



National Environmental
Research Program



Australian Government



TSRA
www.tsra.gov.au

Climate Projections for Torres Strait and Southern PNG

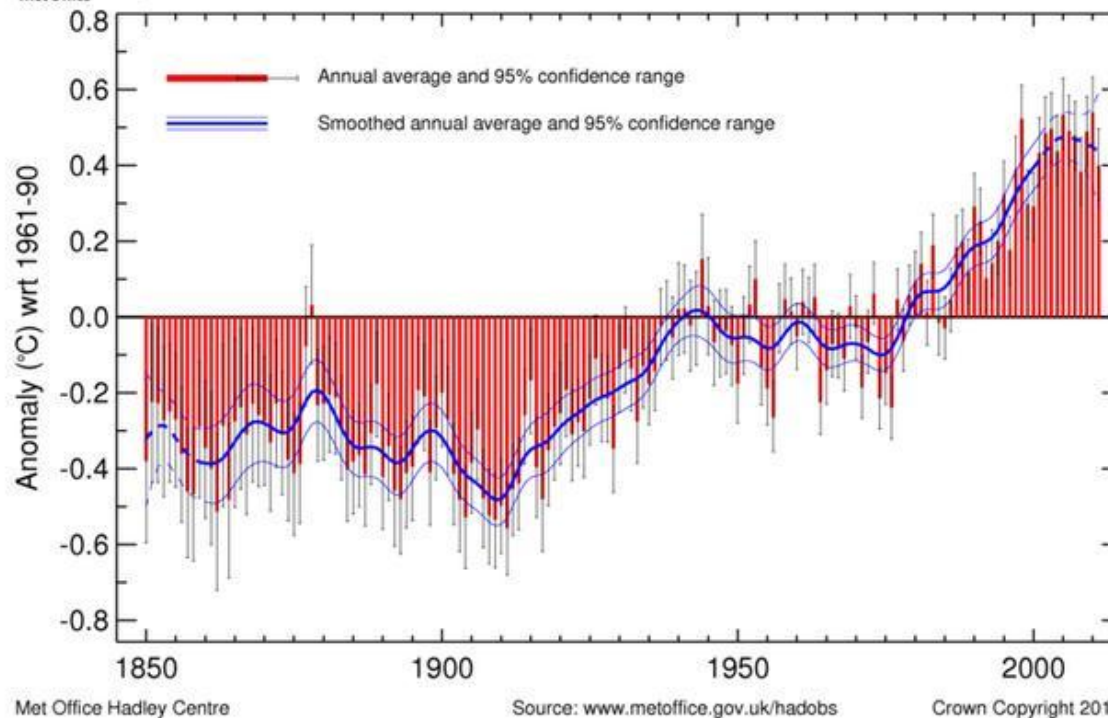
Jack Katzfey, Wayne
Rochester, Tim Skewes



CLIMATE CHANGE



Global average temperature 1850-2011
Updated from Morice et al. 2012



The red bars show the global annual average near surface temperature anomalies from 1850 on. The error bars show the 95% confidence intervals on the annual averages. The thick blue line shows the annual values after smoothing with a 21 point binomial filter. The dashed portion of the smoothed line indicates where it is influenced by the treatment of the end points. The thin blue lines show the 95% confidence intervals on the smoothed curve.

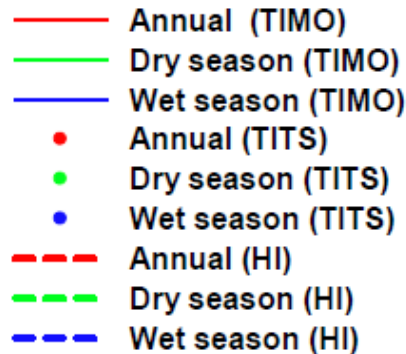


AIR TEMPERATURES CHANGES

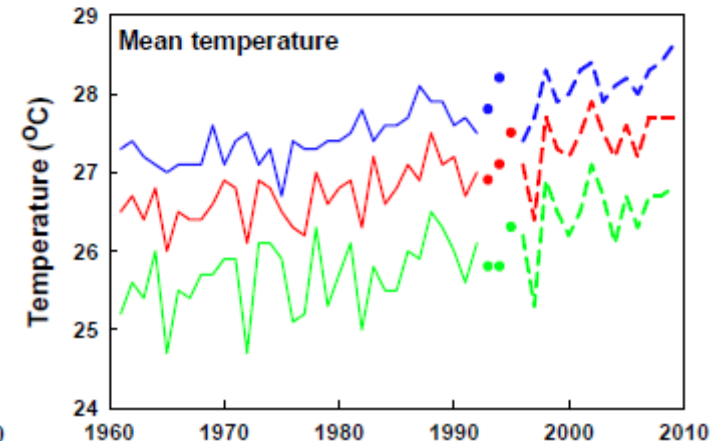
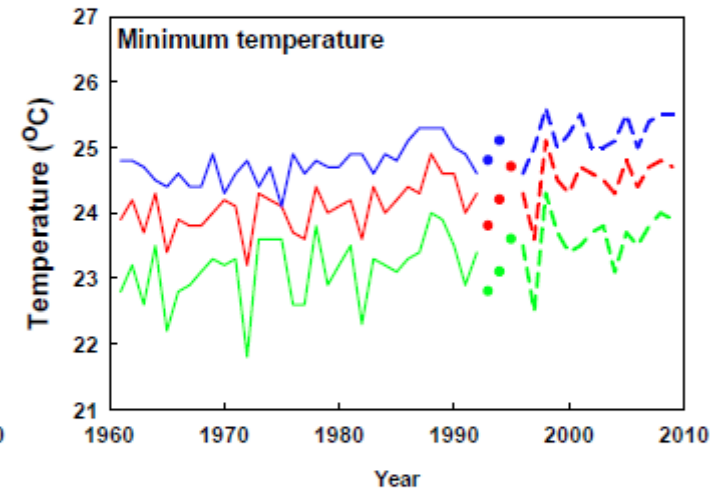
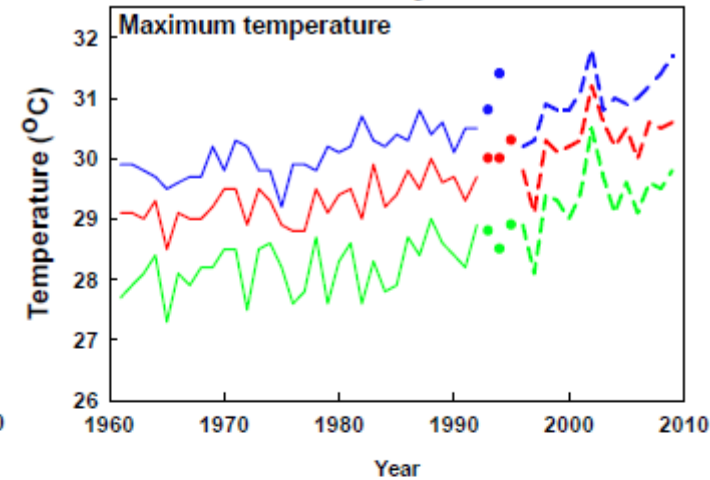
- Increase of 0.8°C since 1880
- $0.15\text{-}0.2^{\circ}\text{C}$ per decade since 1975



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Ramasamy et al., 2010



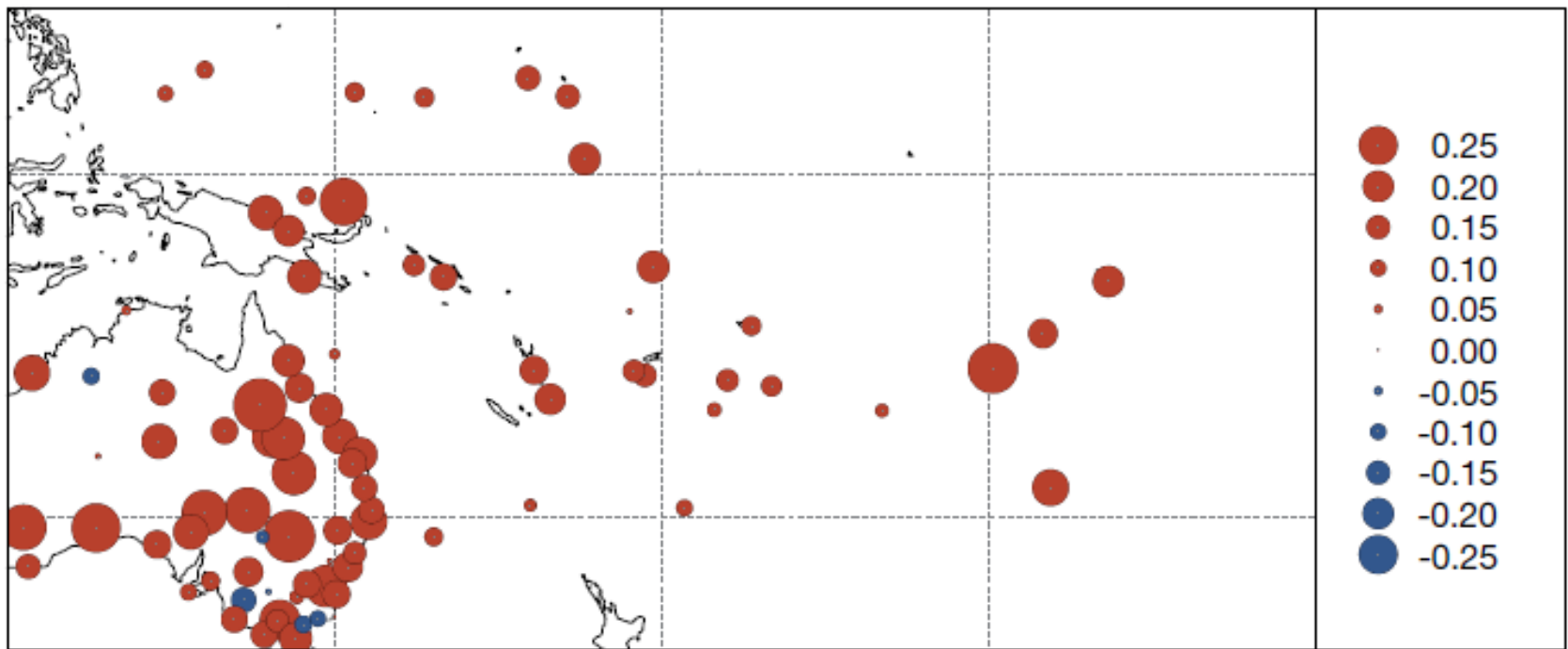


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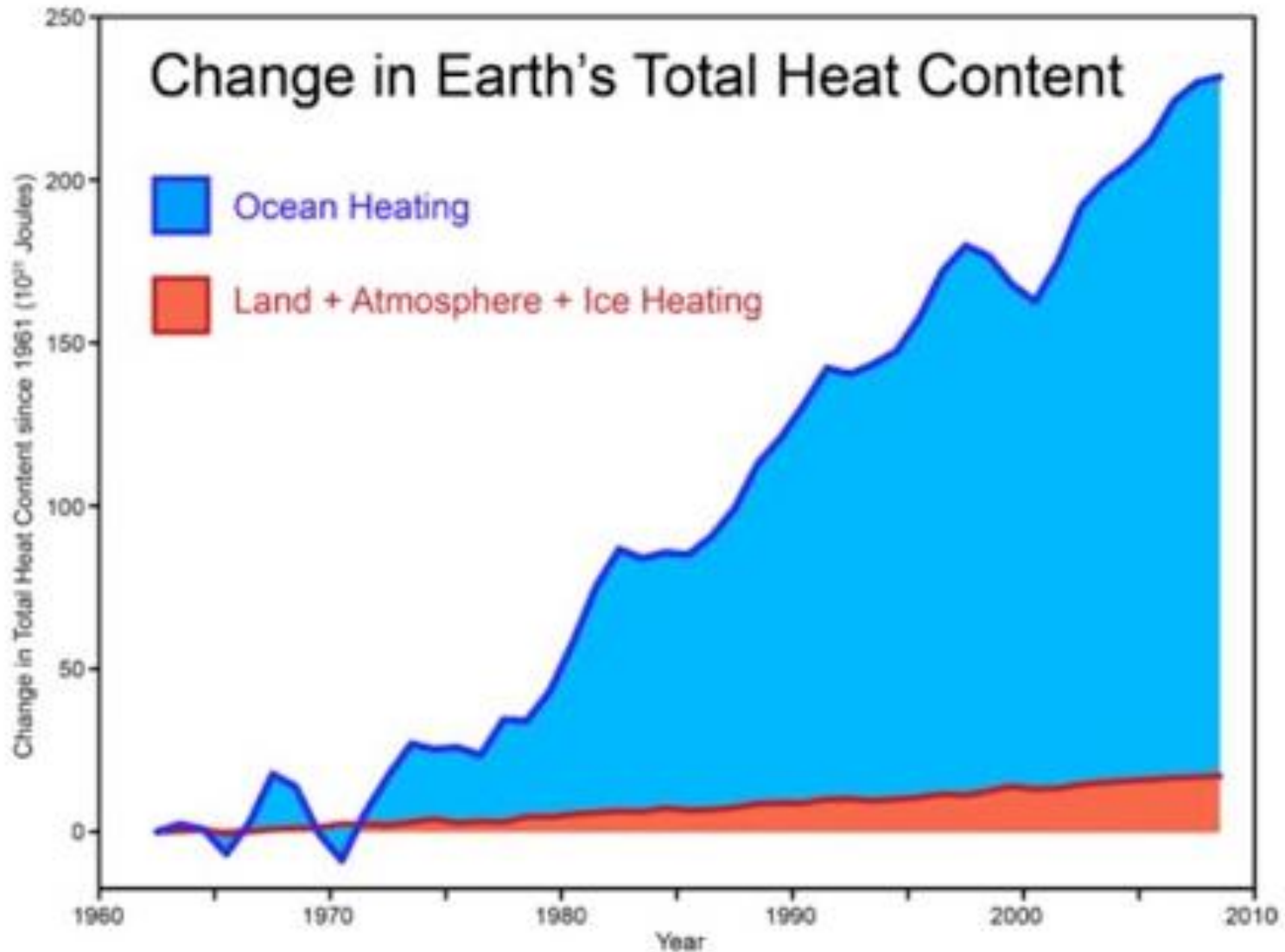
AIR TEMPERATURES CHANGES

Trend in Annual Mean T

1960-2009 ($^{\circ}\text{C}/\text{decade}$)



PCCSP

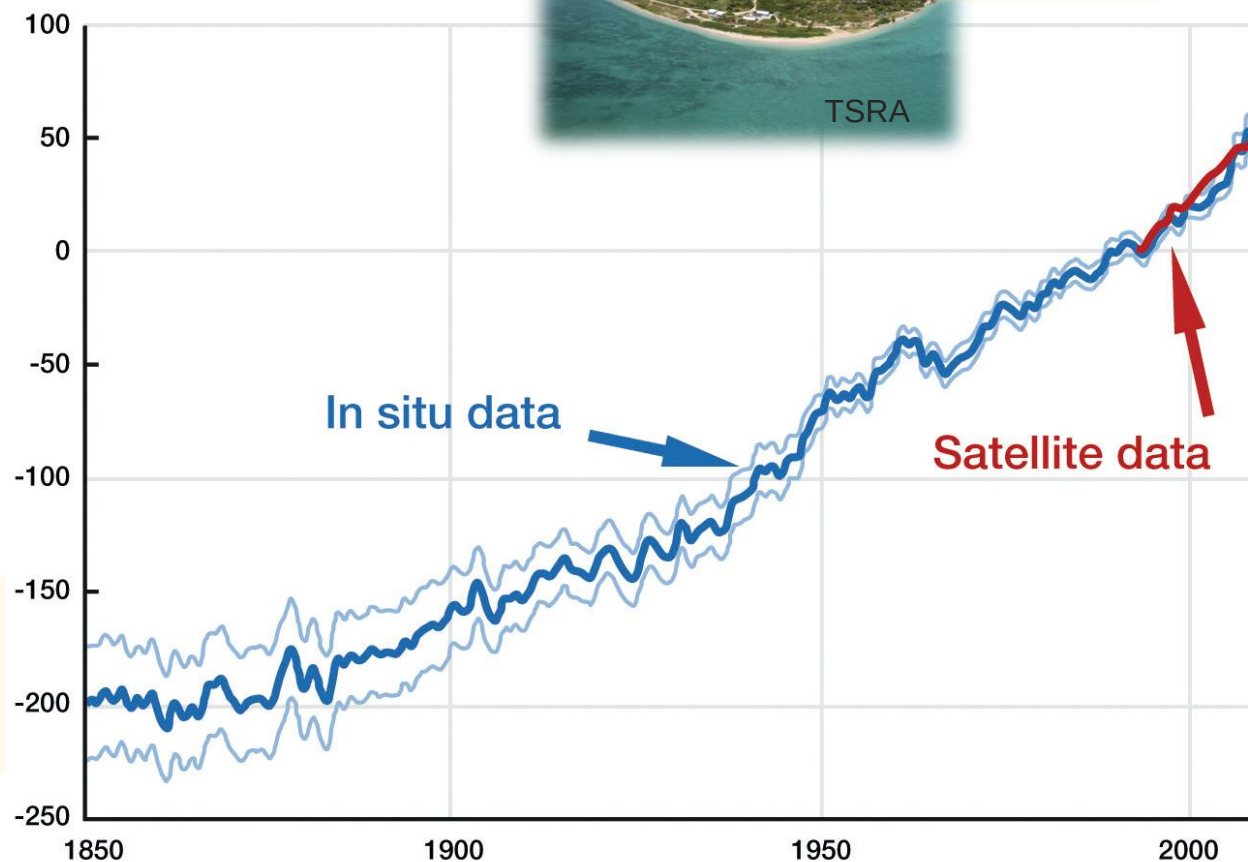


From *Geophysical Research Letters*



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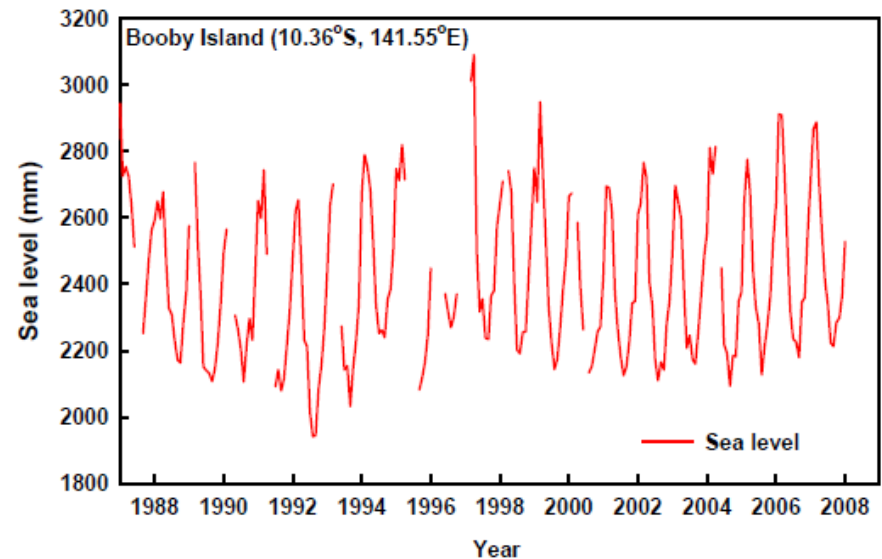
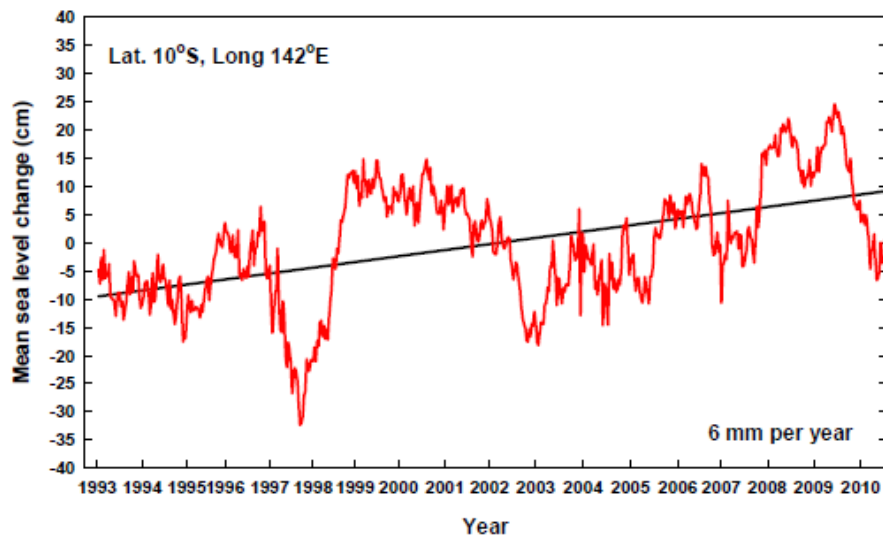
SEA LEVEL RISE





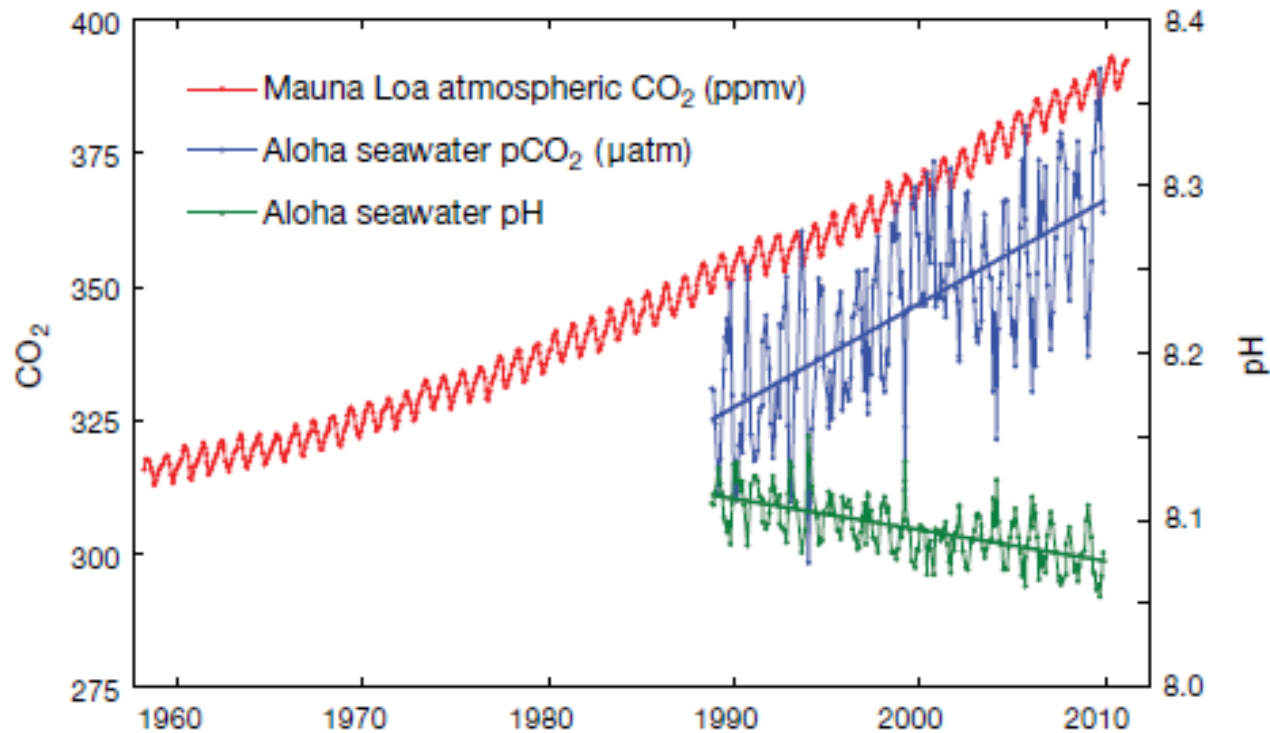
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SEA LEVEL RISE





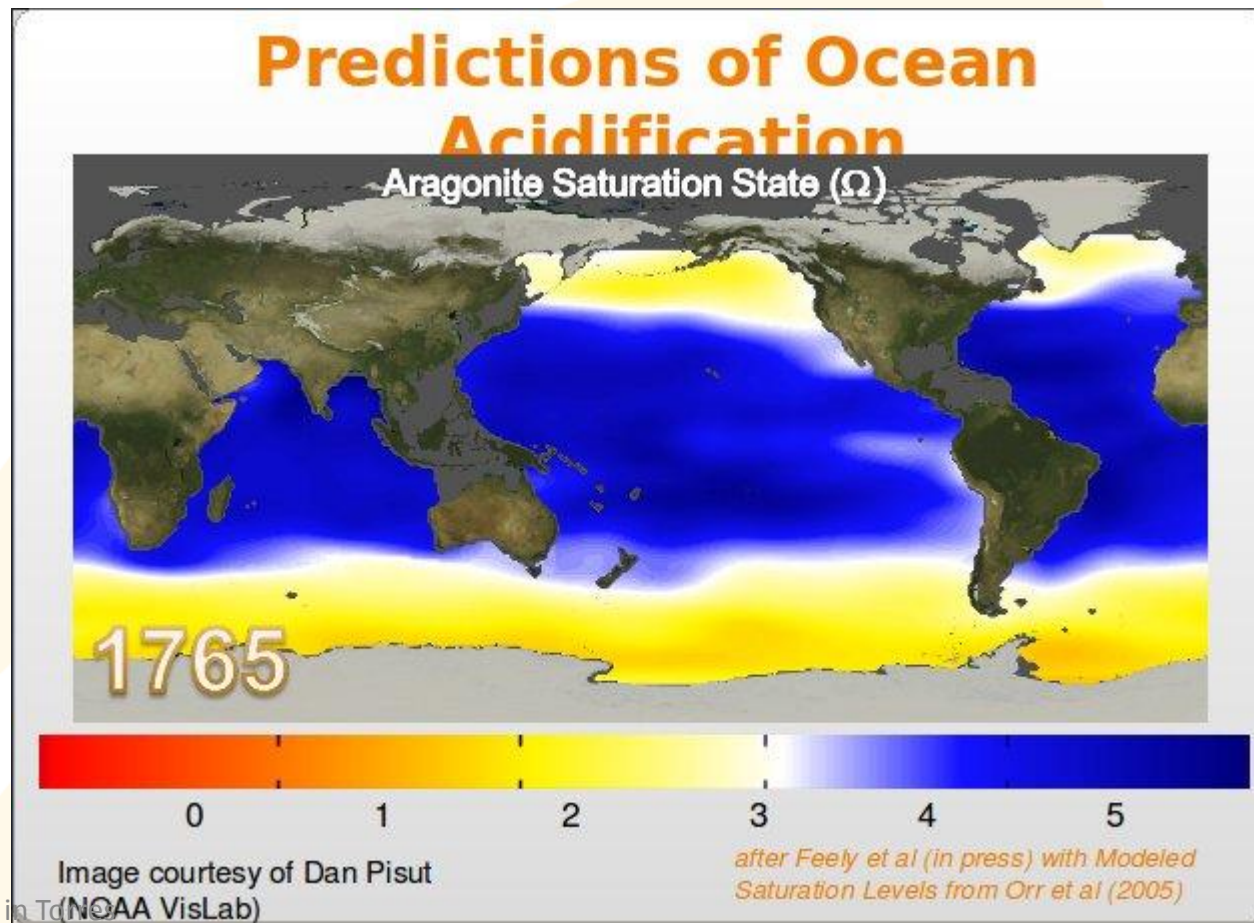
OCEAN ACIDIFICATION





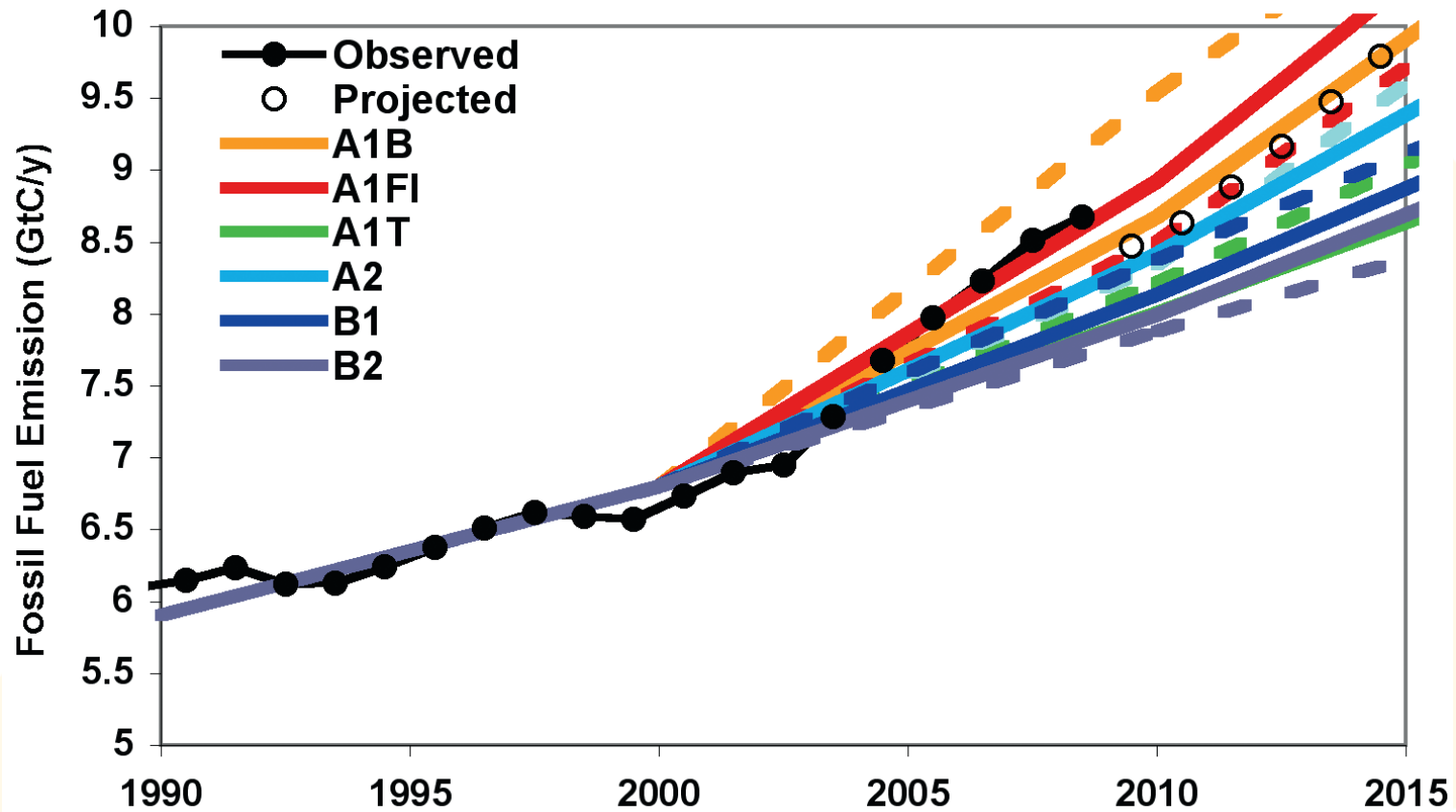
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OCEAN ACIDIFICATION





EMISSION SCENARIOS



PCCSP

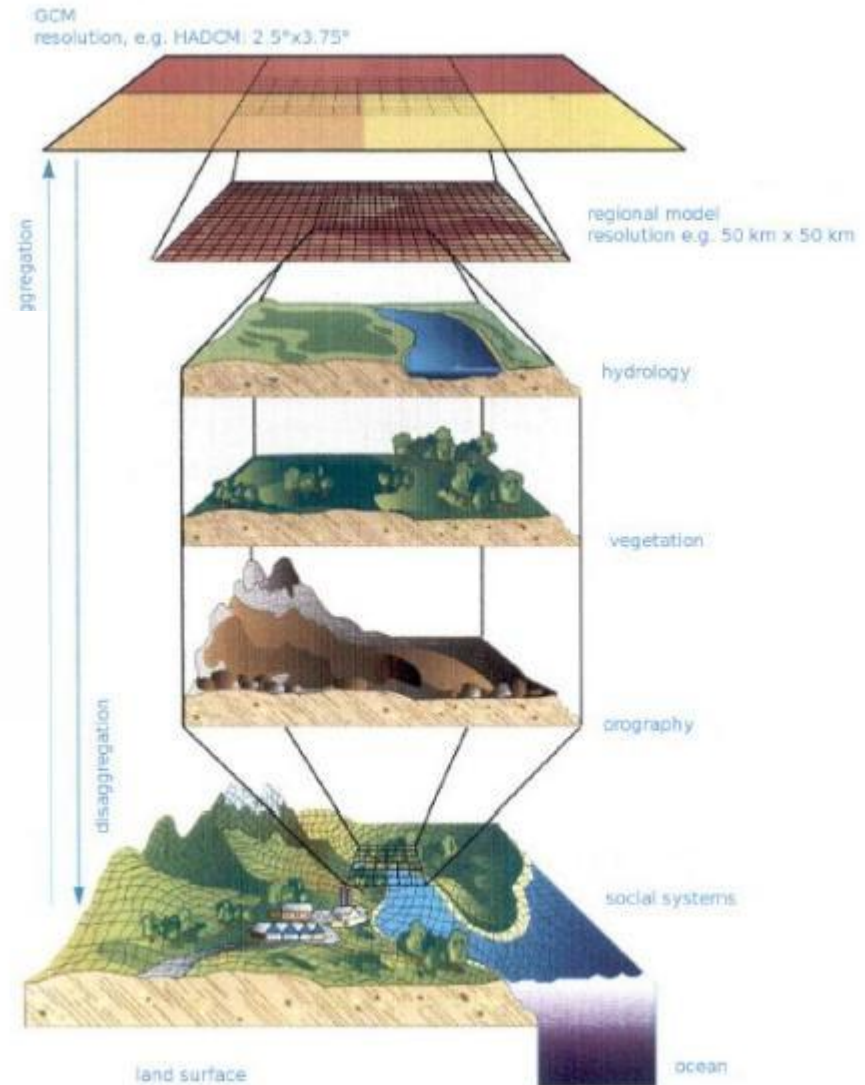


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APPROACH

Schematic for Global Atmospheric Model

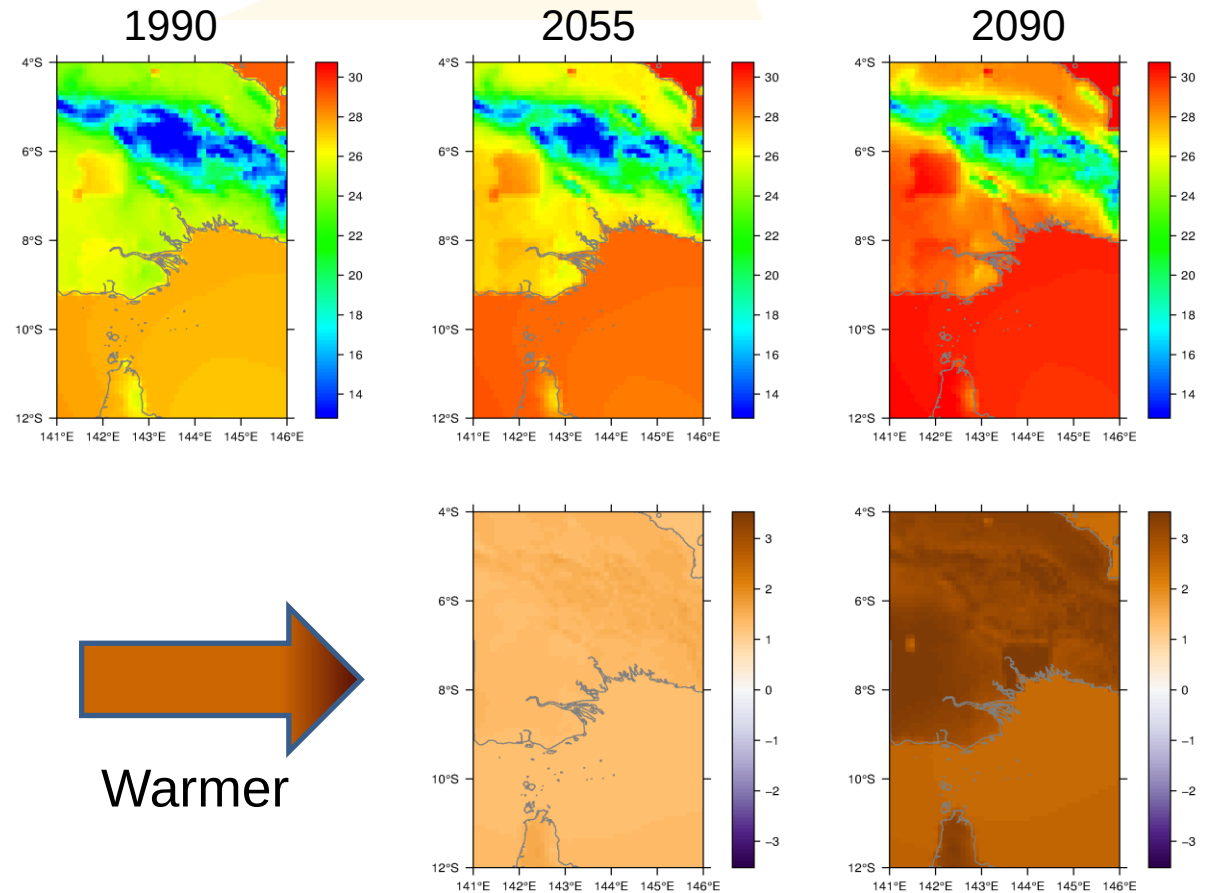
Horizontal Grid (Latitude-Longitude)
Vertical Grid (Height or Pressure)

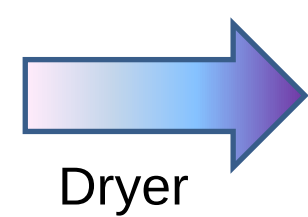




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SURFACE TEMPERATURE (LAND & SEA)

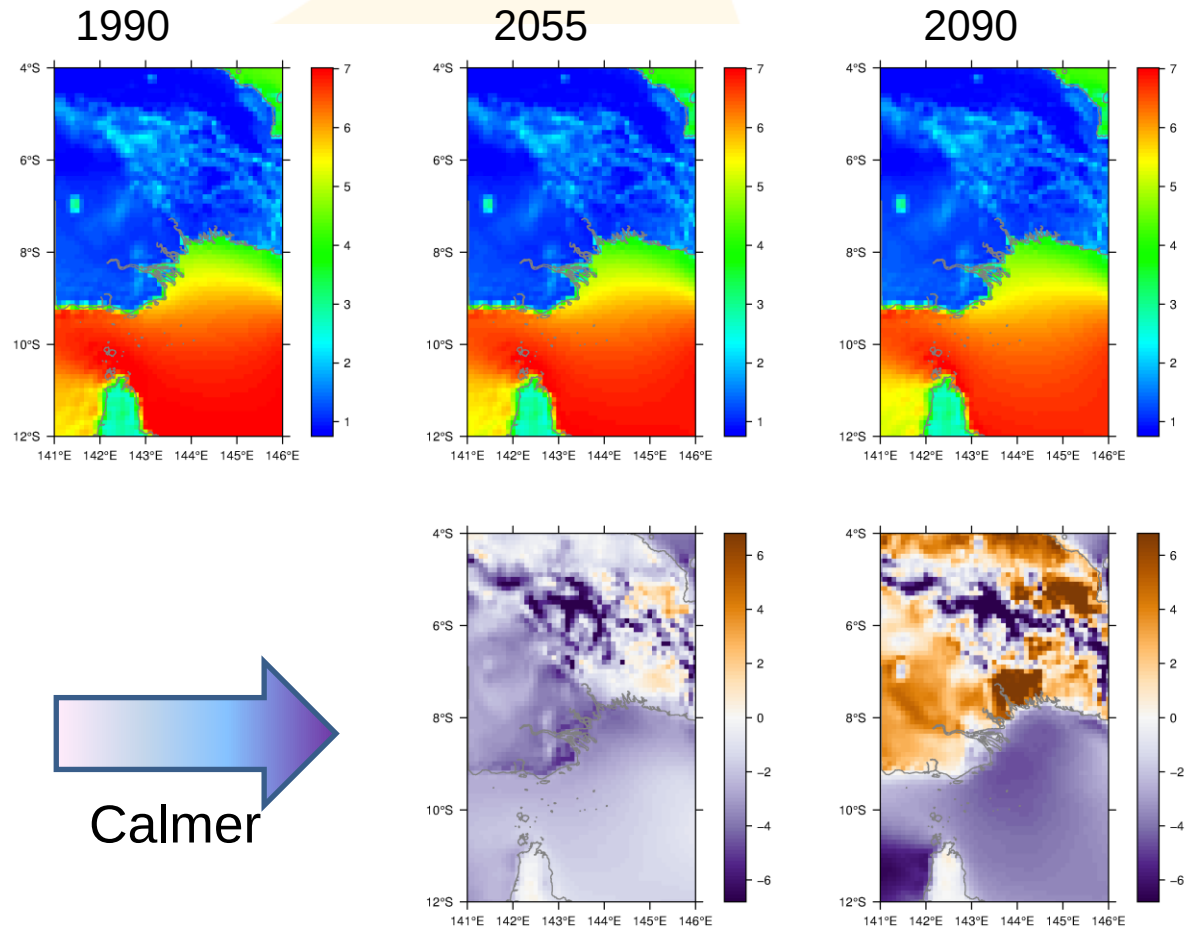






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MEAN WIND SPEED

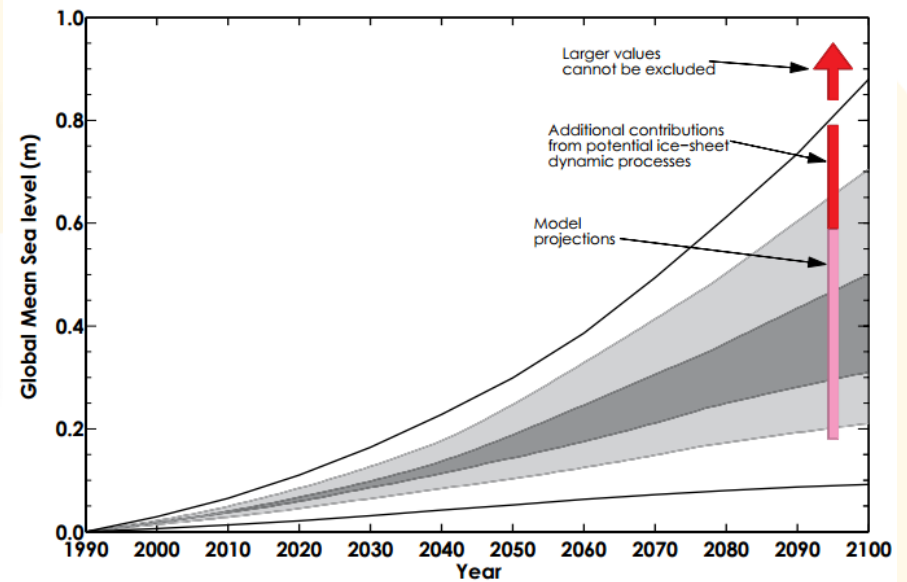




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SEA LEVEL RISE

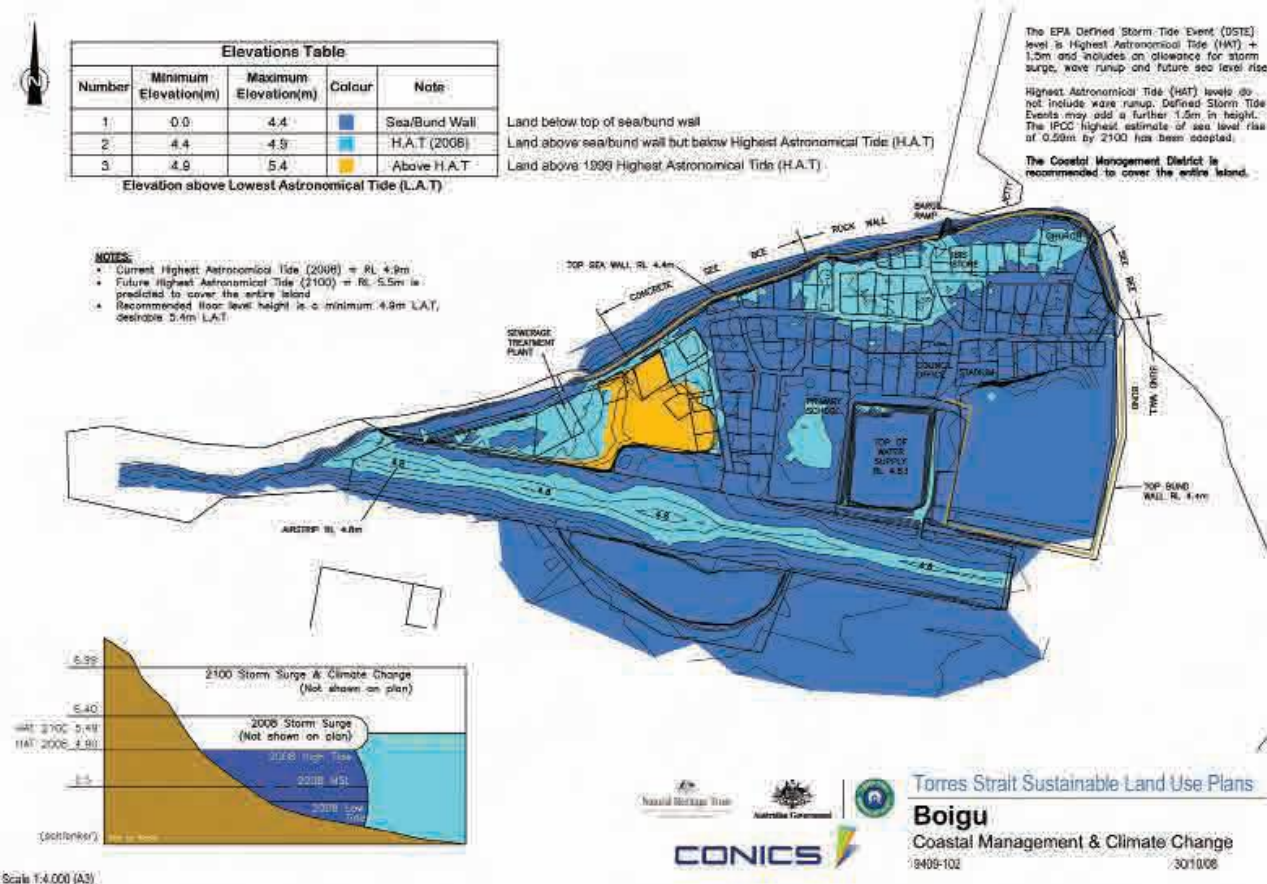
- Current best guess - 1 m by 2100





SEA LEVEL RISE

- Island inundation mapping e.g. Boigu

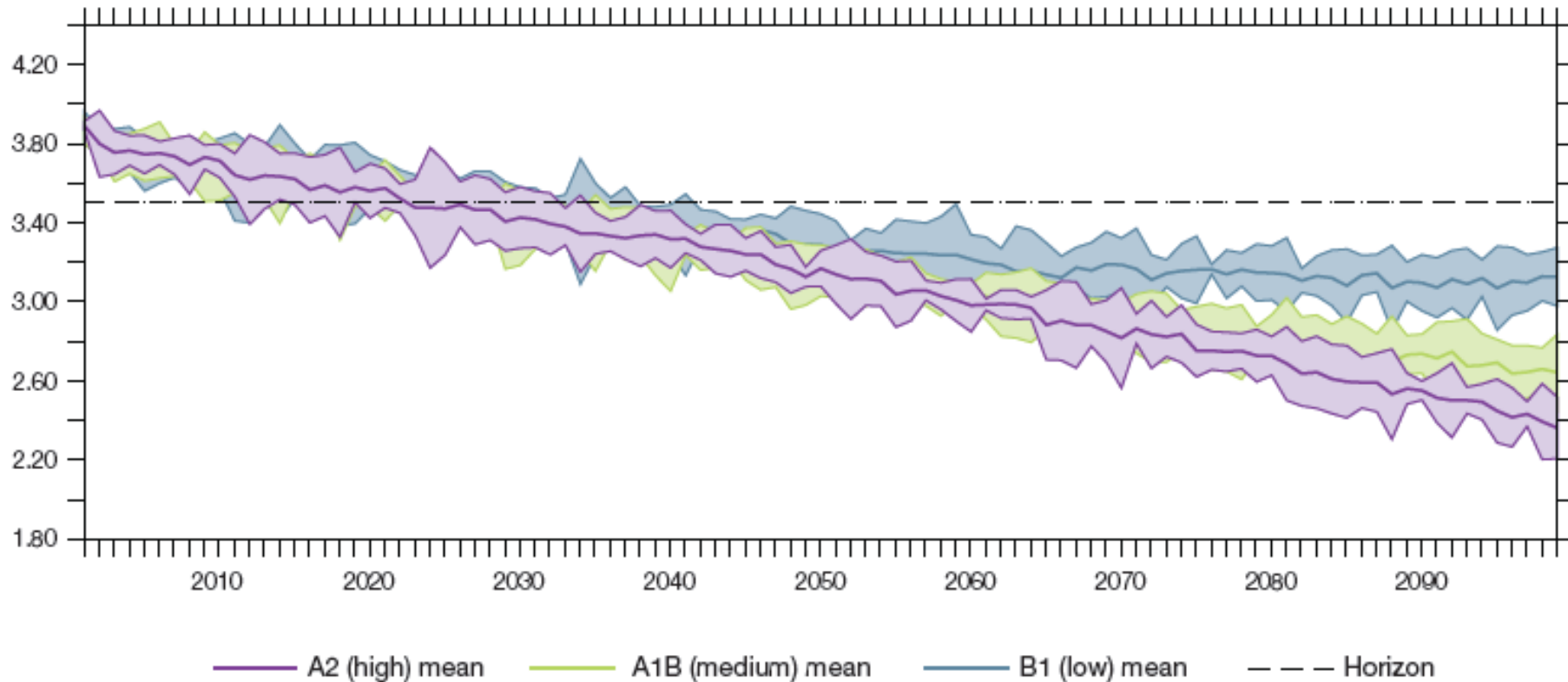




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ARAGONITE SATURATION COEFFICIENT

Maximum Annual Aragonite Saturation State – Papua New Guinea





CHANGE ACROSS TORRES STRAIT



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A2 scenario	2055	2090
Temperature (°C)	+1.3	+2.5
Apparent temperature (°C)	+2.2	+4.8
Rainfall (%)	+3.4	-2.9
Relative humidity (% humidity)	+0.5	+0.6
Wind speed (%)	-2.2	-3.5



AVERAGE CHANGES IN TORRES STRAIT COMMUNITIES

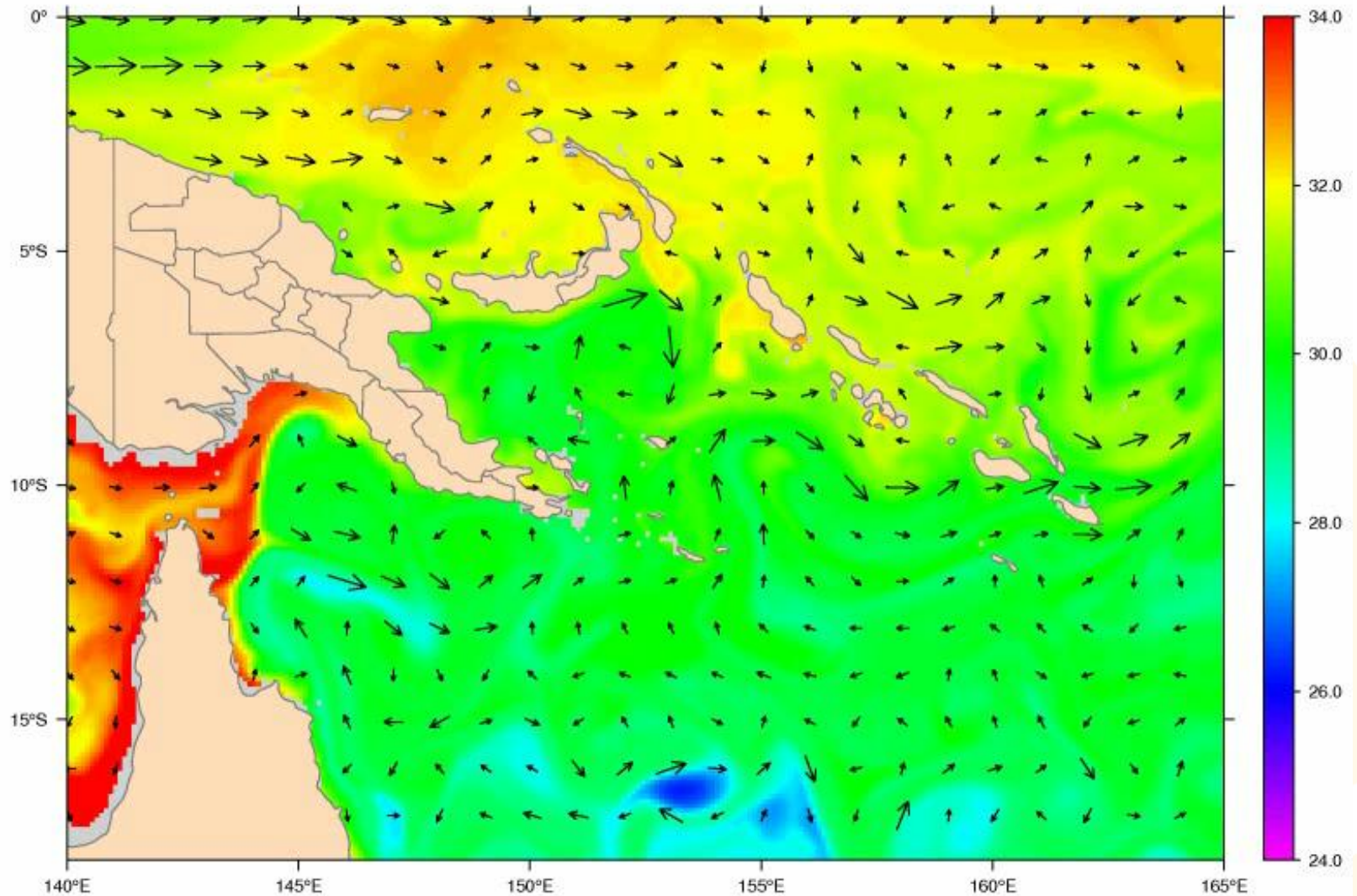
- Rainfall change

Rainfall % change	Badu	Boigu	Dauan	Erub	Hammond	Yam	Kubin
2055	+2.07	+5.31	+6.18	+5.13	-2.86	+4.58	+2.07
2090	-6.98	+1.01	+1.07	+0.24	-9.42	-3.02	-6.98

Mabuiag	Masig	Mer	Poruma	Saibai	St Paul	Ugar	Warraber
+3.23	+4.84	+3.07	+4.28	+6.31	+2.27	+6.10	+2.92
-5.77	-1.11	-1.57	-2.44	+1.46	-6.53	+1.35	-4.19

Downscaling future climate

Bluelink surface temperature and current, 2063-01-01



Thank you

