

Changing Weather Patterns in South Australia?

Consistent with Predicted Climate Change?

Andrew Watson

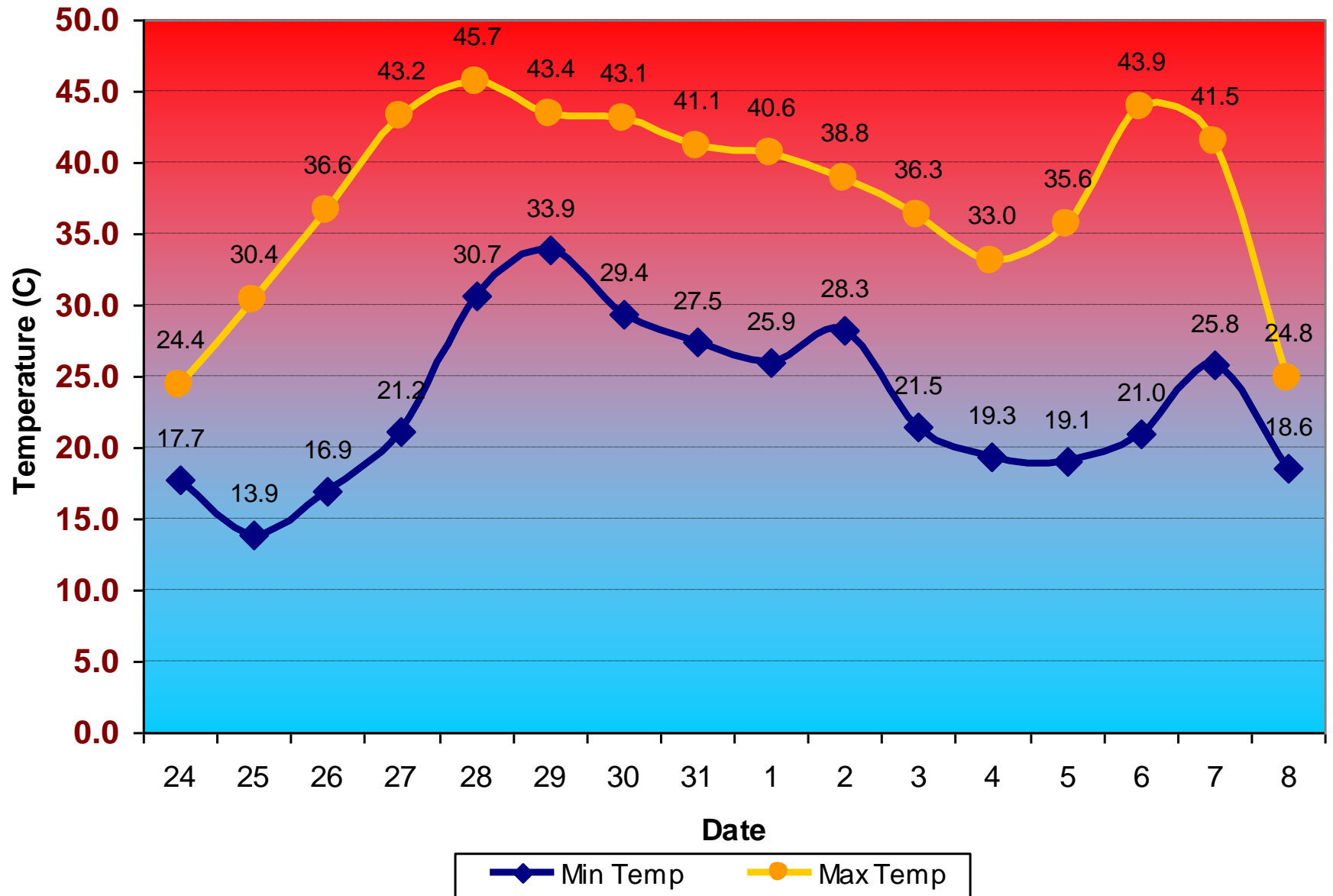
Regional Director

Bureau of Meteorology : South Australian Regional Office

Climate Futures Seminar : 11 March 2009

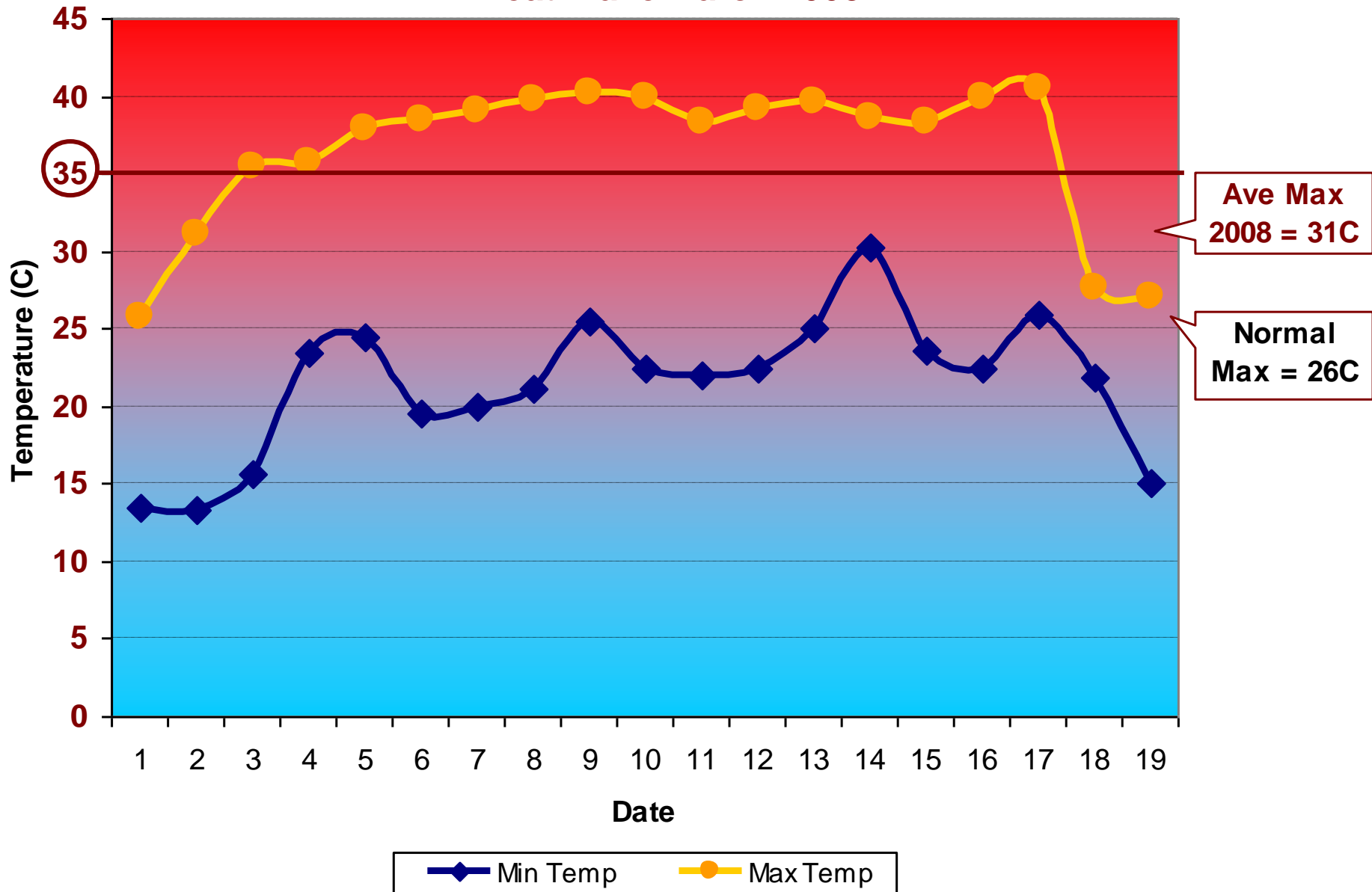
Temperature Trends

Heat Wave January/February 2009



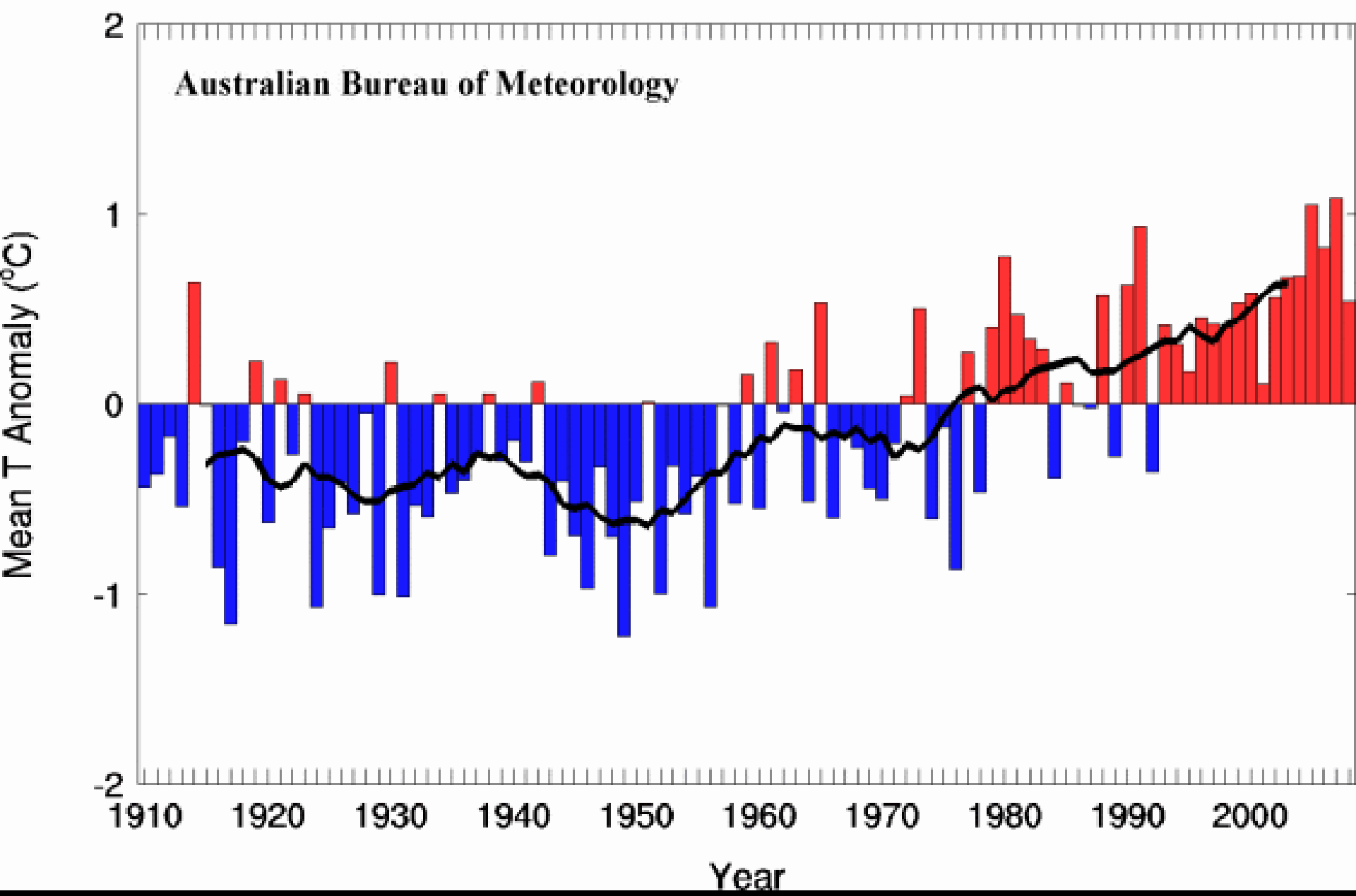
Daily Temperature trend : 24 January – 8 February 2009 (source BOM)

Heat Wave March 2008



Daily Temperature trend : 1 – 19 March 2008 (source BOM)

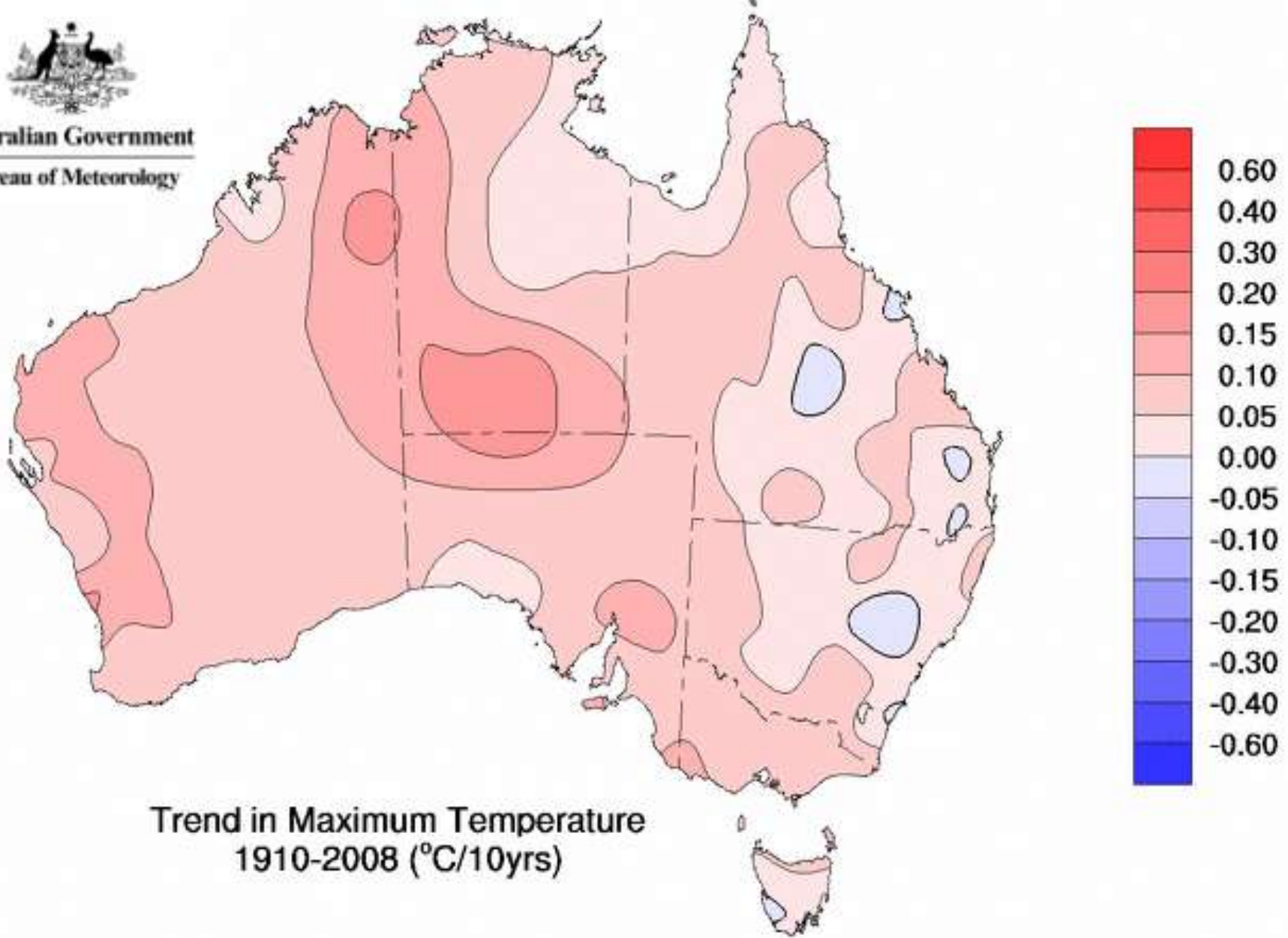
South Australia Annual Mean T Anomaly (base 1961-90)



South Australian mean temperature trend : 1910 – 2008 (source BOM)

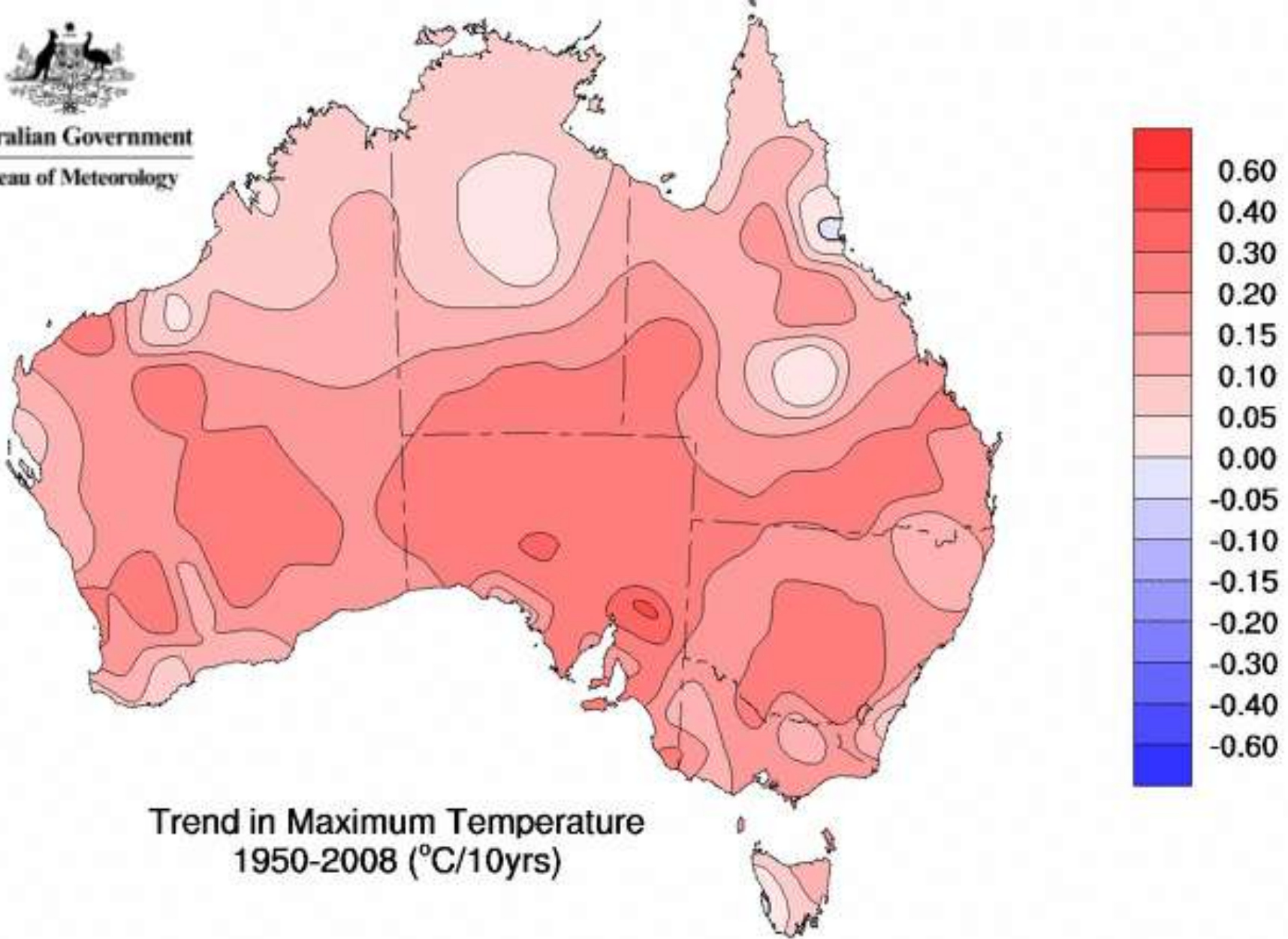


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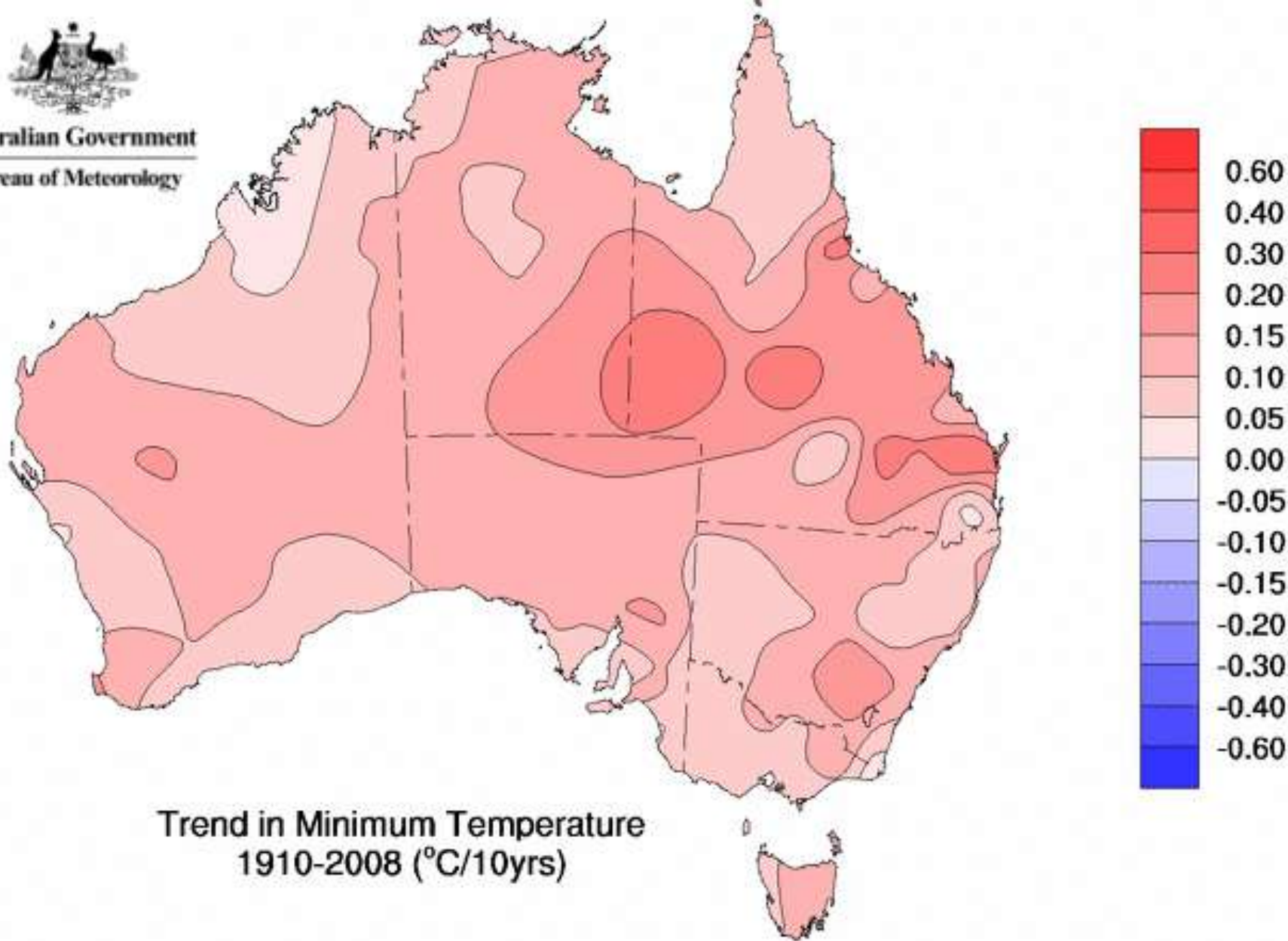


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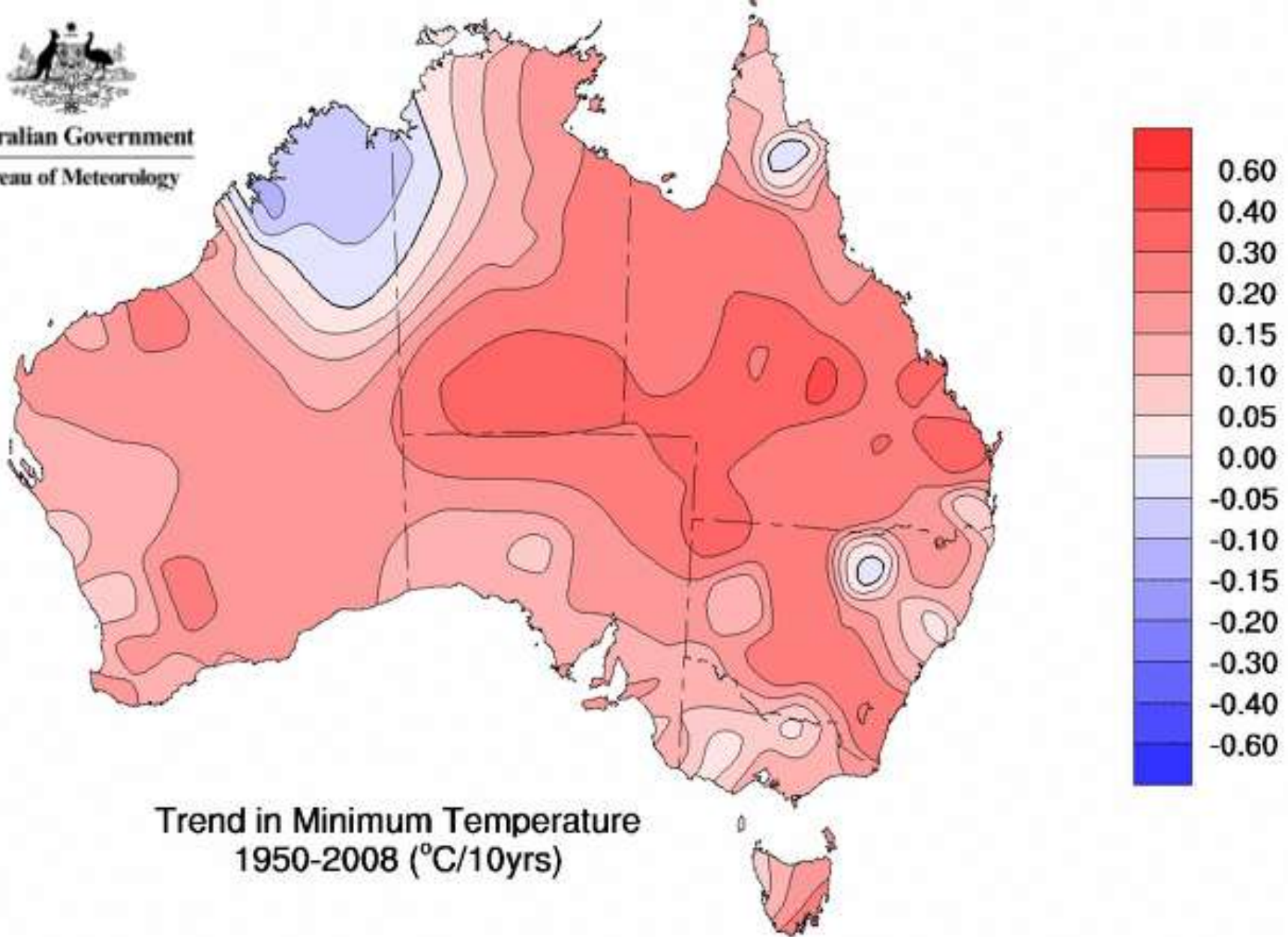


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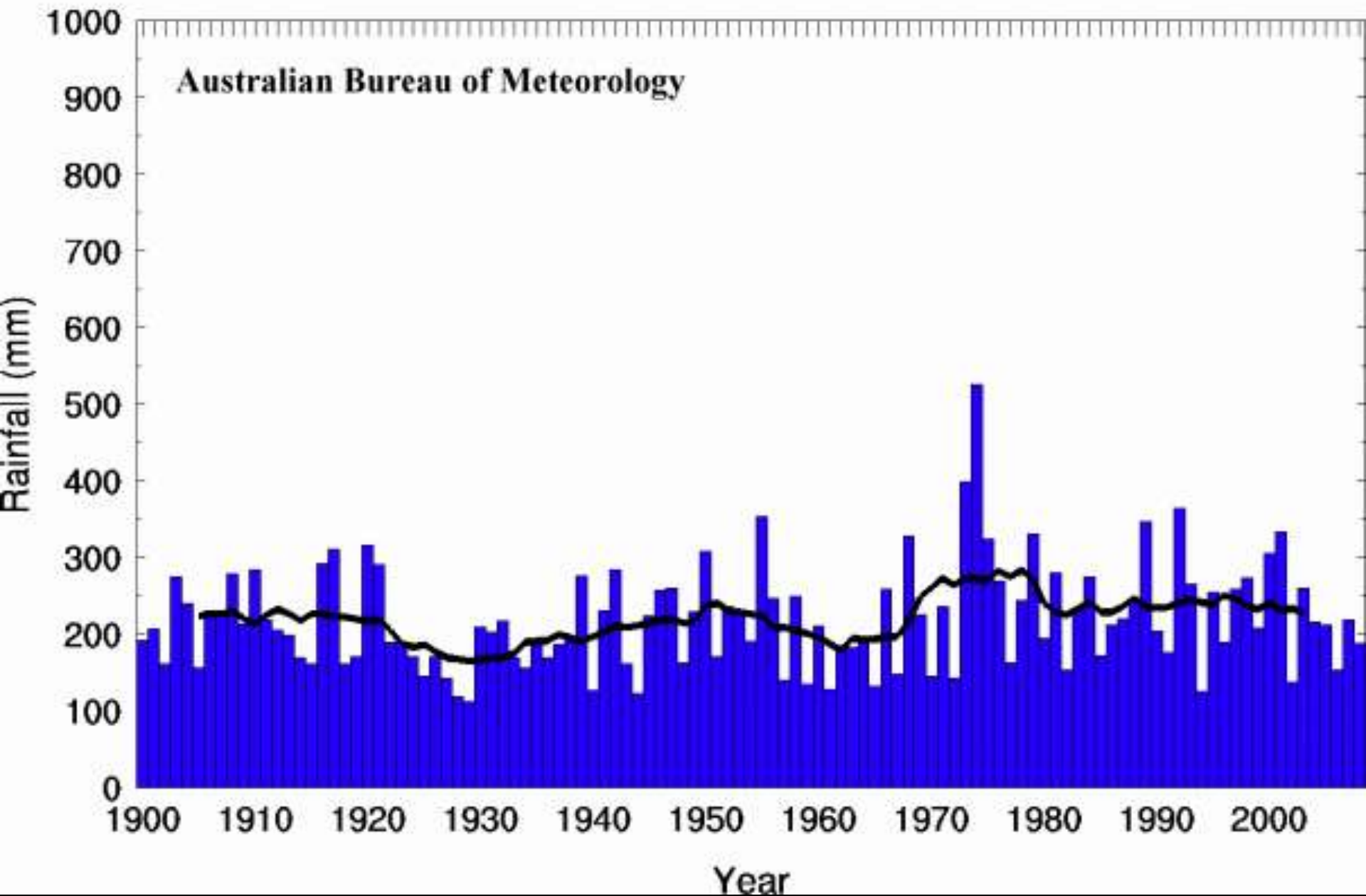


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Rainfall Trends

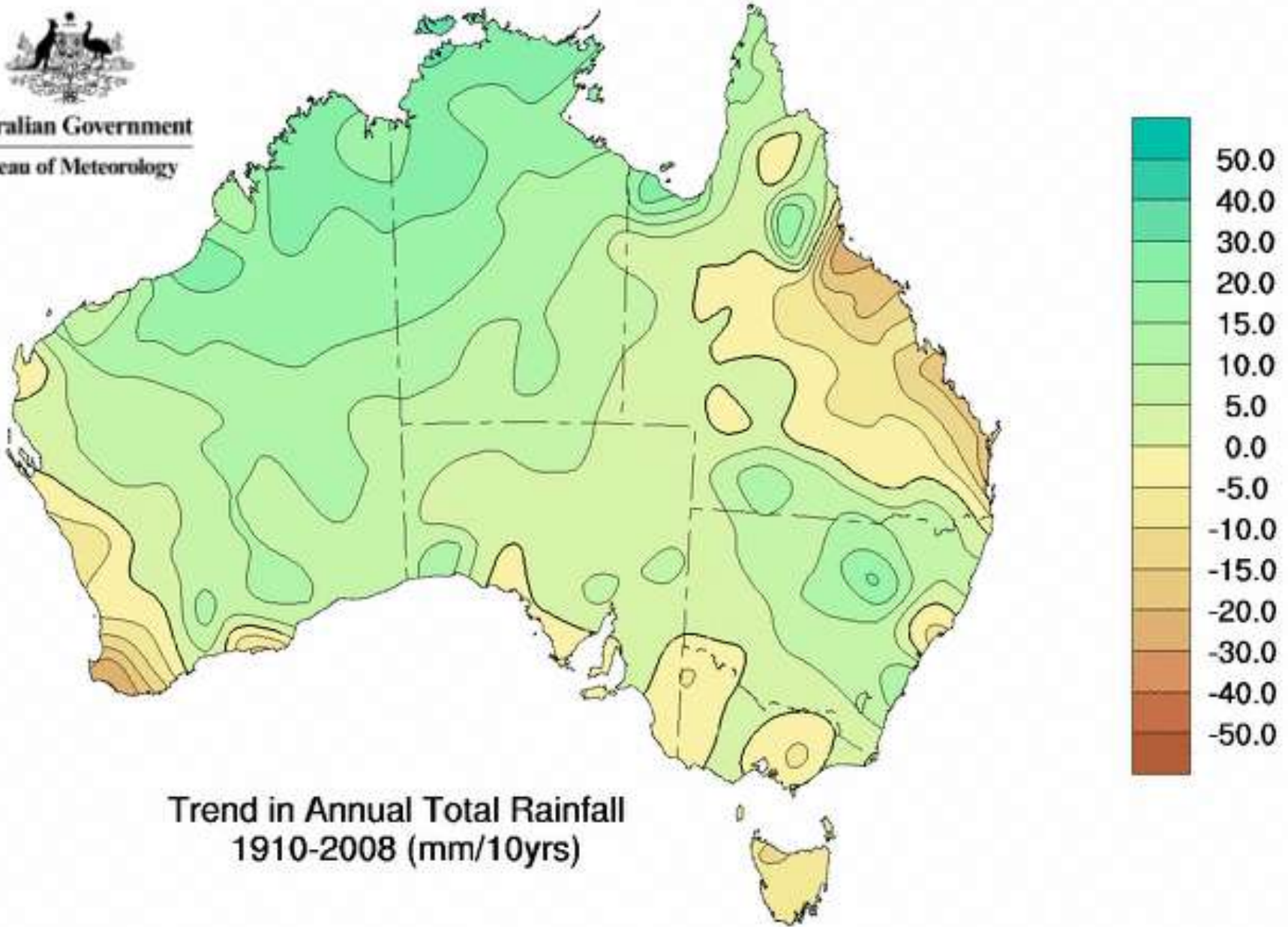
South Australia Annual Rainfall



South Australian rainfall trend : 1900 – 2008 (source BOM)



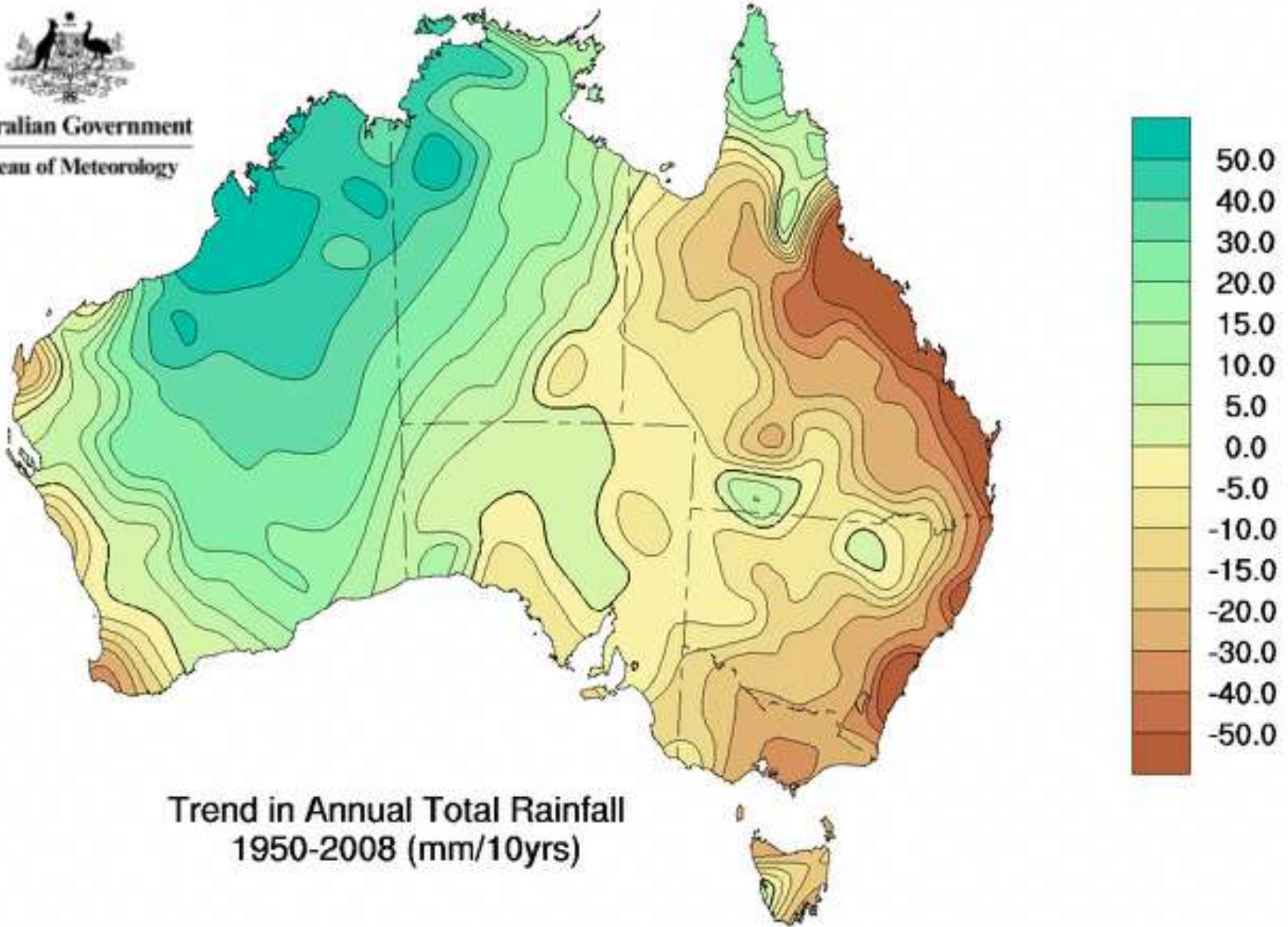
Australian Government
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Spatial rainfall trends (mm/10yrs), Australia : 1910 - 2008 (source BOM)

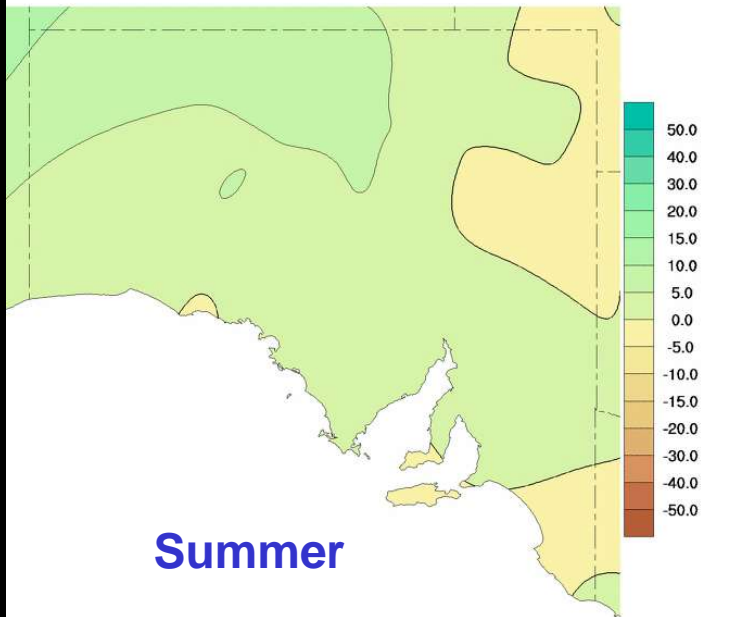


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Spatial rainfall trends (mm/10yrs), Australia : 1950 - 2007 (source BOM)

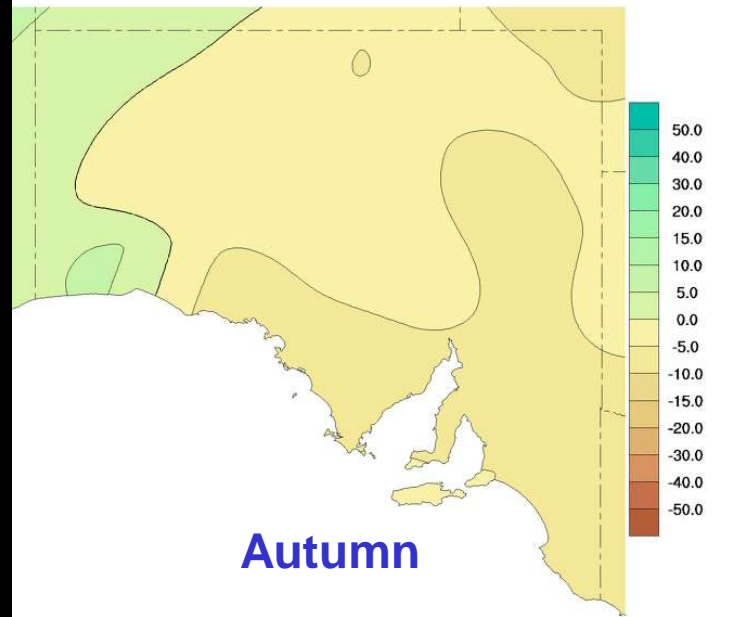
Trend in Summer Total Rainfall 1950-2008 (mm/10yrs)



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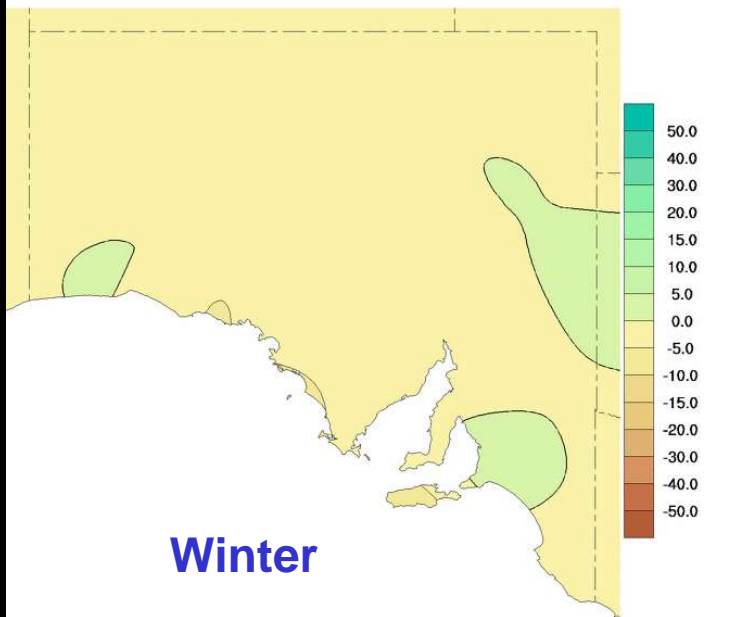
Trend in Autumn Total Rainfall 1950-2008 (mm/10yrs)



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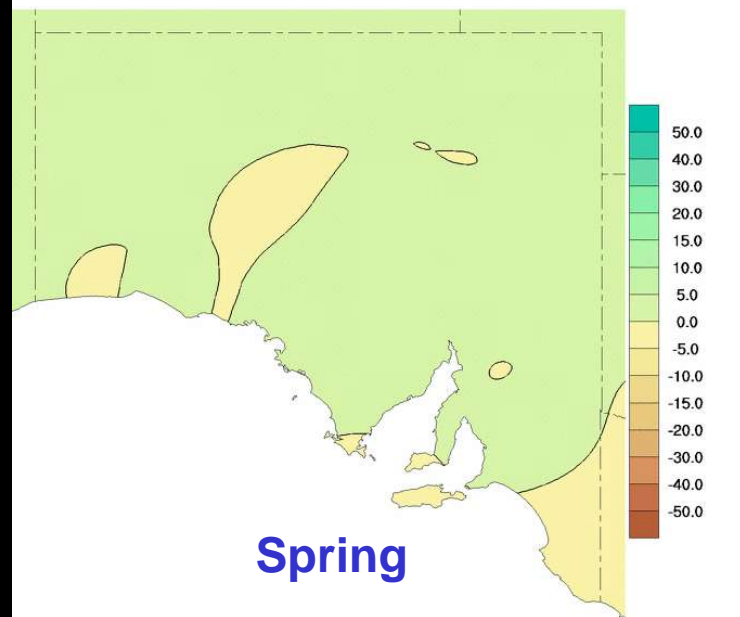
Trend in Winter Total Rainfall 1950-2008 (mm/10yrs)



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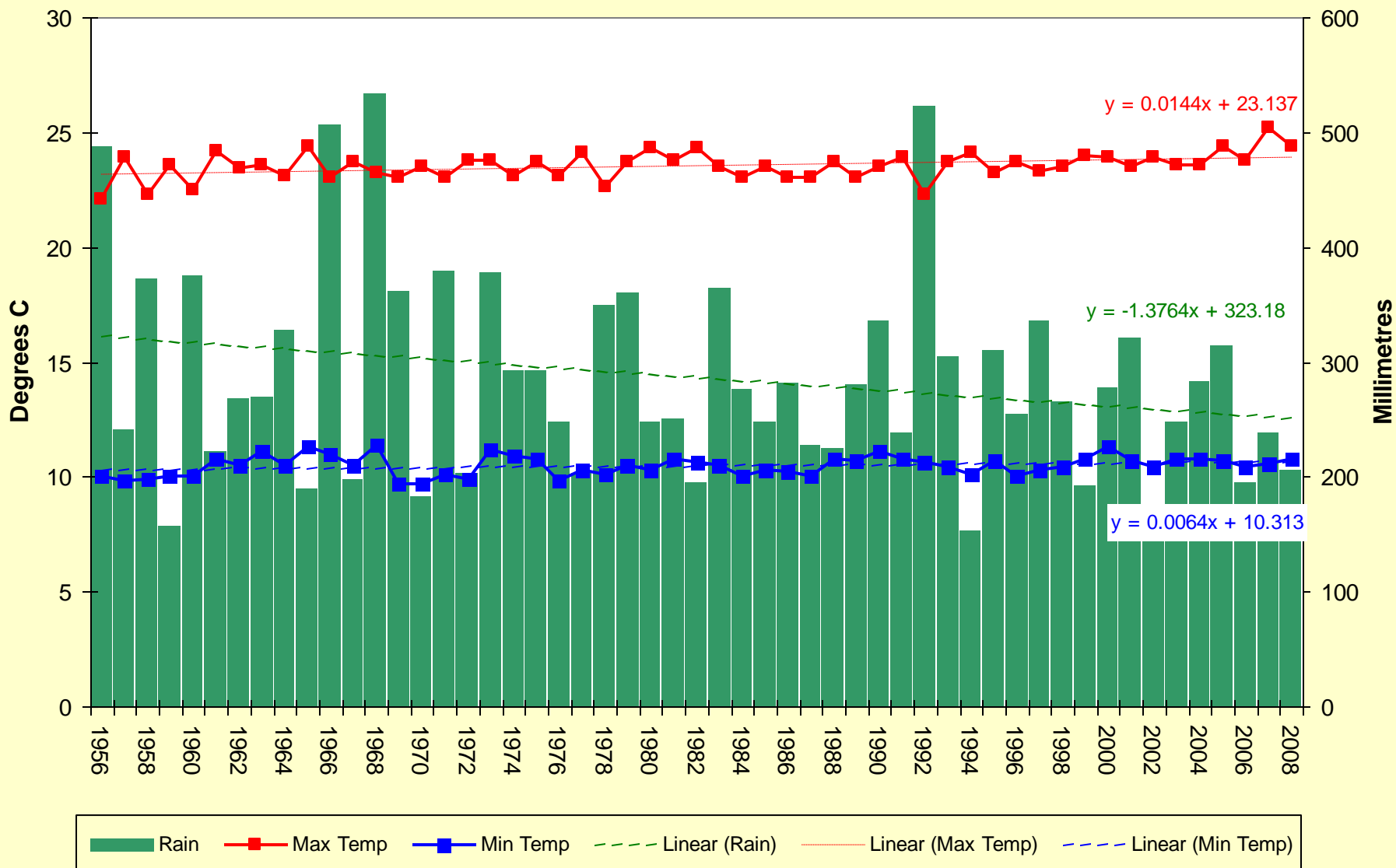
Trend in Spring Total Rainfall 1950-2008 (mm/10yrs)



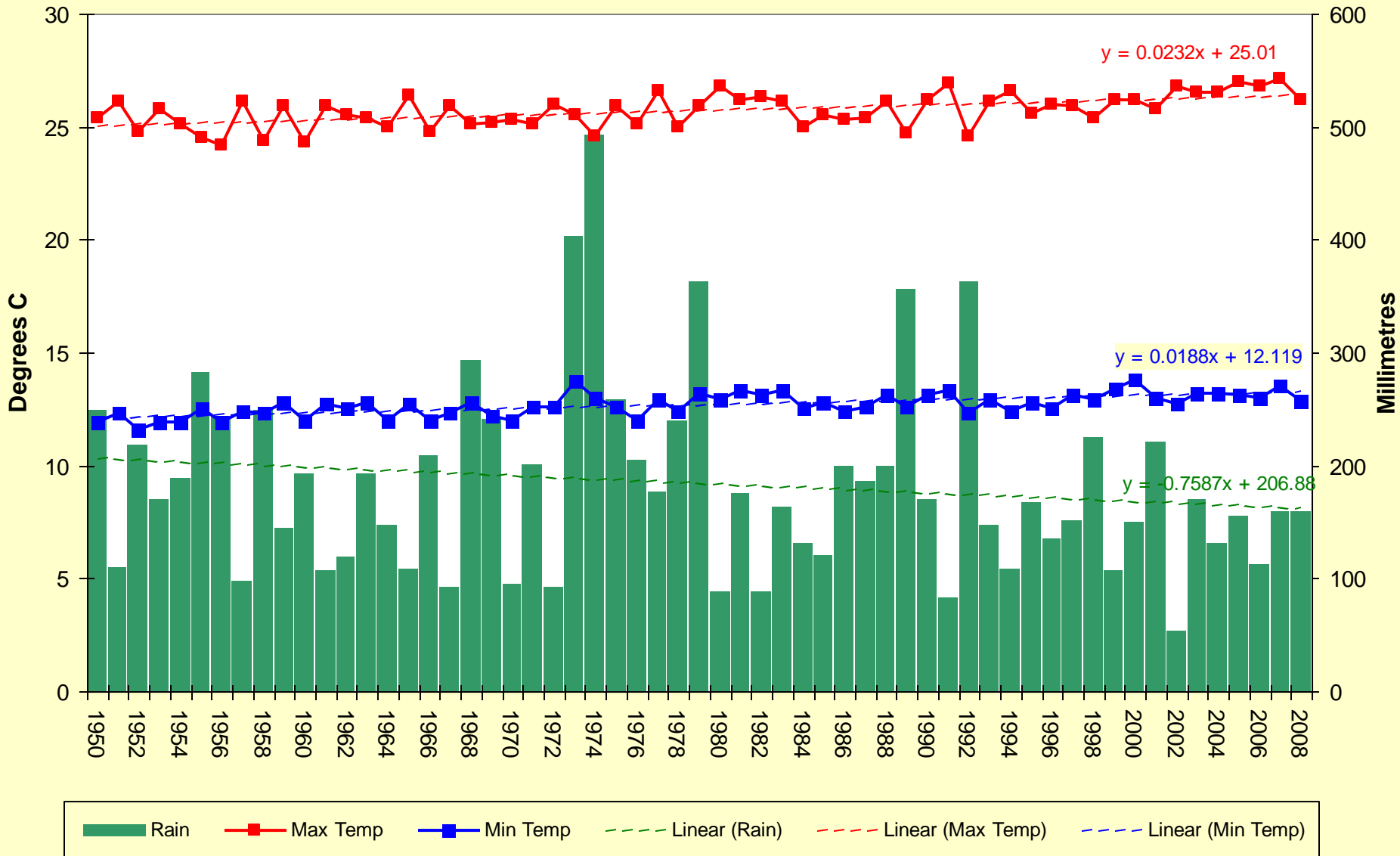
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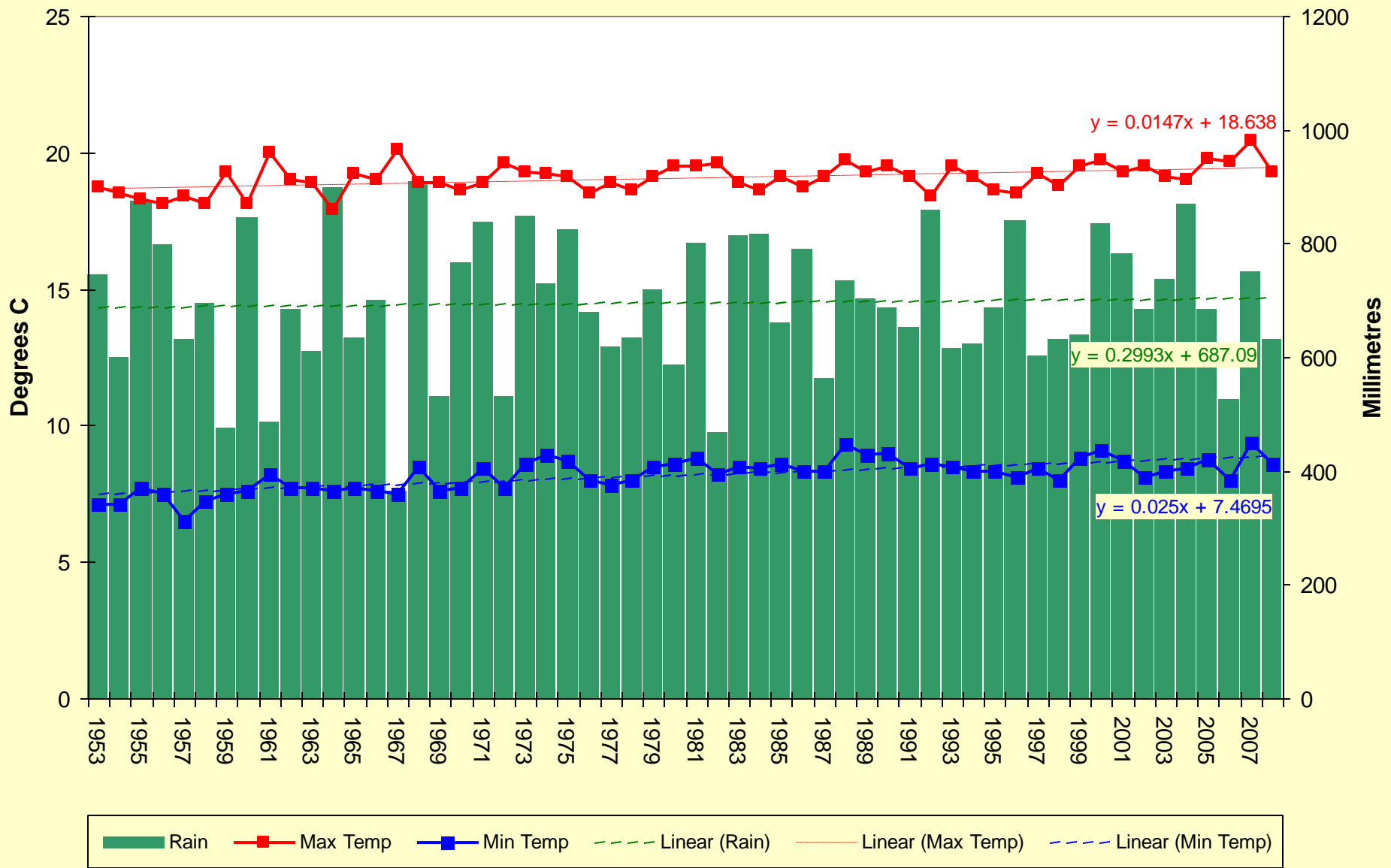
South Australian Station Climate Trends



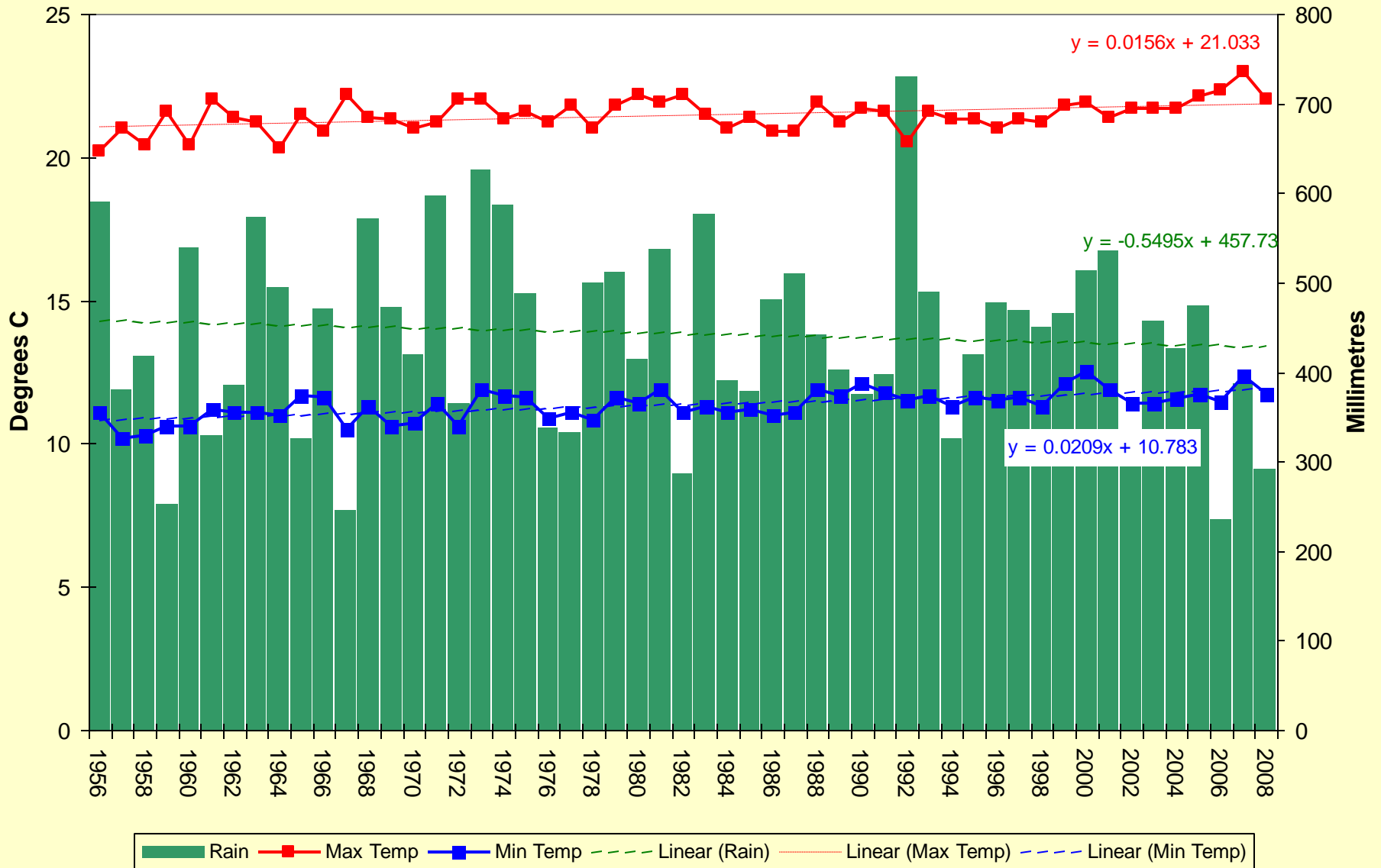
Temperature, rainfall trends, Ceduna : 1956 - 2008 (source BOM)



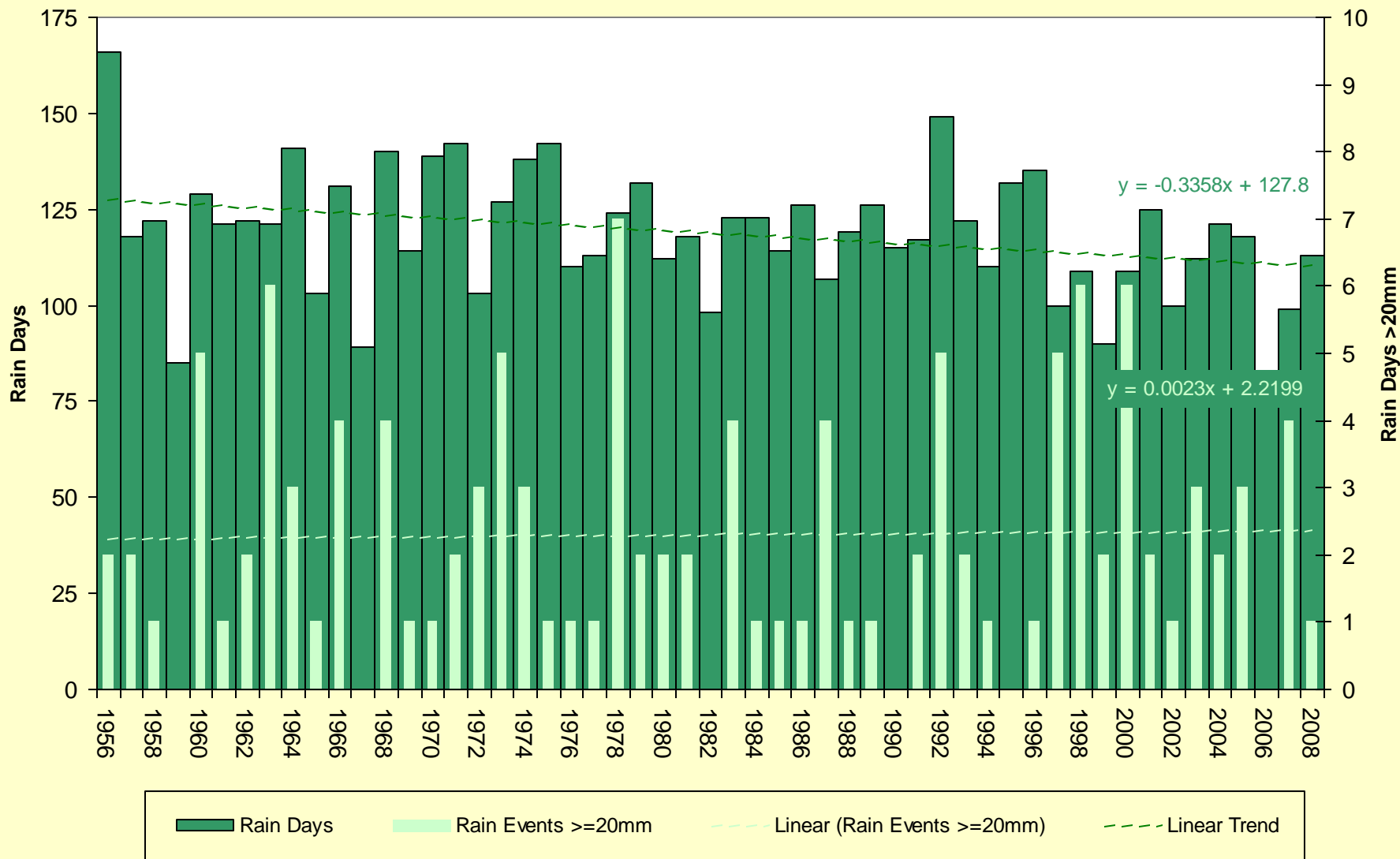
Temperature, rainfall trends, Woomera : 1950 - 2008 (source BOM)



Temperature, rainfall trends, Mt Gambier : 1953 - 2008 (source BOM)



Temperature, rainfall trends, Adelaide Airport : 1956 - 2008 (source BOM)

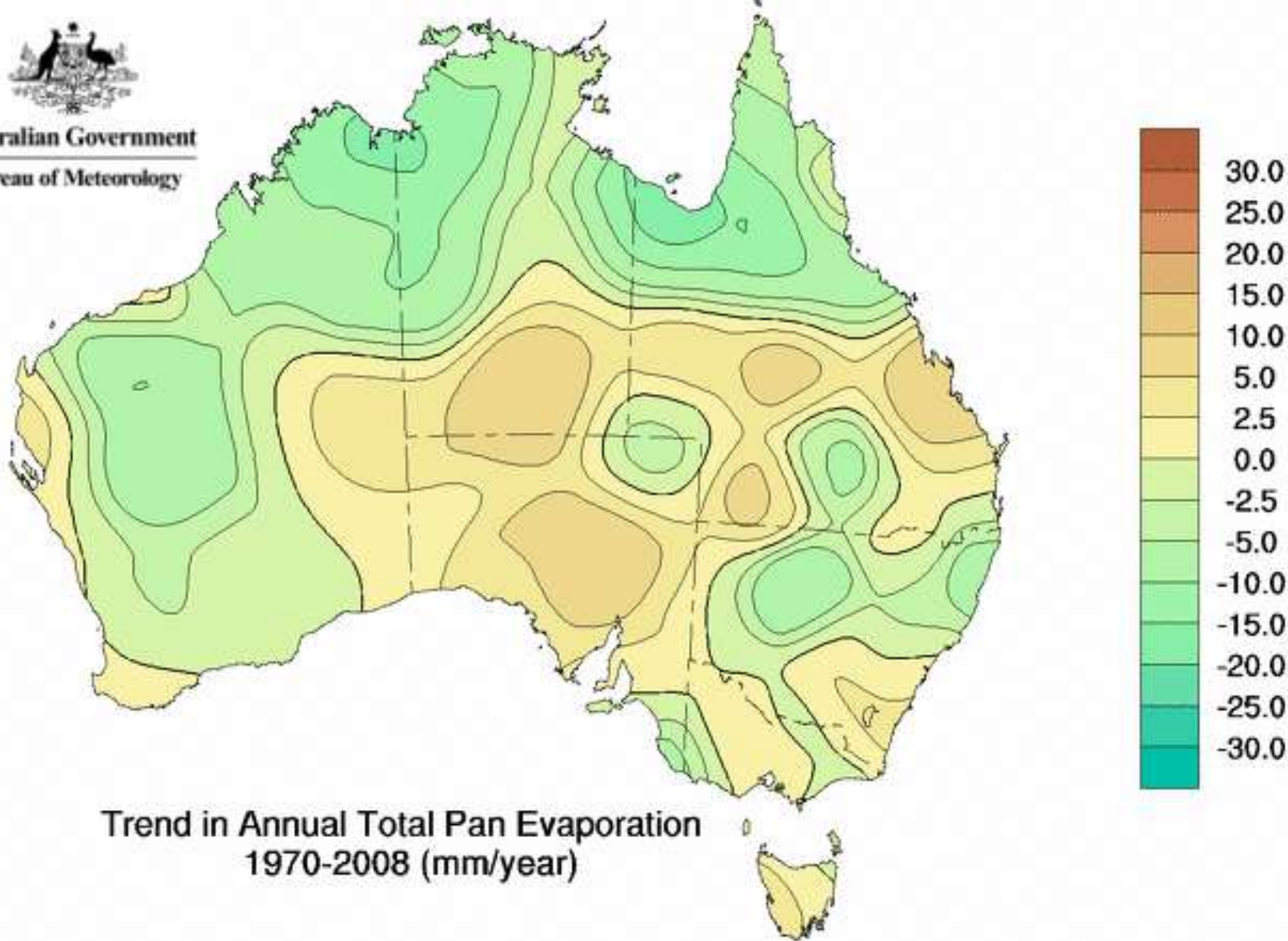


Rain Days vs Rain Events > 20mm, Adelaide Airport : 1956 - 2008 (source BOM)

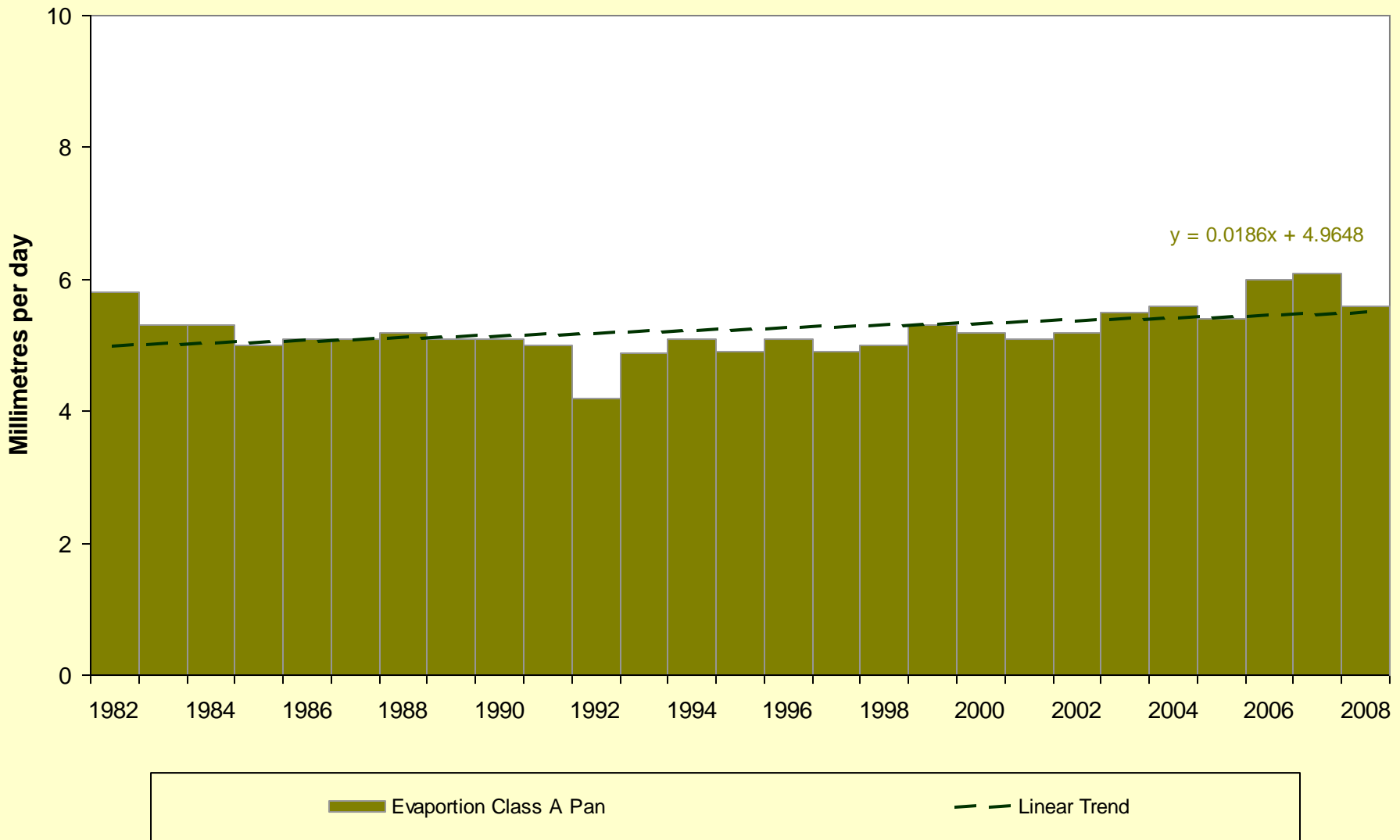
Evaporation Trends



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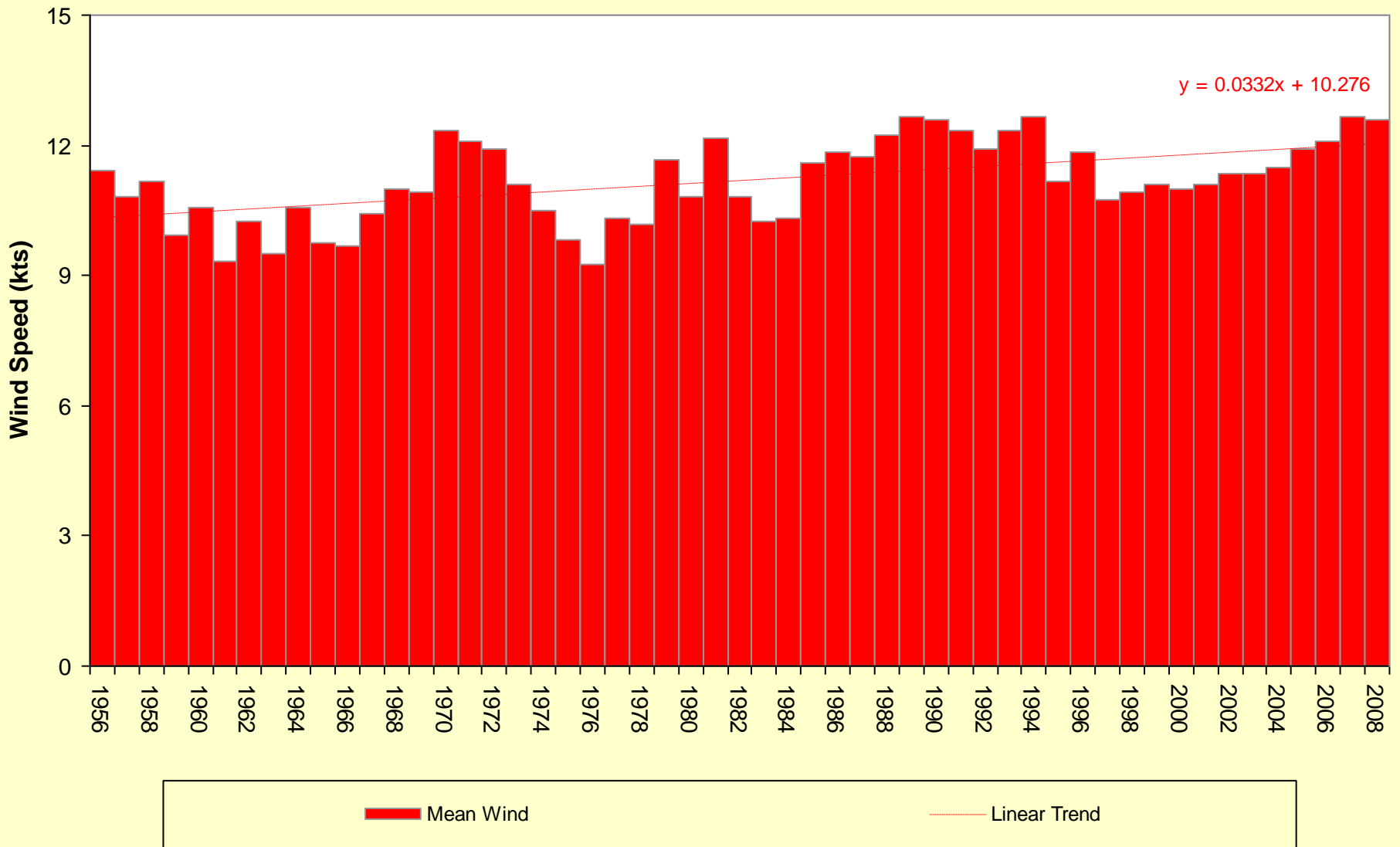


Spatial evaporation trends (mm/yr), Australia : 1970 - 2008 (source BOM)



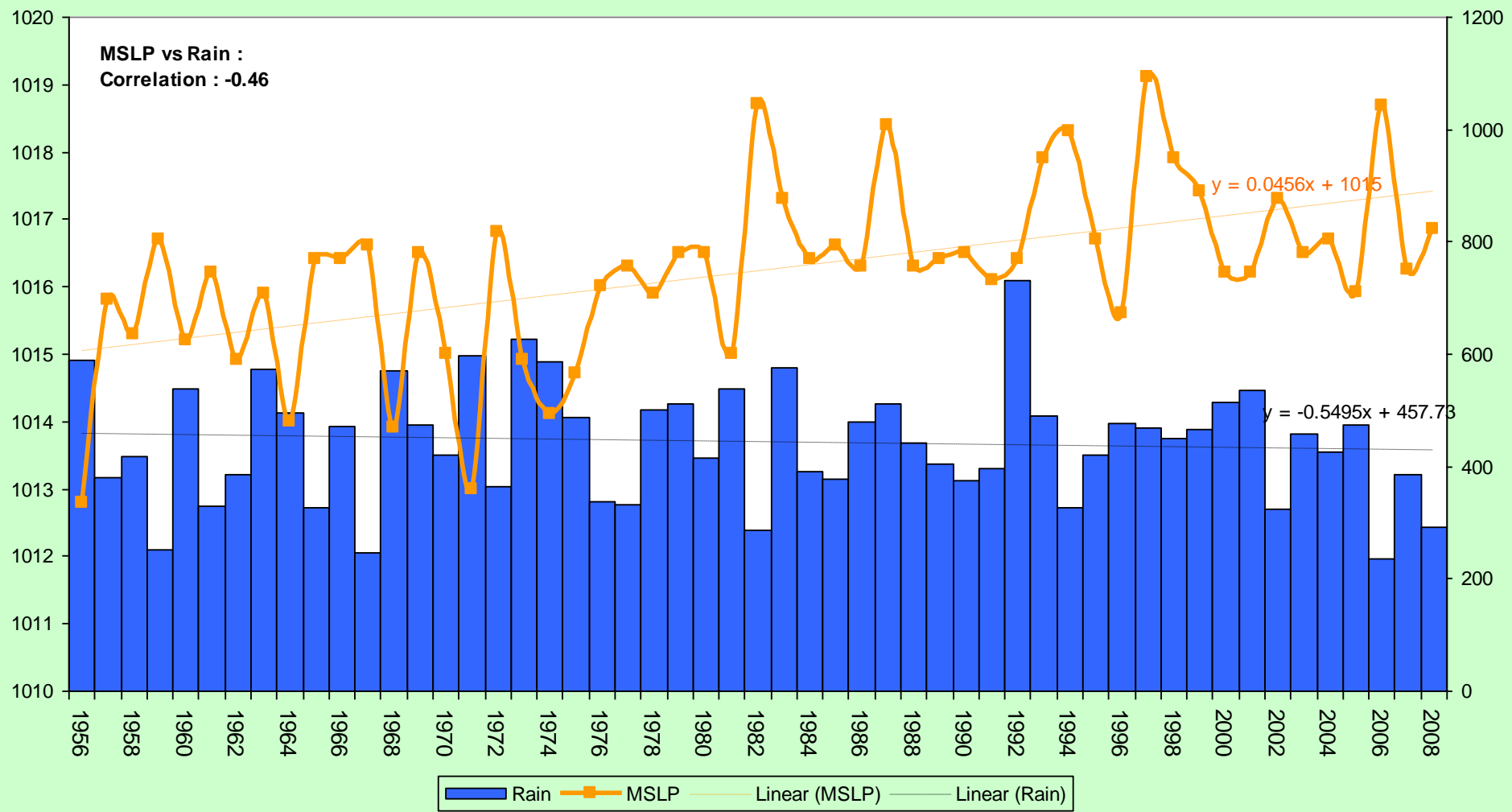
Evaporation trend, Adelaide Airport : 1982 - 2008 (source BOM)

Wind Speed Trends

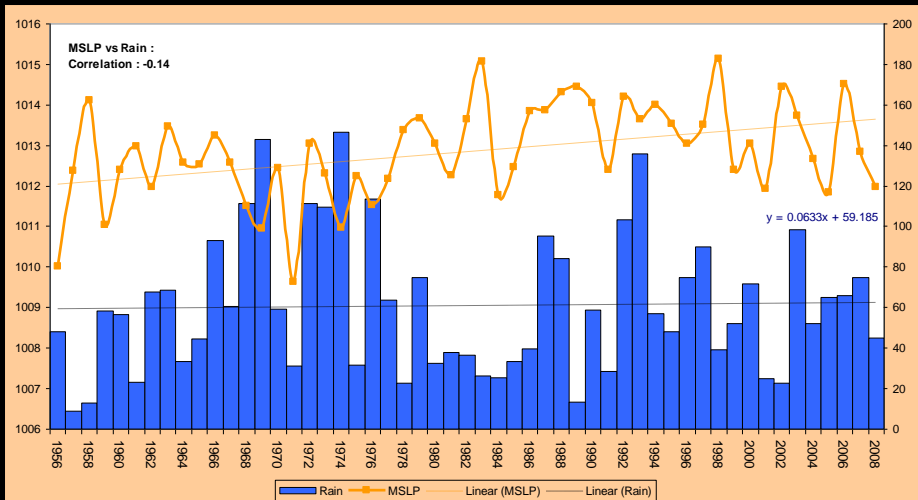


Wind Speed trend, Adelaide Airport : 1956 - 2008 (source BOM)

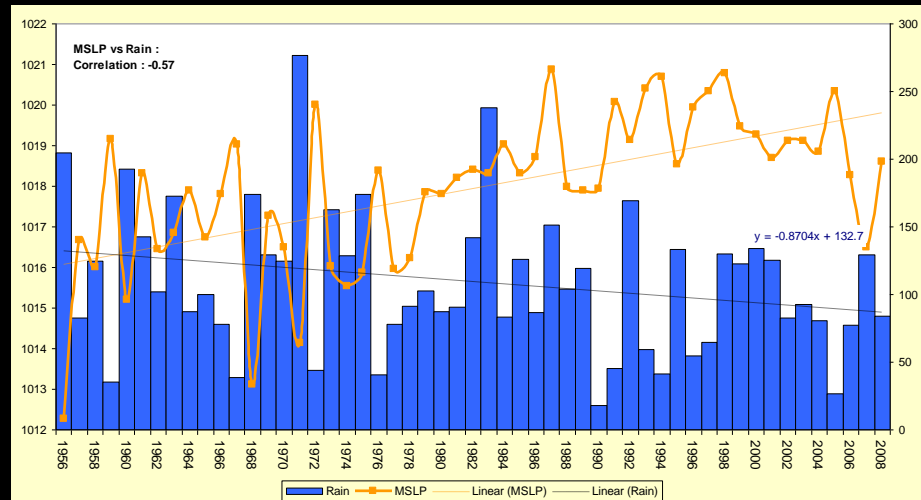
Atmospheric Air Pressure and Rainfall Trends



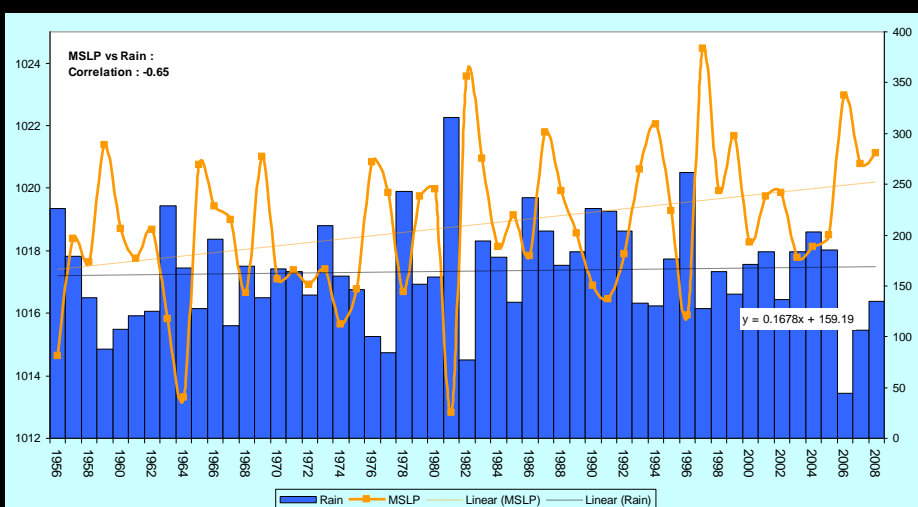
Adelaide Airport : Trend in MSLP vs Rainfall, 1956 - 2008



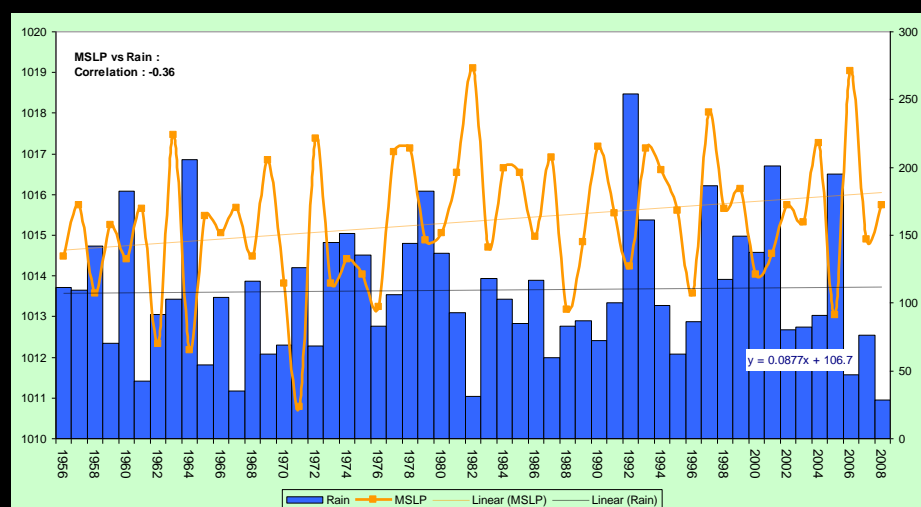
Summer



Autumn

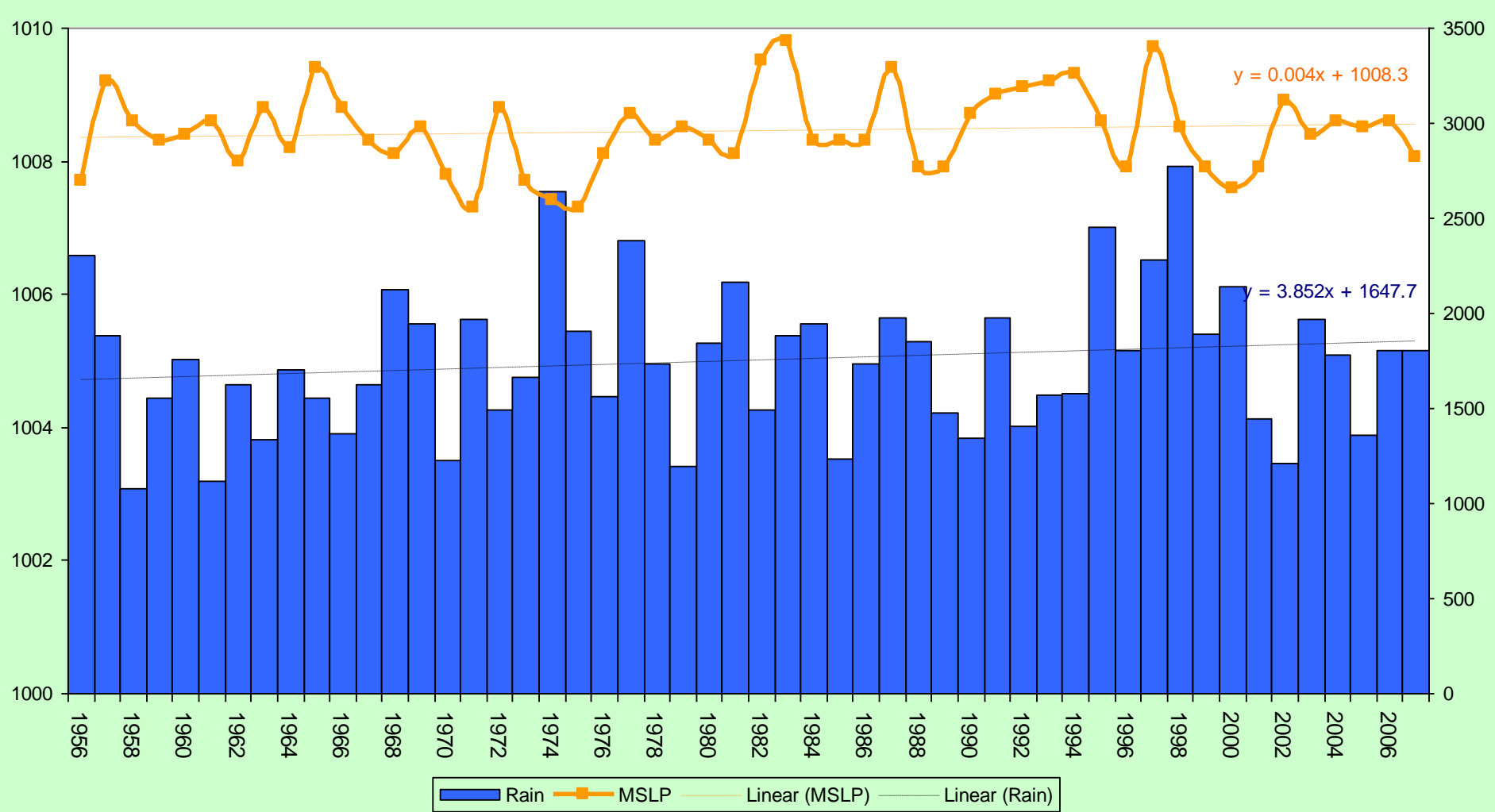


Winter

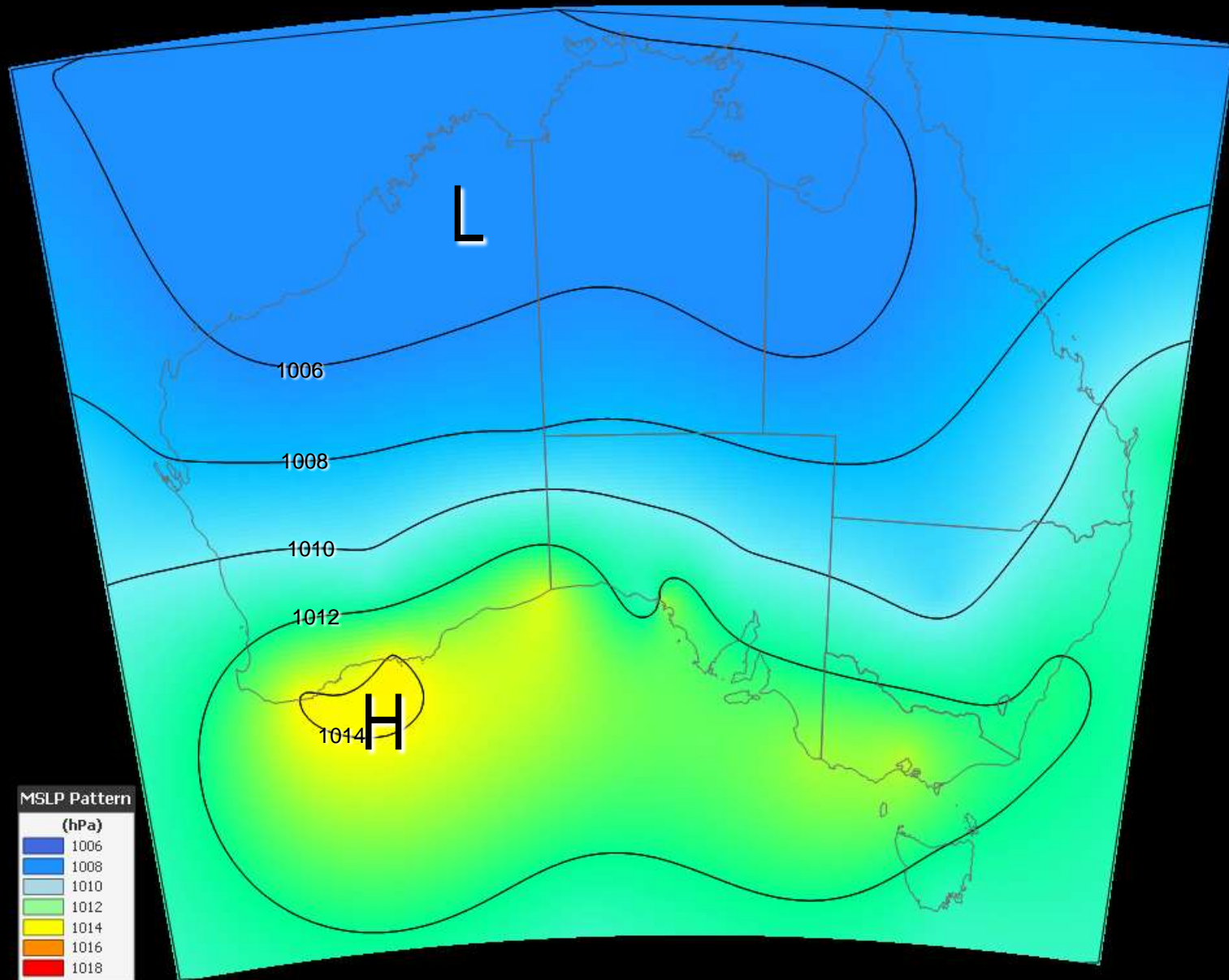


Spring

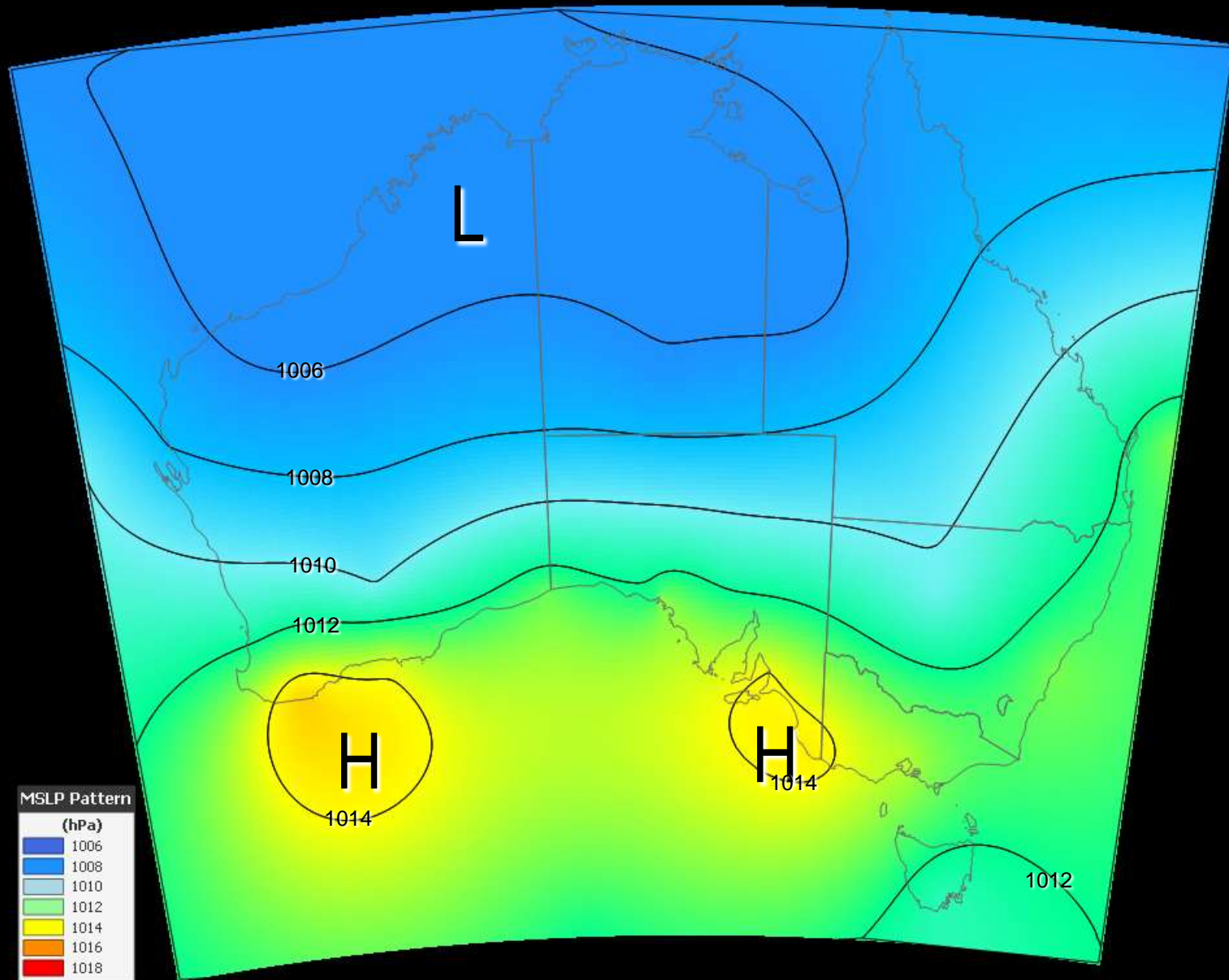
Adelaide Airport : Seasonal Trend in MSLP vs Rainfall, 1956 - 2008



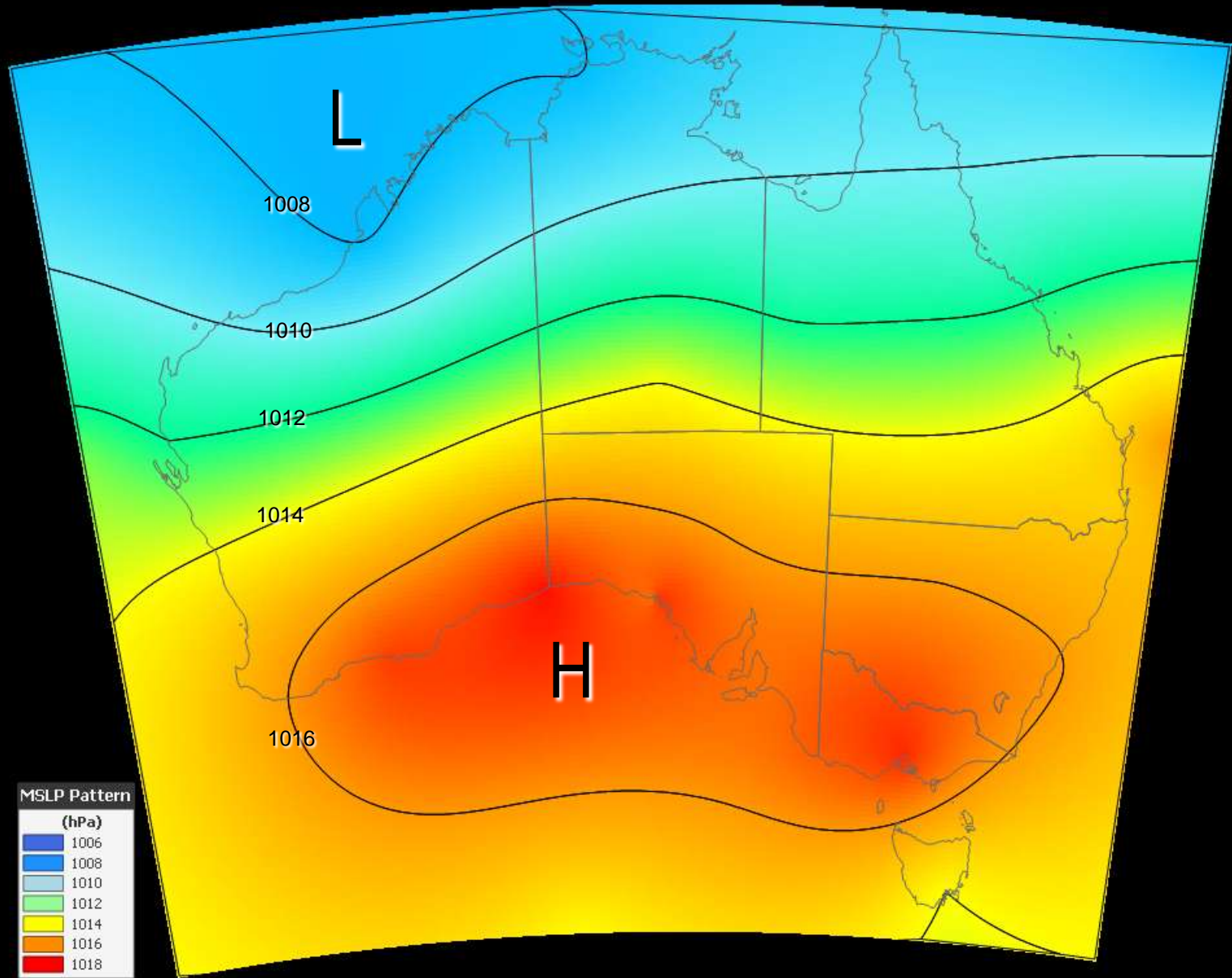
Darwin : Trend in MSLP vs Rainfall, 1956 - 2007



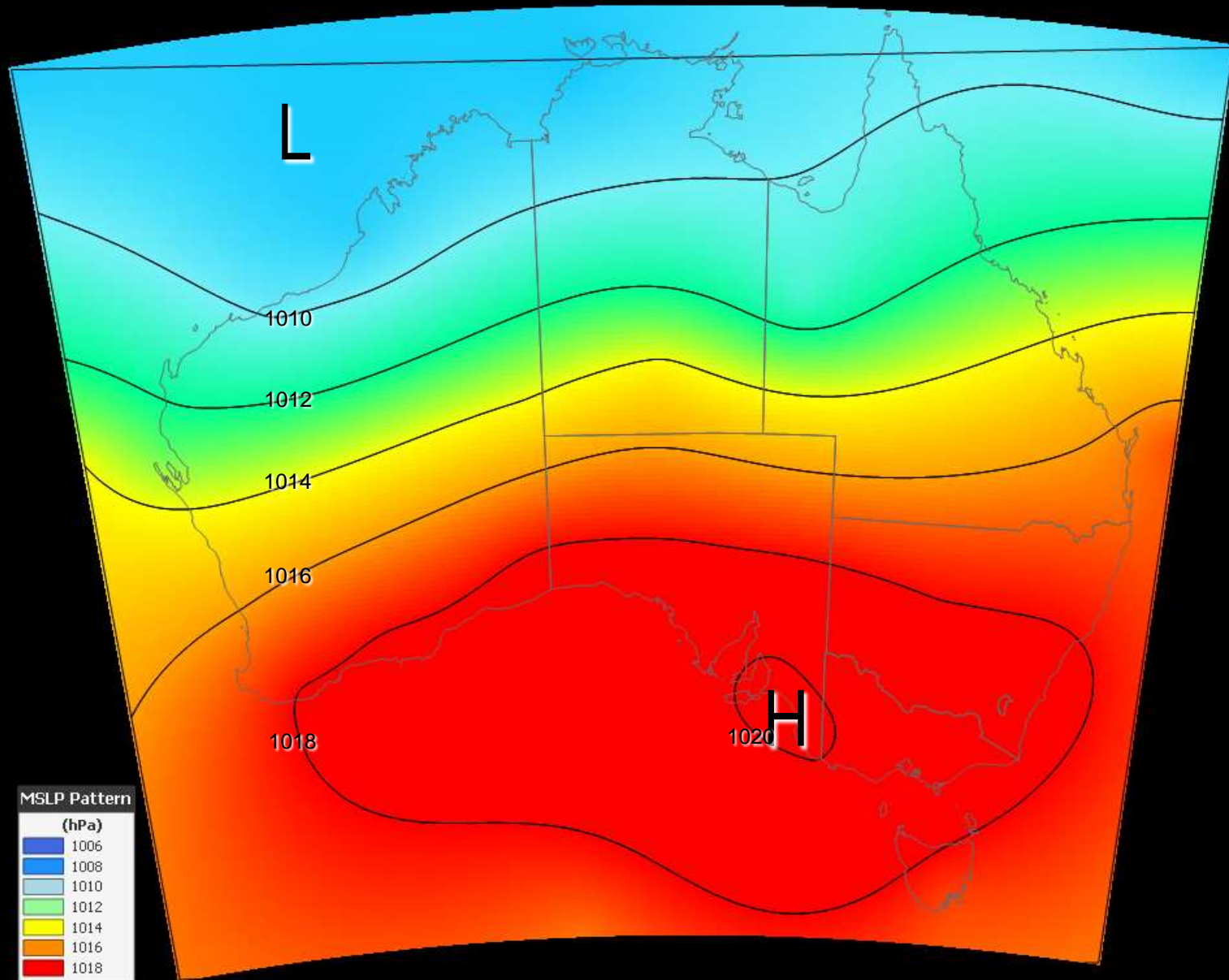
Summer MSLP Pattern, 1956



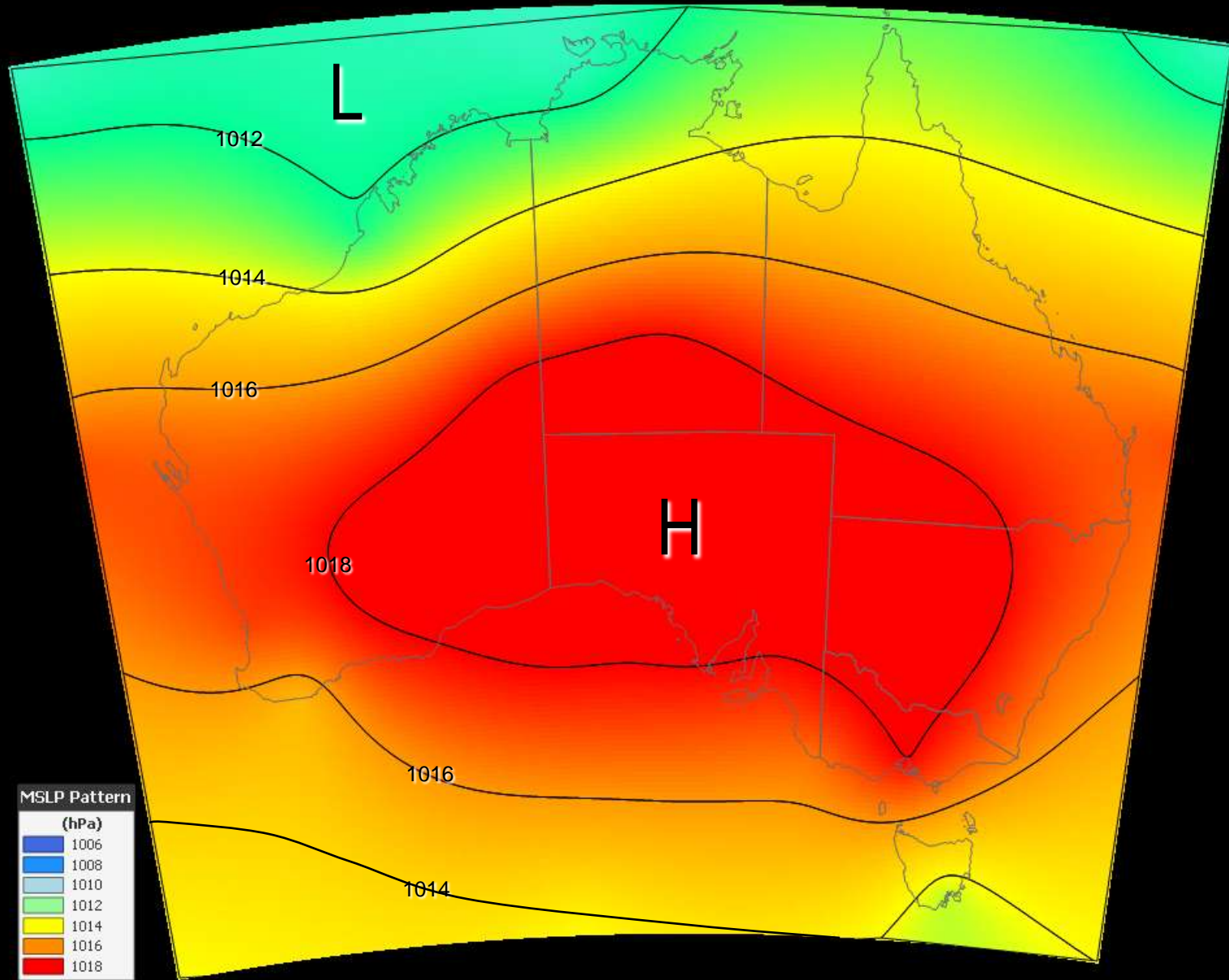
Summer MSLP Pattern, 2007



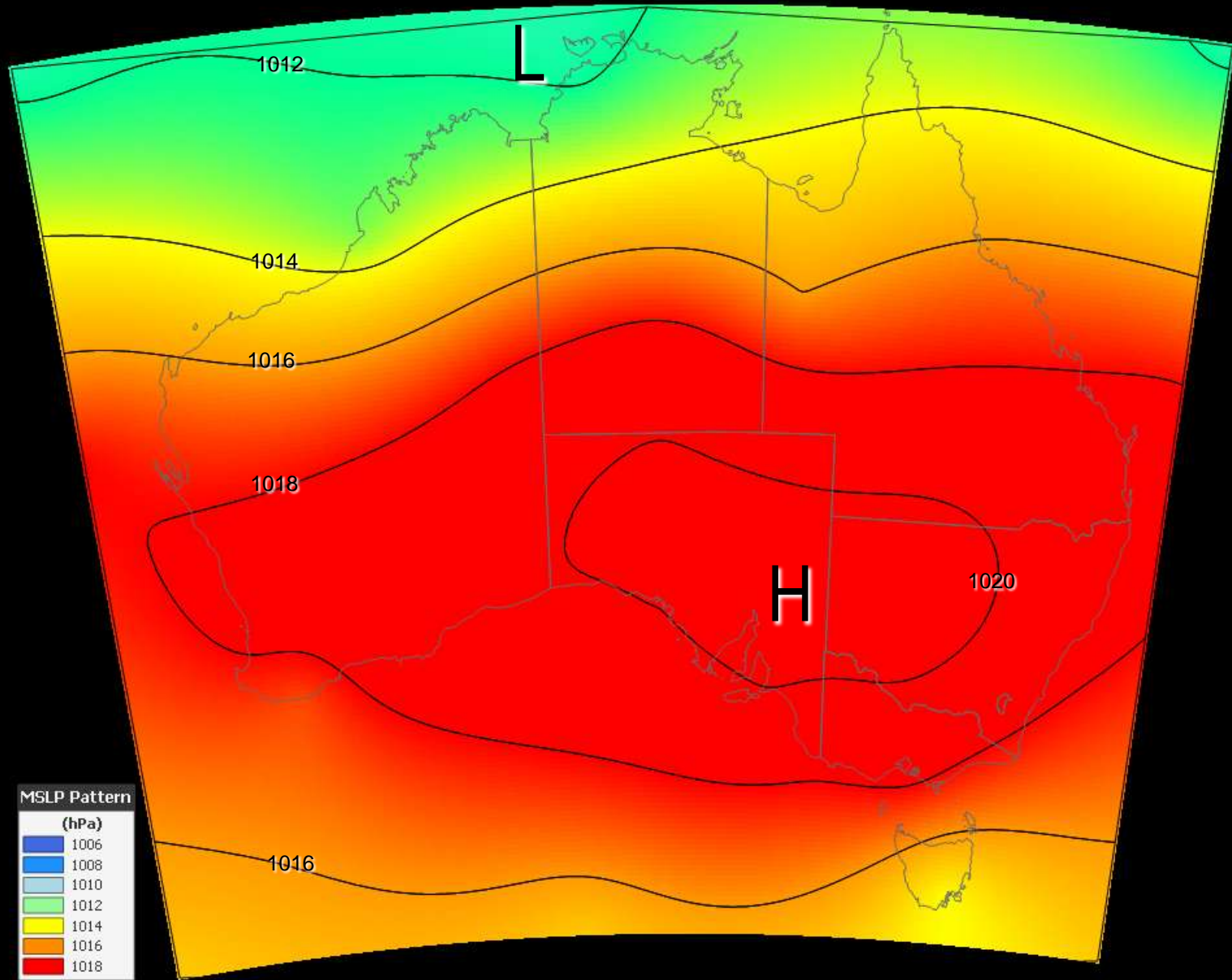
Autumn MSLP Pattern, 1956



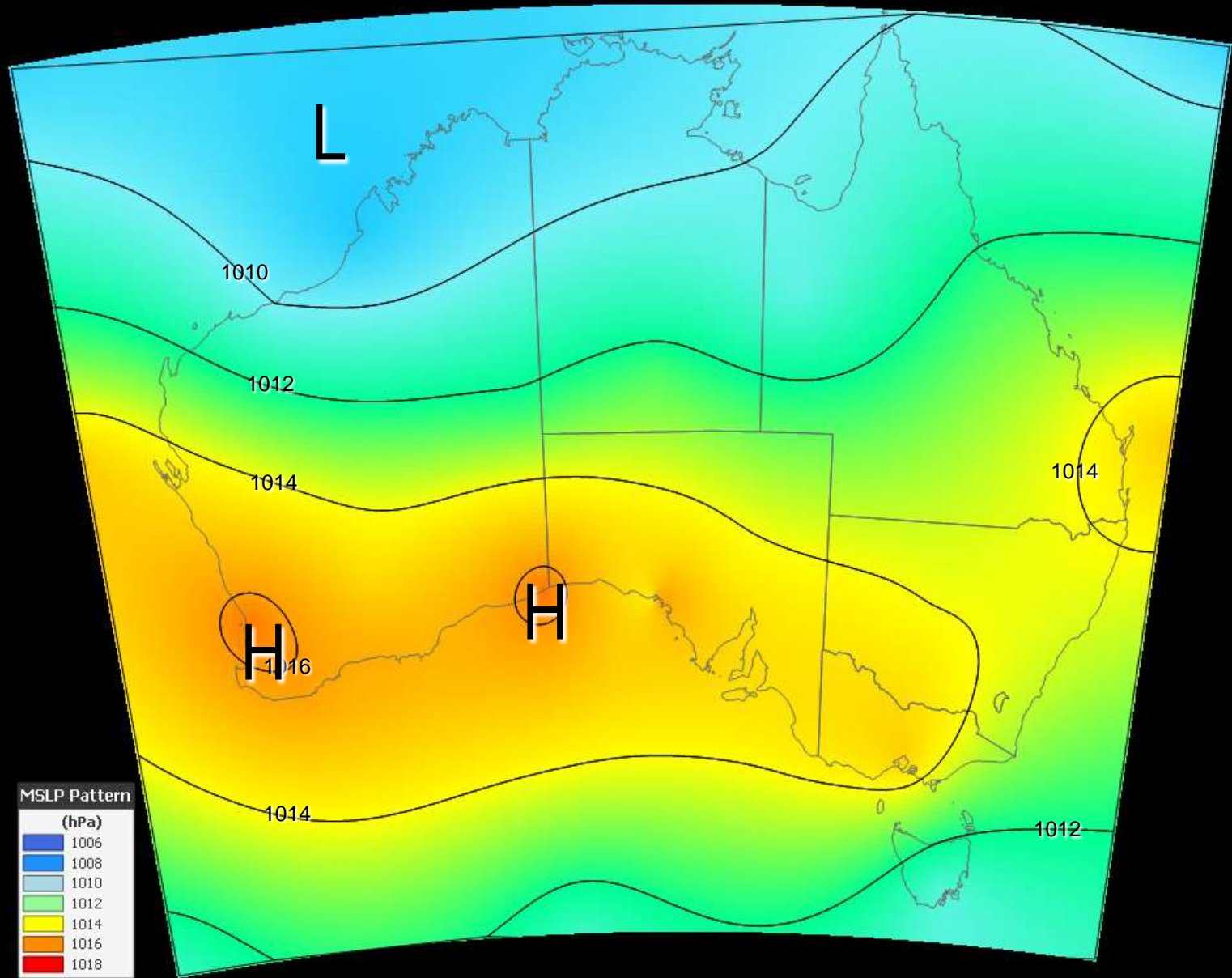
Autumn MSLP Pattern, 2007



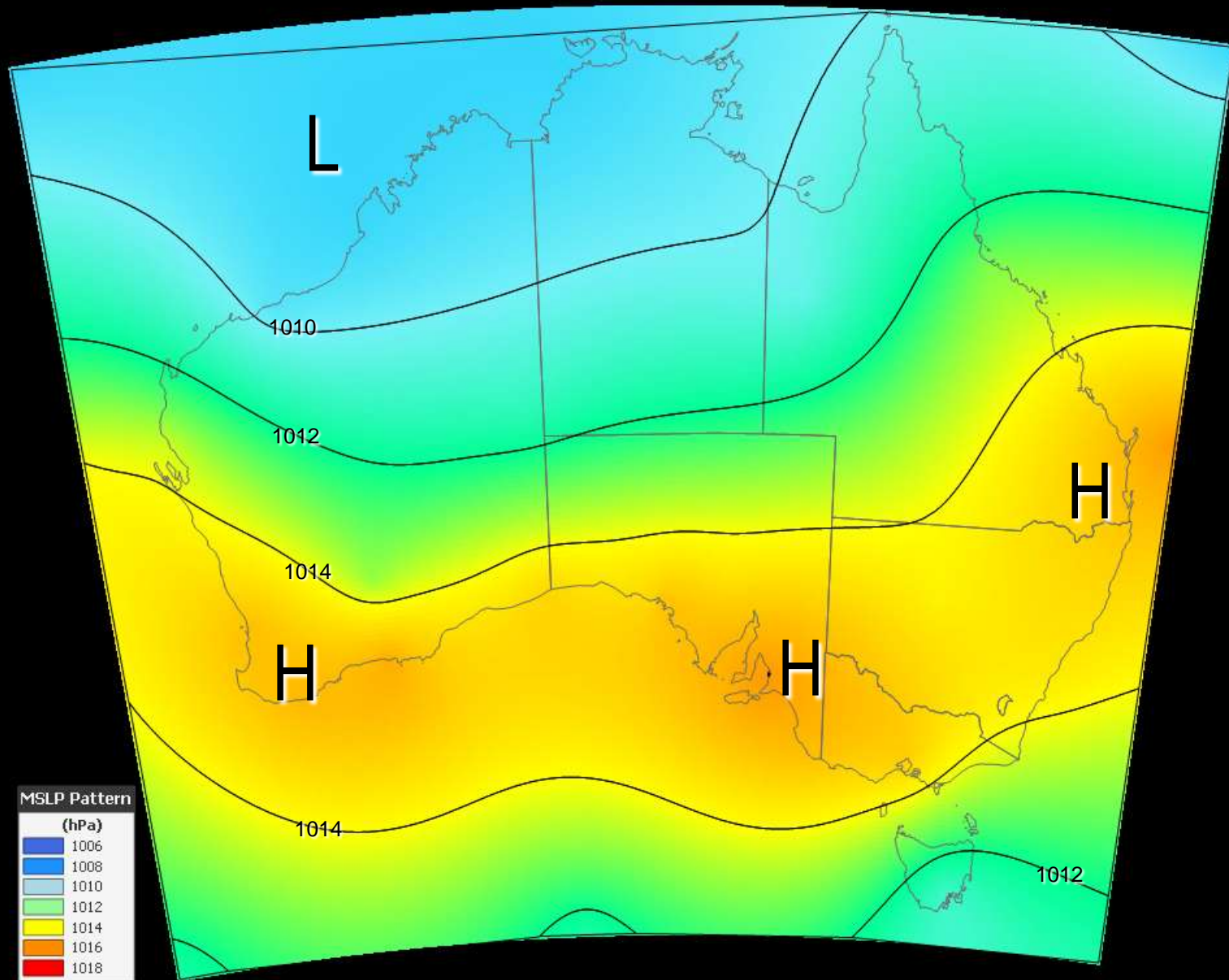
Winter MSLP Pattern, 1956



Winter MSLP Pattern, 2007



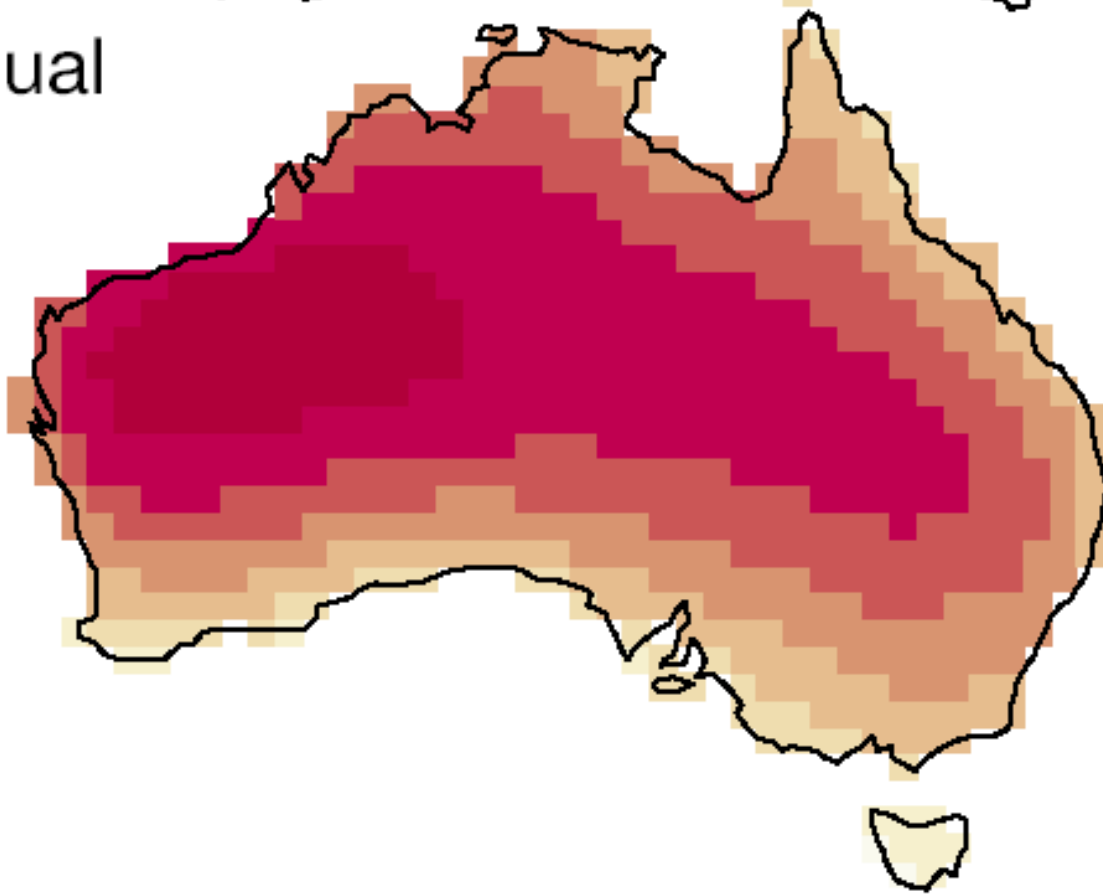
Spring MSLP Pattern, 1956



Spring MSLP Pattern, 2007

Climate Predictions

Annual

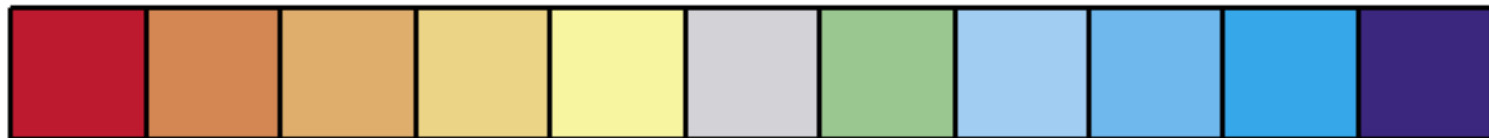
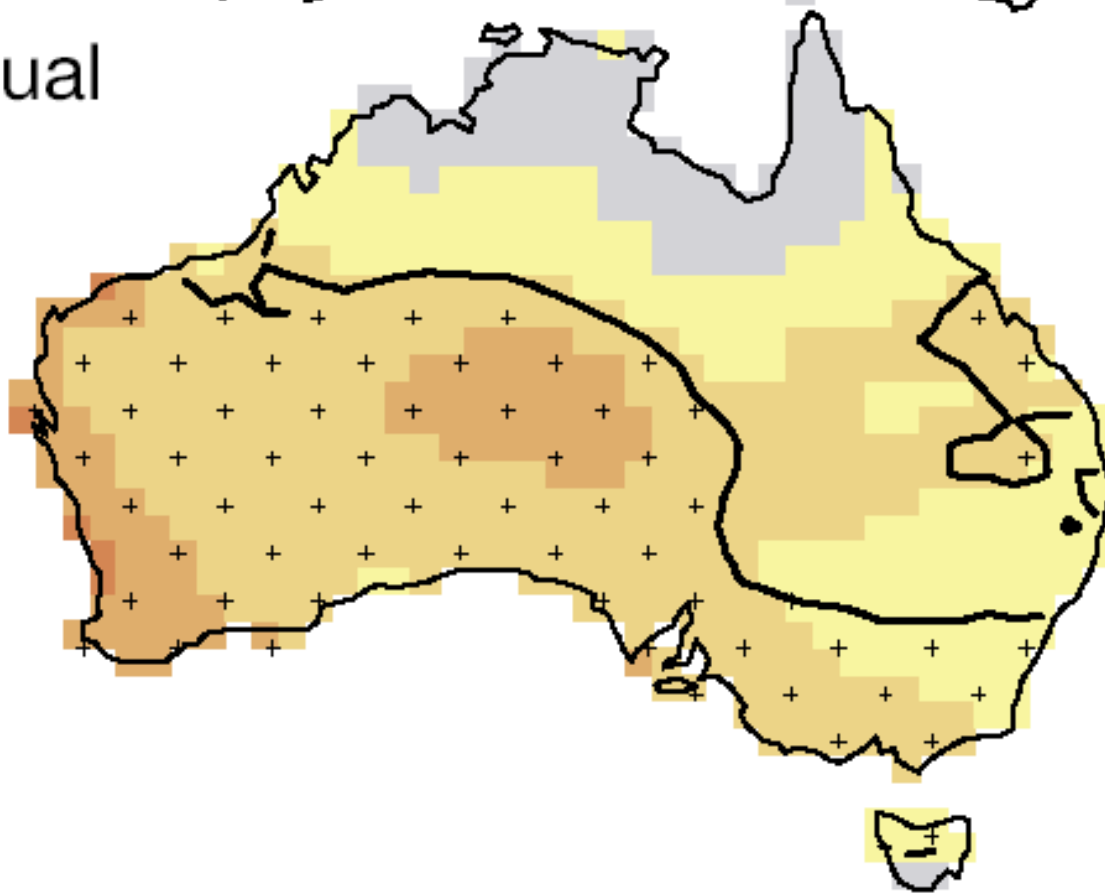


.5 .6 .7 .8 .9 1 1.1 1.2 1.3

Best estimate of warming ($^{\circ}\text{C}$) for 2030 relative to 1990

(source Climate Change in Australia : CSIRO, Bureau of Meteorology, 2007)

Annual

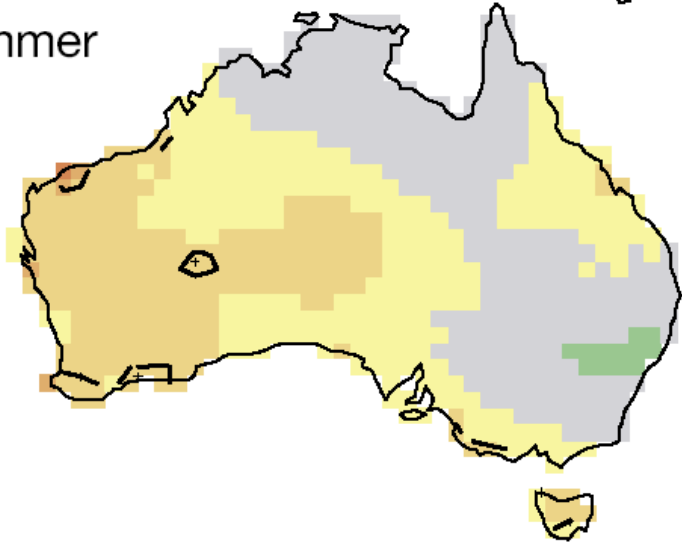


-9 -7 -5 -3 -1 1 3 5 7 9

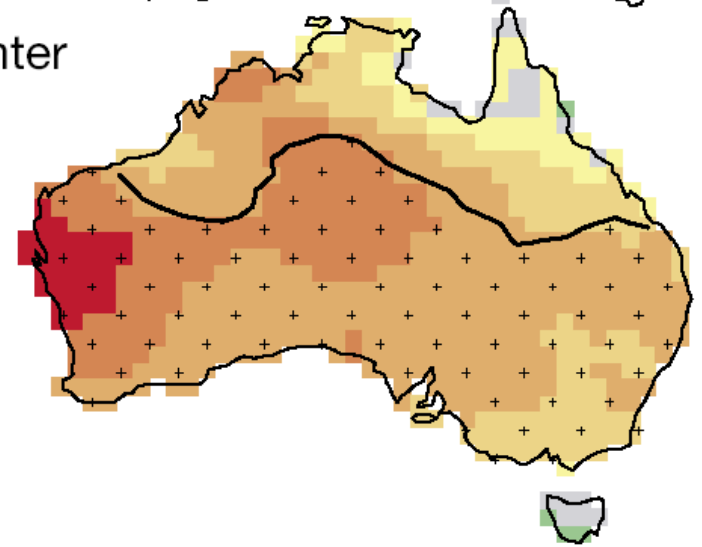
Best estimate of rainfall change (%) for 2030 relative to 1990

(source Climate Change in Australia : CSIRO, Bureau of Meteorology, 2007)

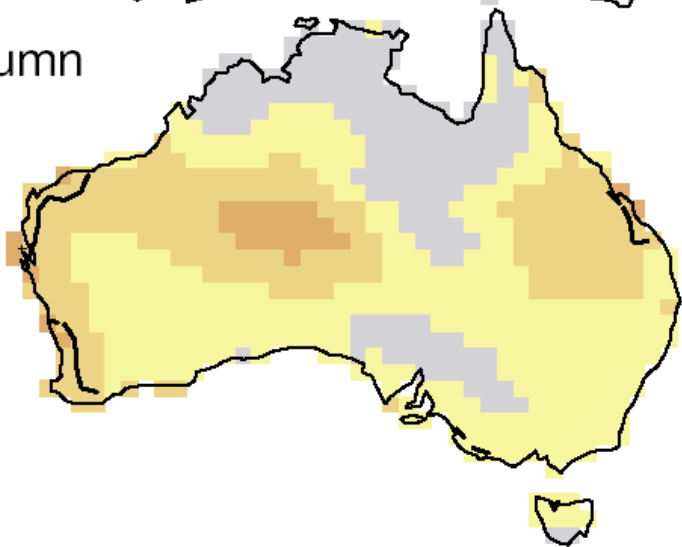
Summer



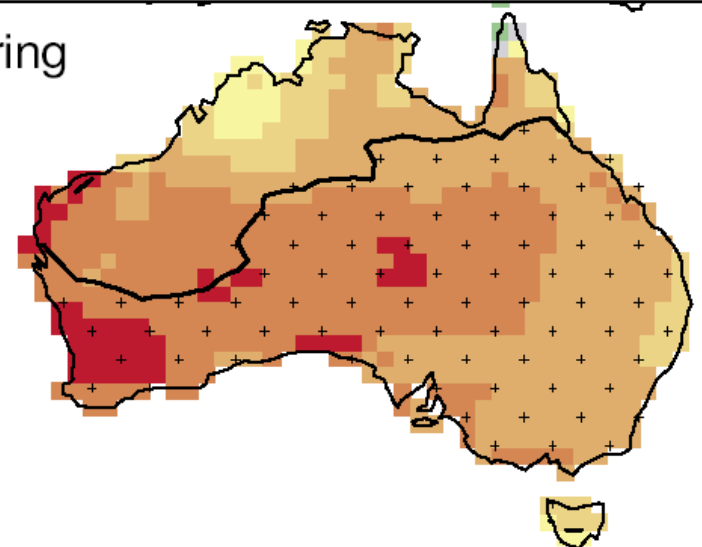
Winter



Autumn



Spring

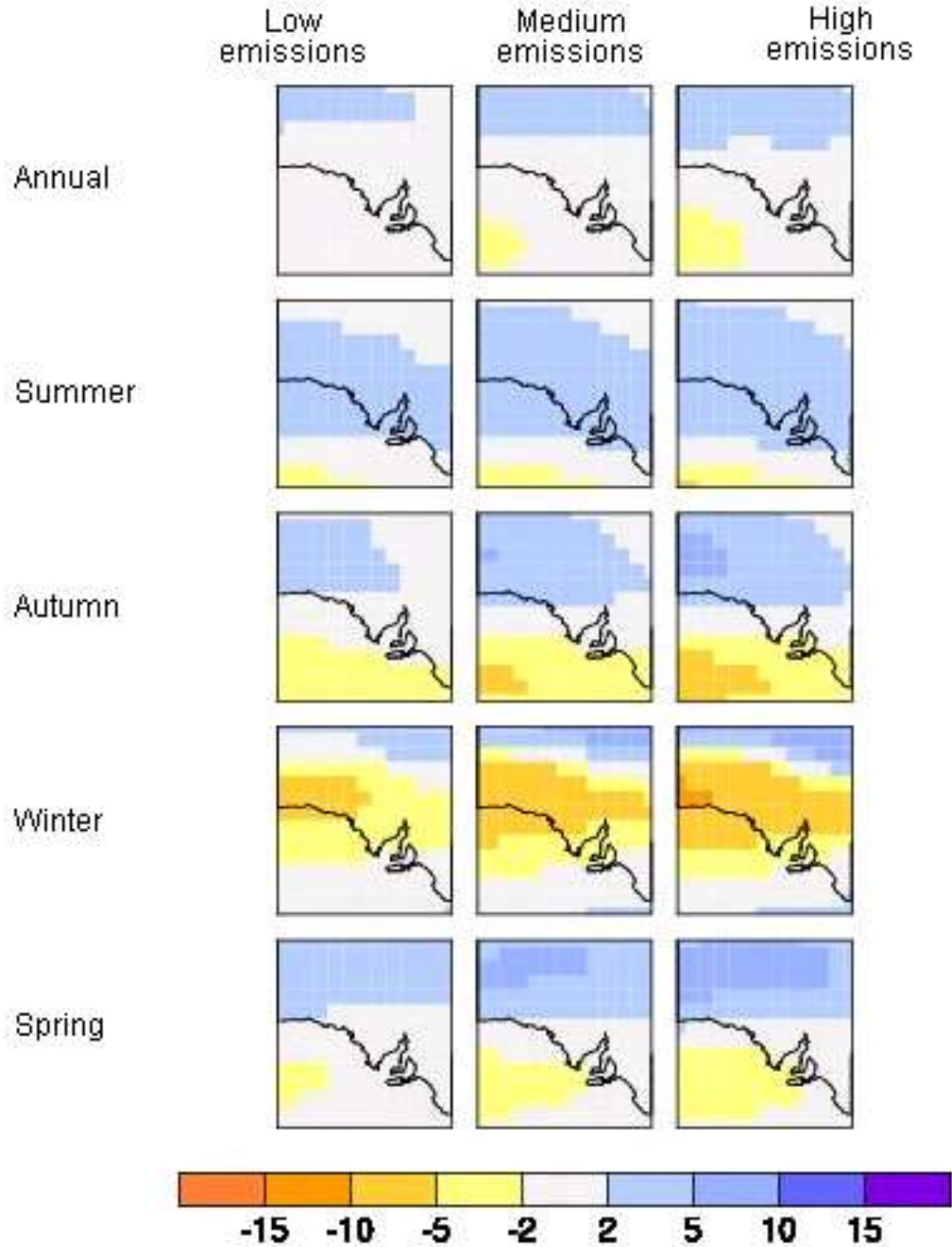


Best estimate of seasonal rainfall change (%) for 2030 relative to 1990

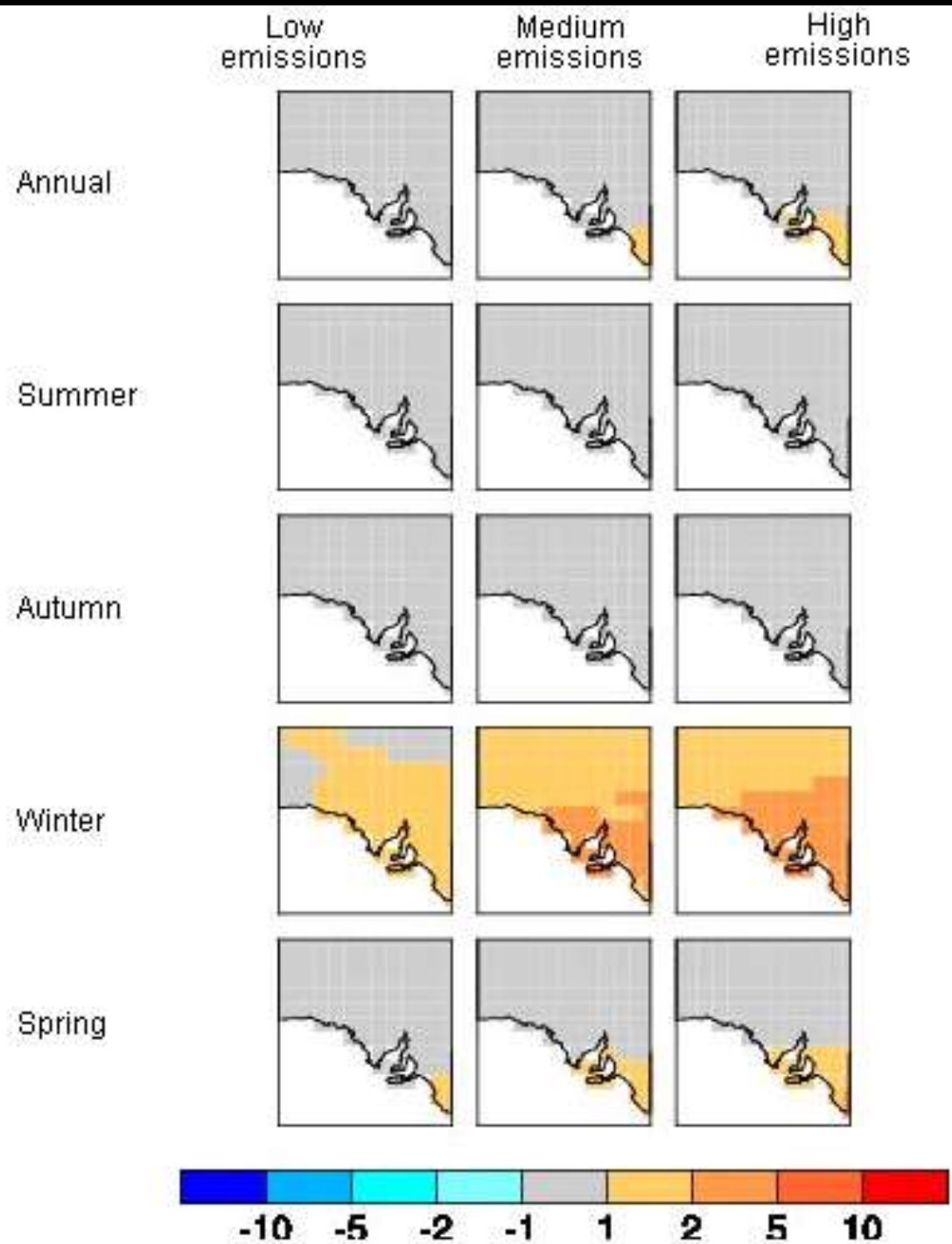
(source Climate Change in Australia : CSIRO, Bureau of Meteorology, 2007)

Predicted Changes in Wind Speed in SA (%) by 2030

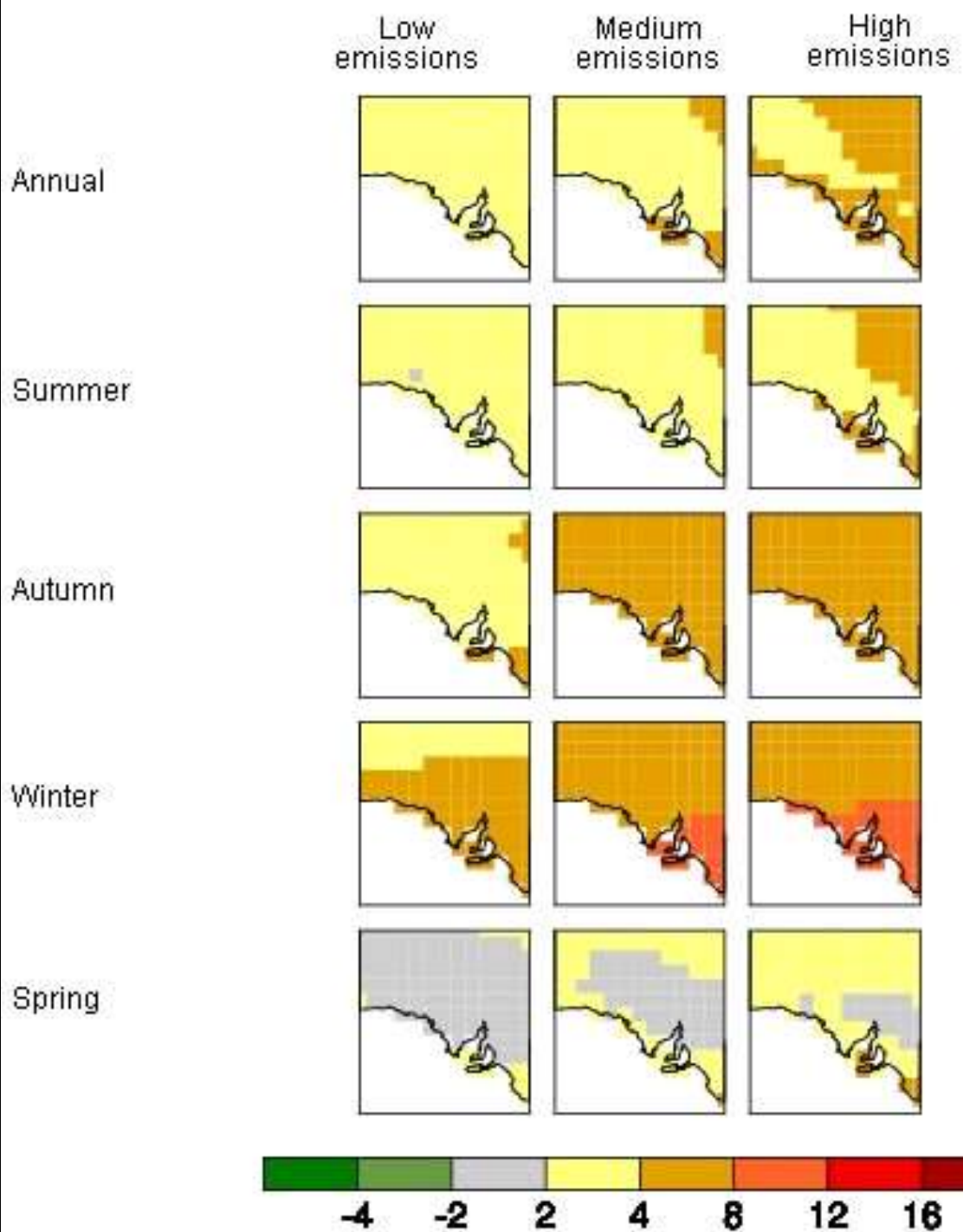
(source Climate Change in Australia : CSIRO, Bureau of Meteorology, 2007)



Predicted Changes in Sunshine in SA (%)

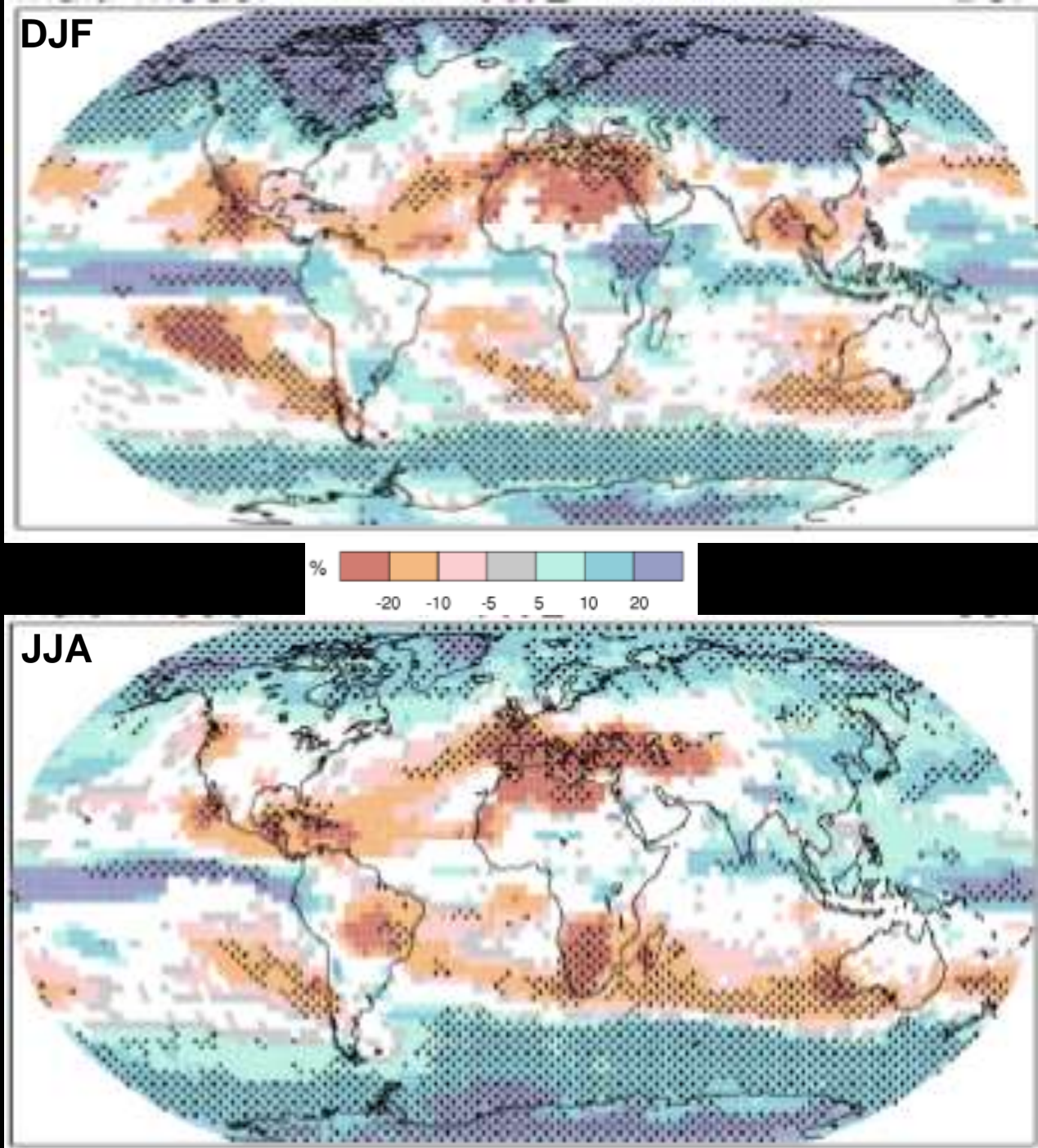


Predicted Changes in
Potential Evaporation in
SA (%)



Projected Pattern of
Precipitation Change ;
Year 2100

IPCC 4th Assessment



Thank You