Climate change and South Australian wine regions

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Australia is warming, on land and in the oceans.

Australia’s mean temperature has warmed by 0.9°C since 1910.

2013 was hottest year on record for Australia and South Australia.
Australia's future is very likely to be hotter

Range of modelled future annual temperatures (CMIP5 RCP4.5)

Averaged over Australia and over the calendar year
Changes in weather patterns

Rainfall in the southwest of Western Australia has been very much below average to lowest on record.

Southeast Australia has experienced a decline in late autumn and early winter rainfall since the mid-1950s.

Daily weather map

National Meteorological and Oceanographic Centre
MSL Prognosis (hPa) Valid: 00 UTC Wed, 24 February 2010 (10AM EST, 11AM EDT)
Warming by ~ 1.0°C, particularly at night and in spring

Earlier bud burst and flowering resulting in earlier harvests in late summer
Clare Valley

Annual mean temperature increases from ~14.8°C to ~15.2°C

MJT increases from ~21.2°C to ~22.6°C

Strong increase in MJT relative to annual mean
Mildura

Annual mean temperature increases from ~16.8°C to ~17.5°C

MJT increases from ~24.0°C to ~25.5°C

Strong increase in MJT relative to annual mean
Strathalbyn

Annual mean temperature increases from ~15.0°C to ~16.0°C

MJT increases from ~19.9°C to ~21.2°C
Naracoorte

Annual mean temperature increases from \(~14.1\, ^\circ \text{C}\) to \(~14.8\, ^\circ \text{C}\).

MJT increases from \(~20.0\, ^\circ \text{C}\) to \(~20.7\, ^\circ \text{C}\).

Likely cooler back in the first half of the 20th C.
Shrinking seasons—warming temperatures are shrinking winter from both ends.

Adelaide seasonal temperature

1887-1978
1992-2012
Getting longer and more frequent heatwaves and very hot days

Also increased bushfire risk (smoke taint), sea level rise for coastal areas
Increased extremes

No. FY days of maximum temperature >35C and mean temperature (red line): ('MILDURA AIRPORT',)

- **Numbers of days maximum T >35C**

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- **mean temperature (degrees C)**

  - 22.0
  - 22.1
  - 22.2
  - 22.3
  - 22.4
  - 22.5
The Next Generation forecasting system allows more information out 7 days ahead for a point or as maps/grids

Key features:
- GIS enabled data
- Zoom/pan
- Multiple forecast element overlay & marine (waves)
- Includes observations, radar, satellite overlays
- Potential to add profiles such as Agriculture profile
Evapotranspiration (Eto) data for irrigation

- Daily past Eto figures derived from BoM weather stations
- On our ‘Agriculture’ page from the BoM homepage
- 7 day forecast Eto is in development
Predicting extremes – BoM pilot heatwave warning service

POAMA January 5 outlook

4 day prediction of January 2014 heatwave

Observed maximum temperature for mid-January 2014
BoM Seasonal Outlook now uses POAMA

Predictive Ocean Atmosphere Model for Australia

As of May 2013, Seasonal Climate Outlooks are based on the dynamical model.
Providing information across a range of timescales

7 day forecasts

3 month block seasonal outlook

BoM is moving toward more specific products across a range of timescales
POAMA- bridging the gap between the week ahead and the season ahead

POAMA gives useful predictions of heatwaves 2-6 weeks ahead

Temperature

Likelihood of extreme heat in June 2014
Thank you

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