

# The Polar Climate Predictability Initiative

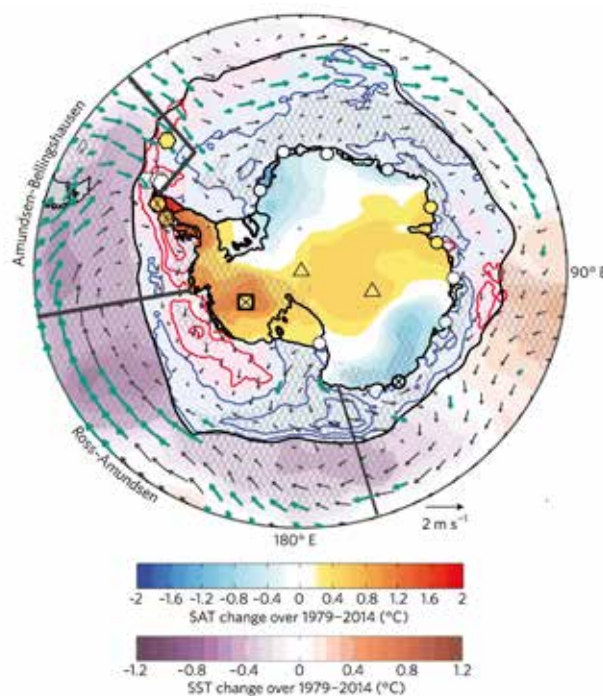
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The Polar Climate Predictability Initiative (PCPI) is an initiative of the World Climate Research Programme (WCRP) core projects CliC (Climate and Cryosphere) and SPARC. The PCPI aims to advance understanding of the sources of polar climate predictability on timescales ranging from seasonal to multi-decadal. Such predictability stems from the unique persistence of signals in ice and snow, as well as through exchange with the stratosphere and with the ocean at all depths. PCPI is concerned with the success of modelling and observing the rapid changes seen in the Arctic and the mixed, slow and fast changes occurring in the Antarctic. PCPI is investigating the role of the poles in global climate and prediction. We work jointly with the World Weather Research Programme's Polar Prediction Project (WWRP - PPP) on mutual interests, though our focus tends towards longer timescales. PCPI also collaborates with the WCRP's Grand Challenge on Near Term Climate Prediction. PCPI maintains links with many other groups that have mutual interests, including ASPeCt (Antarctic Sea ice Processes and Climate), SORP (Southern Ocean Research Panel), SIPN (Sea Ice Prediction Network - South) and the Scientific Committee for Antarctic Research's (SCAR) AntClim21.

## Recent activities

In 2016 we held a Spring School on Polar Prediction for 30 post-graduate and early career researchers at the Abisko Field Station in Sweden in collaboration with PPP. PCPI also organised three workshops on: Polar Prediction (with PPP), Polar Feedbacks, and Sea Ice Thickness. We published one review paper on recent trends in the Southern Ocean (Jones *et al.*, 2016; see **Figure 13**) which is the outcome of a workshop held the year before. We published another paper on the Amundsen Sea Low (Raphael *et al.*, 2016), also the outcome of a PCPI workshop. A third paper, an intercomparison of the sensitivity of predictions to initial sea ice thickness (Blanchard-Wrigglesworth *et al.*, 2016) was also published. Several PCPI sessions were also hosted at AGU and EGU on Polar Prediction and at AGU on Data Assimilation Products. In March 2017 a follow-on



**Figure 13:** Antarctic climate system trends in the instrumental record period. These trends were found to be typical of variability in Antarctic paleoclimate records of the past two centuries, while most climate model simulations are incompatible with these observations. (Jones, *et al.*, 2016).

workshop to the 2016 Polar Prediction workshop (also joint with PPP), was held at the Alfred Wegener Institute, in Bremerhaven, Germany. It focused on decadal variability and was held synchronously with CliC's Sea Ice MIP Workshop.

## Future Plans

PCPI will participate in AntClim21's #GreatAntarcticClimateHack Workshop (held from 9-12 October 2017) and continues to work on the WCRP Grand Challenge on Near-Term Climate Prediction. A review paper that evolved from our 2016 workshop on climate feedbacks is also in final review by the 14 authors, led by Hugues Goosse and Jennifer Kay. PCPI is undergoing a change in leadership as co-lead Cecilia Bitz stepped down in early 2016 and is being replaced by Julie Jones. Cecilia Bitz and Ted Shepherd were the first leaders

of PCPI. A meeting of co-leads Julie Jones and Marilyn Raphael to discuss future plans for PCPI will occur in July 2017. We encourage those interested in PCPI activities to visit the website at [www.climate-cryosphere.org/wcrp/pcpi](http://www.climate-cryosphere.org/wcrp/pcpi) and/or contact us: **Marilyn Raphael** ([raphael@geog.ucla.edu](mailto:raphael@geog.ucla.edu)) or **Julie Jones** ([julie.jones@sheffield.ac.uk](mailto:julie.jones@sheffield.ac.uk))

## References

Jones, J. M., et al., 2016: Assessing recent trends in high-latitude Southern Hemisphere surface climate, *Nature Climate Change*, **6**, 917-926, doi:10.1038/NCLIMATE3103.

Blanchard-Wrigglesworth, E., et al., 2016: Multi-model seasonal forecast of Arctic sea-ice forecast uncertainty at pan-Arctic and regional scales, *Climate Dynamics*, doi:10.1007/s00382-016-3388-9.

Raphael, M.N, et al., 2016. The Amundsen Sea Low: variability, change, and impact on Antarctic climate, *Bulletin of the American Meteorological Society*, **97** (1), 111-121. doi: 10.1175/BAMS-D-14-00018.1

