSE	30	10:22	12.1	75		
19	1	5.3	14.9	0	1.6	3.6	s	28	13:39	11.4	60		ш
20	We	6.9	15.1	0	1.4	6.2	ESE	30	20:12	12.0	50		ш
21	f	6.1	19.3	0	2.2	9.3	ш	30	21:52	13.8	47		ш
22	F	12.3	21.1	0	2.6	10.1	z	37	13:02	17.2	8		ź
33	Sa	15.0	17.9	0		5.9	WNW	41	13:14	16.3	40		N
24	Su	6.0	16.2	0		10.1	×	26	15:01	10.3	86		N
25	Mo	4.2	18.6	0	8.0	10.3	WNW	20	13:31	11.1	76		SS
26	Tu	4.7	19.2	0	1.0	10.3	SW	26	15:08	12.2	69		

IDCJDW5002201408 Prepared at 16.06 UTC on 2 Oct 2014 Copyright 2014 Bureau of Meteorogy Users of this product are detend to have read the information and accepted the conductors described in the notes at http://www.bom.gov.au/cinnate/dw01DCJDW000.pdf

Kent Town is a suburban site with good exposure. Climate averages are available for West Terrace as well as Kent Town.

Observations were drawn from Adelaide (Kent Town) (station 023090)

South Australia in August 2014

- Cold nights see record low minimum temperatures across central districts
- A dry finish to winter for agricultural districts
- Near average daytime temperatures

Minimum temperatures were below average for South Australia during August, with large parts of the State observing the coolest August nights on record. Early in the month, central and eastern parts of the state experienced widespread frost over a five day period with minimum temperatures persistently below 0 °C for many locations. Daytime temperatures, on the other hand, were a little above average in most areas.

Rainfall was very much below average across much of the state as a whole, though tended average to above average for some locations in the northeast Pastoral districts. The heaviest rainfall for most parts of the state occurred at the start of the month and again during mid month. On the 1st, a deep low pressure system extended a trough over South Australia which brought cold and unstable air to southern Agricultural areas and produced scattered showers and isolated thunderstorms. It then remained relatively dry for most parts of the state up until the 14th when an upper level cold airmass and associated surface trough brought heavy rain mainly to the Flinders and southern Pastoral districts today with some lighter rain extending further south to adjacent districts during the 15th.

Extremes in August 2014

Hottest day	33.1 °C at Tarcoola Aero on the 31st
Warmest days on average	22.0 °C at Oodnadatta Airport
Coolest days on average	11.8 °C at Mount Lofty
Coldest day	6.3 °C at Mount Lofty on the 1st
Coldest night	-6.6 °C at Yunta Airstrip on the 6th
Coolest nights on average	0.2 °C at Yongala
Warmest nights on average	11.6 °C at Neptune Island
Warmest night	15.9 °C at Cleve Aerodrome on the 31st
Warmest on average overall	14.3 °C at Moomba Airport
Coolest on average overall	7.7 °C at Yongala
Wettest overall	60.8 mm at Arkaroola
Driest overall	0 mm at Balaklava (Donaleen)
	0 mm at Ernabella (Pukatja)
	0 mm at Marla Police Station
	0 mm at Moomba Airport
	0 mm at Tarcoola (Mulgathing)
	0 mm at Tarcoola Aero
	0 mm at Uraidla (Sutton Creek)
Wettest day	40.8 mm at Bridgewater on the 1st
Highest wind gust	98 km/h at Cape Willoughby on the 1st

South Australian Rainfall Deciles August 2014

Distribution Based on Gridded Data Product of the National Climate Centre



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Adelaide Metro & Hills in winter 2014

- Overall, an average winter, though highly variable
- Adelaide records the coldest night in 6 years
- A wetter June and July and drier August results in near average winter rainfall

Winter 2014 was quite variable, with warmer nights and above average rainfall through June and July, but August 2014 experienced drier conditions with below average rainfall and colder than average nights. Overall, rainfall for winter for Adelaide with 224.6 mm was very close to, if slightly less than the long-term winter average of 225.7 mm, and the driest winter since 2011. 280.0 mm was recorded in winter 2013.

Daytime temperatures overall for winter were close to average, with the end of August seeing a run of days reaching temperatures in the low to mid 20's to finish the season. Minimum temperatures were above average in June and July with cloudy nights, but clearer skies and lighter winds in August saw colder nights. An outbreak of cold air following a frontal system early in August, and clear skies following this, led to a run of 5 days of very frosty nights in the Adelaide region, with the city experiencing the coldest night of the season on 4 August when the temperature dropped to 0.9 °C, resulting in the coldest temperature recorded for Adelaide since the winter of 2008

Extromos in winter 2014

Hottest day	25.2 °C at Parafield Airport on 30 Aug
Warmest days on average	16.5 °C at Parafield Airport
Coolest days on average	10.5 °C at Mount Lofty
Coldest day	5.7 °C at Mount Lofty on 9 Jul
Coldest night	-1.4 °C at Mount Barker on 4 Aug
Coolest nights on average	5.6 °C at Mount Lofty
Warmest nights on average	9.0 °C at Noarlunga
Warmest night	15.5 °C at Noarlunga on 31 Aug
Warmest on average overall	12.3 °C at Noarlunga
Coolest on average overall	8.1 °C at Mount Lofty
Wettest overall	525.4 mm at Uraidla
Driest overall	43.8 mm at Montacute
Wettest day	52.4 mm at Ashton on 24 Jun
Highest wind gust	100 km/h at Mount Crawford on 31 Jul

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South Australia in winter 2014

- Below average winter rainfall
- Days a little milder than usual
- Cold nights, especially in August

South Australia had a generally dry winter. Dry conditions were present across the Northwest pastoral and central districts. Below average falls were also recorded across coastal areas and the southeast and Murray Valley districts. The state-wide average rainfall of 35 mm for winter was 37% below the long-term average. Dry conditions were experienced in June across the Pastoral districts, while Agricultural areas experienced average to above average June rainfall. Below average rainfall continued through July for northeast Pastoral areas with average to above average elsewhere across the State. Very little rainfall was recorded through August with dry conditions extending across the Agricultural districts, but a widespread rainfall event over the northeast saw some Pastoral districts receive their most significant rainfall for the season.

Daytime temperatures were generally warmer that average across the west, northern Pastoral and through the southeast districts. Across South Australia as a whole, maximum temperatures were 0.8 °C above the long term average (18.8 °C). Nights were generally cooler than average, particularly across the far north and central districts were minimum temperatures tended very much below average. A cold spell during August saw several locations observed their coldest August nights on record, with central districts experiencing widespread frosts. Across South Australia as a whole, minimum temperatures were 0.1° C above the long term average (5.7 °C).

Extremes in winter 2014

Hottest day	32.4 °C at Nullarbor on 30 Aug
Warmest days on average	21.0 °C at Oodnadatta Airport
Coolest days on average	10.5 °C at Mount Lofty
Coldest day	5.7 °C at Mount Lofty on 9 Jul
Coldest night	-6.6 °C at Yunta Airstrip on 6 Aug
Coolest nights on average	2.7 °C at Yongala
Warmest nights on average	12.2 °C at Neptune Island
Warmest night	16.0 °C at Oodnadatta Airport on 23 Jul
Warmest on average overall	13.9 °C at Neptune Island
Coolest on average overall	8.0 °C at Mount Lofty
Wettest overall	525.4 mm at Uraidla
Driest overall	1.0 mm at Oodnadatta Airport
Wettest day	76.0 mm at Port Lincoln (Woolga) on 13 Jun
Highest wind gust	124 km/h at Neptune Island on 22 June

South Australian Rainfall Deciles 1 June to 31 August 2014 Distribution Based on Gridded Data Product of the National Climate Centre







Adelaide in September 2014

- Adelaide observes its warmest September night since 1987
- Monthly minimum and maximum temperatures warmer than average
- Below average rainfall for most locations

September was very dry across the Adelaide region, with most locations struggling to record more than 50% of their long term September average rainfall total. The Kent Town office recorded 31.4 mm (53% of the long-term September average) over 13 rain days, which is the average number of rain days for September, reflecting a lower amount of rainfall per rain day experienced through this month. This is drier than September 2013 with a total of 37.2 mm, but wetter than 2012 with only 18.2 mm recorded.

The heaviest rainfall event occurred at the start of the month, when a rain band moved over southern districts. Showers and isolated thunderstorms followed the rain band, though daily rainfall totals were generally less than 10 mm across the Adelaide region. Monthly rainfall totals were generally between 20 and 30 mm across metropolitan locations while locations in the Adelaide Hills received totals up to and in excess of 40 mm. The wettest location was at Crafers West, in the Adelaide Hills, with a monthly total of 58.0 mm.

Both monthly mean maximum and minimum temperatures were above average across the region, with particularly warm days and nights during the last week of the month which saw Adelaide observe its warmest September night in 27 years with a minimum of 21.6 °C.

Extremes in September 2014

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Hottest day	31.9 °C at Parafield Airport on the 27th
Warmest days on average	21.4 °C at Parafield Airport
Coolest days on average	14.8 °C at Mount Lofty
Coldest day	9.0 °C at Mount Lofty on the 18th
Coldest night	1.9 °C at Mount Barker on the 3rd
Coolest nights on average	7.3 °C at Mount Lofty
Warmest nights on average	11.2 °C at Noarlunga
Warmest night	21.6 °C at Adelaide (Kent Town) on the 28th
	21.6 °C at Noarlunga on the 28th
Warmest on average overall	15.8 °C at Adelaide (Kent Town)
Coolest on average overall	11.1 °C at Mount Lofty
Wettest overall	58.0 mm at Crafers West
	58.0 mm at Cudlee Creek (Millbrook Reservoir)
Driest overall	1.0 mm at Belair
Wettest day	16.0 mm at Piccadilly (Woodhouse) on the 9th
Strongest wind gust	98 km/h at Mount Crawford on the 30th

September 2014 Daily Weather Observations Adelaide, South Australia





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3	We	5.6 14.	7 0.4	2.4	1.9	z	35	11:26	10.4	88		NE	4	1025.1	14.6	49		MNN	15	1020.7
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80	Mo 1	7.7 25.	4	14.2	4.5	z	59	16:22	19.7	23		NNE	22	1012.8	24.8	20		NNE	20	1003.9
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16	5	1.3 17.	9 0.2	2.2	5.7	MSM	35	18:52	14.8	88		SW	15	1018.7	16.8	47		≥	22	1016.9
17	We	9.6 16.	8 2.4	2.6	9.1	8	39	14:00	13.0	75		WSW	19	1022.0	16.2	8		WSW	19	1022.0
18	F	5.8 14.	6	3.4	1.9	ESE	30	23:10	12.1	61		SW	9	1027.4	12.5	74		WSW	1	1025.2
19	F	8.7 19.	4 2.0	0.6	10.7	ENE	8	23:52	14.7	47		ENE	17	1026.4	19.1	29		NE	15	1023.2
20	Sa 1	1.4 23.	2		10.6	ш	35	00:04	18.0	28		ENE	15	1026.6	22.5	33		WSW	15	1024.6
21	Su	9.6 24.	2		10.7	ENE	33	01:34	18.7	29		z	1	1030.6	23.5	21		NNE	6	1026.5
22	Mo	9.5 26.	7 0	12.6	10.9	NNN	37	13:14	20.5	21		NNE	15	1026.0	26.2	6		z	13	1021.2
23	E L	6.7 26.	8	5.4	9.8	z	44	12:21	21.3	42		z	19	1021.0	25.9	27		NNE	20	1015.9
24	We 1	4.9 23.	1 1.0	5.0	8.9	3	33	12:45	19.2	61		z	6	1015.5	21.9	54		WSW	19	1013.7
25	Ę	3.9 16.	6	3.8	2.8	WSW	31	12:04	15.1	65		SSW	17	1023.0	15.4	8		SW	13	1022.3
26	F	1.2 22	0.0	2.2	3.0	SW	26	15:12	13.1	86		NNE	6	1023.8	18.2	89		WSW	7	1020.9
27	Sa L	1.8 30.	6 0.2		11.0	z	48	22:32	22.0	32		NNE	17	1018.9	30.1	19		MNN	19	1014.6
28	Su 2	1.6 29.	9		9.3	MNN	67	09:58	25.1	20		z	30	1009.4	25.0	36		WSW	28	1007.6
29	Mo 1	2.0 21.	6	14.8	9.5	×	41	13:40	15.8	75		z	15	1016.6	21.0	44		WNW	20	1013.5
30	Tu	1.2 21.	1	4.0	9.1	8	59	13:53	19.3	52		WNW	22	1014.7	16.8	65		WSW	30	1017.0
statistics fo	or Septen	nber 2014																		
W	ean 1	0.8 20.	6	4.7	7.6				16.2	53			14	1020.7	19.7	40			17	1018.3
Lov	vest	5.6 14.	7	0.6	0.6				10.4	20			Calm	1007.3	12.5	6		NNE	6	1003.9
High	hest 2	1.6 30.	.6 6.6	14.8	11.0	WNW	72		25.1	60		N	30	1030.6	30.1	74		WSW	30	1026.5
	otal		30.8	103.6	227.1															

Kent Town is a suburban site with good exposure. Climate averages are available for West Terrace as well as Kent Town. Observations were drawn from Adelaide (Kent Town) {station 023090}

IDCJDW5002.201409 Prepared at 13.05 UTC on 2 Oct 2014 Copyright 2014 Bened of Meteorogy Users of this product are detered to have read the information and accepted the conditions described in the notes at http://www.bom.gov.au/cimate/dw01DCJDW000.pdf

South Australia in September 2014

- A warm spell at months end results in record warm nights
- Below average rainfall for most of the state
- Daytime temperatures above average

Maximum temperatures were generally above average across South Australia during September, with coastal districts experiencing daytime temperatures that were very much above average for the month. Across the state as whole, the September maximum temperature was 2.2°C above the long term average. While minimum temperatures were 1.0°C above the long term average for the state, some eastern districts observed cooler than average nights, particululary during the third week of the month. In the last week of the month, strong to gale force northerly winds ahead of cold front saw several locations observe both day and night temperatures that were significantly above average, with several locations throughout coastal and southeast districts observing highest on record daily September minimum temperatures.

Rainfall was very much below average across most of the state, though tended average to above average for some locations in the northeast Pastoral districts, continuing a pattern that became established during the final weeks of winter. The heaviest rainfall occurred on the 24th of the month as a low pressure trough with embedded thunderstorms crossed central and eastern districts. Isolated showers cleared by the afternoon of the 25th. Very little rainfall was recorded during other periods of the month which resulted in a statewide monthly average that was 57% below the long term average.

Extremes in September 2014

Hottest day	38.2 °C at Marla Police Station on the 28th
Warmest days on average	28.4 °C at Oodnadatta Airport
Coolest days on average	14.8 °C at Mount Lofty
Coldest day	9.0 °C at Mount Lofty on the 18th
Coldest night	-2.3 °C at Naracoorte Aerodrome on the 19th
Coolest nights on average	4.3 °C at Yongala
Warmest nights on average	12.3 °C at Oodnadatta Airport
Warmest night	21.7 °C at Cleve Aerodrome on the 28th
	21.7 °C at Victor Harbor on the 28th
	21.7 °C at Wudinna Aero on the 28th
Warmest on average overall	20.3 °C at Oodnadatta Airport
Coolest on average overall	11.1 °C at Mount Lofty
Wettest overall	58.0 mm at Crafers West
	58.0 mm at Cudlee Creek
Wettest day	27.2 mm at Hawker (Wilson) on the 24th
Strongest wind gust	113 km/h at Hindmarsh Island on the 28th

South Australian Rainfall Deciles September 2014

Distribution Based on Gridded Data Australian Bureau of Meteorology









Upcoming changes to Bureau of Meteorology rainfall terminology

Over the last few years the Bureau's has introduced a new gridded weather forecasting system called NexGen, available to the public through the MetEye tool on the Bureau homepage. This produces forecasts of rainfall, temperature, wind and other weather elements on a 6km across all of Australia out to 7 days ahead.

With this, in early October 2014 the Bureau of Meteorology is introducing consistent and easily understandable terminology for rainfall forecasts through this system. This is to pick up on the power of this high resolution gridded forecasting system, and to replace some terms which are not always clear to all members of the public.

Feedback from the public has indicated that people find words like "isolated", "patchy" and "scattered", used in past weather forecasts confusing. What is of interest is information on the likelihood of rain occurring, how much, and how intense the rainfall might be, information the new forecasting system can easily produce.

The new terminology will use words like slight, medium, high and very high to describe the likelihood of rain occurring, include ranges for rainfall totals, as well as percentages.

The aim of this is to make the forecast information more precise and more easily understandable to help people better plan their day and their activities.

For more information see http://www.bom.gov.au/NexGenFWS/rainfall-faq.shtml



Australian Meteorological Association Inc

NEXT MEETING

5.30 PM MONDAY 20 October 2014

Conference room, Bureau of Meteorology 25 College Road, Kent Town

<u>Subject:</u> A new heatwave warning service for Australia <u>Speaker</u>: John Nairn a/ Regional director – South Australian Region, Bureau of Meteorology

John has a background in weather forecasting, serving around Australia, before working in and heading up the South Australian Regional Forecasting Centre for the Bureau of Meteorology, and since late 2013, acting as the South Australian Regional Director.

In what will be a timely presentation with warm weather fast approaching, his talk will cover his research in recent years developing a new heatwave index called Excessive Heat Factor, which included undertaking a Churchill Fellowship in 2012 looking at heatwave services around the world. John will highlight the application of the EHF index as the basis for a pilot heatwave warning service, trialled across Australia in the summer of 2013/14, and about to be re-established for the coming summer.

We look forward to seeing you.

For further information contact

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Inquiries or suggestions, please contact the Secretary on the phone number listed above.

REMINDER: AMETA Membership annual subscriptions of \$15 are now due for the period August 2013 to August 201. Those who have not paid can do so at any AMETA meeting or through the Treasurer John Braendler by phone 08 8337 2852 or via email to john.braendler@bigpond.com