



Australian  
National  
University

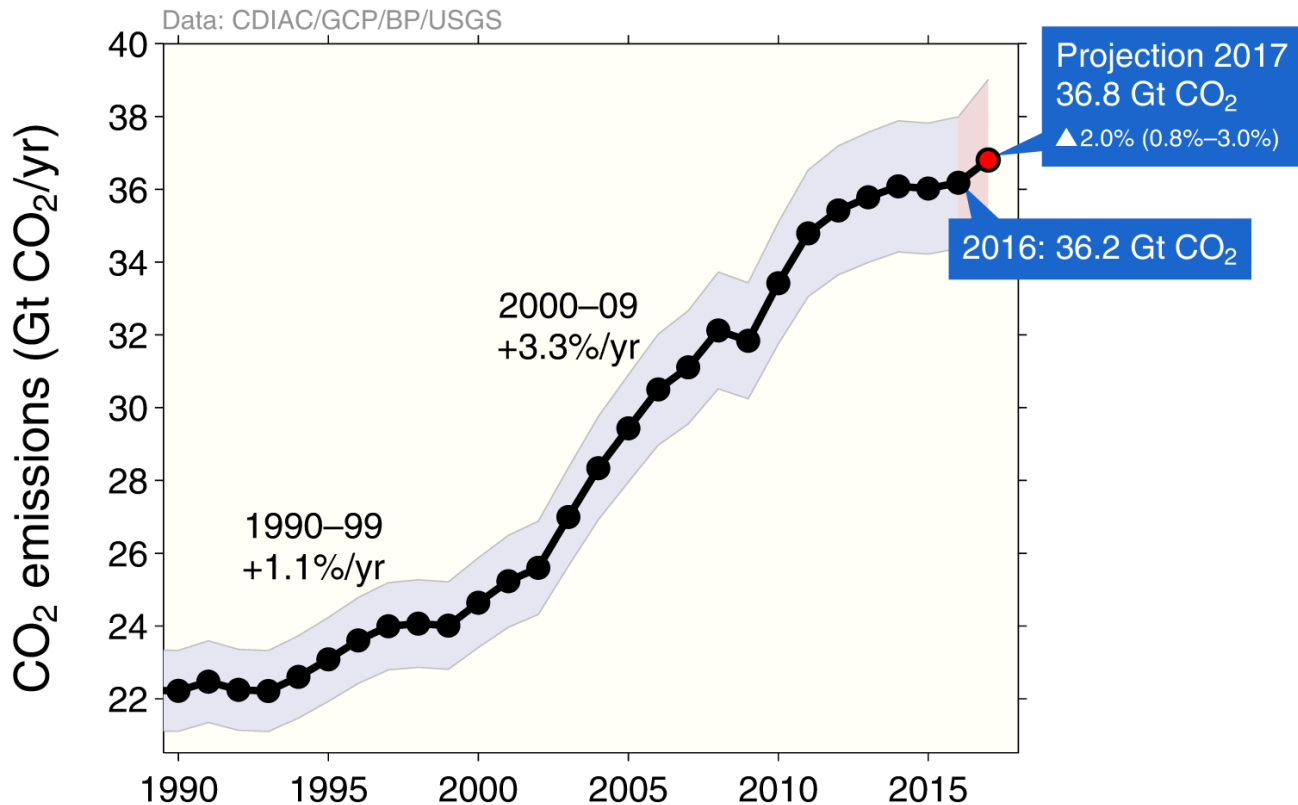
# Climate Update 2018: Brisbane

A record year: 2017

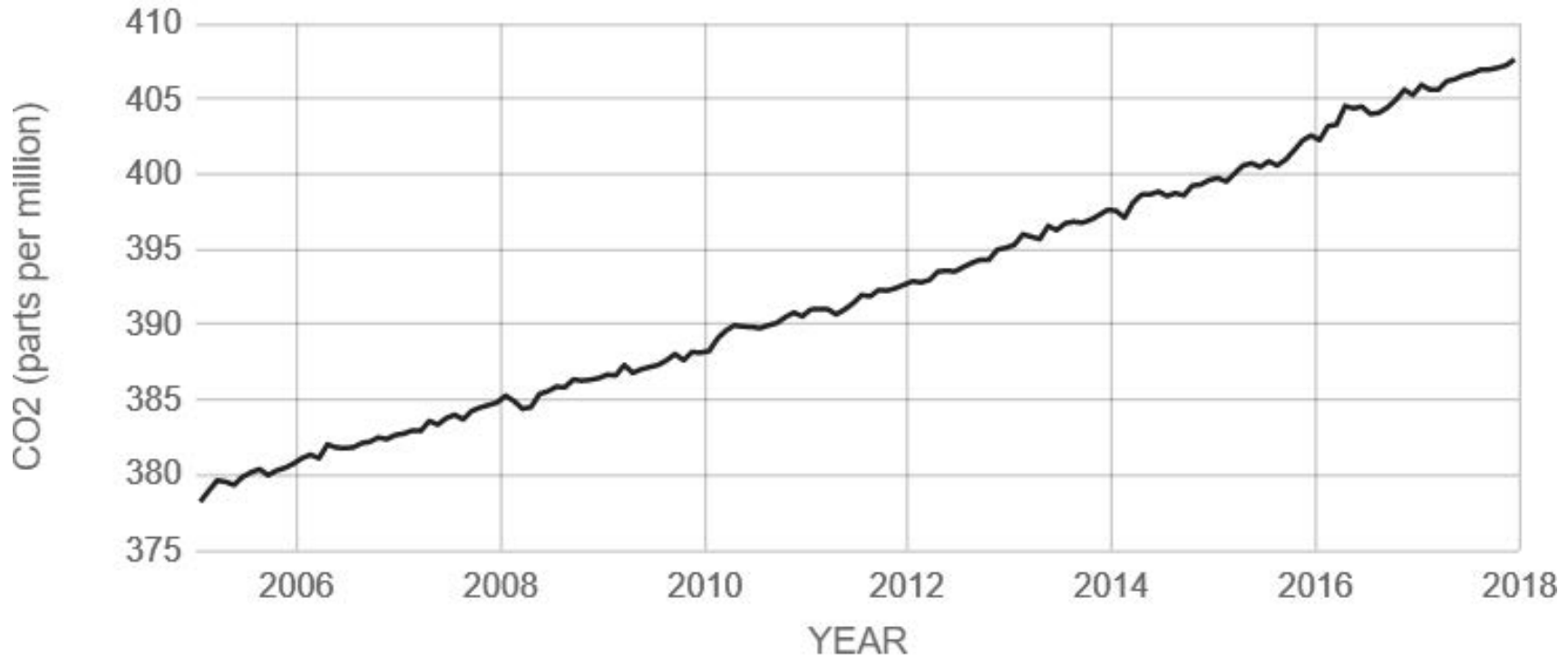


Professor Mark Howden  
ANU Climate Change Institute  
Vice Chair, IPCC Working Group II

# CO<sub>2</sub> emission rising again: record levels

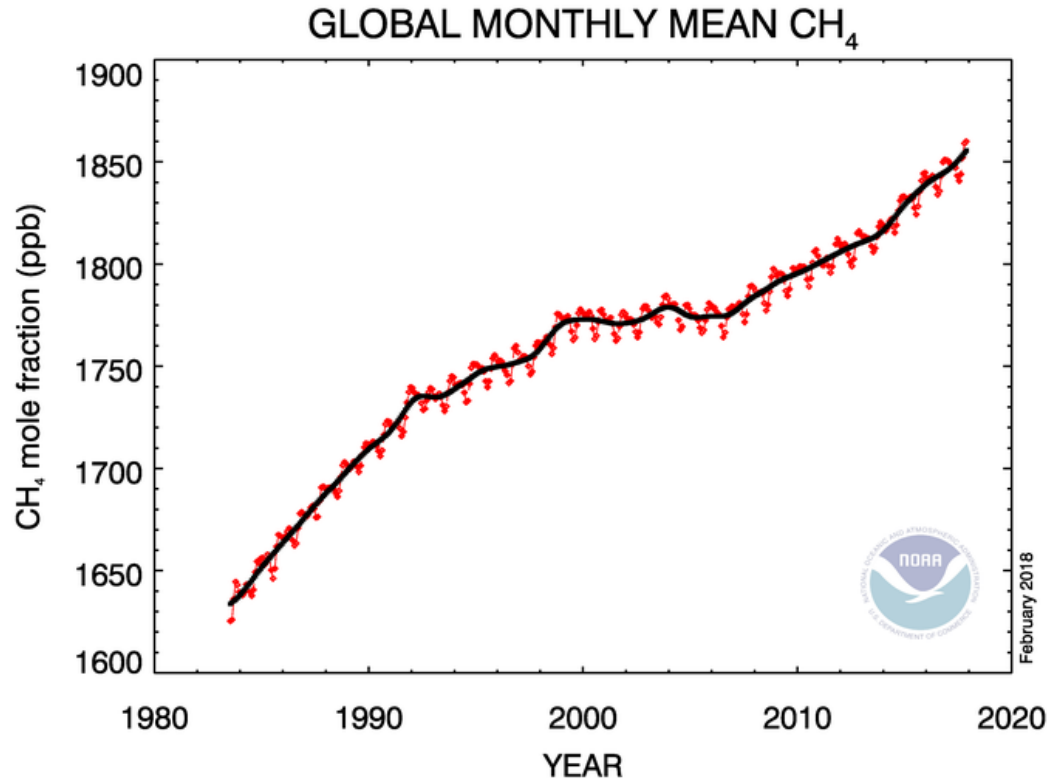


# Atmospheric CO<sub>2</sub>: record concentrations

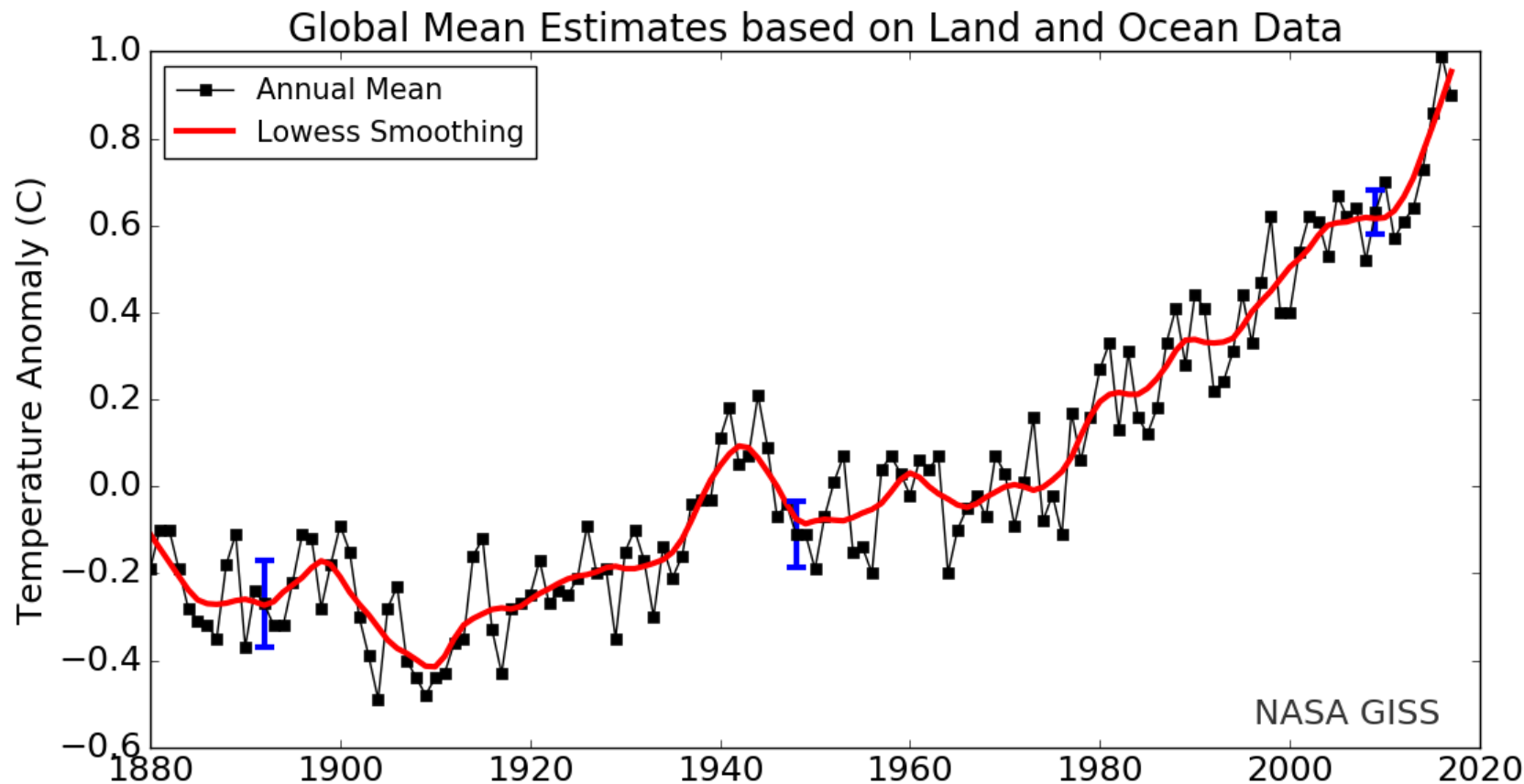


Source: [climate.nasa.gov](https://climate.nasa.gov)

# Atmospheric methane concentrations: record

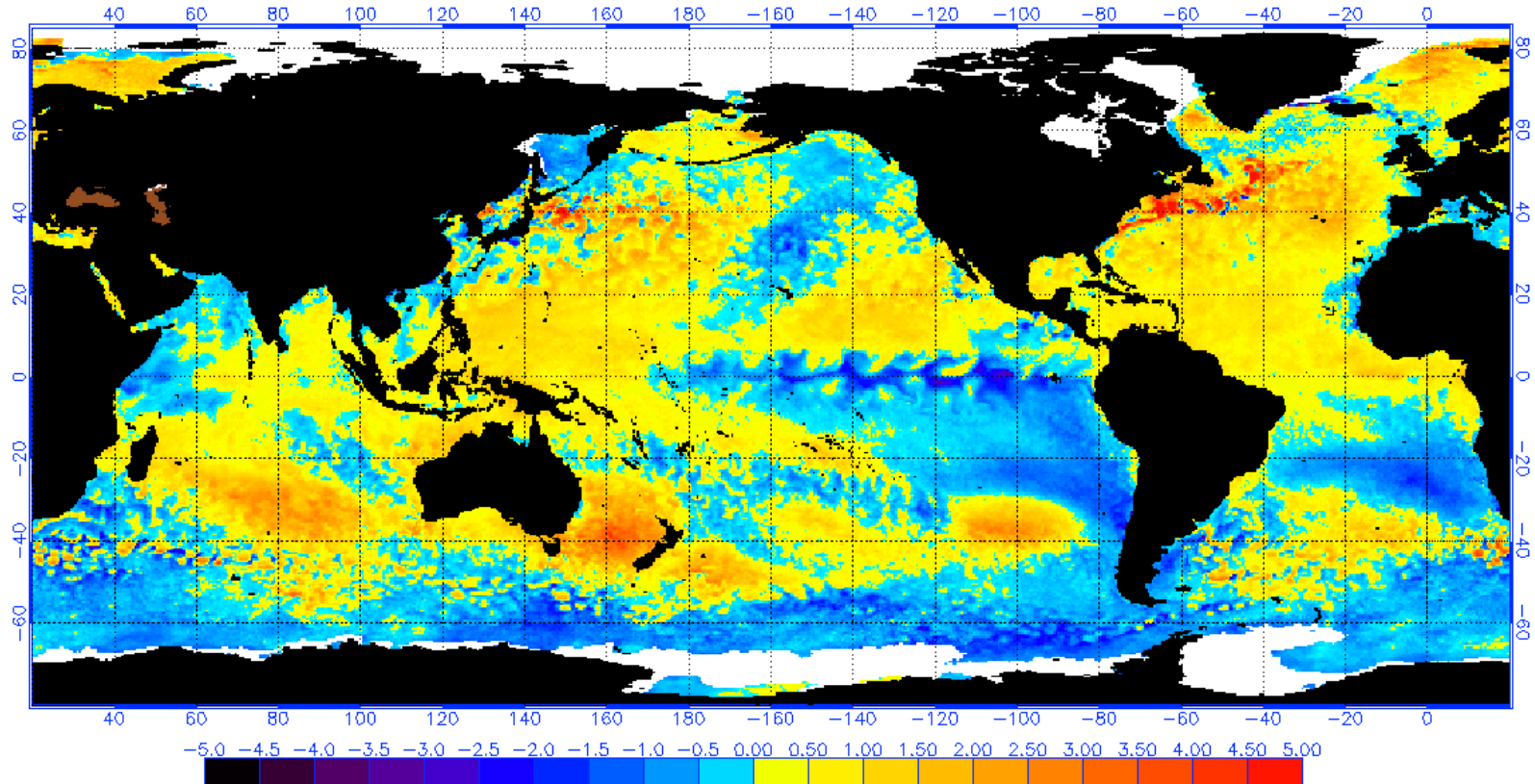


# Global temperatures keep rising



# La Niña keeping it cooler in 2017

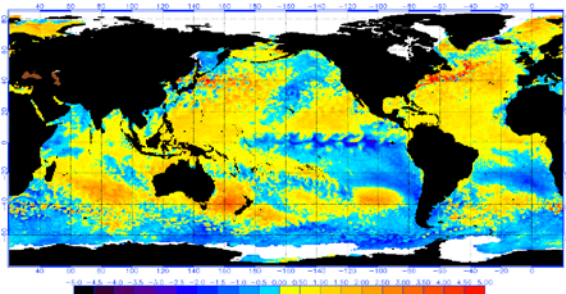
NOAA/NESDIS 50 KM GLOBAL ANALYSIS: SST Anomaly (degrees C), 12/28/2017  
(white regions indicate sea-ice)



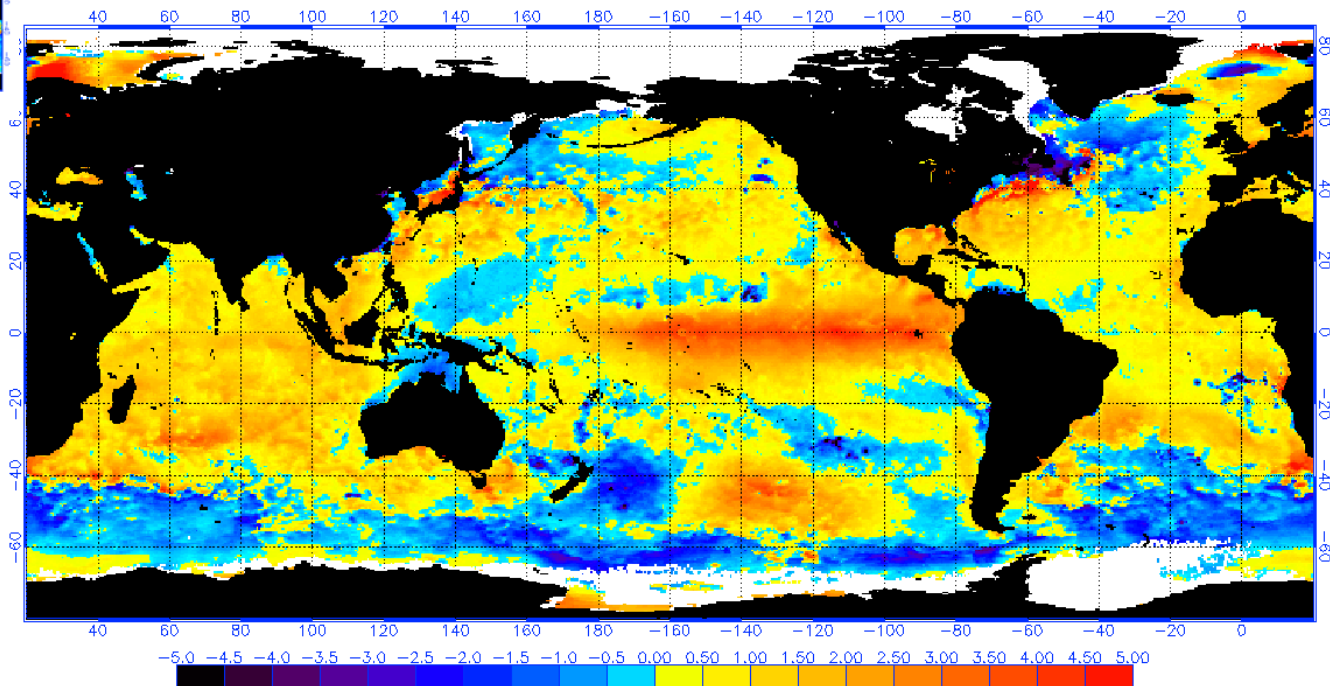


# El Niño made it hotter in 2016

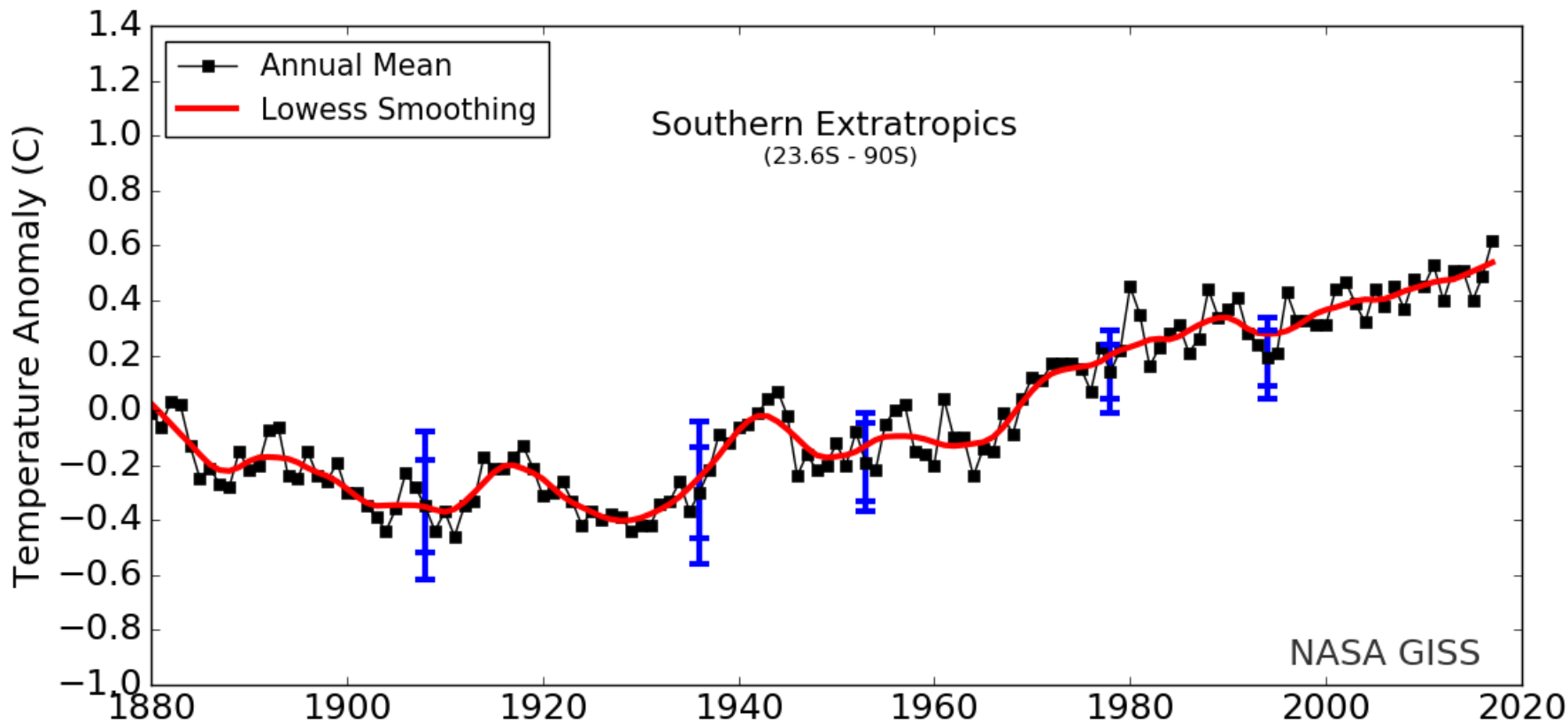
NOAA/NESDIS 50 KM GLOBAL ANALYSIS: SST Anomaly (degrees C), 12/28/2017  
(white regions indicate sea-ice)



NOAA/NESDIS 50 KM GLOBAL ANALYSIS: SST Anomaly (degrees C), 1/4/2016  
(white regions indicate sea-ice)



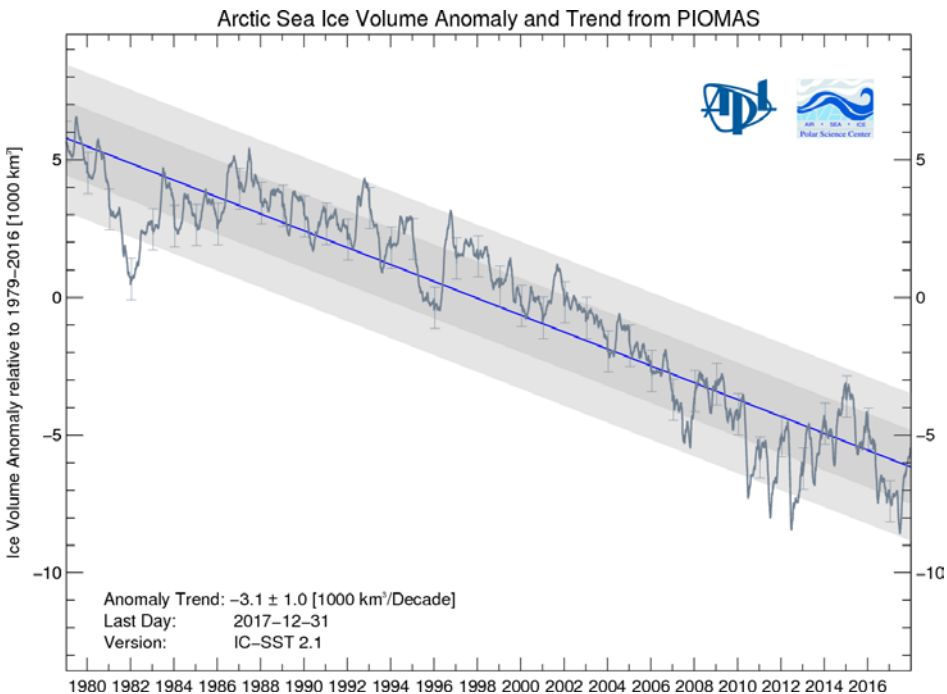
# Southern hemisphere temperatures: record high



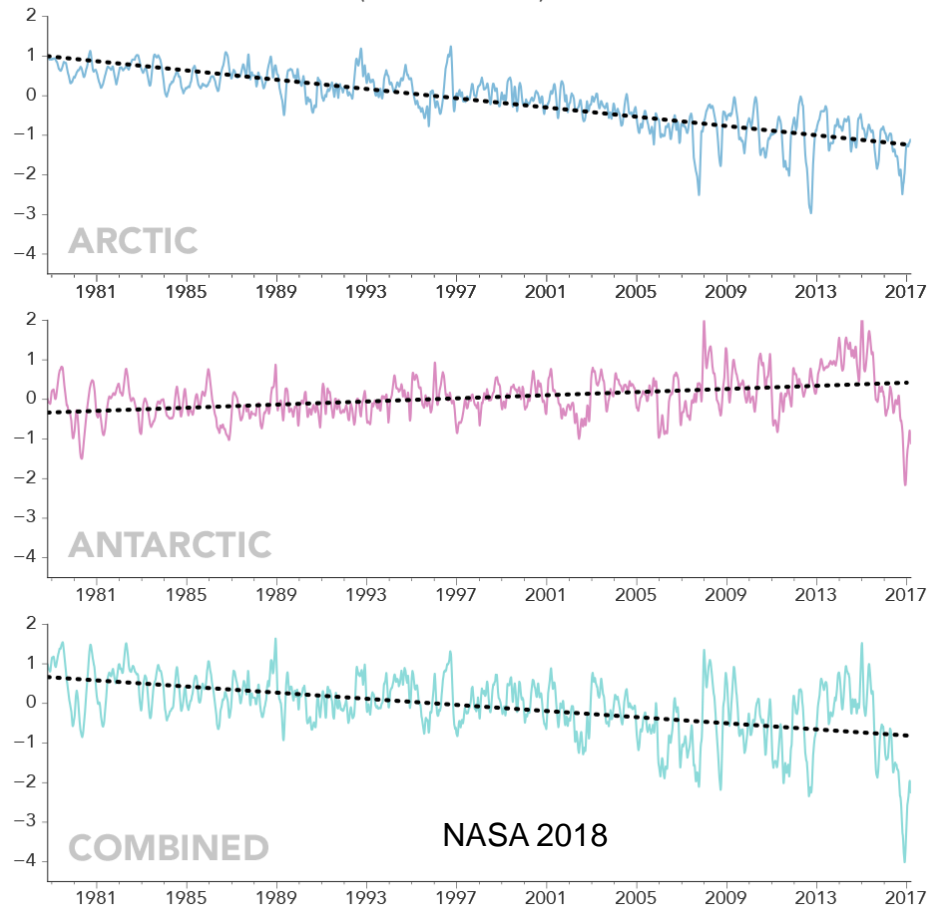




# Sea ice volume and extent: record lows

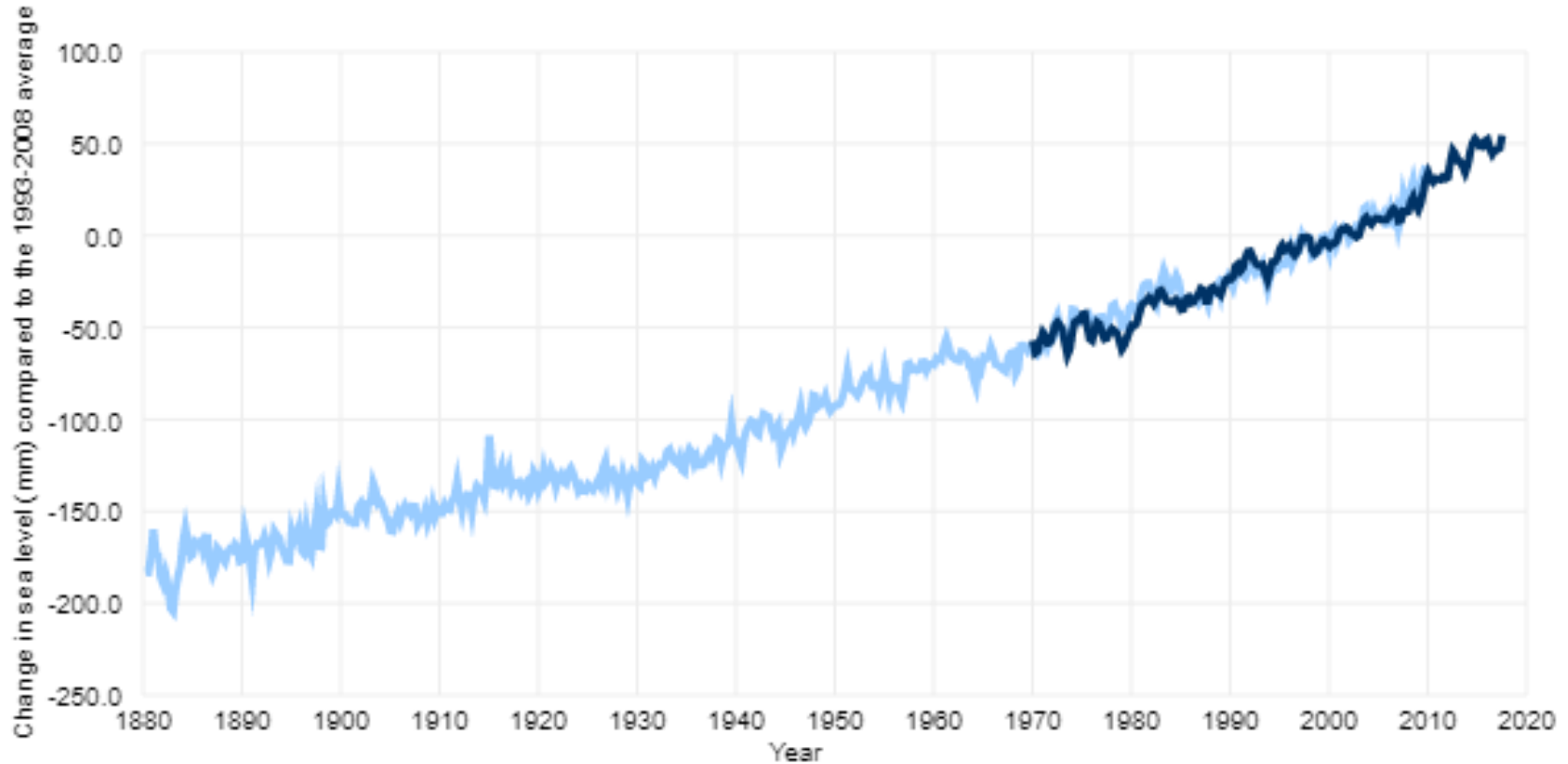


Deviation in Sea Ice Extent (x 1 million km<sup>2</sup>)



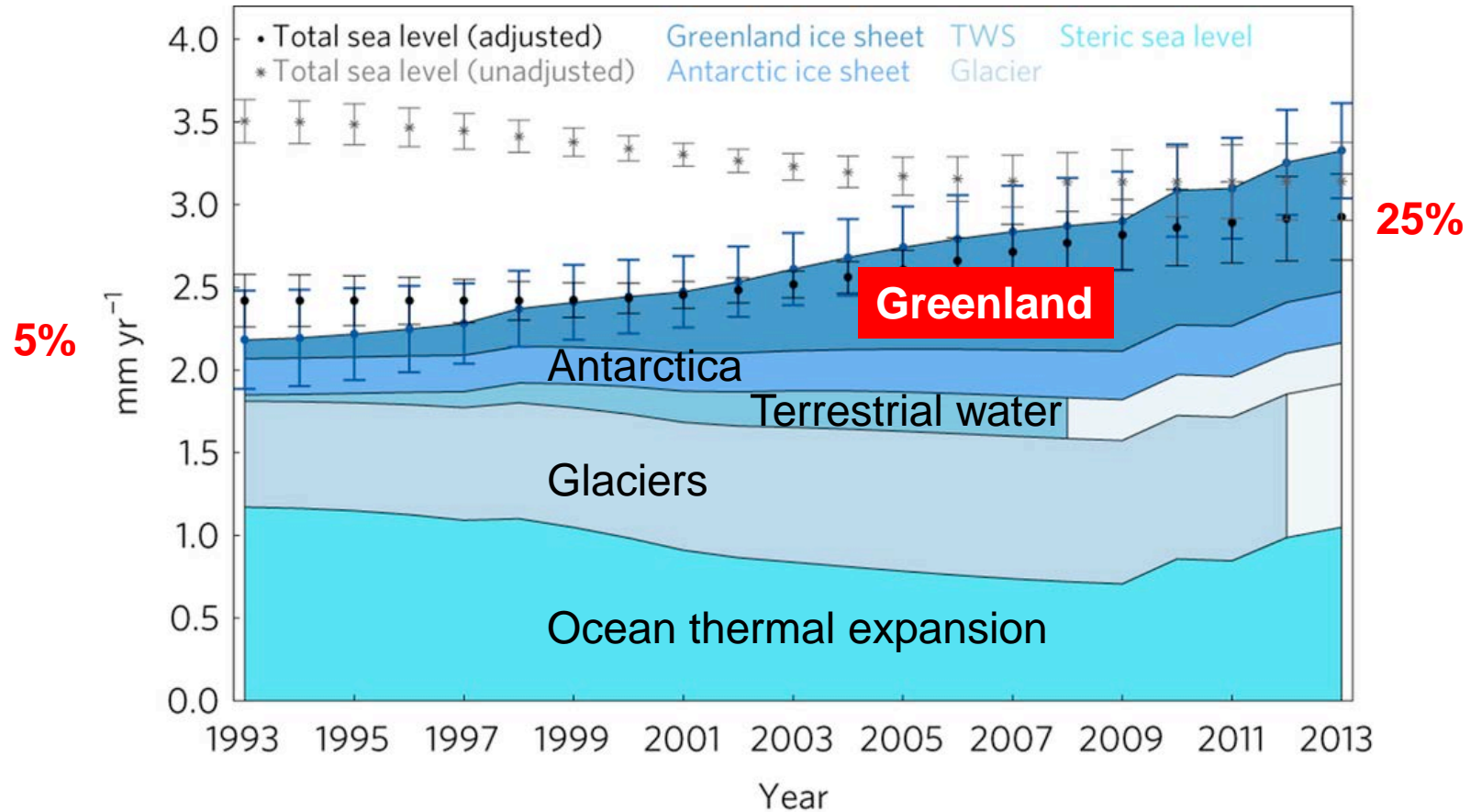


# Sea level: record high



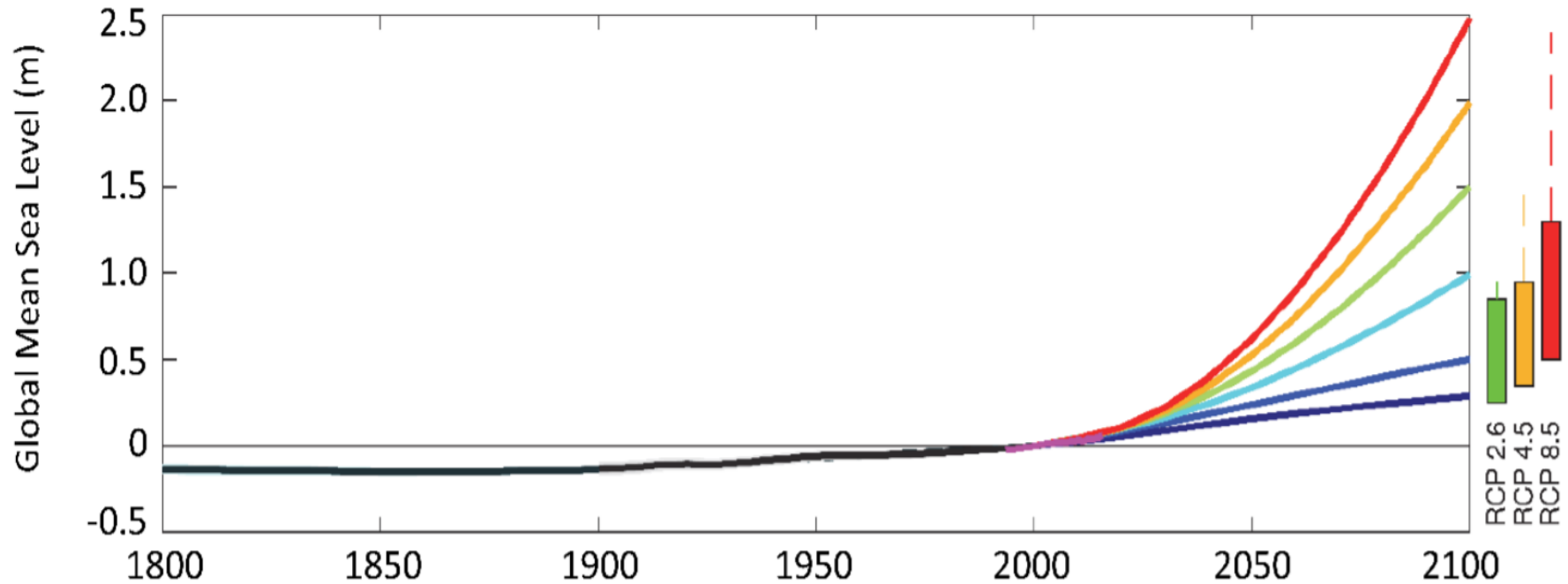


# Sea level rise: new understanding

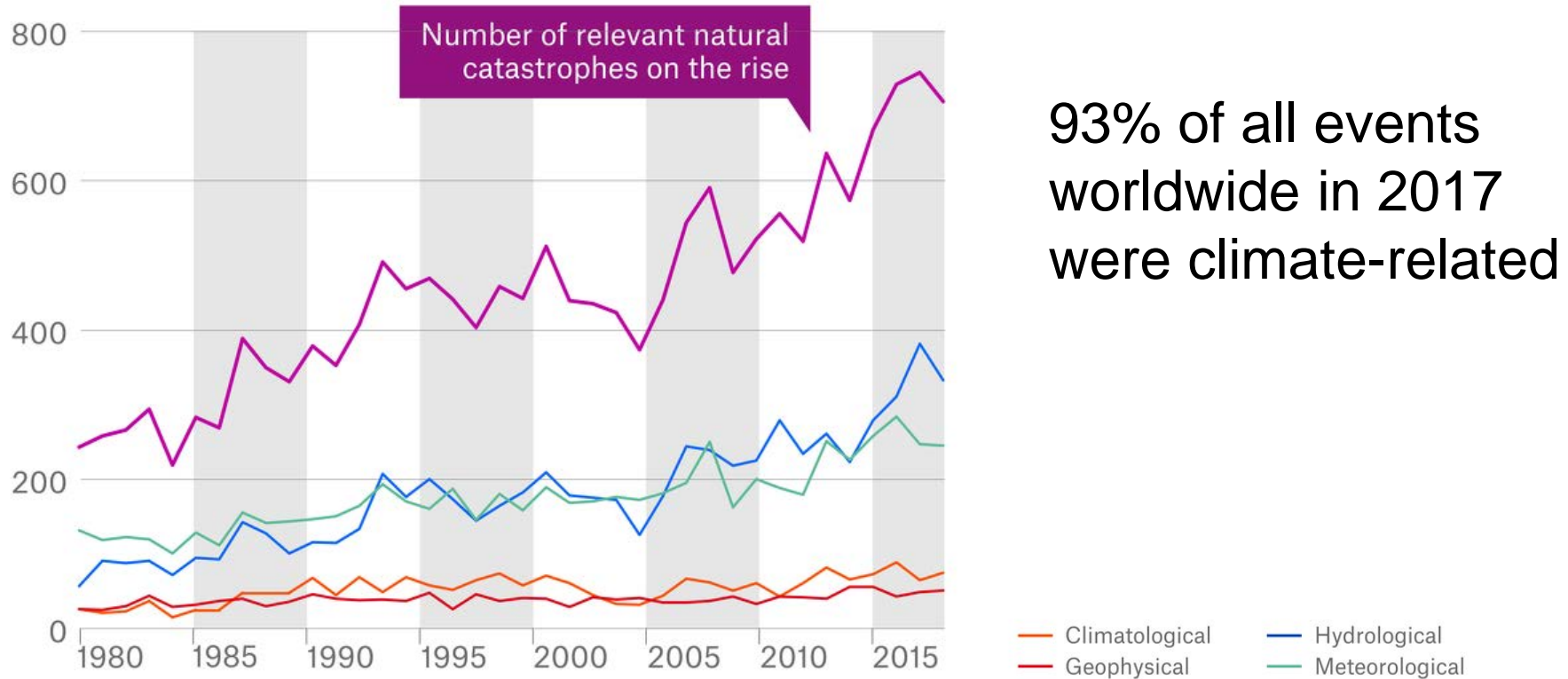


# Future sea levels: increasingly of concern

## Upper estimate of 2.5m global sea level rise by 2100



# Natural catastrophes: events

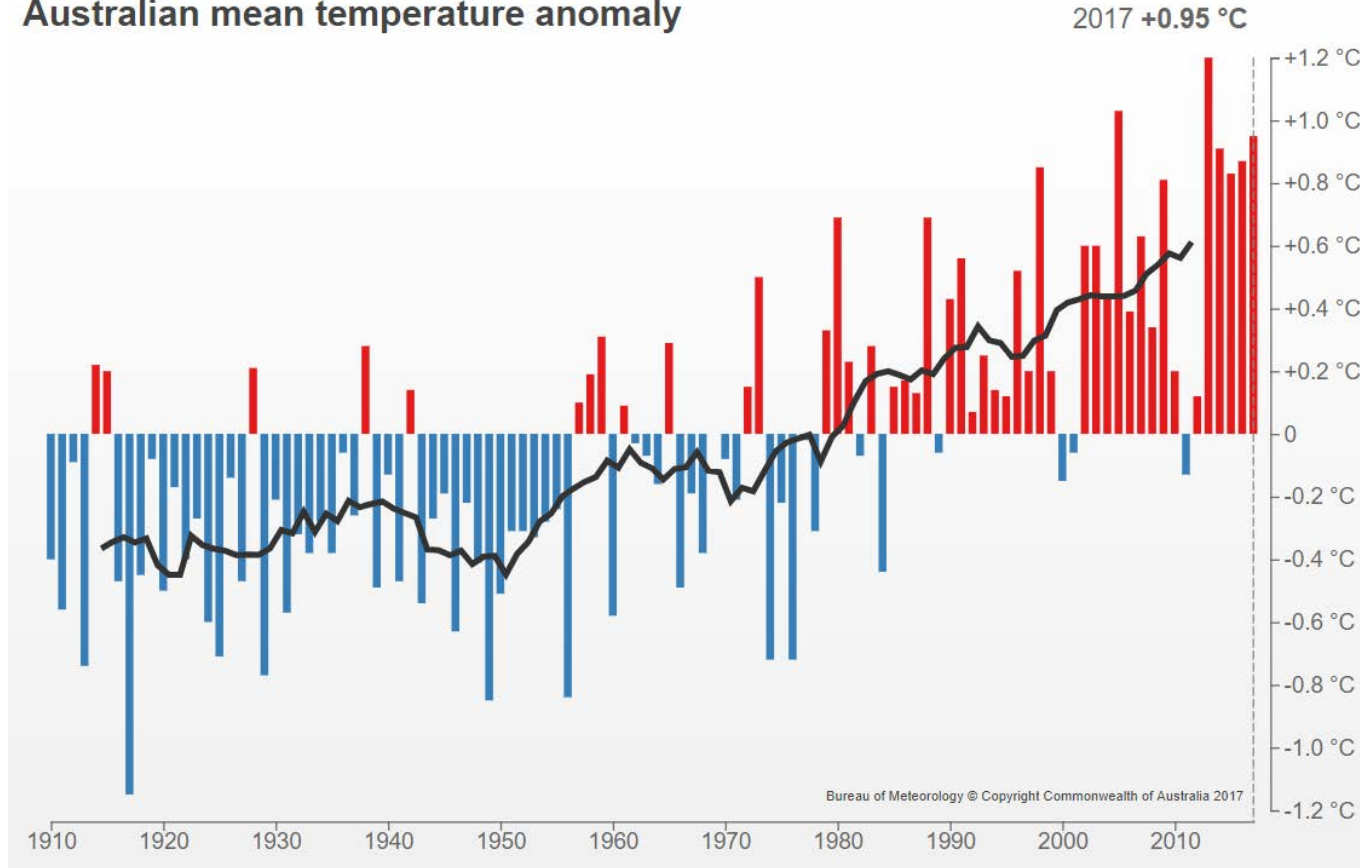


- 2017 was the second-costliest year ever for natural disasters in terms of overall losses (\$330B)
- BUT the highest in insured losses (\$135B)
- Record high losses from climate-related disasters
- 81% of the losses were from meteorological events compared with an average of 41%
- The proportion of insured losses was even higher (89%)
- The U.S. share of losses was 50% as compared to the long-term average of 32%
- In contrast, geophysical events were 3% of losses



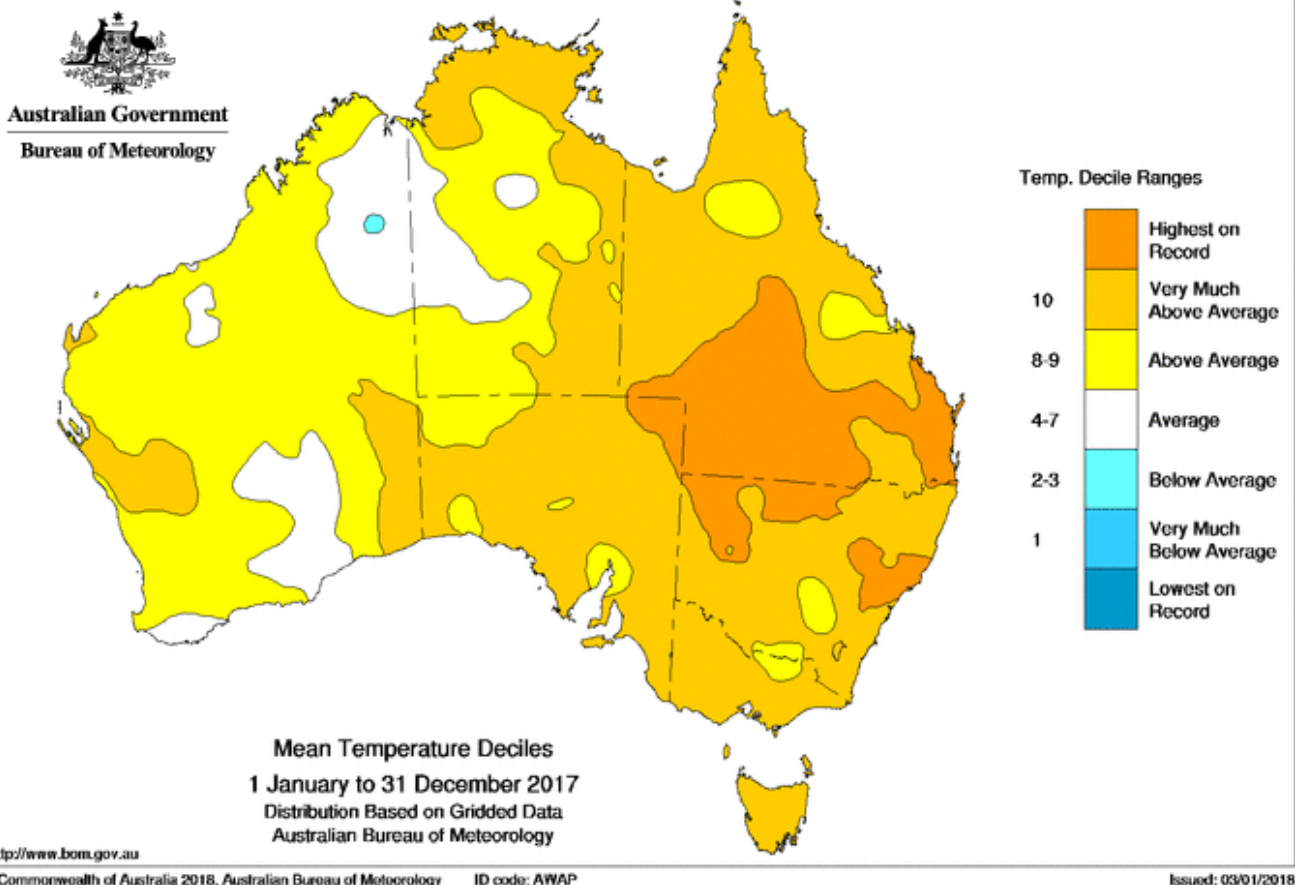
# Australia was warm too

Australian mean temperature anomaly





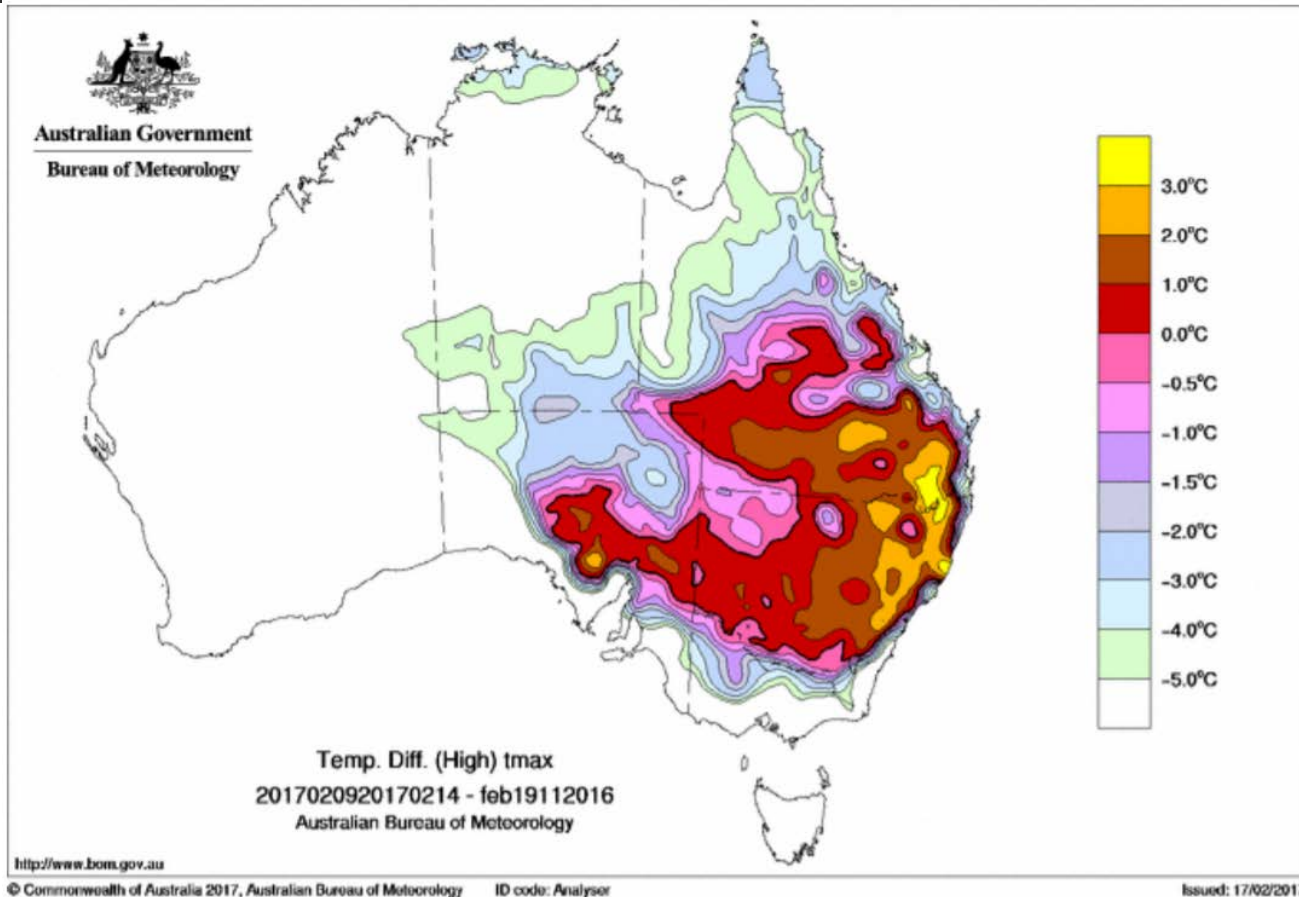
# Warm almost everywhere





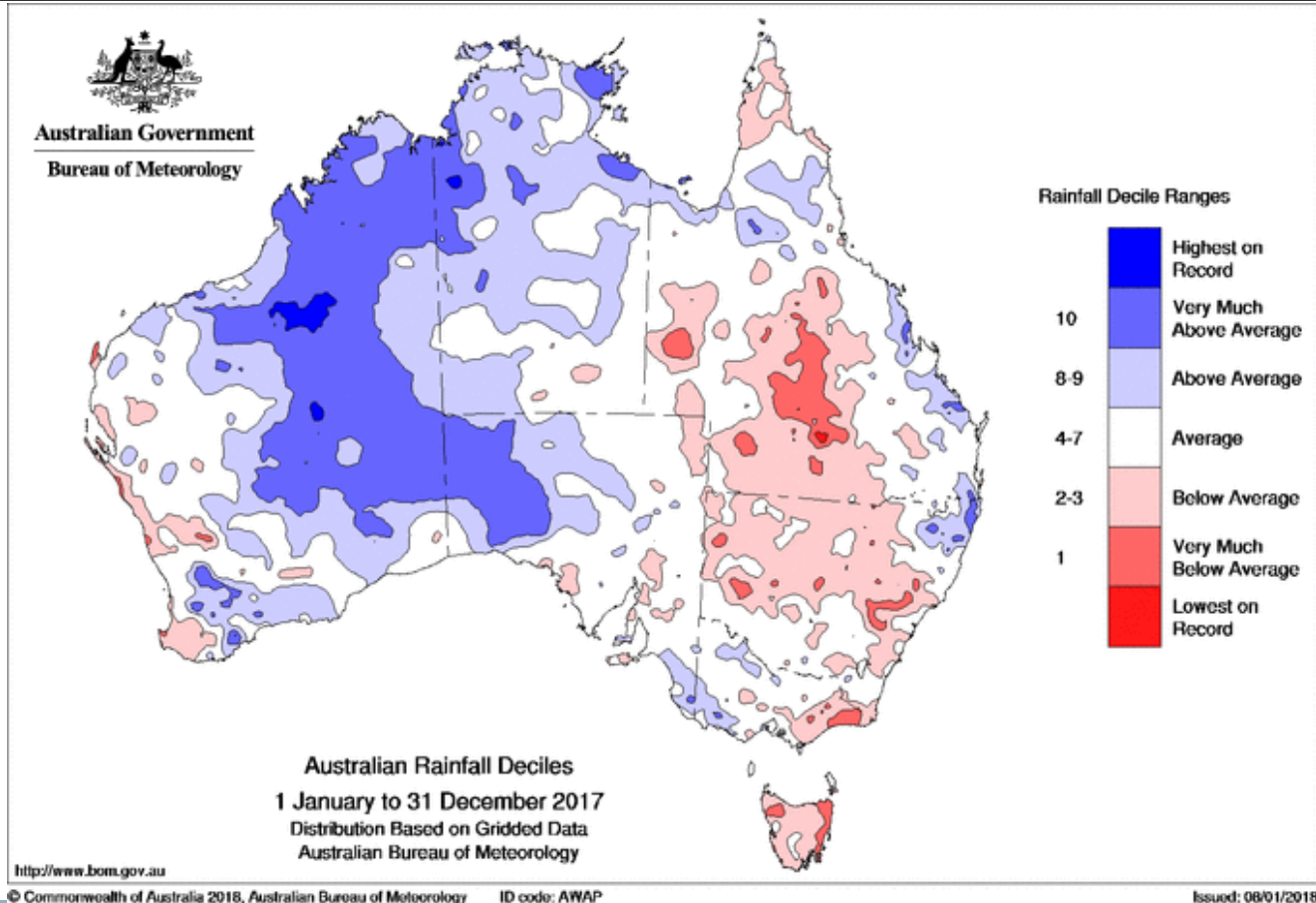


# February 2017 heatwave



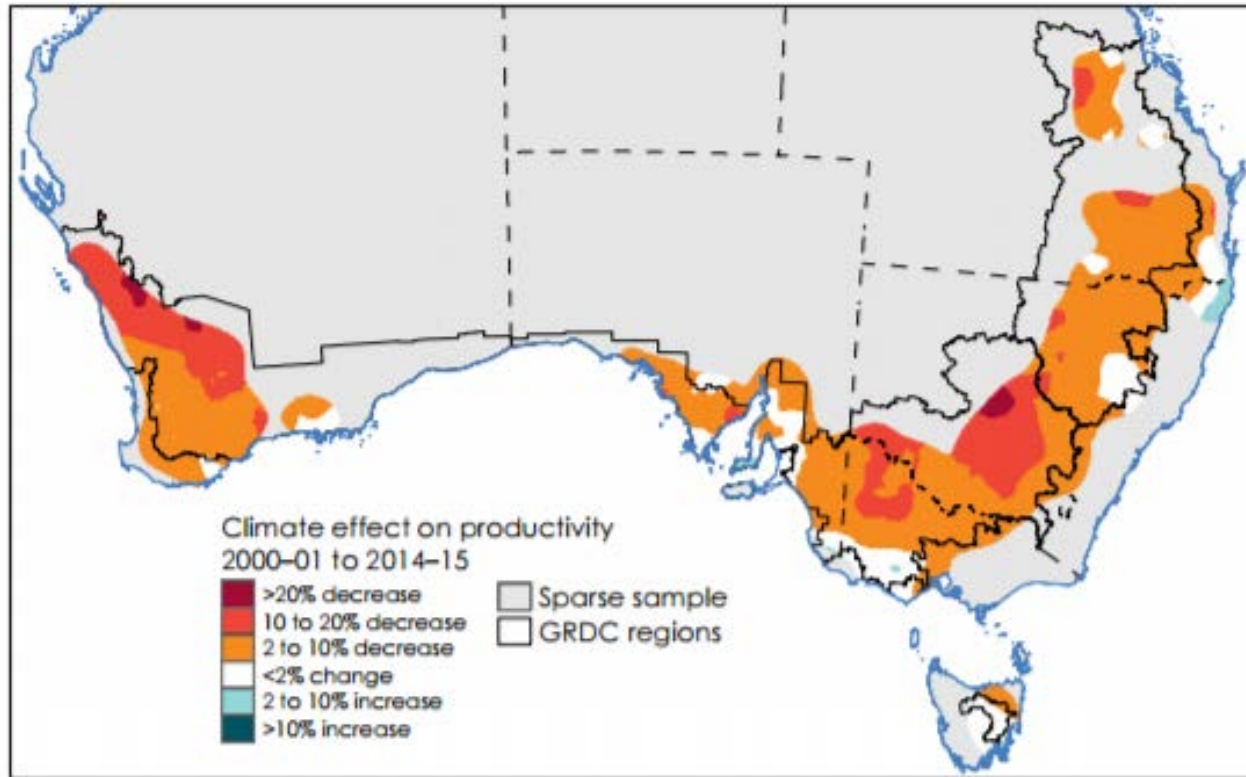


# Australian rainfall: mixed

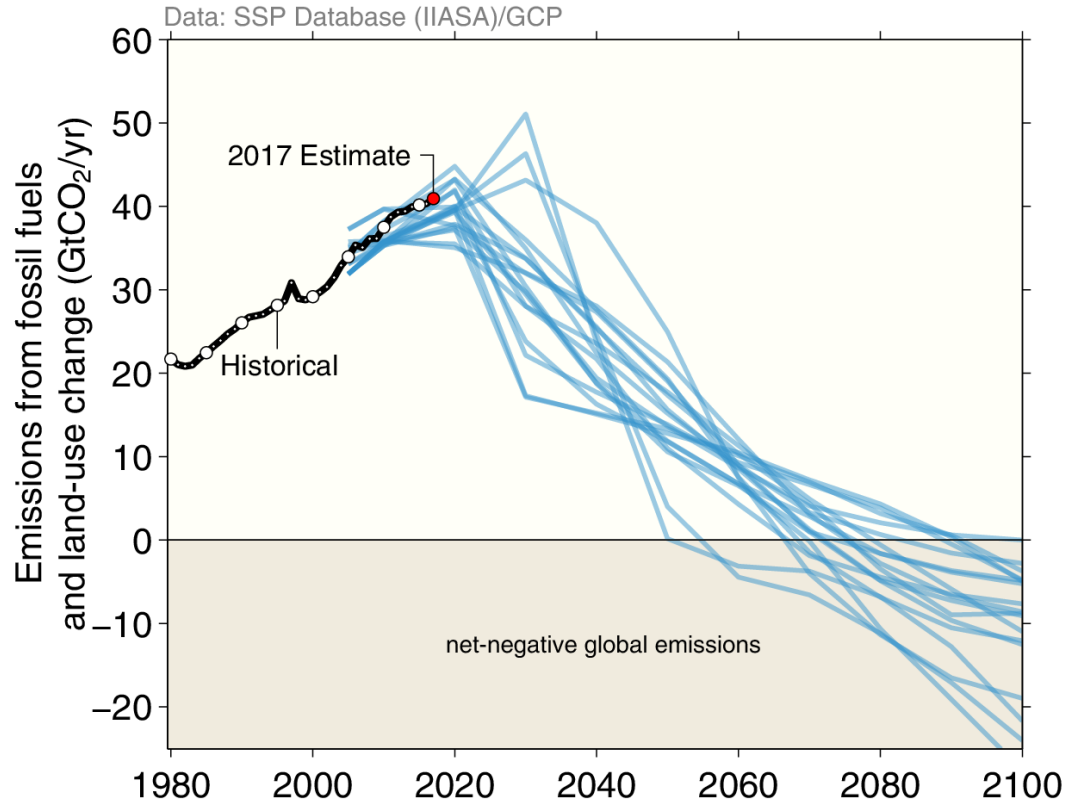




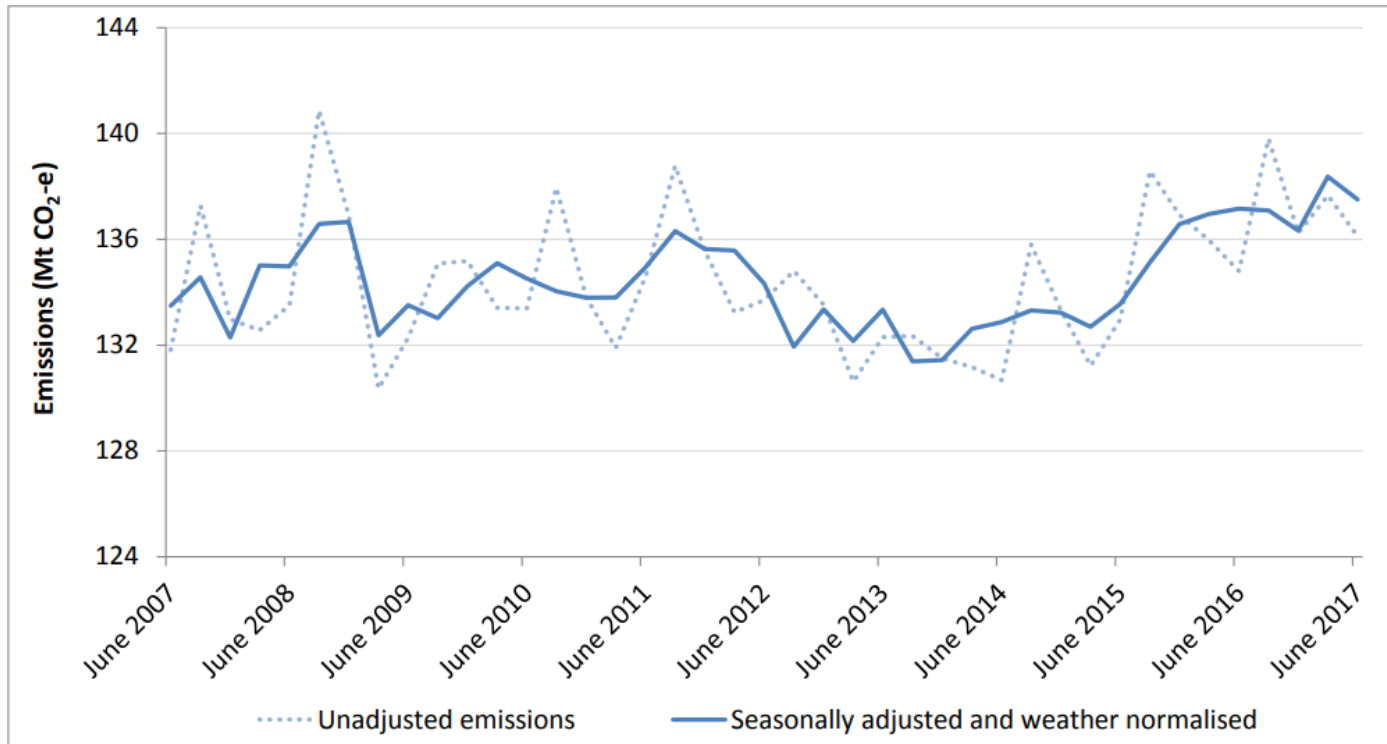
# Climate already putting brakes on agriculture



# Emission reductions to keep within 2°C



# Australia's GHG emissions rising again



Source: Department of the Environment and Energy

- Australia's emissions rose by 0.7% in 2016-2017.

# Climate change and business risk

- ‘The top priority for the next few years and decades must be for society and the world to adapt to the now inevitable impact of climate change’  
*Munich Re*
- ‘While there is still time to act, the window of opportunity is finite and shrinking’  
*Mark Carney, Governor of Bank of England*
- Climate change ‘risks are foreseeable, material and actionable now ... and regulators here and abroad are paying attention’  
*Geoff Summerhayes, APRA*



**Geoff Summerhayes**

*Executive Board Member*

*Australian Prudential Regulation Authority (APRA)*

*17 February 2017*



# Brisbane in 2017

- Equal warmest year on record -  $0.8^{\circ}\text{C}$  above average
- Several extended heatwaves (esp February and September) with February having 26 days above  $30^{\circ}\text{C}$
- Average rainfall
- Wettest March on record (TC Debbie) with several sites having highest daily rainfall on record
- Record high October rainfall



# Summary

- Many record-breaking changes in 2017
- More change is in store
- Neither emission-reduction responses (except in a few jurisdictions like the ACT) nor adaptation responses are keeping pace
- Positive, strategic and timely climate-smart choices in a fast-changing world

