

DAFF climate discussion
Biloela
29/07/10

- Our climate is always changing.
- Our climate is influenced by both natural variability and human induced environmental changes on differing time scales

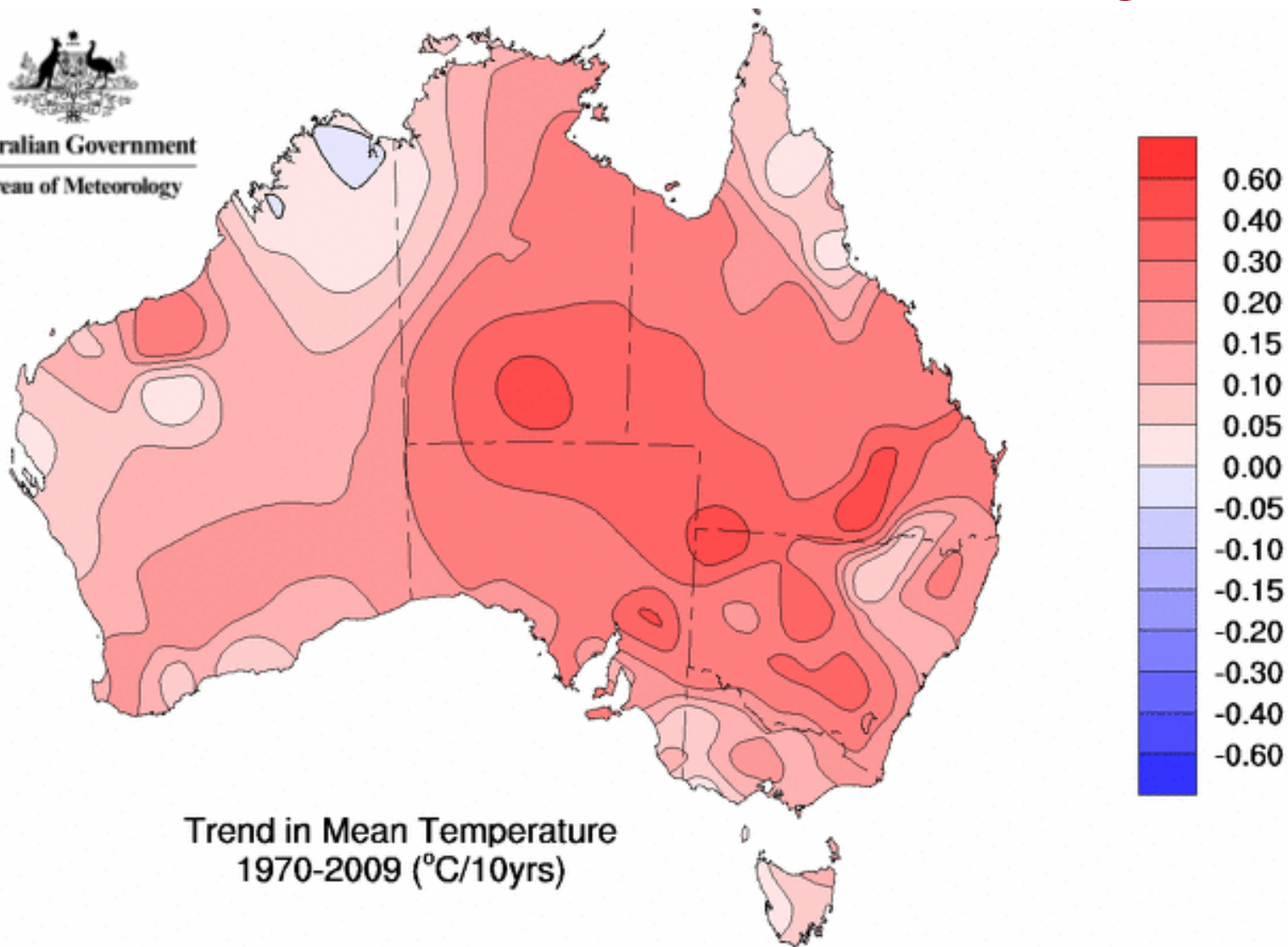
Natural Variability Includes

- The annual cycle
- El Nino/Southern Oscillation, Pacific Decadal Oscillation, North Atlantic Oscillation
- Volcanic eruptions
- Fluctuations in solar output
- Orbital Cycles
- Ocean and Polar Ice Variations

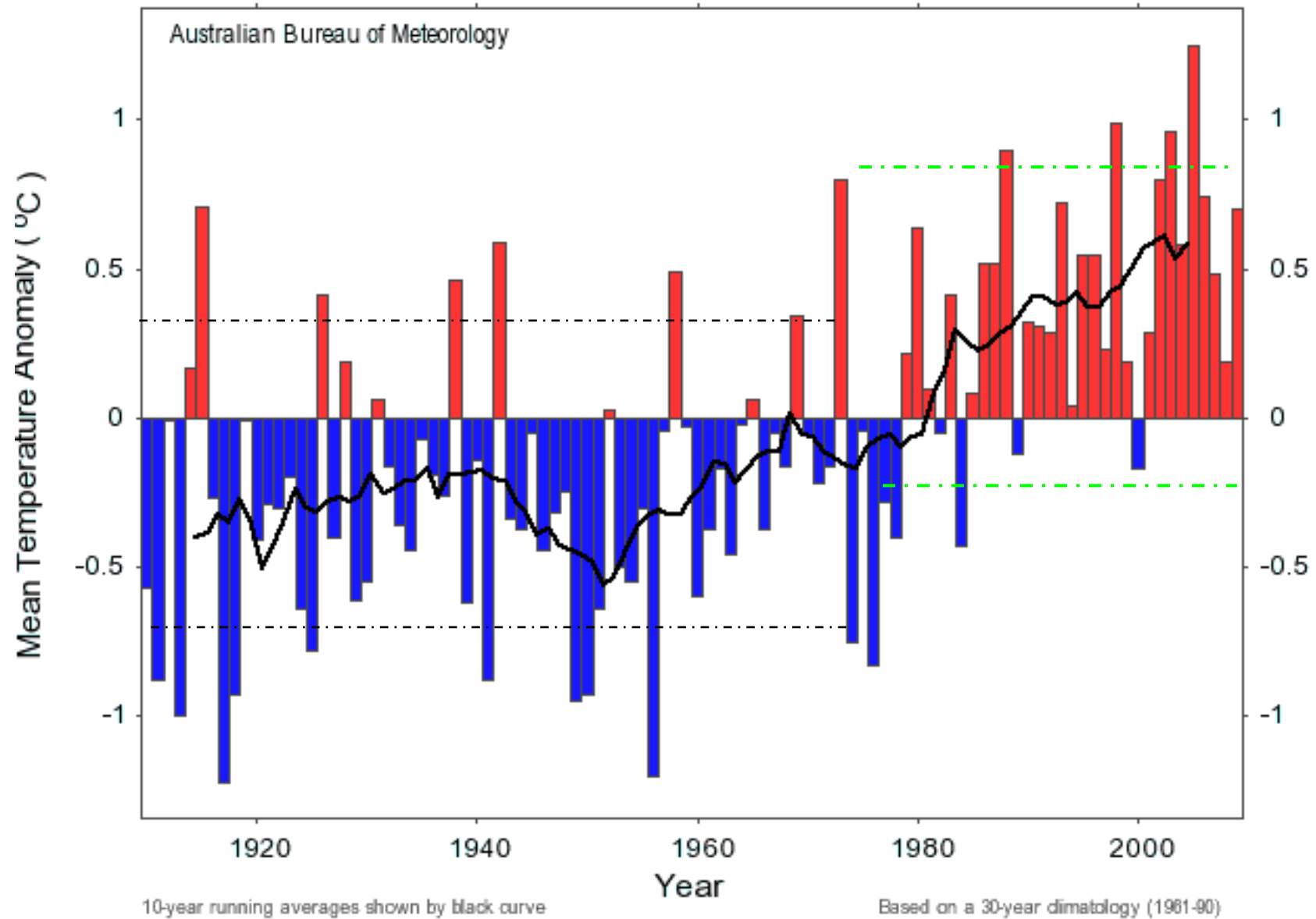
Human Influences Include

- Changing land use
- Changing urban climates
- Anthropogenic sources of greenhouse gases (increase in CO₂, methane etc = increase in temperature)
- Aerosols and other pollutants

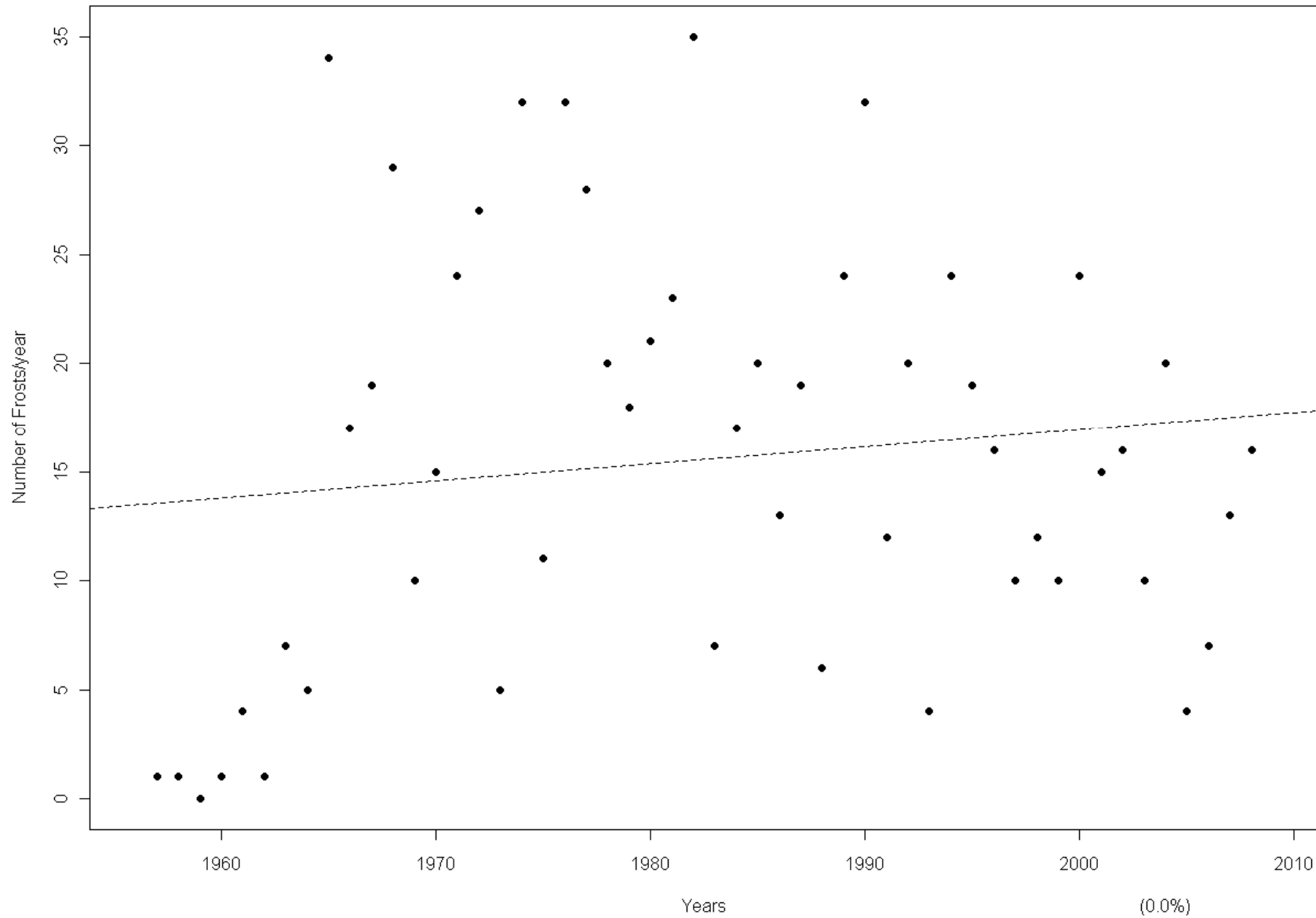
Observations of recent change



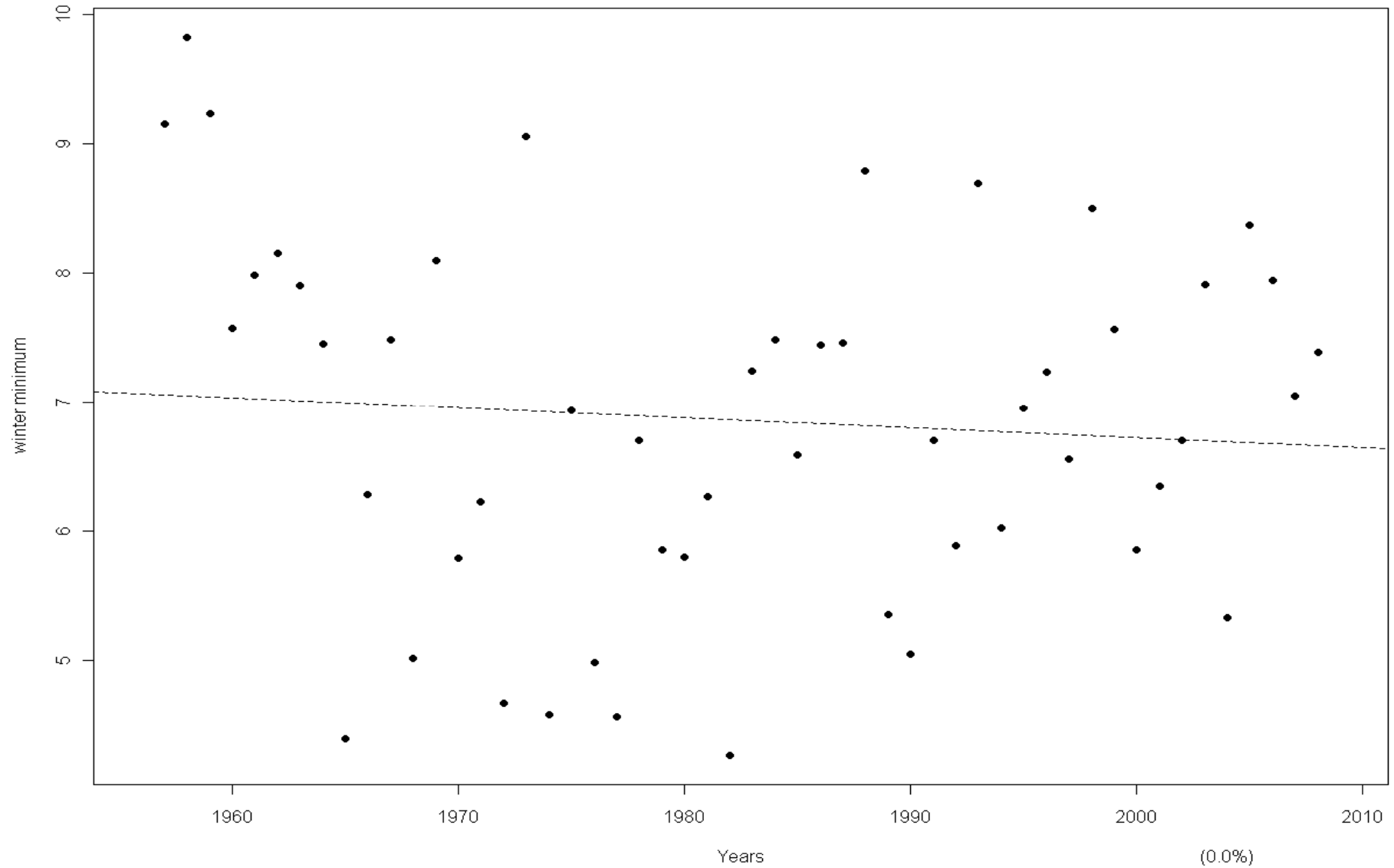
Annual Mean Temperature Anomaly - Queensland



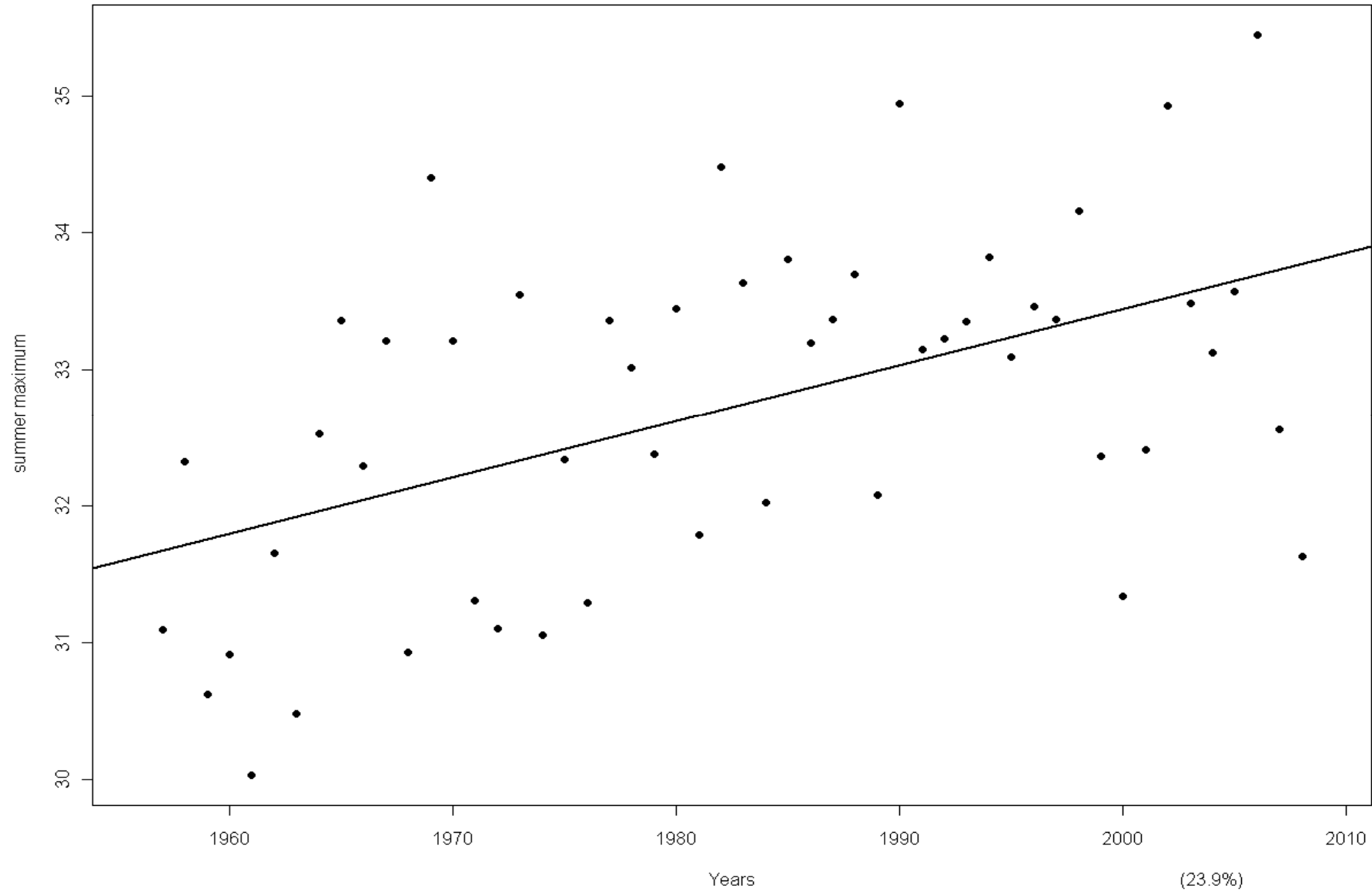
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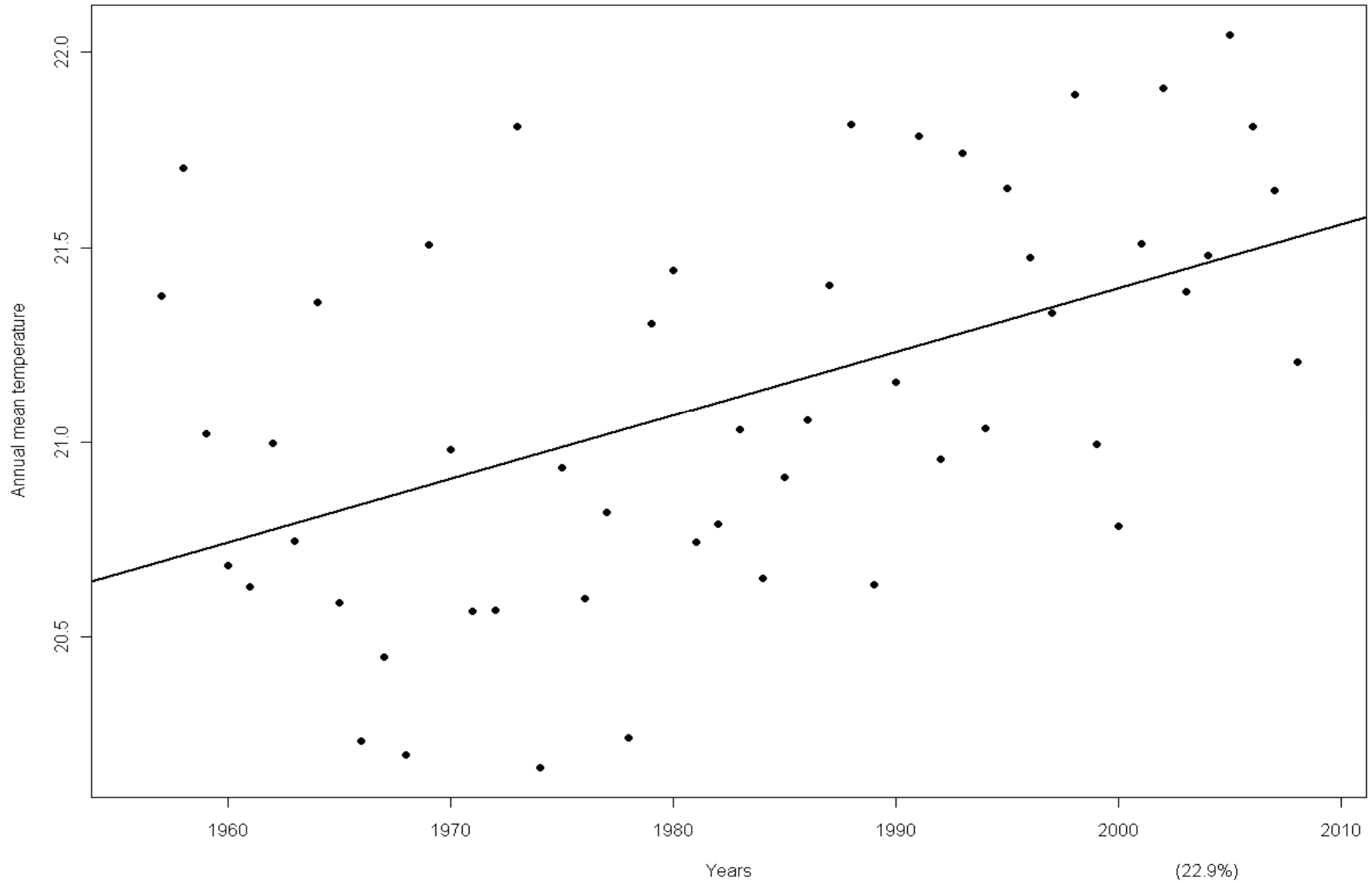
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Temperature summary

- All of Australia has experienced warming over past 50 years
- Some areas have experienced warming since 1960 of up to 0.4 degree C per decade – total warming over last 5 decades of 1.5 to 2 degree C
- Number of hot days has increased per decade over past 50 years
- There have been fewer cold days
- 2000 to 2009 was Australia's warmest decade on record

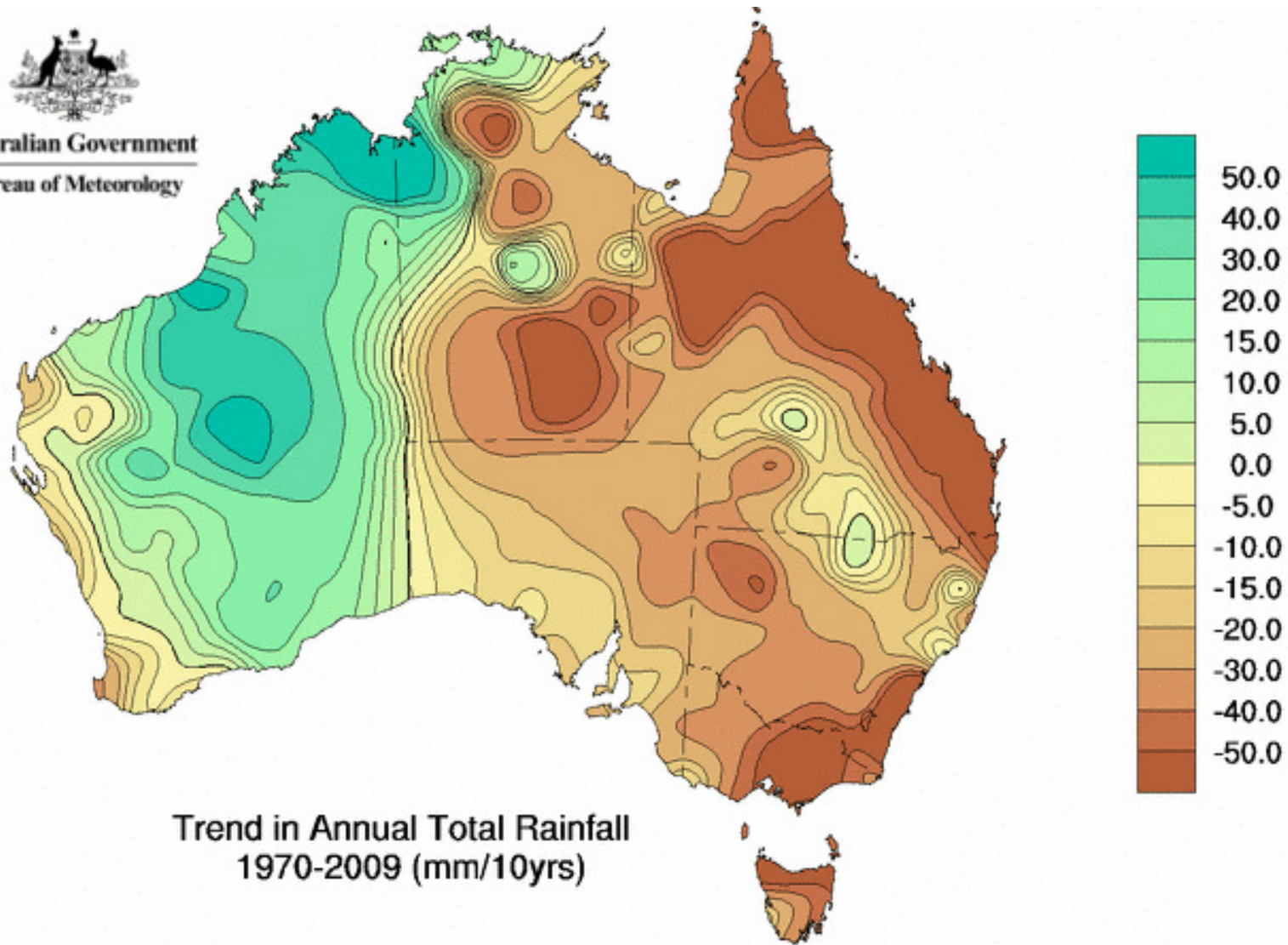
Temperature projections

Department of Environment
and Resource Management

- Annual mean temperature is projected to increase by further 1.0 degree C by 2030 (by 1.3 to 2.8 degree C by 2050)
- There is little variation in projections between the seasons
- Potential evaporation increase of between 3 to 4% by 2030 (6% increase in winter and spring)

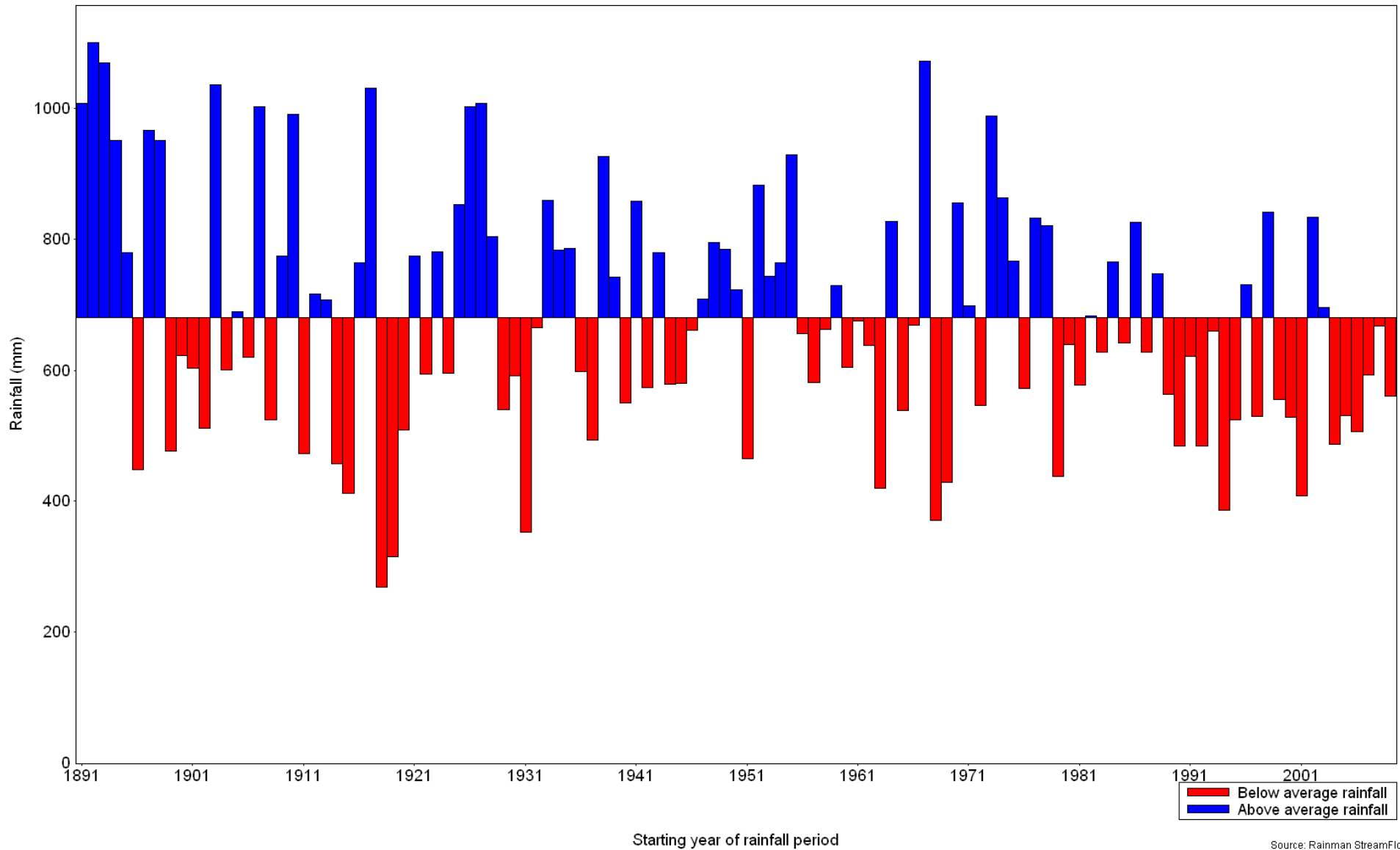
Observations of recent change


Australian Government
Bureau of Meteorology



Historical record of seasonal rainfall (mm) at BILOELA DPI RES. STN COMPOSITE*

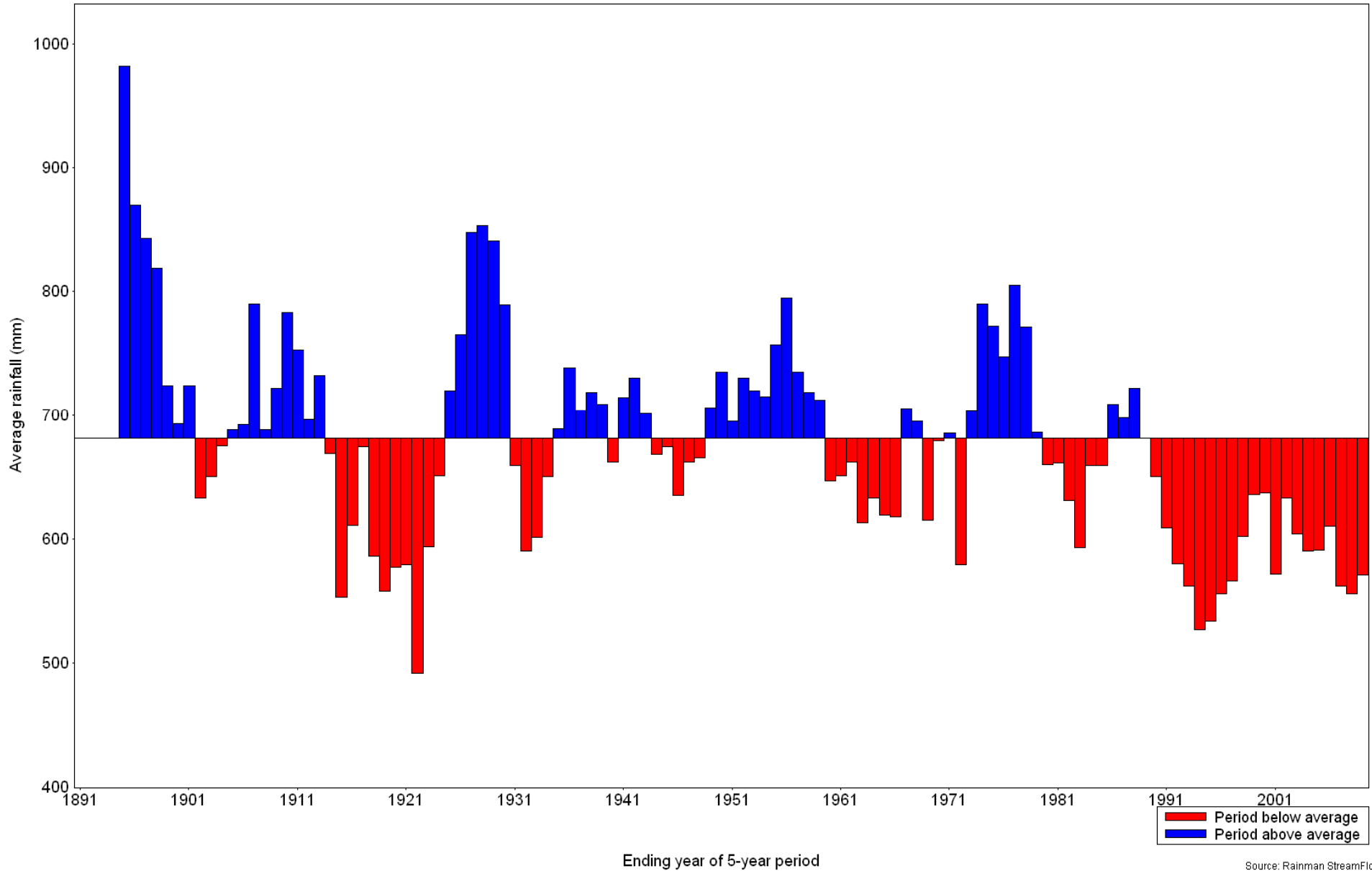
Long-term average rainfall (May to Apr) is 681 mm
Rainfall period: May to Apr



Source: Rainman StreamFlow

5-year moving average rainfall (12 months, May in year 1 to Apr in year 2) at BILOELA DPI RES. STN COMPOSITE*

Long-term average rainfall (12 months, May in year 1 to Apr in year 2) is 681 mm



Source: Rainman StreamFlow

Rainfall summary

- Trend over 5 decades of increasing rainfall in many parts of northern and central Australia
- Trend over 5 decades of rainfall decreasing across much of southern and eastern Australia
- Long term rainfall at Biloela is 681mm (using rainfall records 1891 to 2010)
- Last 5 year average at Biloela is 570mm (-111mm), last 10 year average is 580mm (-101mm)

Rainfall projections

- CQ average annual rainfall in the last decade fell nearly 14% compared with previous 30 years. This is generally consistent with natural variability
- This makes it difficult to detect any anthropogenic climate change impact
- Annual rainfall is projected to decrease by 3% by 2030 with seasonal decrease of 6% for spring; (7% by 2050, 12% for spring)

So what does this mean

- Australia will likely be hotter. These changes will be through an increase in number of hot days
- Much of Australia will likely be drier (southern Australia during winter, southern and eastern Australia during spring and south west Australia during autumn).
- Likely increase in number of consecutive dry days but likely increase in intensity of rainfall events

Change and Adaptation

Department of Environment
and Resource Management

- Consequences of climate change are already impacting on agriculture
- Climate change can be viewed as another mode of climate variability
- There will be winners and losers
- Resilience (profitability and sustainability) is the key: by focusing on increasing a business's resilience will ensure that the business can manage changes in it's operating environment (climate, market forces etc) into the future

