

Climate Change- The Extremes



Assoc. Prof. Melissa Hart

Graduate Director

ARC Centre of Excellence for Climate Extremes, UNSW Sydney

@melissatraveler



climate extremes

ARC centre of excellence



Transform our understanding of the processes that cause climate extremes, including their dependence on climate change and variability, and to use this process-based understanding to revolutionise our capability to predict future climate extremes.

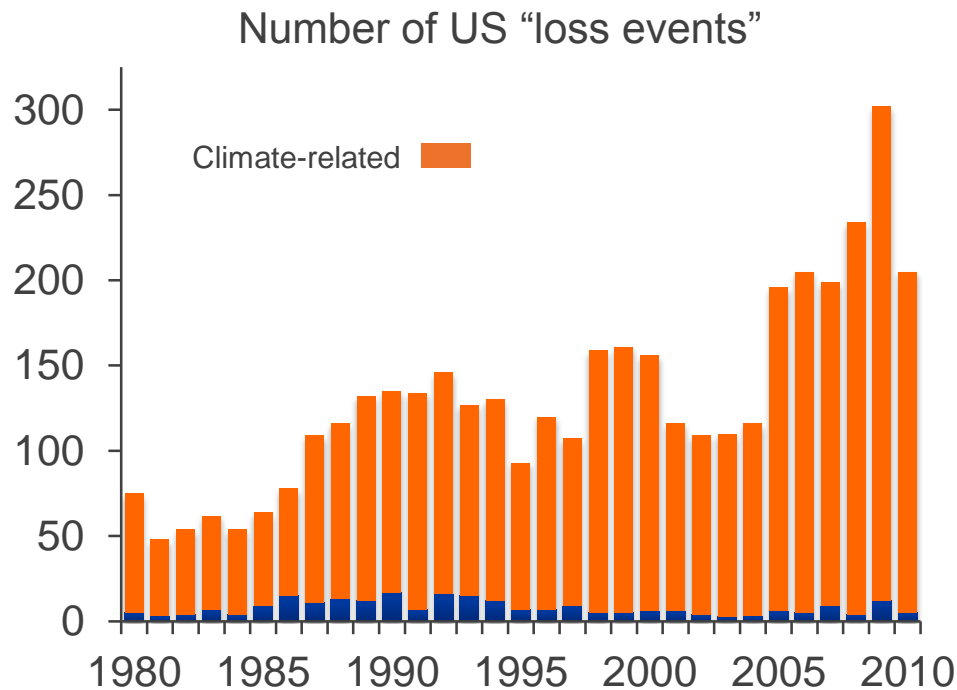


Why extremes?

- Biggest global health threat of the 21st century- The Lancet Commission (2015)
- Financial risk: Investors managing \$24 trillion signed the 2014 Global Investor Statement on Climate Change
- Extremes can trigger environmental thresholds

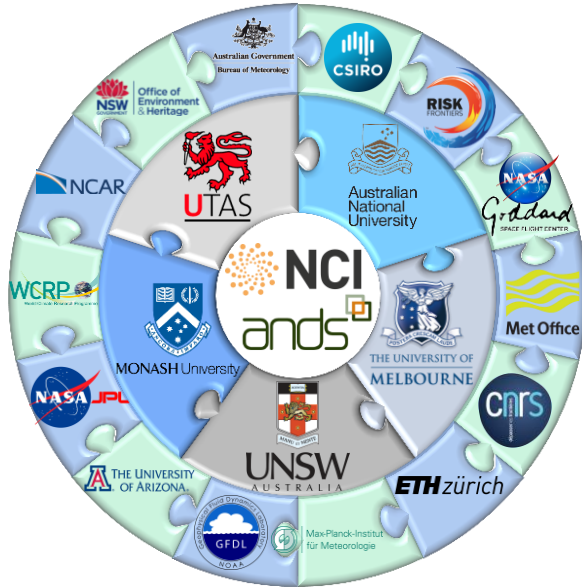


www.ecotourism.ca/effectssofcoralbleaching.html



Munich Re, 2015

Research that engages and has impact

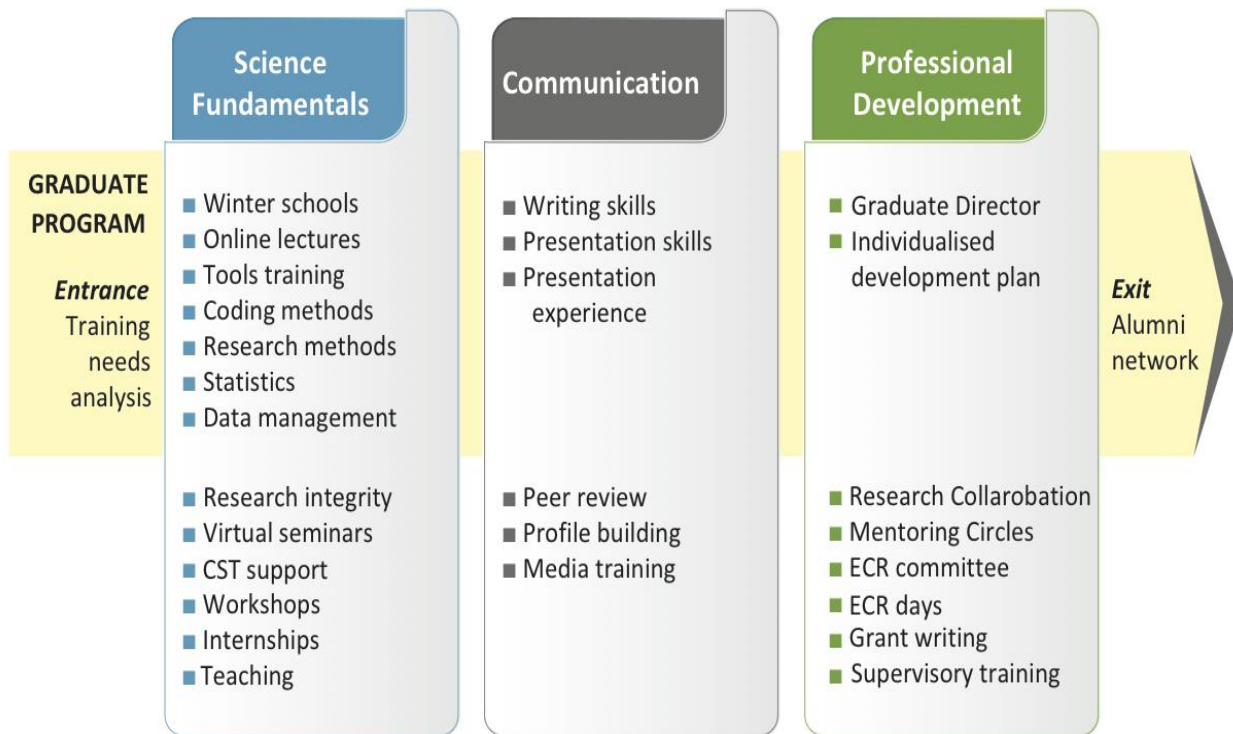


- An international research consortium of five Australian universities and a network of outstanding national and international partner organizations.
- Work with partners to deliver bespoke research
- Develop STEM educational resources for schools
- Communicate our research to government and businesses
- Deliver bespoke research data



Training next generation of climate scientists

Researcher Development Program

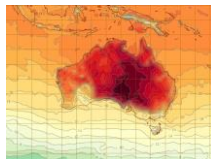


Our Research

Rainfall



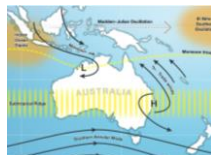
Heatwaves



Drought

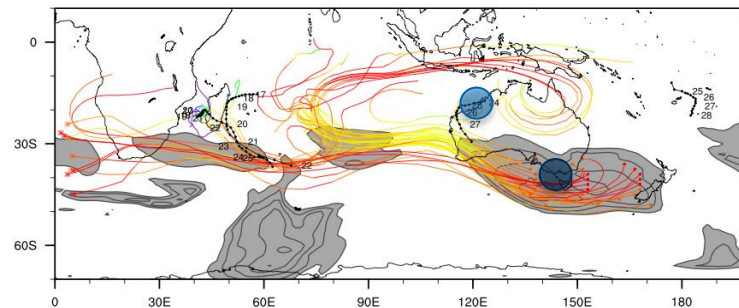


Variability

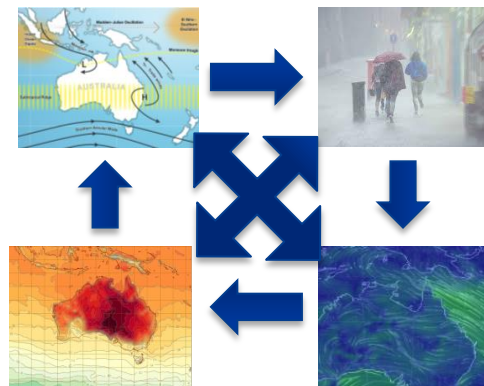


Tropical Cyclone

Heat wave



Parker et al. 2013, GRL

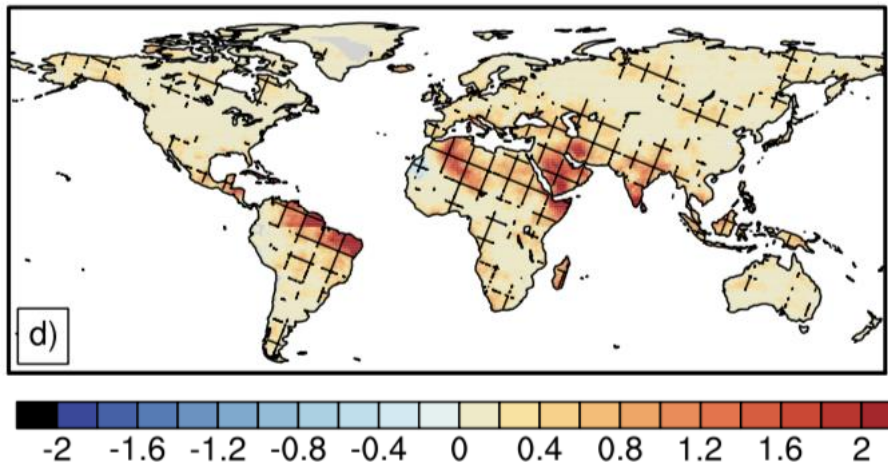


Regional changes in heatwaves



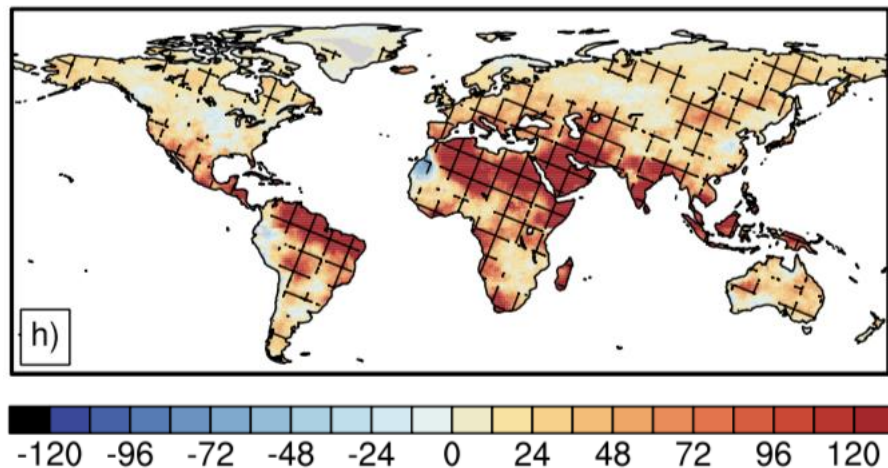
longest heatwave

Berkeley Earth



cumulative heatwave exposure

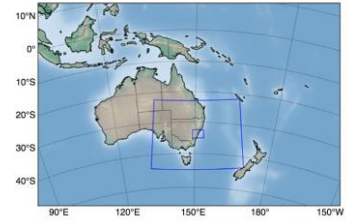
Berkeley Earth



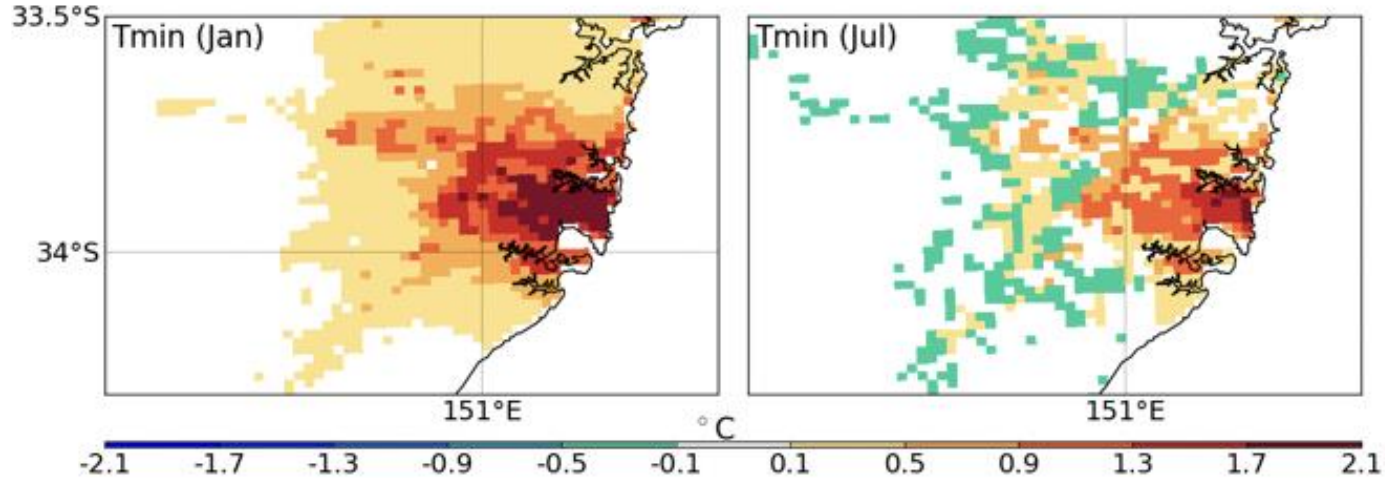
Perkins-Kirkpatrick and Lewis (2018)- submitted

Climate in cities

Impacts of urbanisation



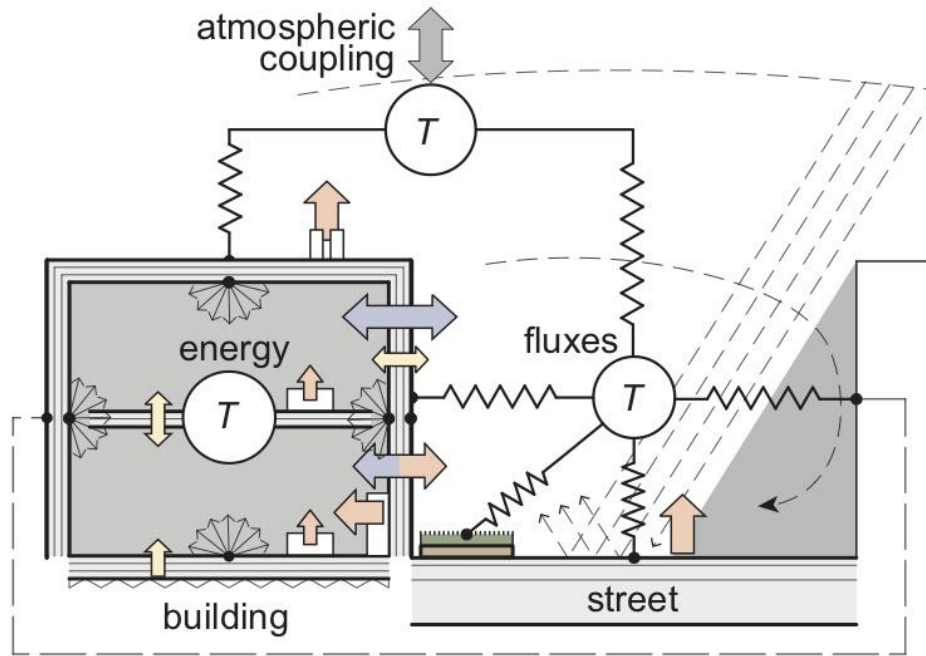
Urban heat Island (UHI)



Ma et al. (2017) - Int J Climatology

Climate in cities

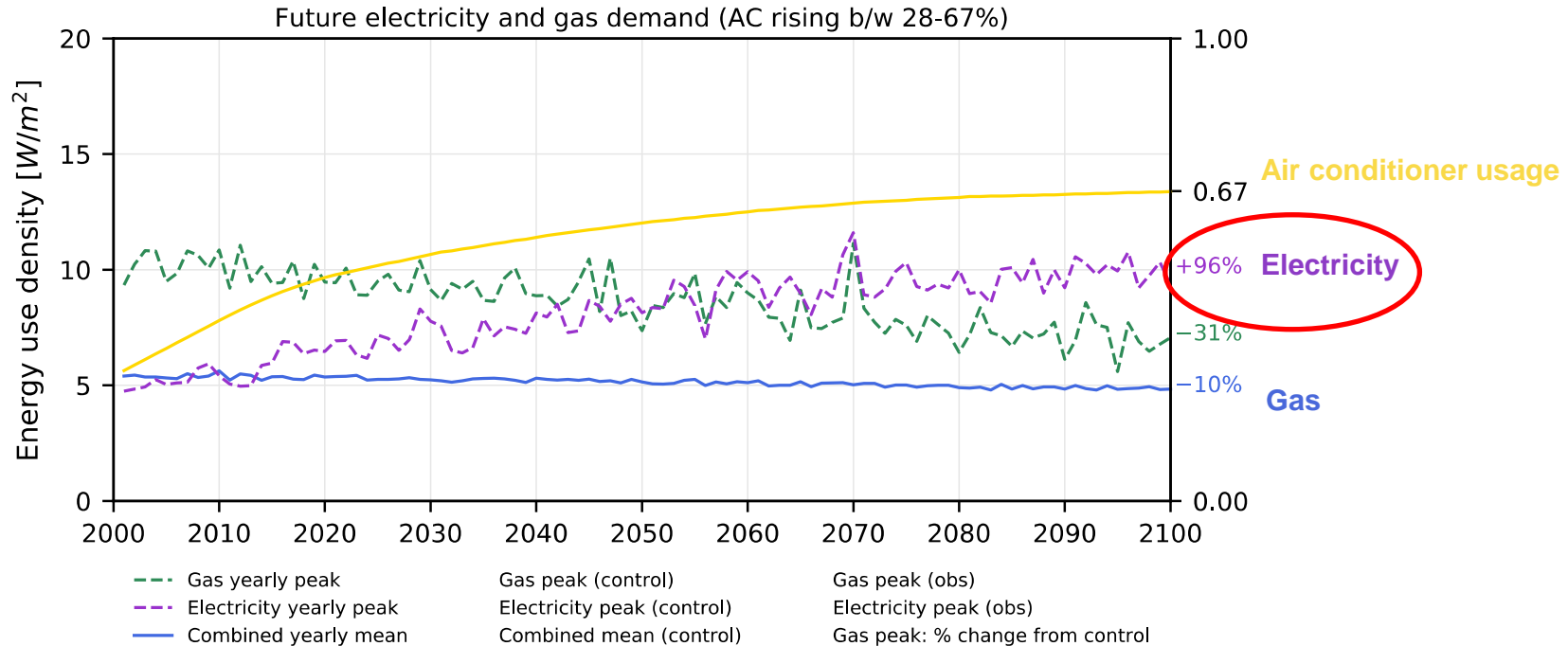
Impacts of urbanization, energy use, and global climate change



Lipson et al. (2017) Geoscientific Model Devel.
Lipson et al. (2018) Quarterly J. Royal Met. Soc.

Climate in cities

Impacts of urbanization, energy use, and global climate change



When citizen science meets urban climate



**Schools Weather
and Air Quality**

- ▶ Citizen science project
- ▶ Meteorology and air quality sensors in Sydney schools
- ▶ Engagement of students in STEM research
- ▶ Students will collect and analyse research quality data in curriculum-aligned classroom activities
- ▶ Data will also be freely available online to the public and researchers

www.swaq.org.au



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