2017 European Climate Diplomacy Week

Australian Government
Bureau of Meteorology

Escaped control burn, October 2015, Lancefield, Victoria. Source: Woodend CFA

Changes in climate requiring adaptation

Increased frequency of large-scale heatwaves and record-high temperatures

Longer fire season with more extreme fire danger days

Prolonged high ocean temperatures

More time spent in drought

Greater proportion of rainfall from heavy rainfall events

Increased frequency of coastal storm surge inundation

occurring now

emerging threat

CSIRO

Australian Government
Bureau of Meteorology

Extreme events

Black Saturday

Record preceding heatwave across southeastern Australia

Prolonged drought (record breaking in some aspects)

Record daytime and overnight temperatures

Record fire danger Black Saturday

173 deaths, 414 serious injuries, total cost of ~$5 billion

~500 excess deaths from extreme heat

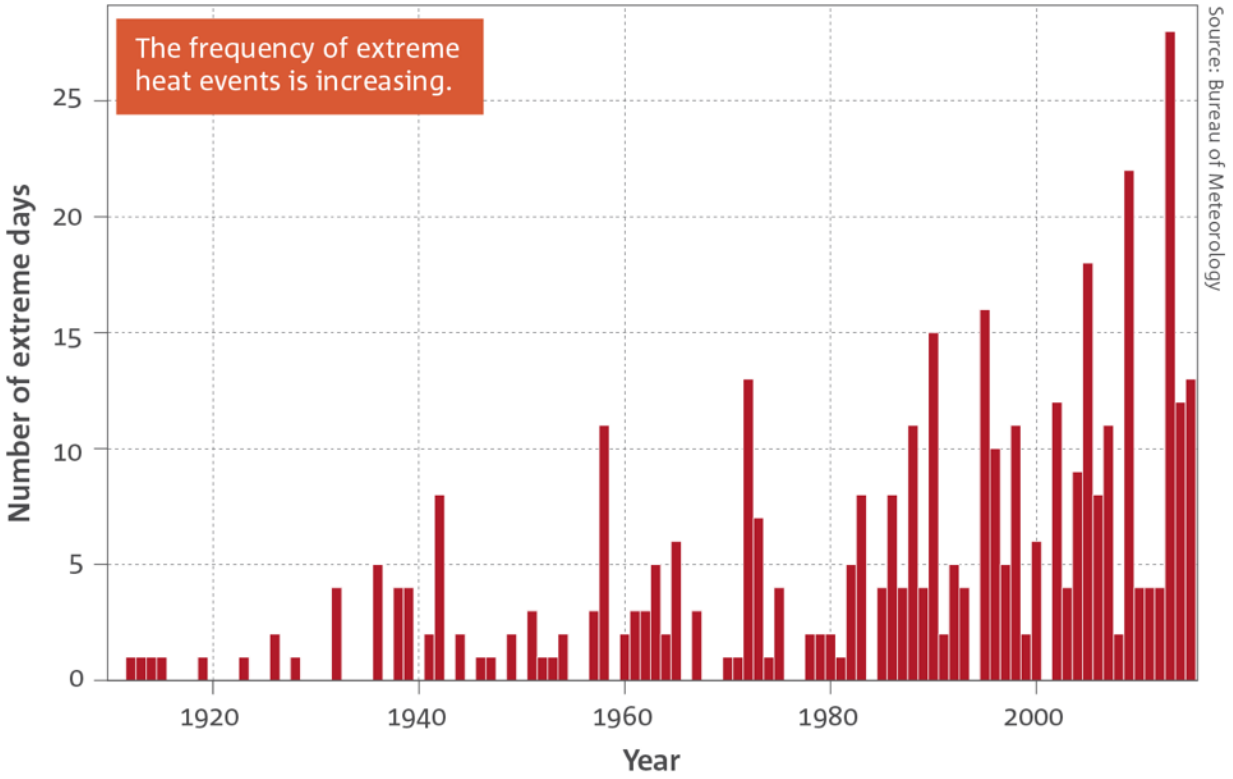
Kinglake Fire. Source:, CSIRO Science Image, Nick Pitsas, February 25 2009

CSIRO

Australian Government
Bureau of Meteorology

Australia's changing terrestrial climate

Increasing extreme heat



CSIRO

Australian Government
Bureau of Meteorology

Summer heatwaves

Black Saturday 2009

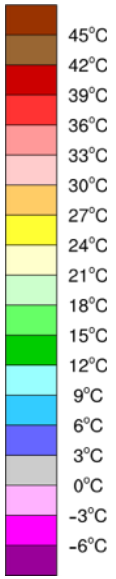
- Record-breaking heatwave across southeastern Australia
- Many all-time daily records set

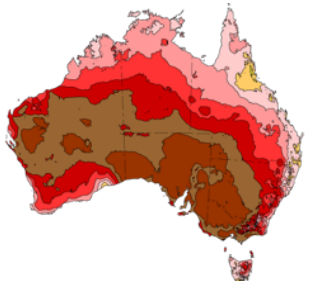
January 2013

- Over 70% of the continent recording temperatures in excess of 42 ºC
- Broke every sequential national heat record from 1 day through to 1 month

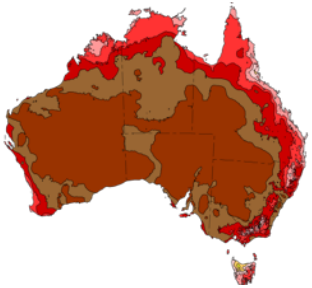
February 2014

- Broke area-averaged records for NSW maximum temperatures

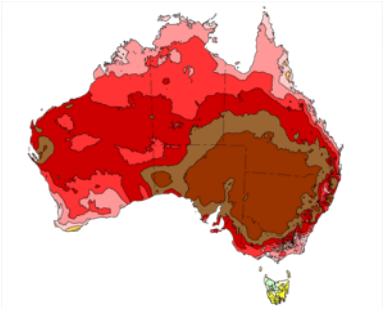




Maximum temperatures, 27 January – 8 February 2009



Maximum temperatures, first half of January 2013



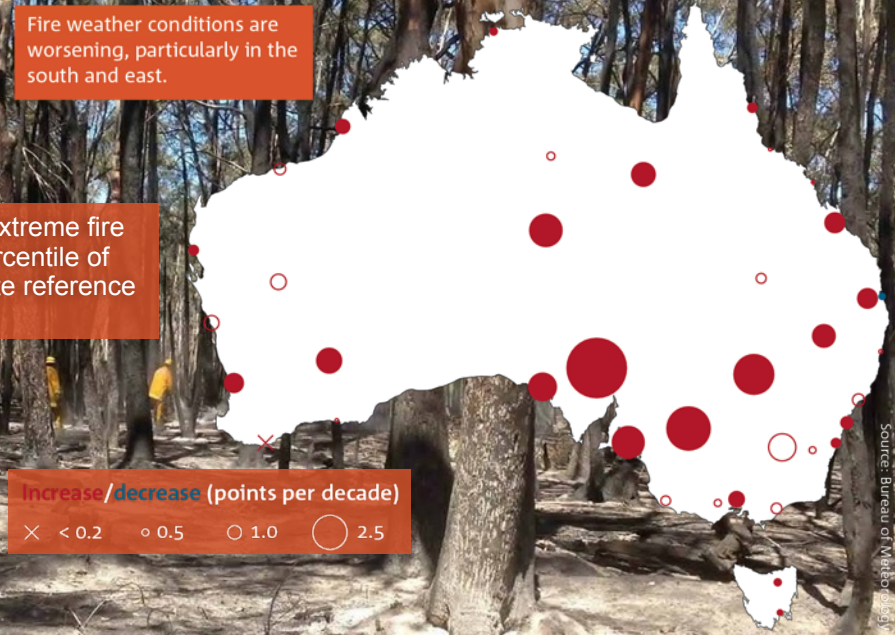
Maximum temperatures, 31 January – 12 February 2017

Australia's changing terrestrial climate

Fire weather

Fire weather conditions are worsening, particularly in the south and east.

Trends from 1974 to 2015 in extreme fire weather days (annual 90th percentile of daily FFDI values) at 38 climate reference sites



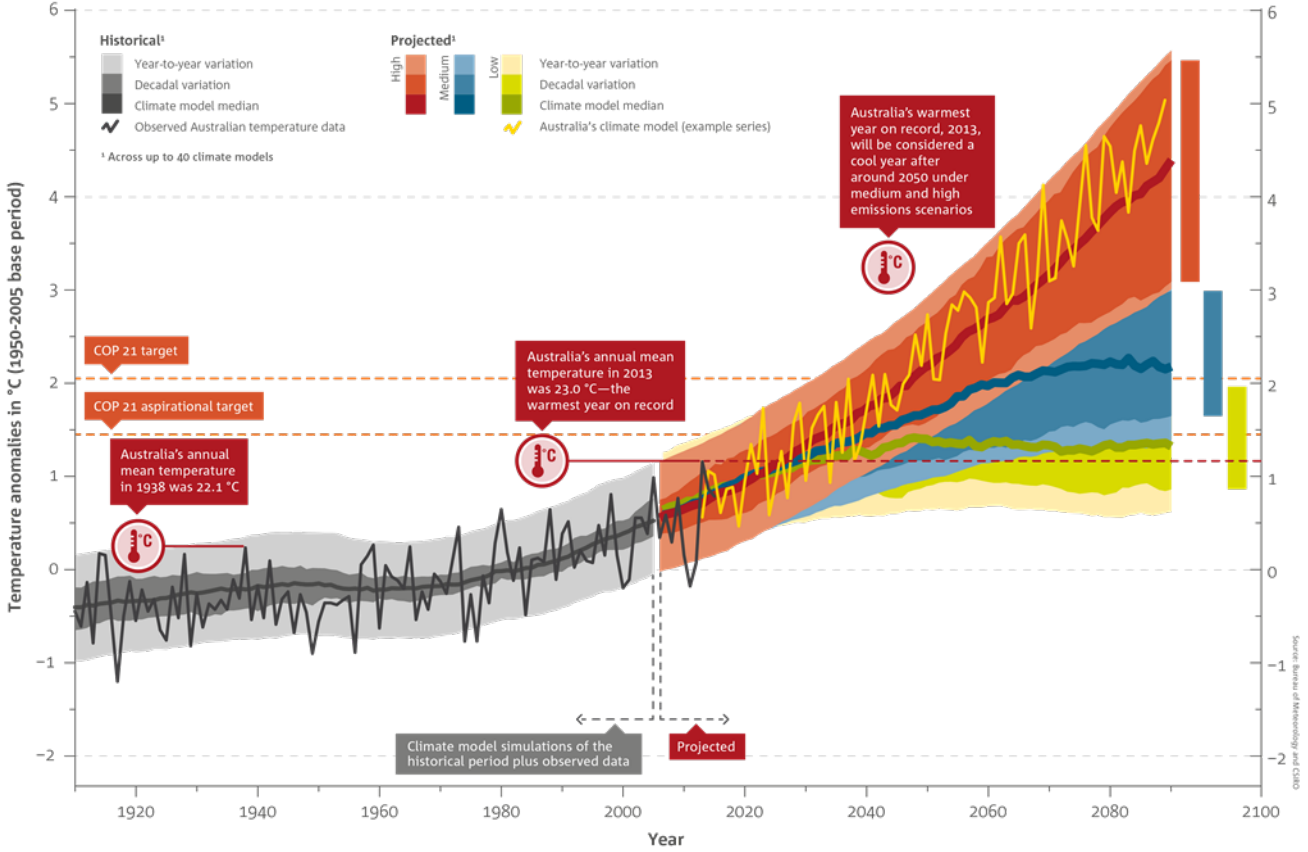
Escaped control burn, October 2015, Lancefield, Victoria. Source: Woodend CFA

CSIRO

Australian Government
Bureau of Meteorology

Australia's future climate

Australian temperature projections

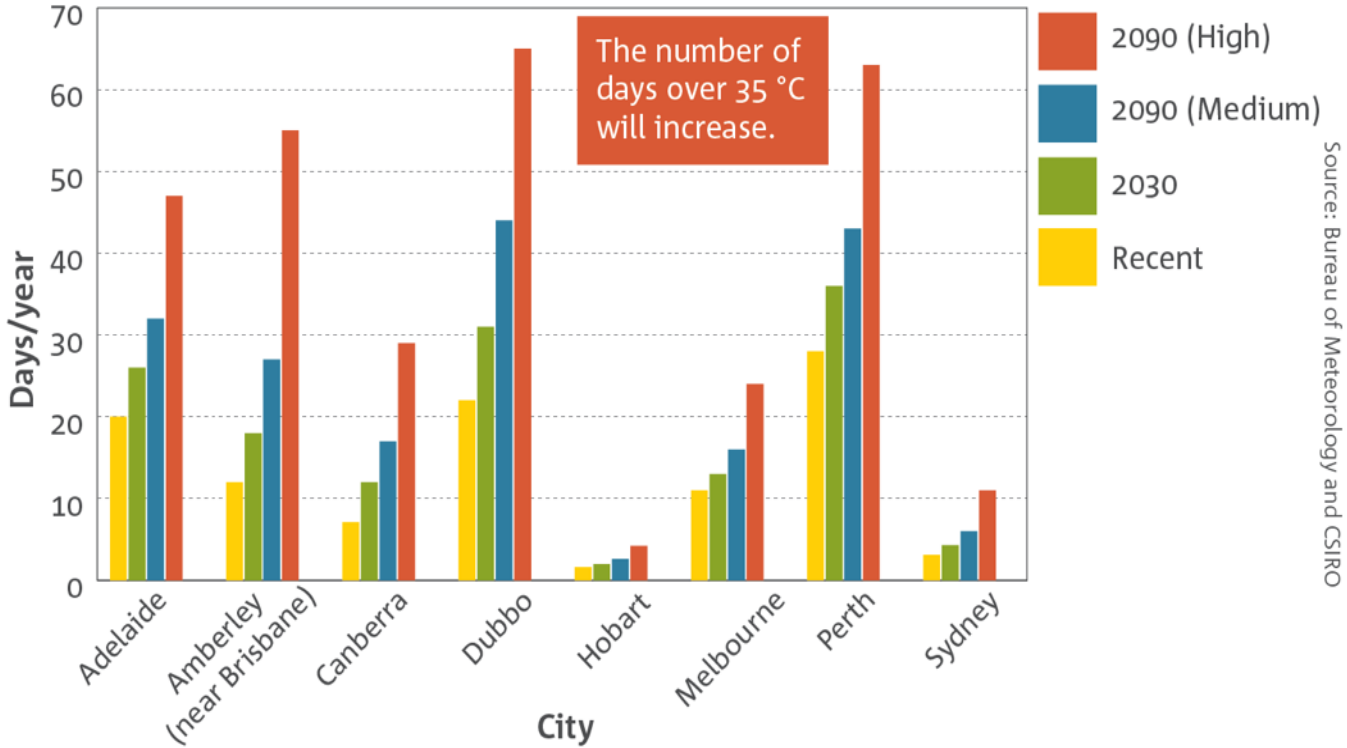


CSIRO

Australian Government
Bureau of Meteorology

Australia's future climate

Towns and cities will experience prolonged periods of heat

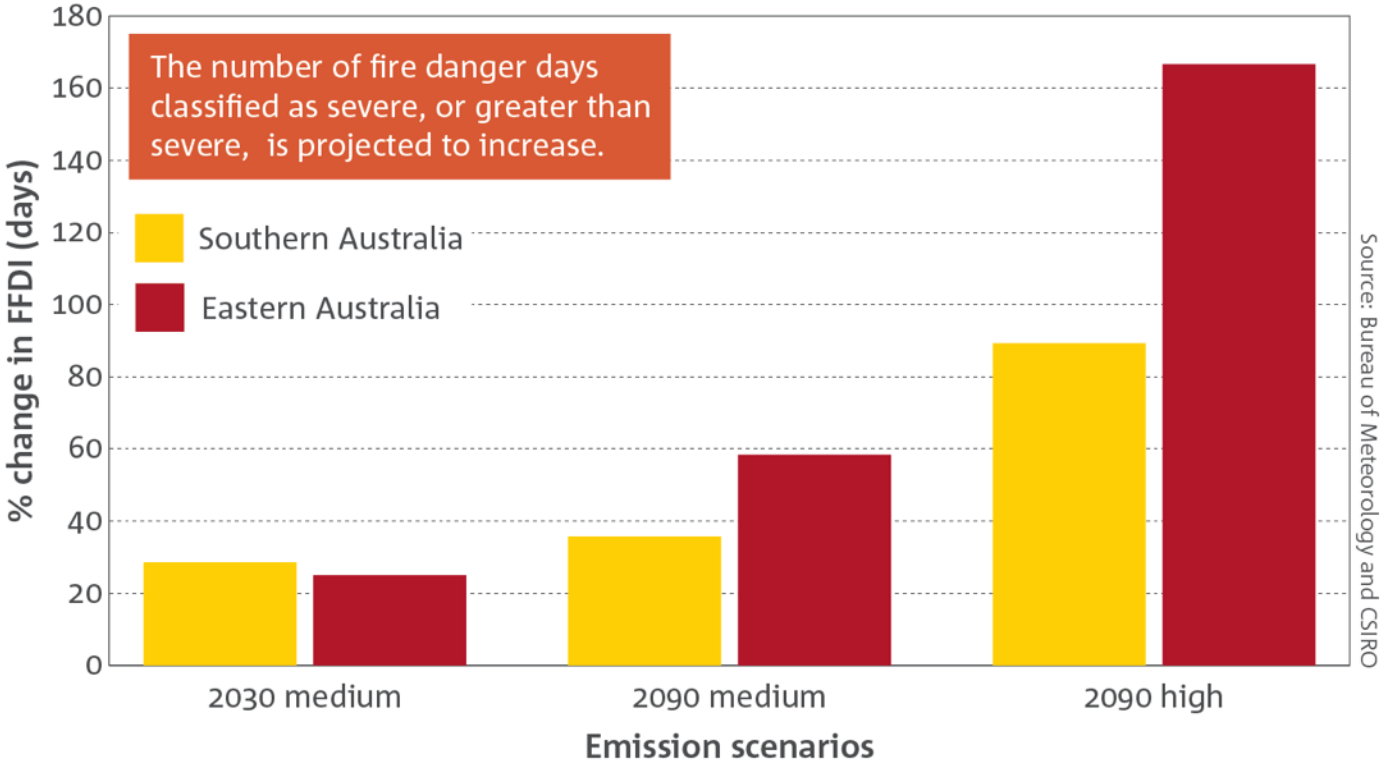


CSIRO

Australian Government
Bureau of Meteorology

Australia's future climate

Australian fire weather projections



CSIRO

Australian Government
Bureau of Meteorology

Extreme events

2015-2016: a confluence of trends and extremes in Tasmania

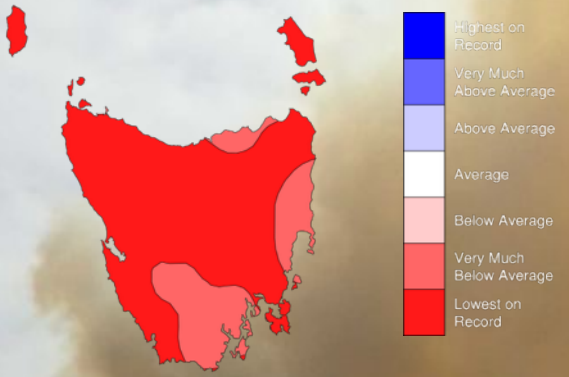
Tea Tree, north of Hobart, Tasmania, October 6. Source ABC News: Edith Bevin

CSIRO

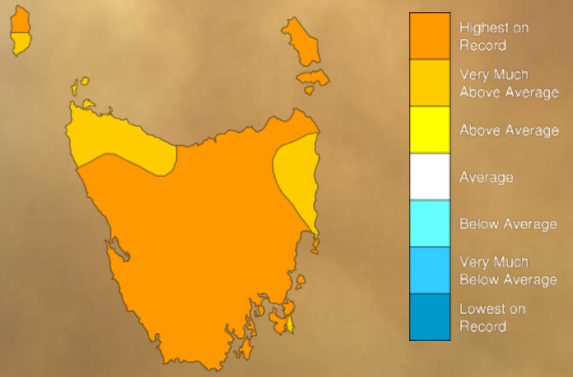
Australian Government
Bureau of Meteorology

Extreme events

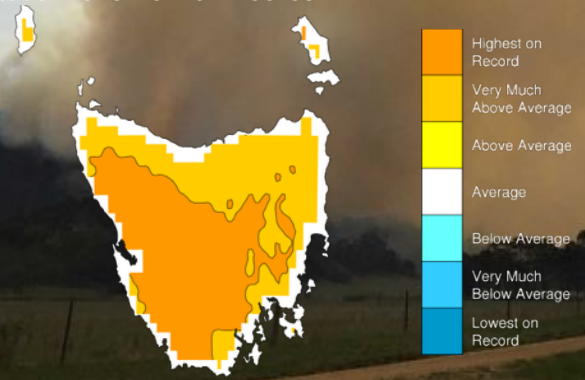
Tasmania in October 2015 — record heat — record low rainfall — record high fire danger



October 2015 Rainfall Deciles



October 2015 Temperature Deciles



October 2015 Forest Fire Danger Index

Tea Tree, north of Hobart, Tasmania, October 6.
Source ABC News: Edith Bevin

CSIRO

Australian Government
Bureau of Meteorology

Extreme events

Tasmania in June 2016

South Esk River Hadspen, Tasmania, 8 June 2016. Source Catherine Jolly, BoM

CSIRO

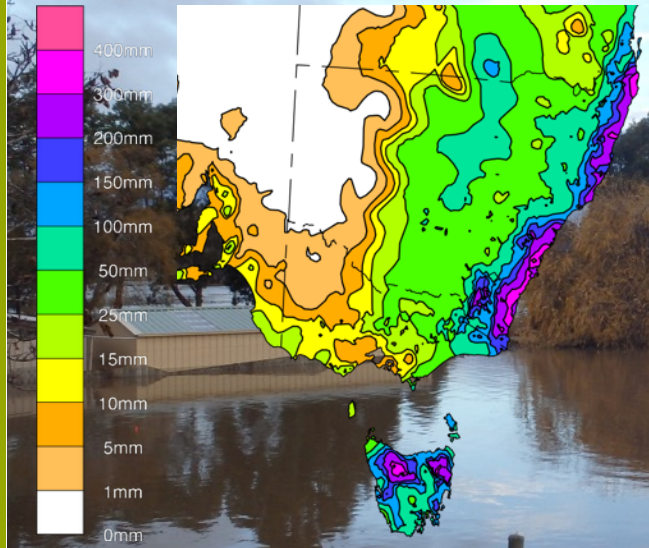
Australian Government
Bureau of Meteorology

Extreme events

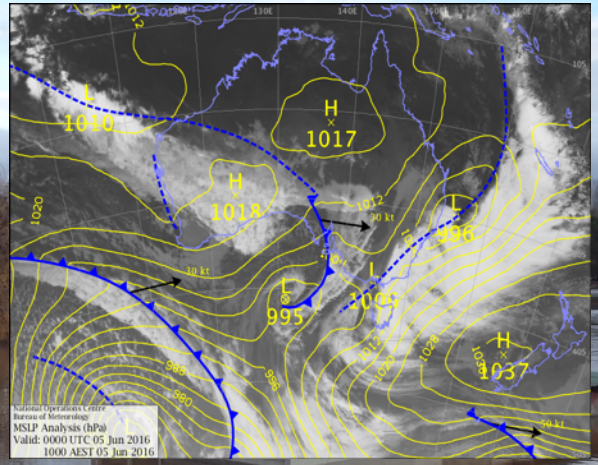
Tasmania in June 2016 — record ocean temperatures — record high rainfall

Collaroy Beach, NSW, 6 June 2016

Cataract Gorge, Tasmania, 7 June 2016



Rainfall anomalies, early June 2016



MSLP and cloud, 5 June 2016

South Esk River, Hadspen, Tasmania, 8 June 2016. Source: Catherine Jolly

CSIRO

Australian Government
Bureau of Meteorology

Future sea level

Cairns projected storm tide inundation

Inundation from storm tide under a business-as-usual median-estimate sea level rise by 2050

(1-in-100 year storm tide ~2.32 metres)

Inundation from storm tide under a business-as-usual high-estimate sea level rise by 2100

(1-in-100 year storm tide ~3.08 metres)

Data sources: http://www.climatechangeinaustralia.gov.au/en/ McInnes et al, (2009; 2015)

http://coastalrisk.com.au/viewer

Thank you

CSIRO

Australian Government
Bureau of Meteorology