

Australia's contribution to the C20C+ project: AMIP runs of ACCESS

Andrew King and Andrea Dittus

(with help from Christine Chung,
David Karoly, Ruth Lorenz, Paola
Petrelli, Daithi Stone and others)



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Outline

- What is C20C+?
- How can we use C20C+?
- Australia's contribution to C20C+
- Some diagnostic plots

What is C20C+?

- C20C+ is the new Climate of the 20th Century project.
- Aim: To optimise research of extreme weather events in a climate context.
- AMIP simulations from 1959-2013.
- Both historical and historicalNat.
- Large number of variables outputted (same format as CMIP5) at a range of time scales.
- Data already available. Can be accessed through NERSC ESG for free and without registration.

What is C20C+?

C20C+ Detection and Attribution Sub-project - Mozilla Firefox

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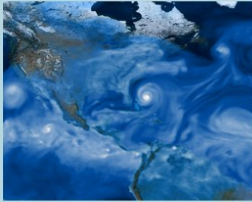
portal.nersc.gov/c20c/ nino3.4

C20C+ Detection and Attribution Project Main page

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This web page provides information on the design, status, and output of the International CLIVAR C20C+ Detection and Attribution Project. This is an international project aiming to produce a large pool of output from climate models and impact models for use in improving our understanding of extreme weather in the context of past and current climate change. It is a subproject of the World Climate Research Programme's (WCRP) Climate Variability Programme's (CLIVAR) Climate of the 20th Century Plus Project (C20C+).

• Summary •

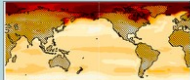


Current climate model-based products are not optimised for research on extreme weather in the context of long-term climate change. The C20C+ Detection and Attribution Project is intended to fill this gap, by providing large samples of simulation data from climate models run at relatively high spatial resolution. Models are run under two families of scenarios:

- All-Hist:** under the time-varying boundary conditions observed during the past few decades
- Nat-Hist:** same as All-Hist but with the anthropogenic contribution to the boundary conditions removed

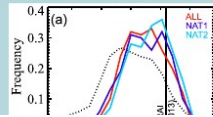
FOR CONTRIBUTORS

This project follows specific protocols for its experimental design. The [Experiment page](#) provides documentation on requested model setup, simulation characteristics, and output variables. It also provides links to surface (ocean temperatures and sea ice concentrations) boundary conditions for the Nat-Hist experiment family.



FOR RESEARCHERS

Output from the simulations is available on the [Earth System Grid Federation](#) under project label "c20c". No registration is required. Details on available models, simulations, and climate variables are provided in the [Data page](#).



The graph shows the frequency of extreme weather events (y-axis, 0.1 to 0.4) over time (x-axis, 1950 to 2050). Two scenarios are compared: All-Hist (solid line) and Nat-Hist (dashed line). The All-Hist scenario shows a higher frequency of extreme weather events, particularly after 2000, compared to the Nat-Hist scenario.



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What is C20C+?

ESGF Portal - Mozilla Firefox

esgf.nersc.gov/esgf-web-fe/live#

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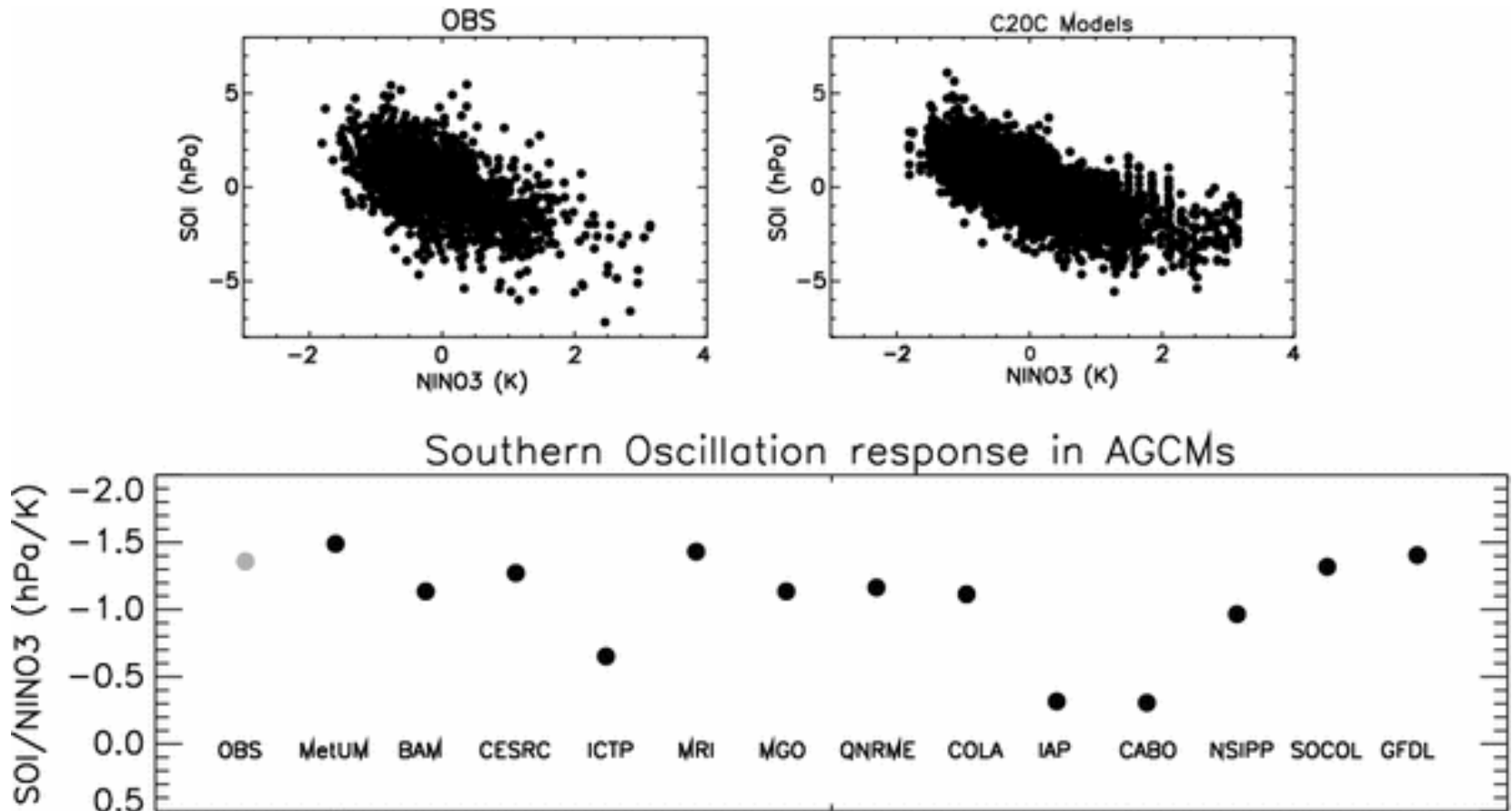


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How can we use C20C+?

- Advantages over other model ensembles in that the spatial resolution is relatively high.
- Large number of ensemble members: 10 “baseline simulations” and 50 “reference simulations”, historical and historicalNat
- Allows for study of climate variability and also attribution of climate trends and extreme events.

How can we use C20C+?

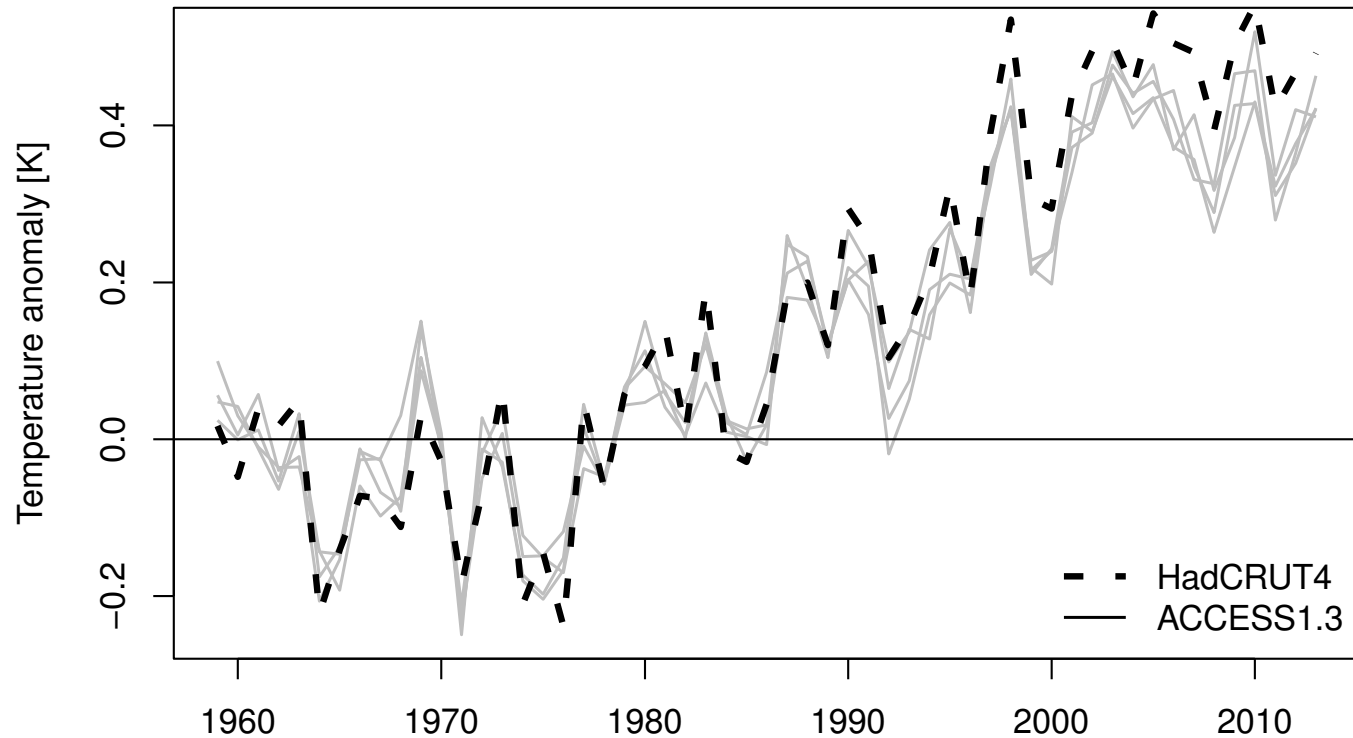


Australian contribution to C20C+

- ACCESS 1.3 AMIP, SST & SIC: Hurrell 2008
- 10 long historical simulations (1959-2013): **5 currently available**
- 10 long historicalNat simulations (1959-2013).
- 50 short historical simulations (~1990-2013).
- Timeline for completion: ~ Dec 2015

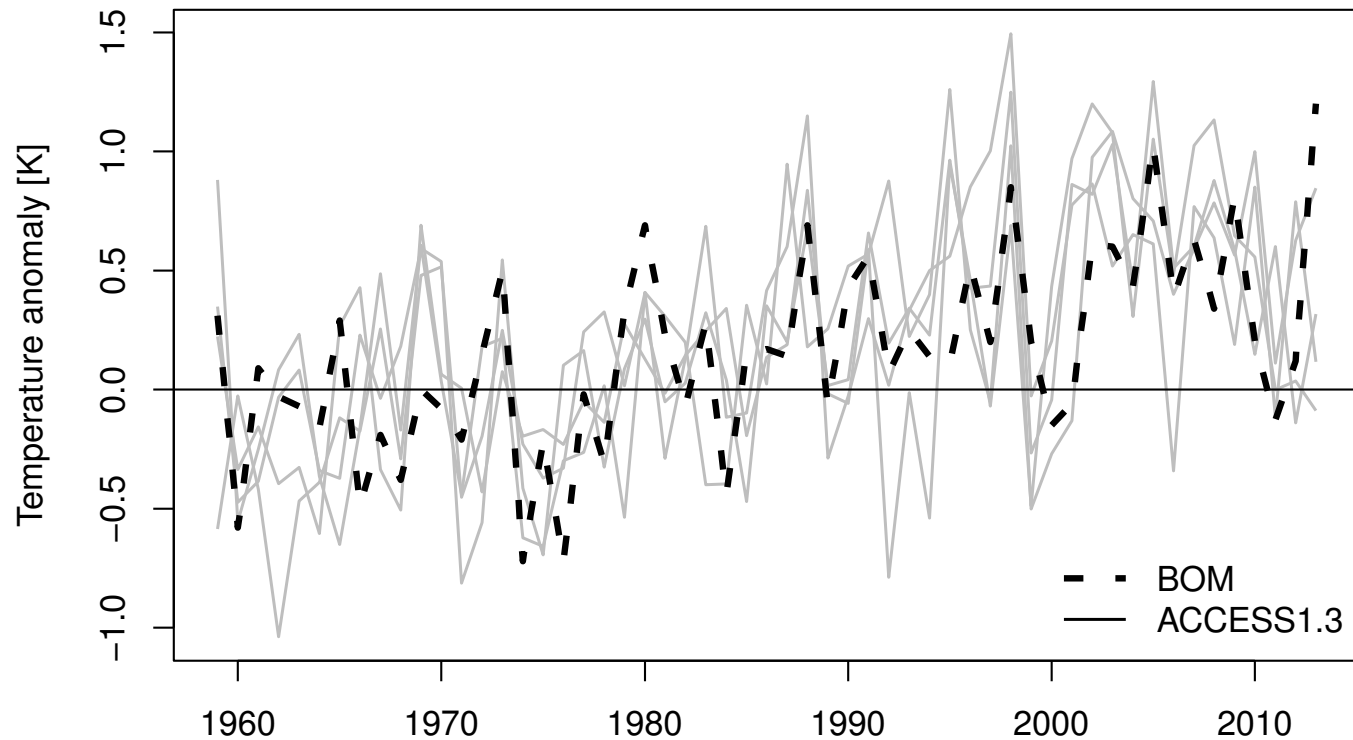
Some diagnostic plots

GLOBAL average mean temperature



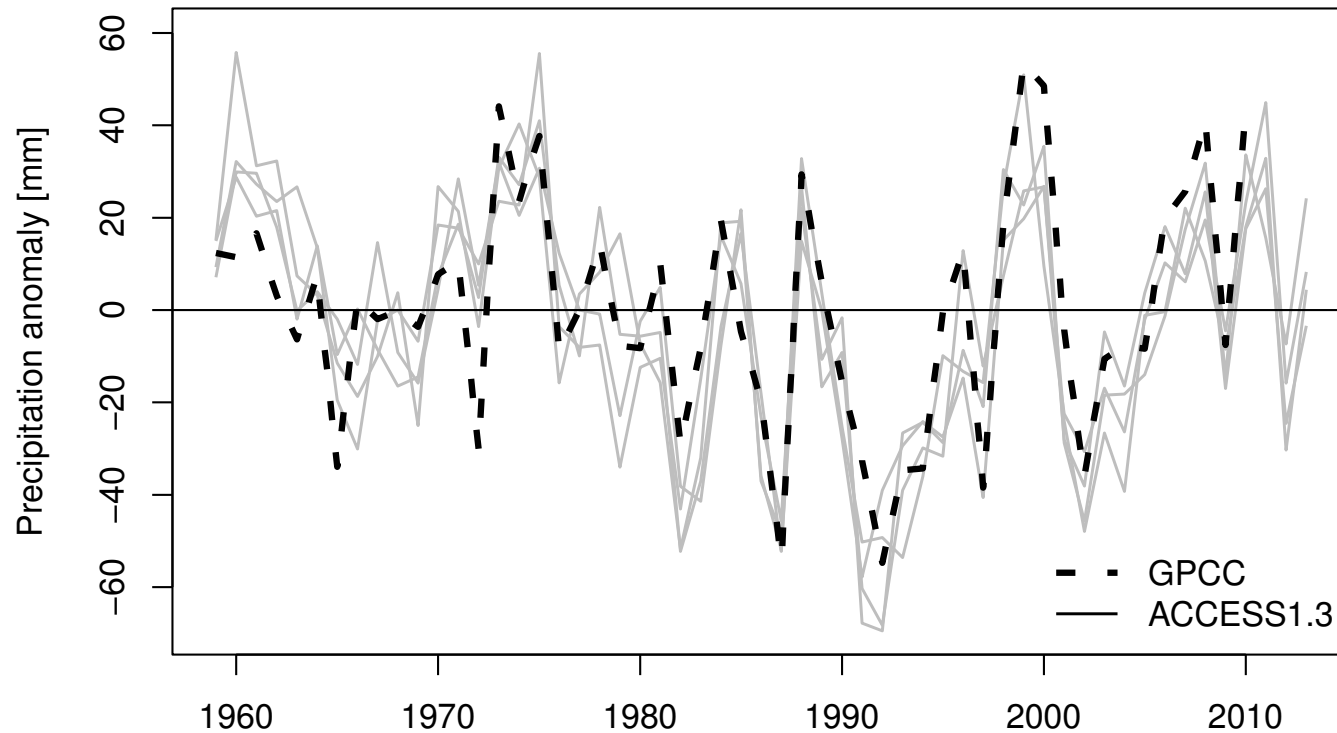
Some diagnostic plots

AUS average mean temperature



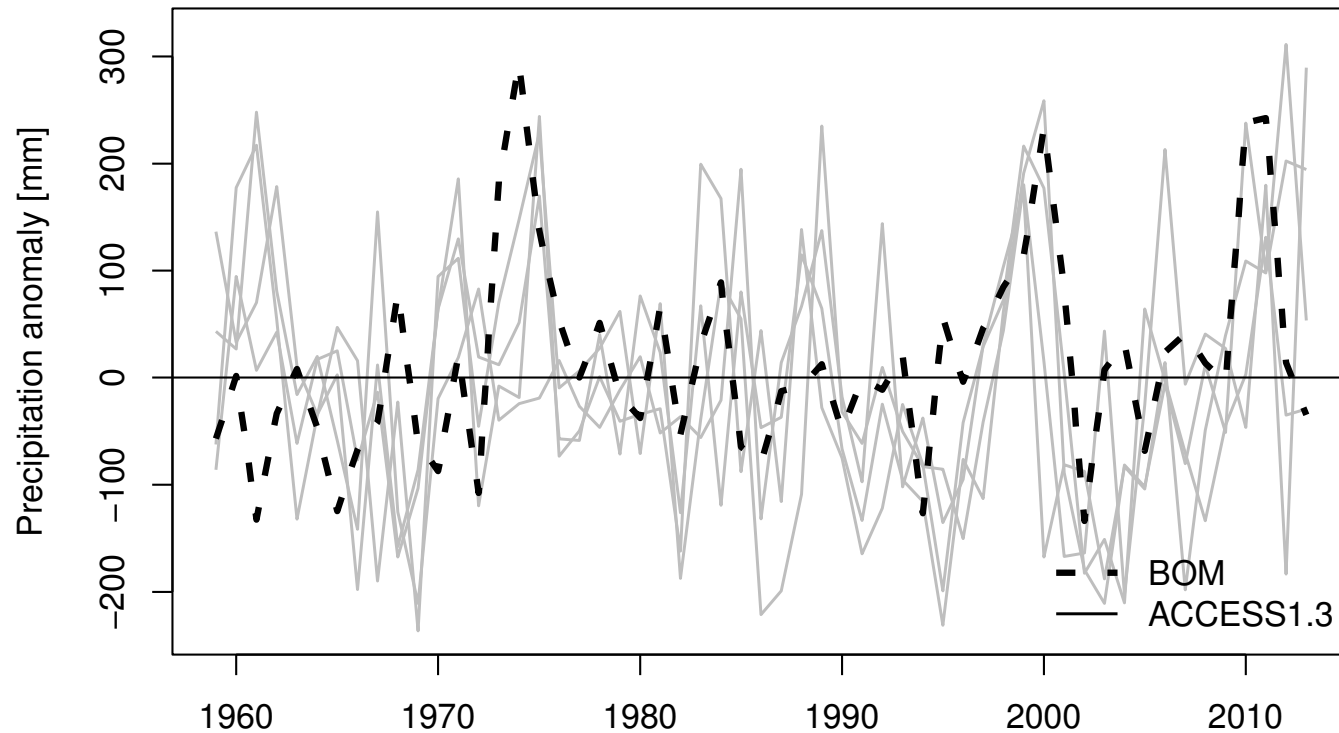
Some diagnostic plots

GLOBAL annual precipitation anomalies

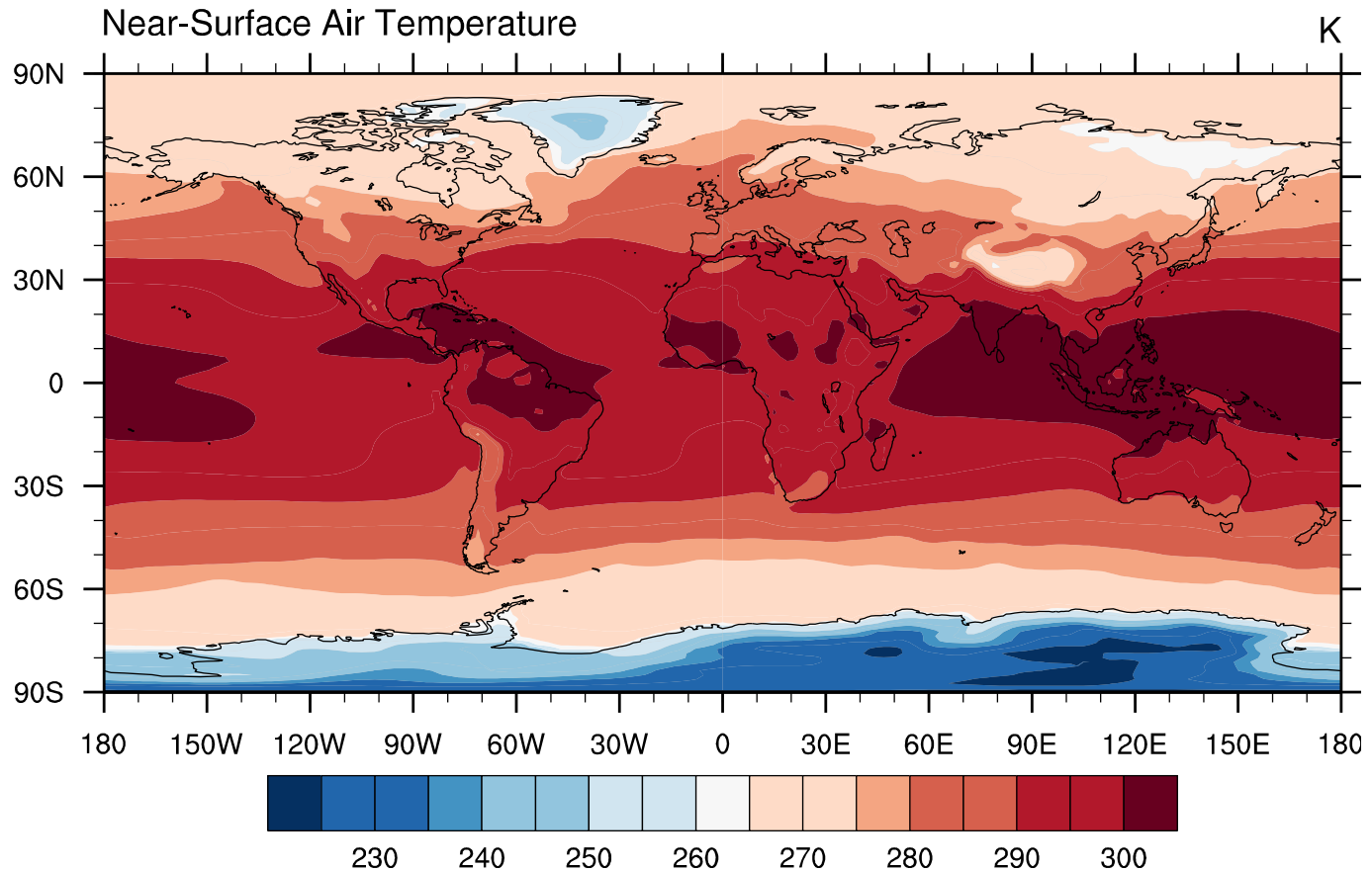


Some diagnostic plots

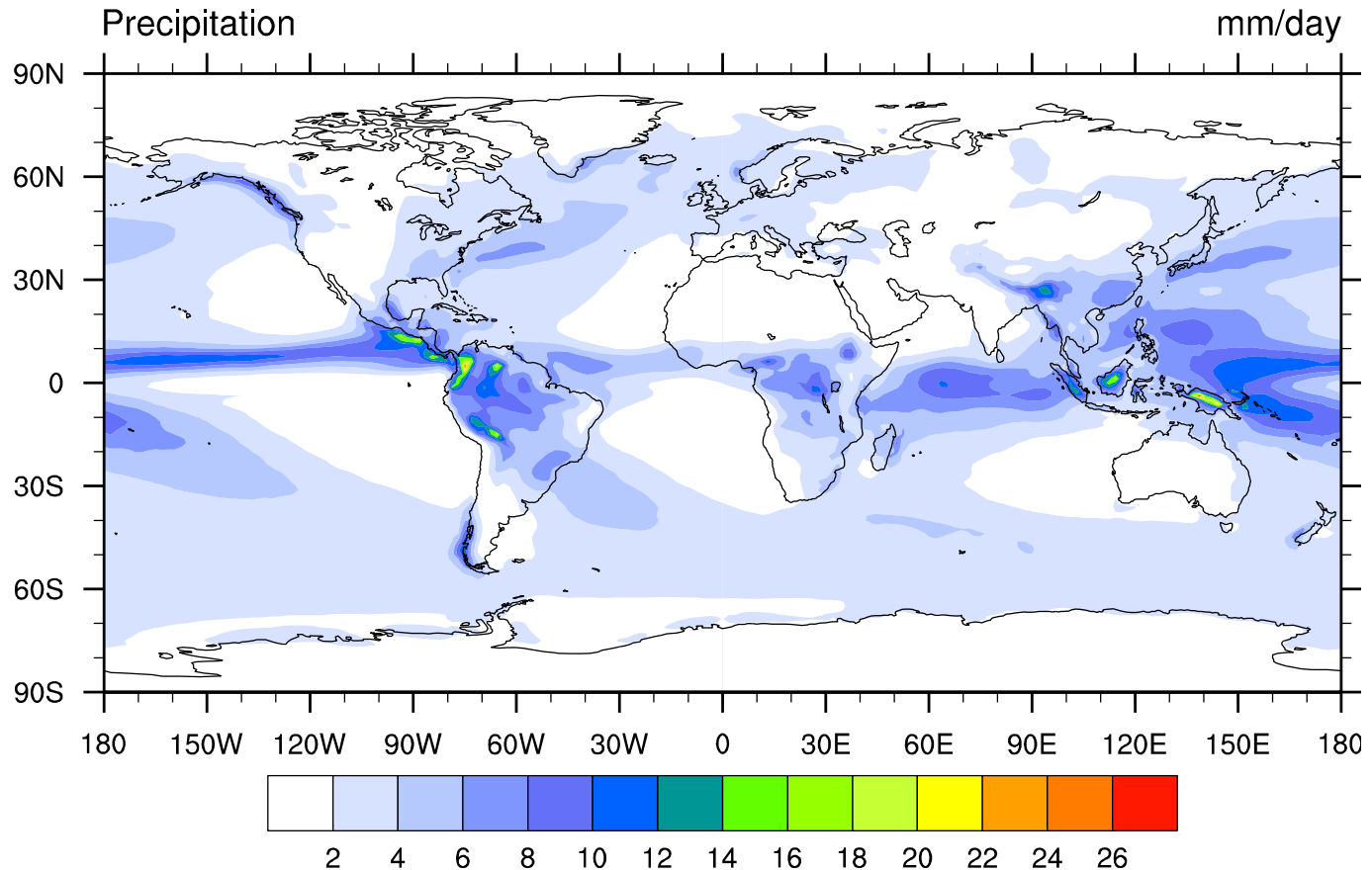
AUS annual precipitation anomalies



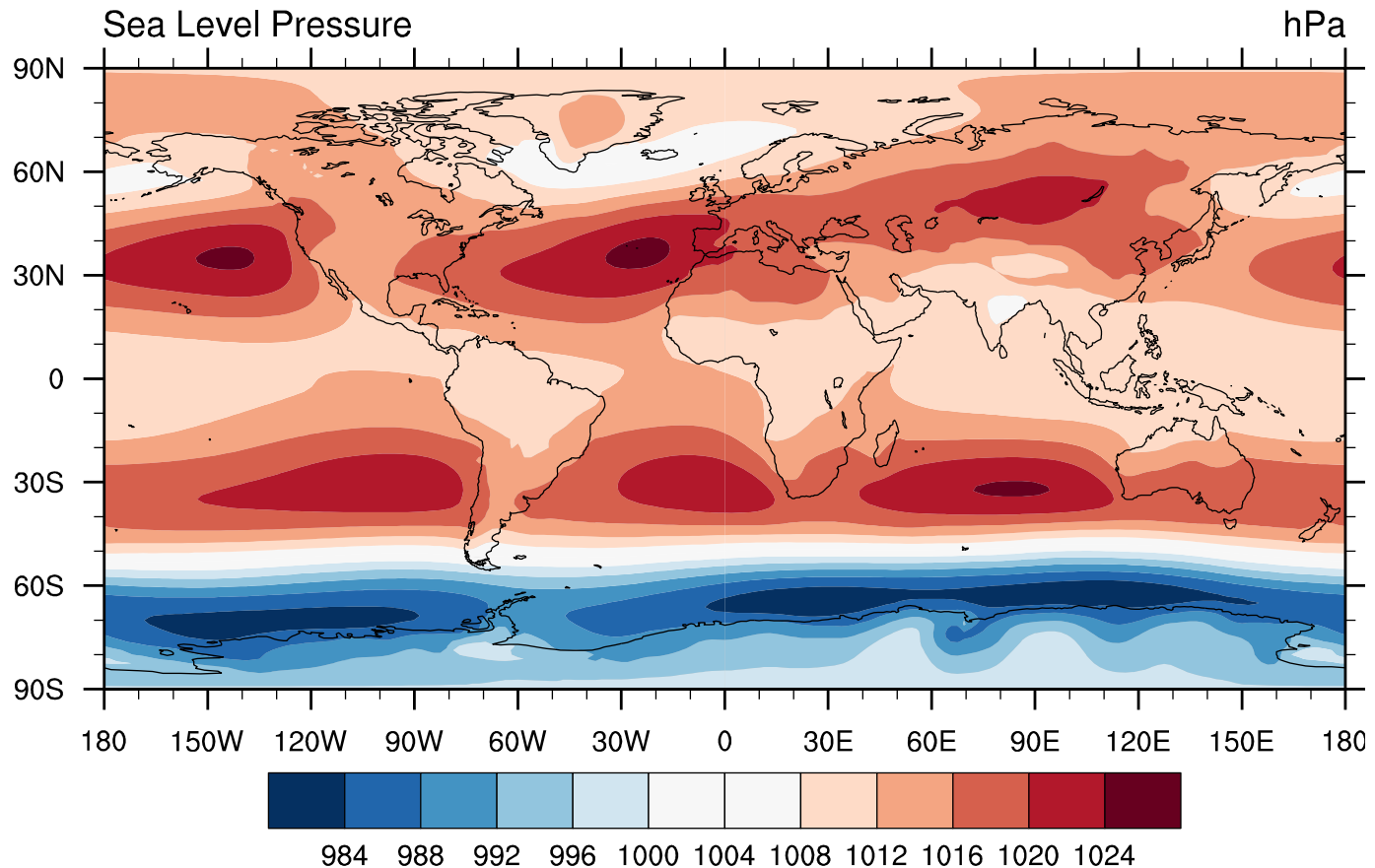
Some diagnostic plots



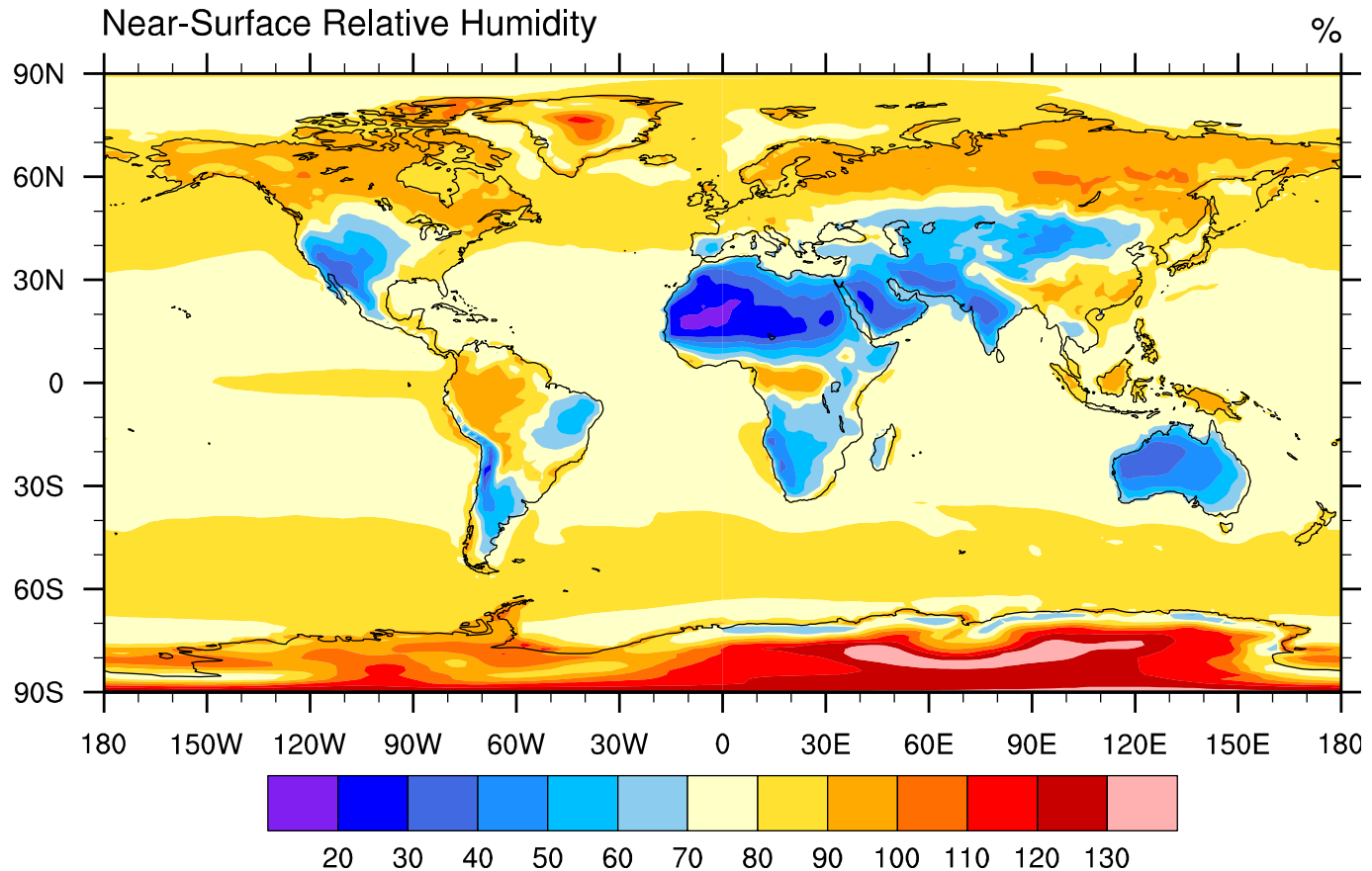
Some diagnostic plots



Some diagnostic plots



Some diagnostic plots



Useful Links

- <http://portal.neresc.gov/c20c/main.html>
- <http://esg.neresc.gov/esgf-web-fe/>
- [Scaife et al. paper](#)



Thank you

E: andrew.king@unimelb.edu.au,
adittus@student.unimelb.edu.au



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