**INTRODUCTION**

Impact of extreme events are of major importance, but large uncertainty exists in their projections at regional scales. GCMs do not resolve most of the spatial -or even temporal- scale at which extremes occur. Regional Climate Models are useful to this purpose. They are high-order moments so the uncertainty must be correctly sampled: long climate periods and robust ensembles (independent models)

Various questions arise from the potential use of RCM to study extreme events and their trends:

- How do RCMs represent the observed trend?
- Do they improve the boundary conditions?
- How do they compare with the observational spread?

**TEMPERATURE INDICES**

- Good agreement spatial pattern (especially TN90p). Some areas of discrepancy: west coast (cloudiness or inherit from boundary conditions)
- Good correlation (TX90p) at continental scale, although stronger warming discrepancies for precipitation.
- Improvement of temperature indices above the 95th percentile from the period 1961-1990. Right: Temporal evolution of TX90p averaged over Australia.

**PRECIPITATION INDICES**

- Maximum in the 70s captured by all RCMs, better than NNRP
- Better spatial detail, but also discrepancies: tropics and east coast.
- Rx5day trends closer to observations. Negative trends in the eastern half begin to appear at 50km resolution.
- At this resolution, little benefit obtained with respect to boundary conditions. Higher resolution likely to provide better results.
- Australia averaged timeseries very well represented by R1 and R2, comparable to observational spread in precipitation. RCMs tend to overestimate Rx5day. Observational spread comparable to RCM deviations over the continent (except R3).

**CONCLUSIONS**

- How do RCMs represent the observed trends?
  - Trends correctly represented by WRF at continental scales for both variables. Temperature spatial patterns captured overall (except west) but larger discrepancies for precipitation.

**REFERENCES**