



Transpose-AMIP

Steering committee: Keith Williams (chair), Steve Klein, David Williamson, Christian Jakob and Catherine Senior

WGNE30



What is Transpose-AMIP?

- Basically, running climate models in NWP mode.
- Core expt for Transpose-AMIP II is to run 64 hindcasts, each 5 days long, initialised from ECMWF YOTC analysis.
- Optional expt to repeat the same set of hindcasts with NASA MERRA re-analysis or own analysis.
- The hindcasts are spread through the annual and diurnal cycles during 2008/9 and were chosen to tie in with YOTC and coincide with some of the IOPs in:
 - VOCALS (SE Pacific stratocumulus)
 - AMY (Asian monsoon)
 - T-PARC (mid-latitude Pacific)
- Any global modelling centre (NWP or climate) can submit data. Those taking part in CMIP5 should use the same model as is being used for their AMIP simulation.
- **Jointly endorsed by WGNE and WGCM.**

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Status of experiments:

	Expt pledged	Expt run	Data converted	Data on ESG
EC-Earth (2.3) (Frank Selton)	✓	✓	✓	✗
EC-Earth (36r4) (Martin Evaldsson)	✓	✓	✓	✗
IPSL (Sandrine Bony/Solange Fermepin)	✓	✓	✓	✓
Met Office (Keith Williams)	✓	✓	✓	✓
Meteo France (Michel Deque)	✓	✓	✓	✓
MIROC (Masahiro Watanabe)	✓	✓	✓	✓
MPI (Traute Crueger)	✓	✓	✓	✗
NCAR (Brian Medeiros)	✓	✓	✓	✓



Transpose-AMIP II Papers

T-AMIP II
description
paper
(shown at
last WGCM)



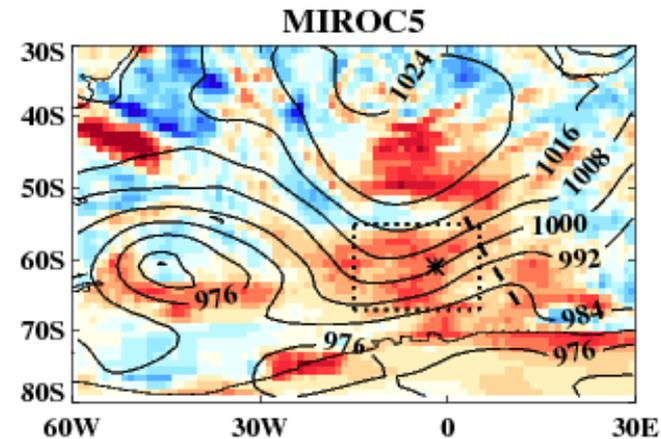
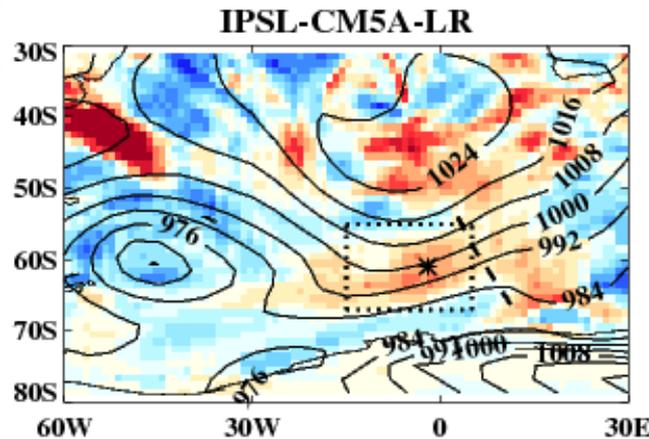
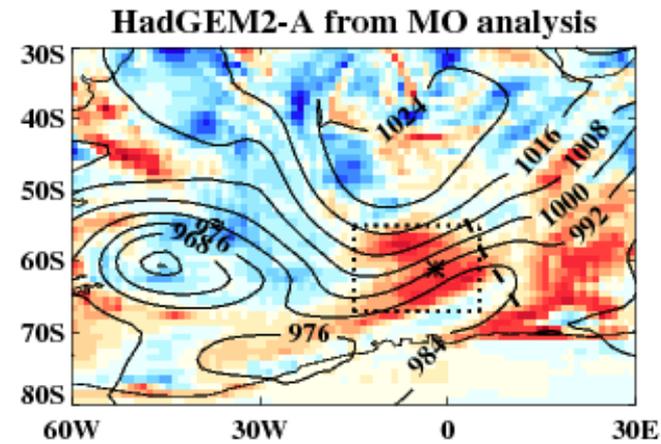
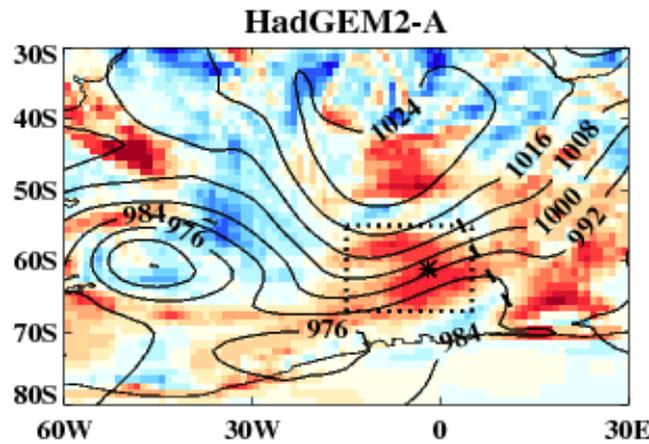
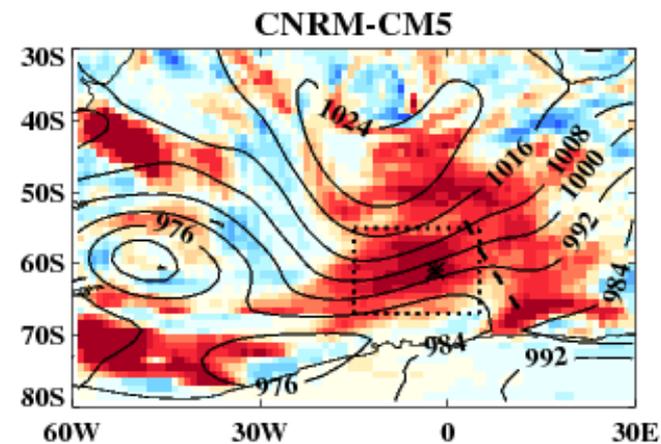
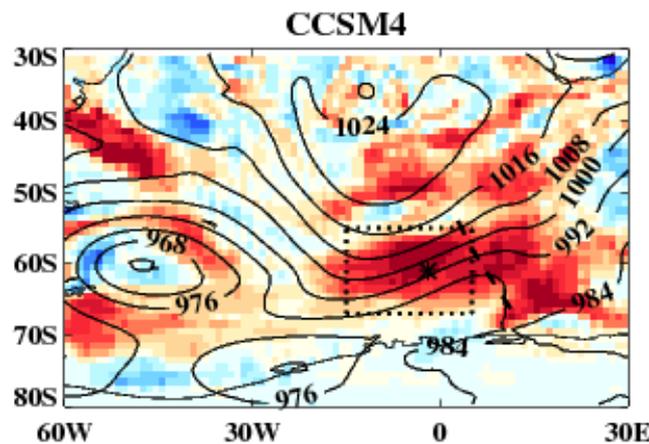
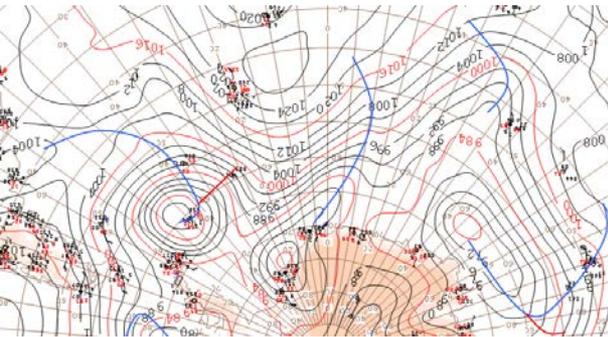
- Williams et al. (2013) The Transpose-AMIP II experiment and its application to the understanding of Southern Ocean cloud biases in climate models *J. Climate*, doi:10.1007/s00382-012-1555-1.
- Xie et al. (2013) Relationship between short and long timescale model errors *In prep.*
- Kamae, Y., and M. Watanabe, (2012): Tropospheric adjustment to increasing CO₂: its timescale and the role of land-sea contrast. *Clim. Dyn.*, doi:10.1007/s00382-012-1555-1.

(plenty more use the methodology)

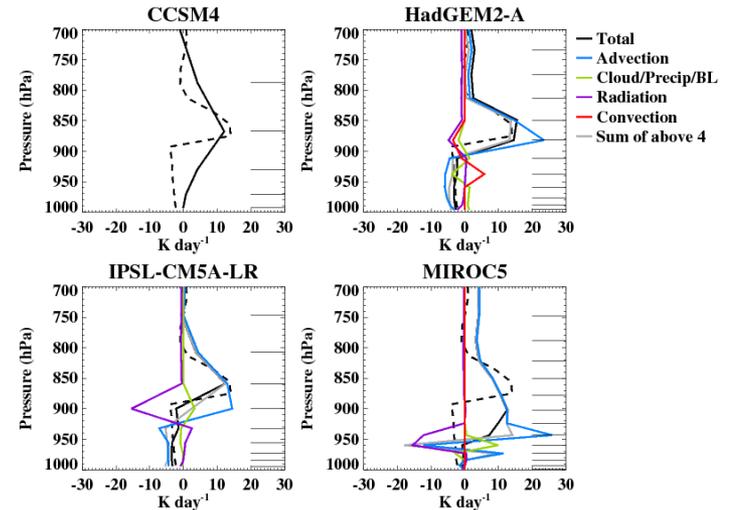
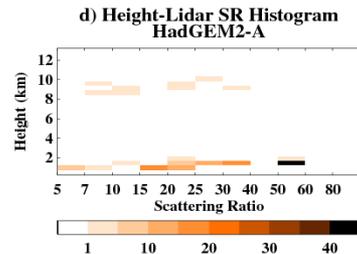
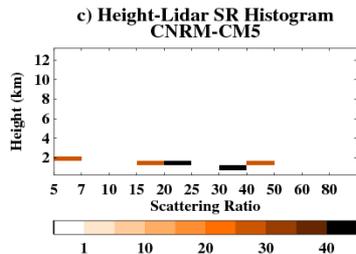
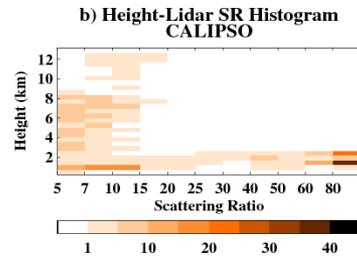
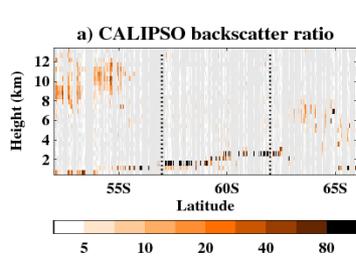
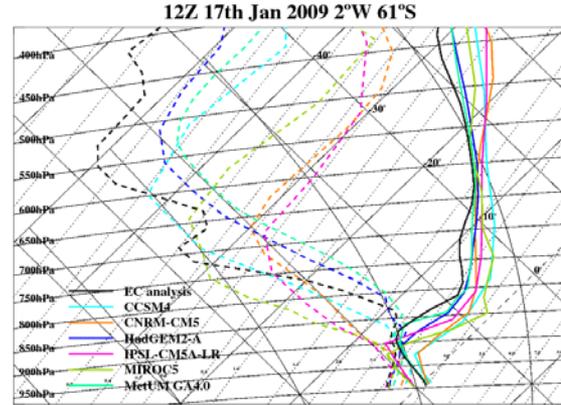
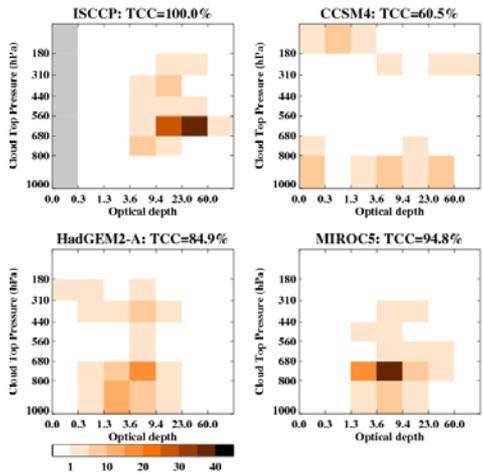
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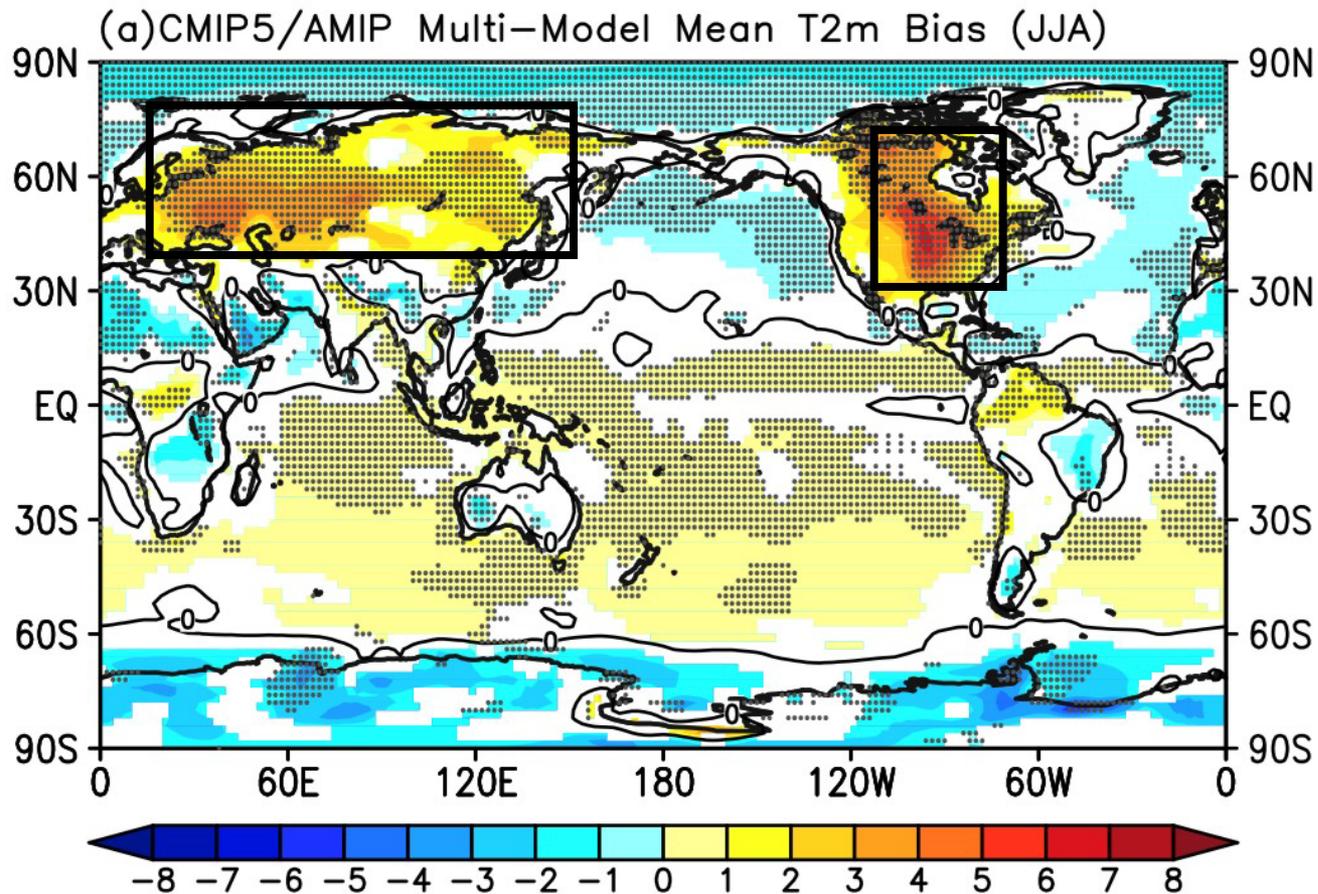
T+30 bias in RSW against CERES-FF



Detailed understanding of the development of bias

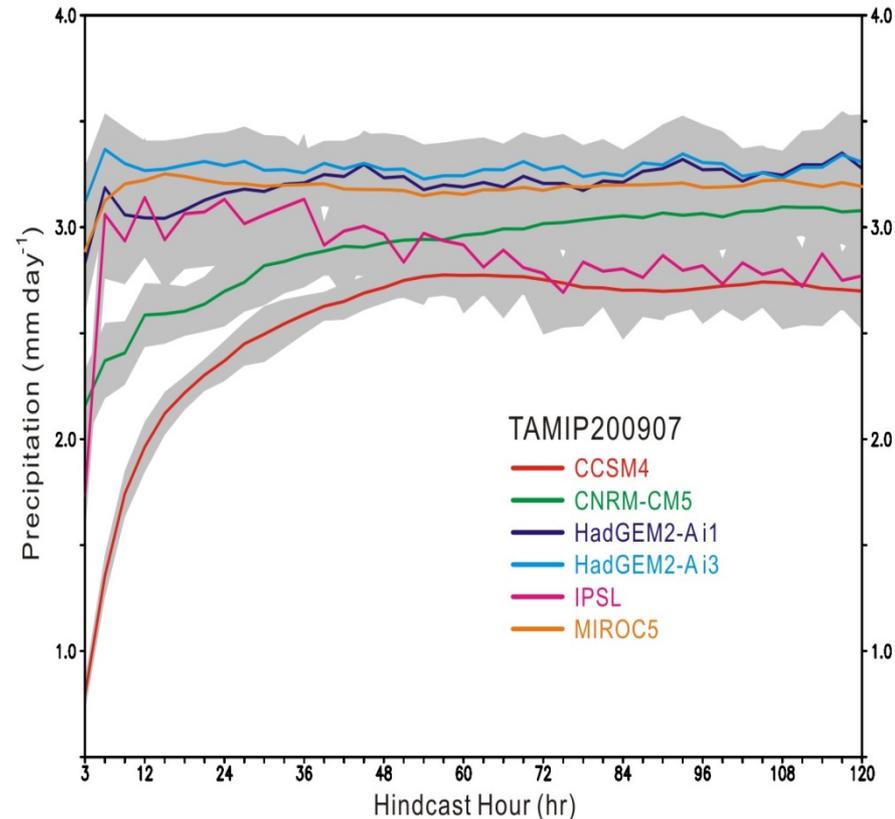
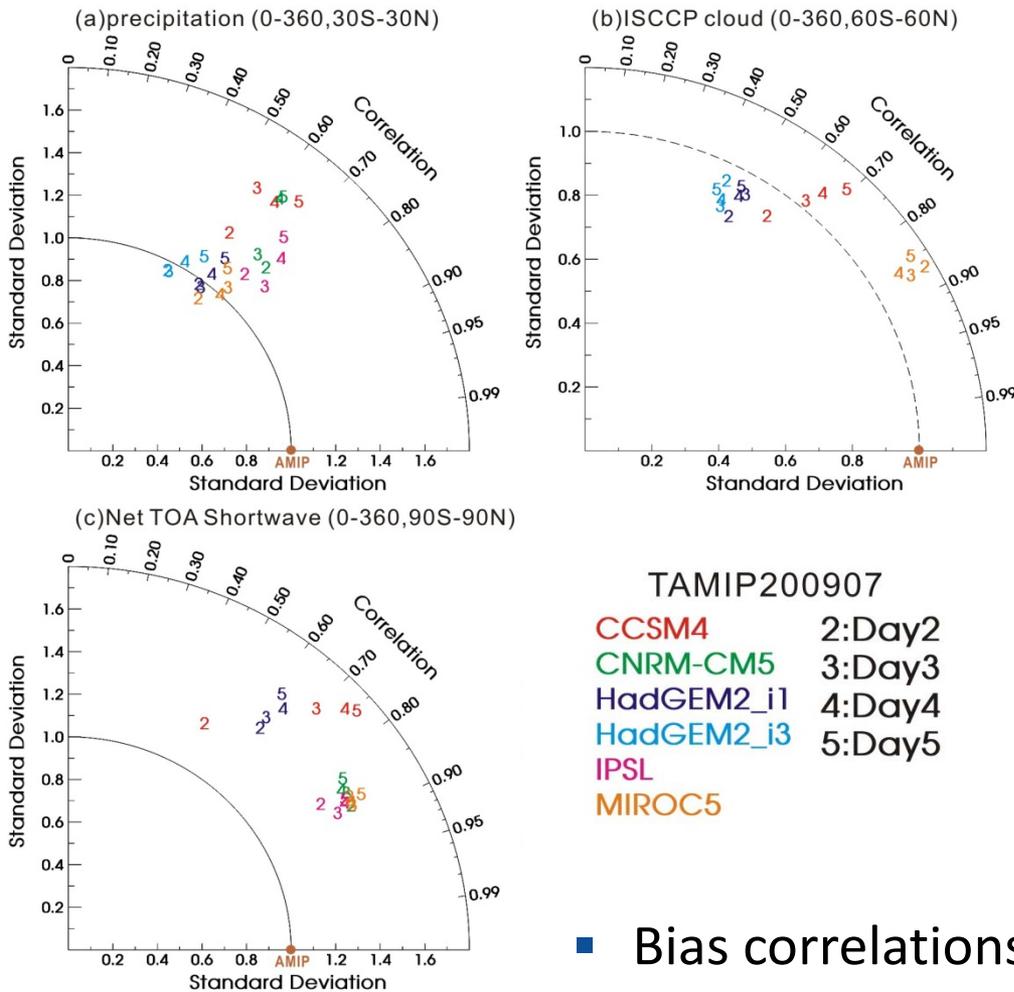


Biases in 2-meter temperature (T2m)



- Strong similarity between hindcast and climate bias patterns
- Strong warm biases over mid-latitude land

Initial spin-up of the hindcasts



- Bias correlations generally saturated fast after Day 2
- Small impacts of choice of analysis



What has been successful?

- More centres submitted data than to T-AMIP I / CAPT.
- Consequently more centre's now have the ability to easily run this type of expt in the future.
- Comprehensive set of diagnostics saved (e.g. satellite simulators) and the data are much more accessible thanks to being on the ESG.
- Methodology widely supported and strongly encouraged at key workshops (e.g. *WGNE systematic errors workshop*, *Pan-GASS meeting*) as necessary to fix model biases.
- The methodology is now being used by other MIP's (e.g. YOTC MJO-TF/GASS diabatic processes project), with a very strong take up (more models submitted to this than T-AMIP II).

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What has been less successful?

- The data have been under-utilised with only a handful of analysis projects being conducted.
 - *Not obvious why this is the case. Possibly the funding for analysis projects is more focussed around climate change projections than evaluation of processes? (although the two are not mutually exclusive!)*
 - *The data will remain in place and use of the data are still strongly encouraged!!!*
- Hard to cover everyone's needs with set hindcasts/diagnostics lists (e.g. those studying MJO likely to want different cases than those studying mid-lat depressions).

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The future

- The steering committee share the view that any new T-AMIP expts are best formed around a particular science question (e.g. continental warm bias; cloud biases; MJO; mid-latitude dynamics)
- T-AMIP should stop as a project (i.e. NOT be a separate MIP in CMIP6), but WGNE/WGCM/GASS/etc. should strongly encourage the methodology be used within other MIPs (e.g. CFMIP, MJO-DP, NAWDEX, GEWEX-PROES)
- Transpose-CMIP (raised at the WGNE workshop) – would require exploratory work; no one has volunteered to take this on. Issues (and solutions) may fall out as NWP centres move to coupled modelling.

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