



# Climate change

Sandgate's Biggest Issue

5 October 2017



# Rising sea levels pose the biggest threat to Sandgate

Like many of the big issues in Australia, this has become political.

And that has muddied the waters. There is now so much contradictory information out there that it is difficult to make sense of it.

But this is personal for us. Many of us will have our home values affected. Visitors will stay away, affecting businesses. And the loveliness of Sandgate will be changed forever.

Hence we have put together this simple summary of the science behind climate change. We should all use it to agitate for more action.

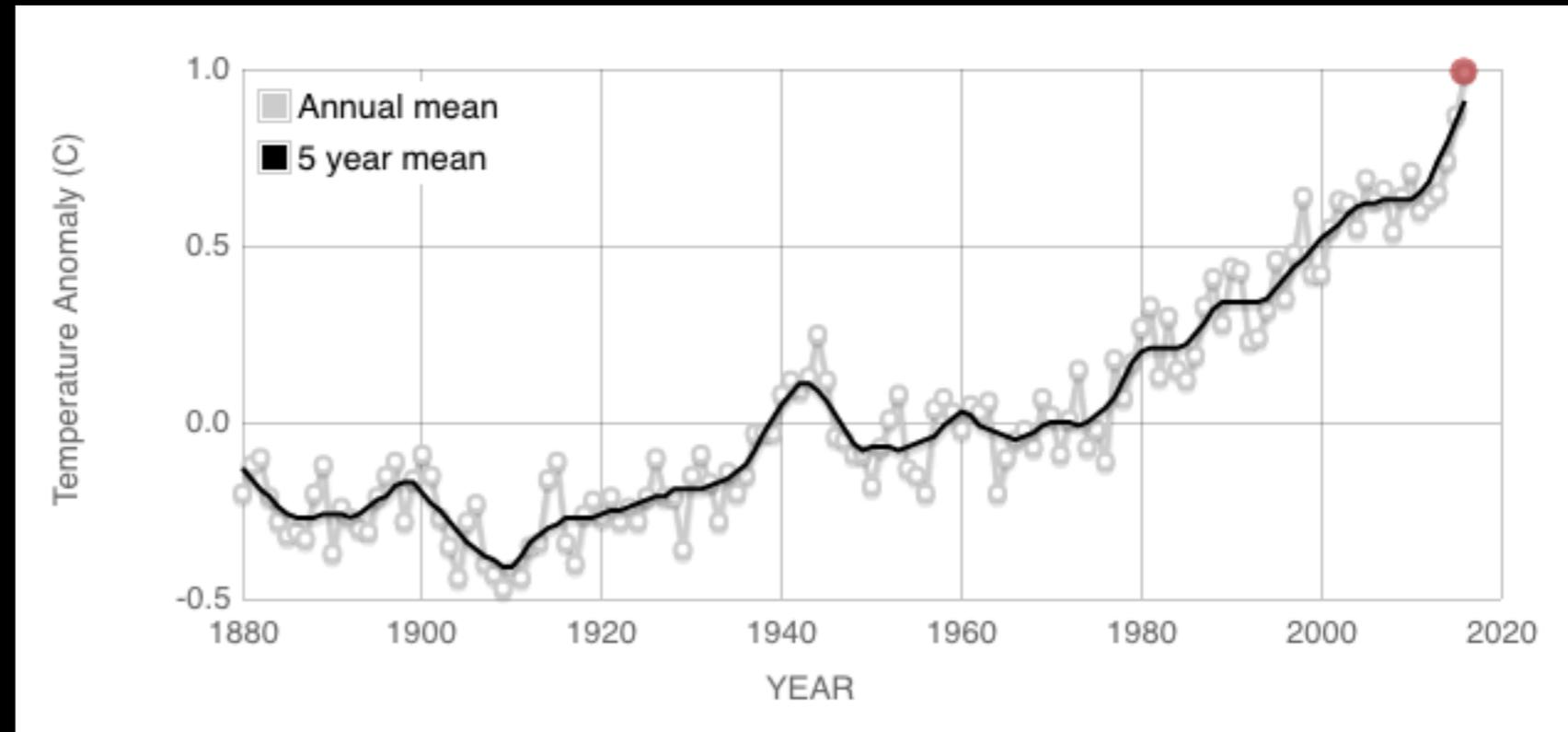
Frank Box  
President  
Keep Sandgate Beautiful Association Inc.



# Our climate is warming

Even the rate at which it is warming is increasing ...

- \* 2014 became the warmest year on record globally;
- \* 2015 surpassed 2014 by a wide margin;
- \* 2016 surpassed 2015;
- \* Sixteen of the last 17 years are the warmest years on record for the globe.



Source (Graph): NASA - <https://climate.nasa.gov/vital-signs/global-temperature/>

Source (Text): US National Academies of Science, Engineering, Medicine -

<https://www.nap.edu/catalog/24712/review-of-the-draft-climate-science-special-report>



# A warming climate causes sea levels to rise

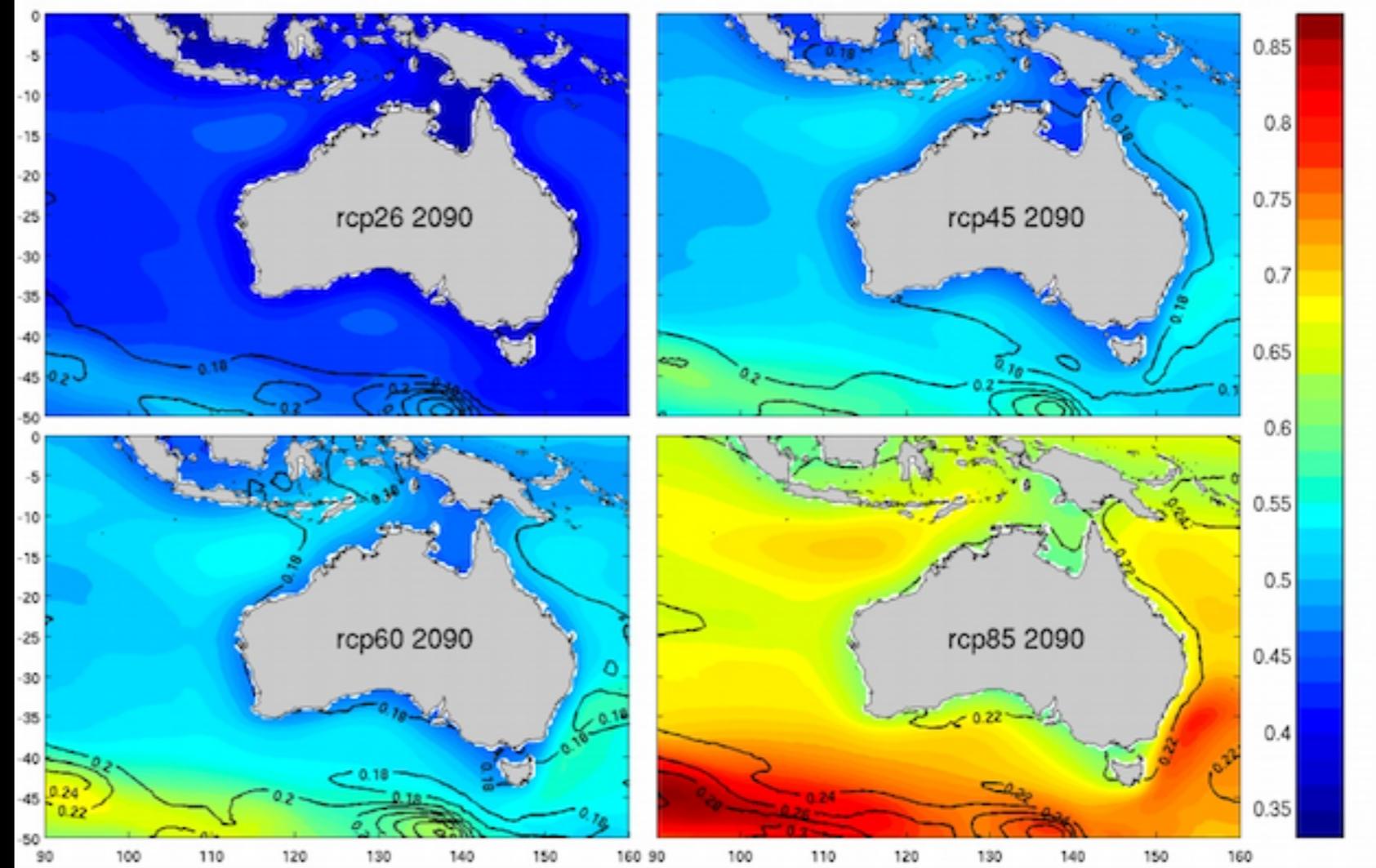
Predicting sea level rise is difficult.

But an enormous amount of work has been done and there is scientific consensus on sea level rise for 4 defined scenarios.

Scenarios 2 & 3 are similar and reflect a world that is trying to do something, but not trying very hard.

The prediction is for about 0.5m rise by 2090.

Projections of relative sea level rise around Australia



The right hand axis is scaled in metres and indicates sea level rise in 2090.

Source: CSIRO - <http://www.esc.nsw.gov.au/inside-council/project-and-exhibitions/major-projects-and-works/coastal-projects/sea-level-rise/sea-level-rise-forum-2014/Dr-JohnChurch-CSIRO.pdf>

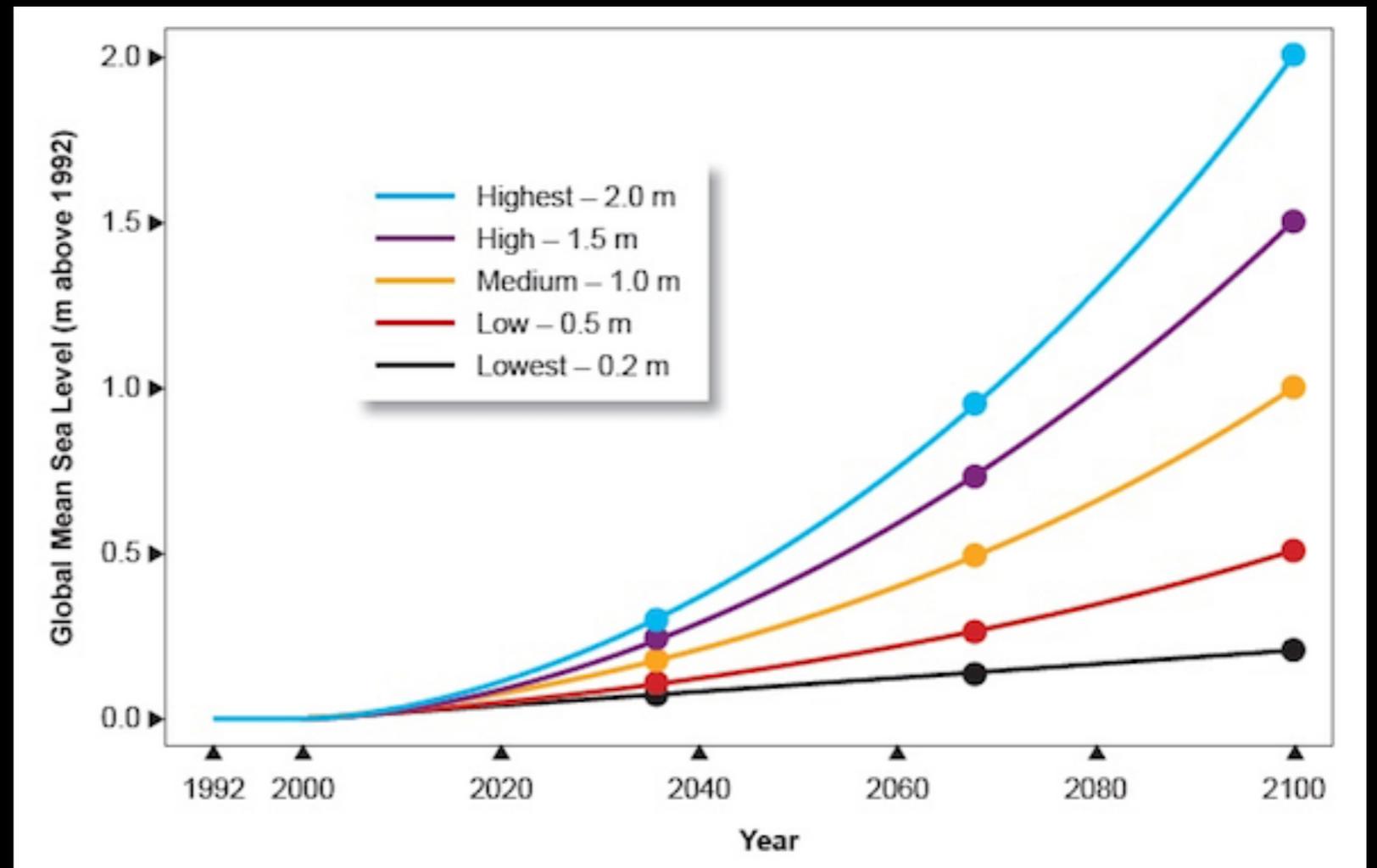


# But the 0.5m prediction ignores storm surges & heavy rainfall

This has caused some **authorities to use values that are 4-times greater than those predicted.**

These curves show the sea level rises used by the US Department of Defence in 2016.

Note that the storm surge associated with Hurricane Irma in Sept 2017 was **1.9m.**





# Sandgate is very sensitive to sea level rise

0.5m is the predicted sea level rise by 2090 if the world tries to do something, but does not try very hard.

Based on Hurricane Irma, a severe cyclone would push sea level rise temporarily towards 2m.

It would be catastrophic.



Source: Aust Gov't Online Coastal Information

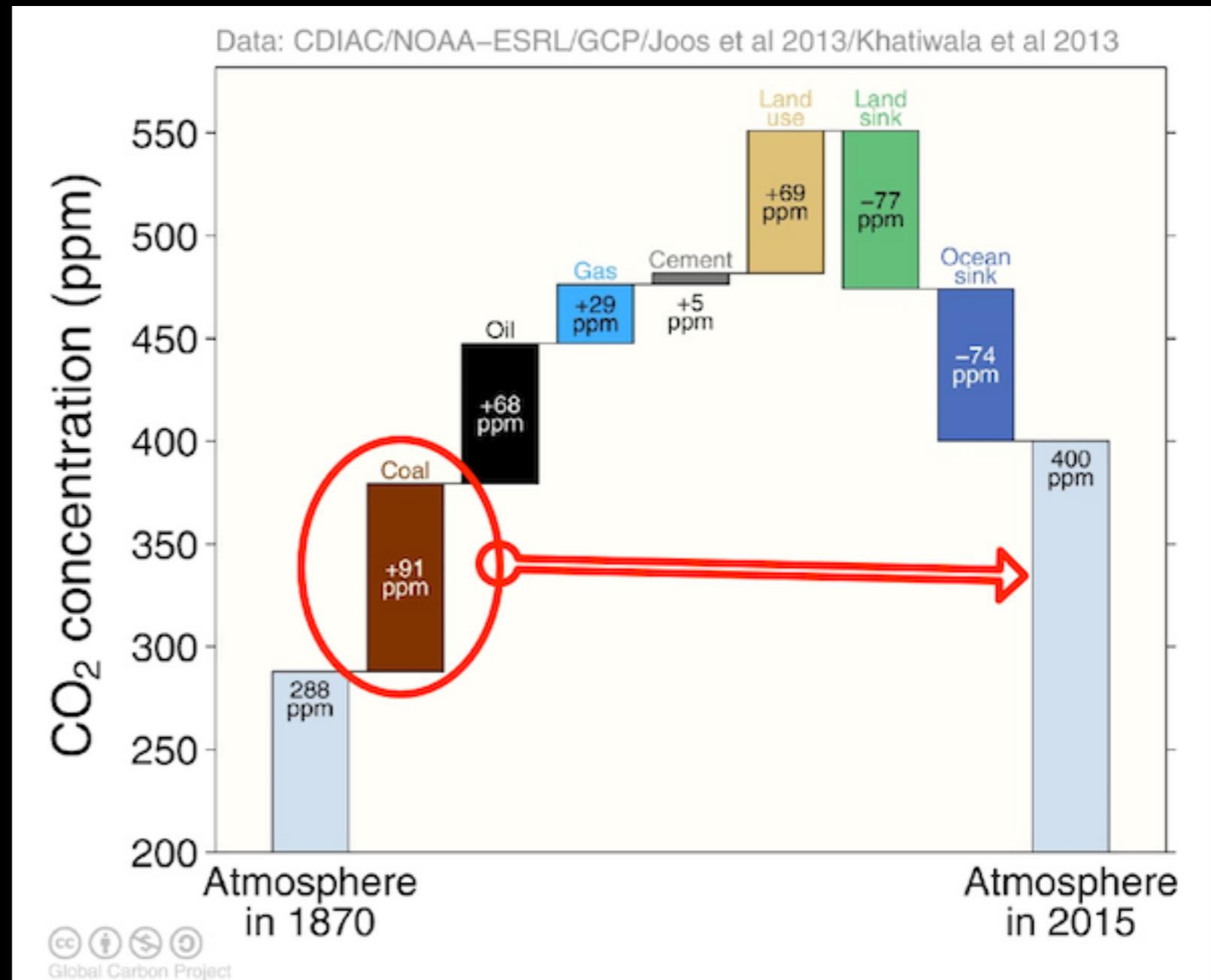
[http://www.ozcoasts.gov.au/climate/Map\\_images/SthEastQld/mapLevel2\\_North.jsp](http://www.ozcoasts.gov.au/climate/Map_images/SthEastQld/mapLevel2_North.jsp)



# Coal is the biggest contributor to atmospheric CO<sub>2</sub>

CO<sub>2</sub> is the dominant greenhouse gas.

The left side of the graph shows the sources of CO<sub>2</sub> since 1870 and the right side where it ends up.



Source: Australian National University

<http://climate.anu.edu.au/news-events/climate-change-global-science-update>

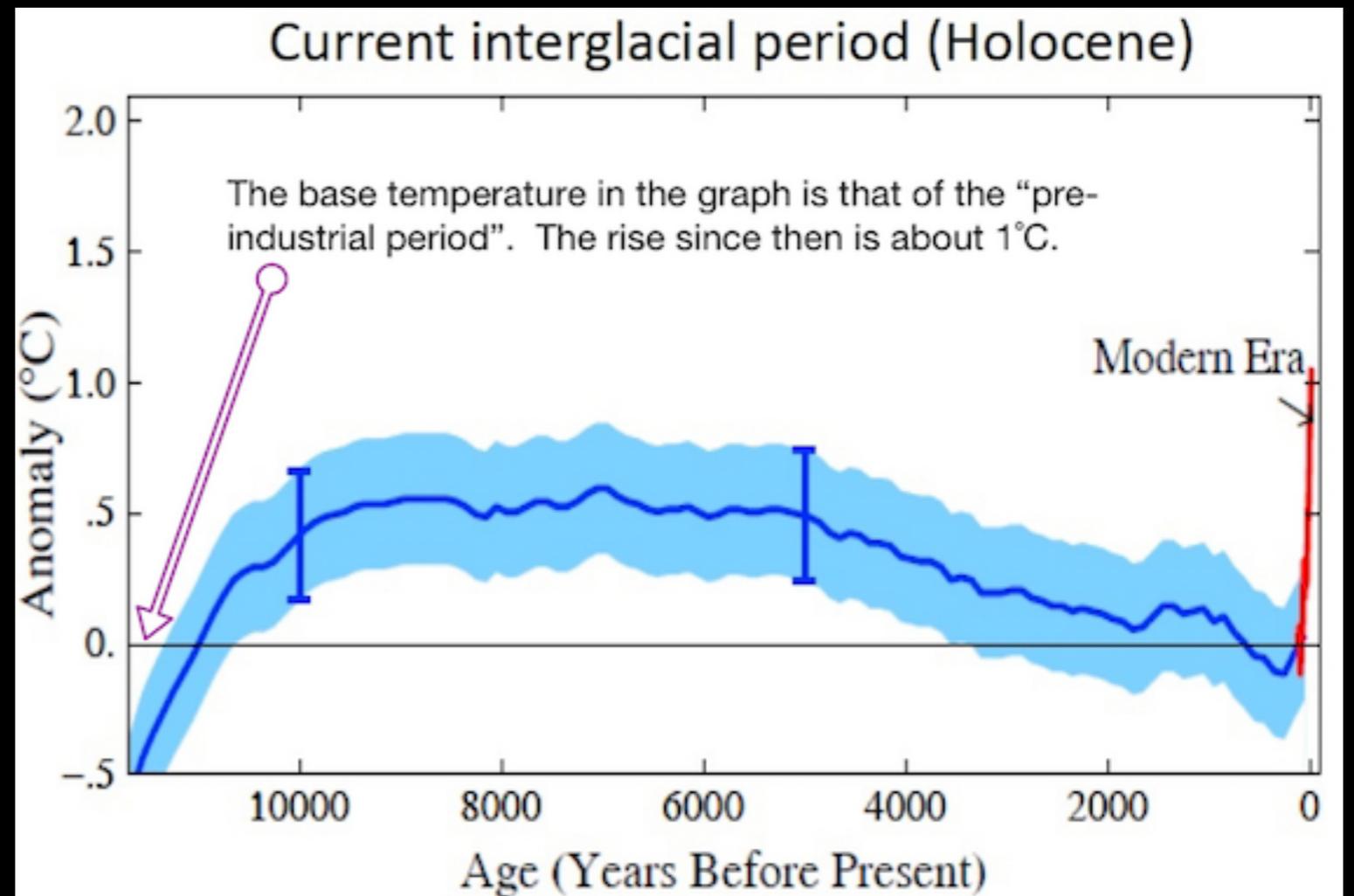


# We could soon be in uncharted territory

The global temperature has risen by about 1°C since 1870 and already exceeds any in recent time.

If the global rise did reach 2°C, it would be the first time in the last million years.

So much has changed since then that the consequences are unpredictable.



Source: Australian National University

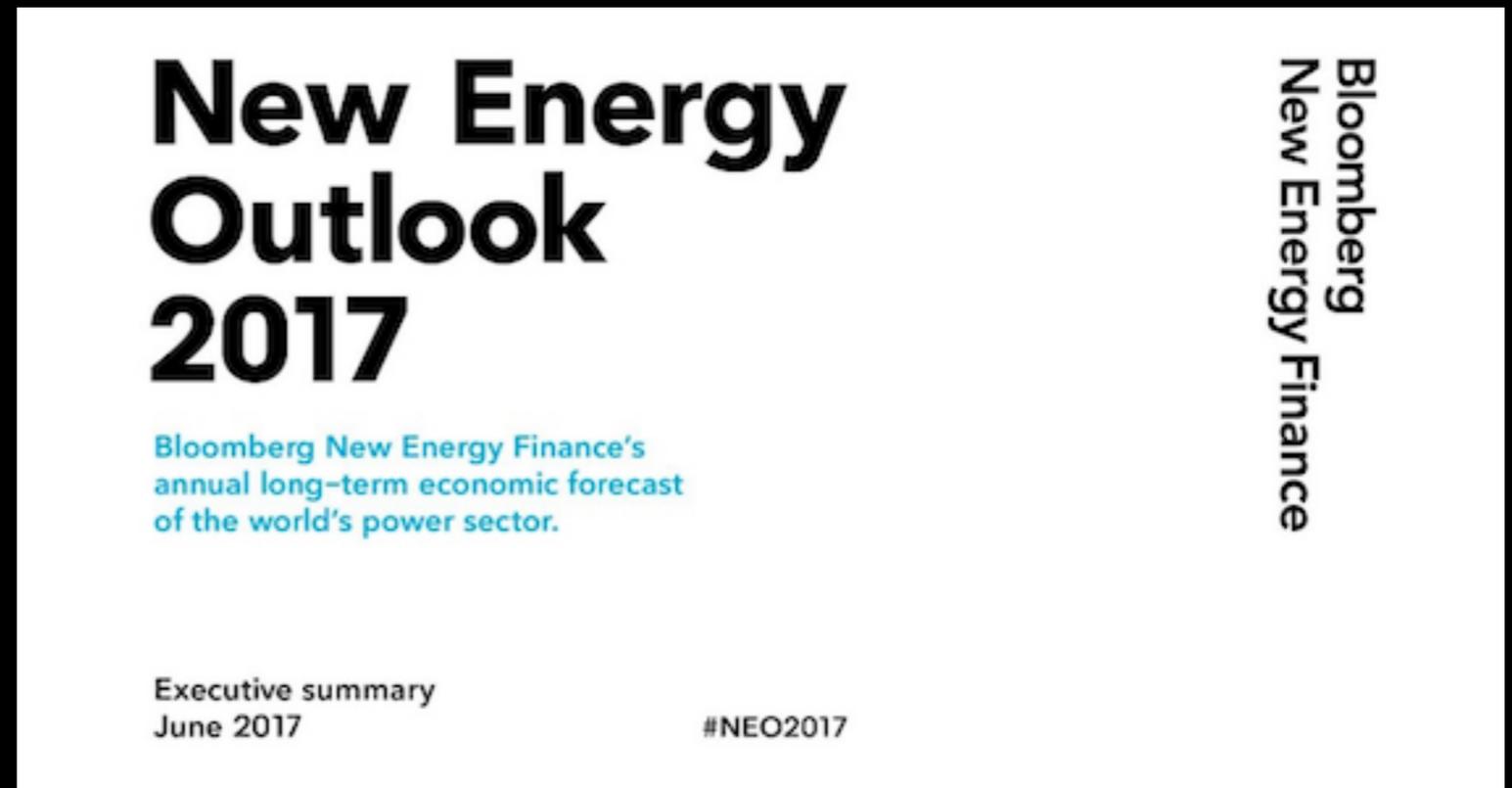
<http://climate.anu.edu.au/news-events/climate-change-global-science-update>



# The power sector is not doing enough

The Bloomberg 2017 Energy Outlook looked out to 2040 and found 72% of all new global generation would be in renewables. And yet it concluded ...

“Although the world’s power sector emissions reach a peak within a decade, the rate of decline in emissions is not nearly enough for the climate”.





# “Clean coal is an oxymoron”

... Professor Ian Lowe, Laurie Jeays Memorial Lecture,  
Sandgate, 25 August 2017

There is no such thing as “clean coal”. Coal is carbon with a whole lot of impurities, many harmful, mixed in.

Burning it releases everything. We could then try to grab back the nasty stuff but the cost would be huge and the technology is unproven.





# We cannot afford to be complacent

We live in a beautiful place but we need to look after it.

Nothing will change it more than global warming.

We all need to do whatever we can to stop the burning of fossil fuels.

So ... talk about it, lobby decision-makers, invest in alternatives.

And urgently. Please.

