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## INTERNATIONAL COORDINATION OFFICE (ICO) FOR POLAR PREDICTION

The Alfred Wegener Institute Helmholtz-Centre for Polar and Marine Research, Bremerhaven, Germany, hosts the International Coordination Office for Polar Prediction (ICO) to support WMO WWRP in the implementation of the Polar Prediction Project (PPP).

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## MISSION

Promote cooperative international research enabling development of improved weather and environmental prediction services for the polar regions, on time scales from hourly to seasonal

This constitutes the hourly to seasonal research component of the emerging WMO Global Integrated Polar Prediction System (GIPPS).



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# The WWRP Polar Prediction Project (PPP)

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## BACKGROUND

Interest in the polar regions continues to grow as the local amplification of anthropogenic climate change becomes apparent in the climatological record. Expansion of human activities in polar regions increases the demand for sustained, improved, and integrated observational and predictive weather, climate and water information in support of decision-making. Meeting the demand for such services will require the resolution of important knowledge gaps in polar regions across weather, sub-seasonal and seasonal forecasting scales.

The expected benefits go beyond the time scales (hourly to seasonal) and regions (Arctic and Antarctic). Anticipated improvements in the representation of polar key processes in coupled models will help to narrow uncertainties of regional climate change projections. Furthermore, improved environmental predictions in the polar regions will result in more accurate predictions for non-polar regions, especially in the middle latitudes.



## FURTHER READING

- Jung, T. et al. (2016) Advancing polar prediction capabilities on daily to seasonal time scales, Bulletin of the American Meteorological Society. doi:10.1175/BAMS-D-14-00246.1
- PPP Steering Group & Co-authors, "WWRP Polar Prediction Project Implementation Plan" WWRP/PPP Nr. 2 (2014)
- Jung, T. et al. (2015) Polar Lower-Latitude Linkages and Their Role in Weather and Climate Prediction. Bull. Amer. Meteor. Soc., 96, E5197–E5200, doi: dx.doi.org/10.1175/BAMS-D-15-00121.1

## RESEARCH PRIORITIES

In order to meet the growing demand for skilful predictions in polar regions and beyond, the following eight key research goals will be addressed:

- Understand and evaluate the use of enhanced prediction information and services in polar regions;
- Establish and apply verification methods appropriate for polar regions;
- Determine predictability and identify key sources of forecast errors in polar regions;
- Improve knowledge of two-way linkages between polar and lower latitudes, and their implications for global prediction;
- Improve representation of key polar processes in (coupled) models of the atmosphere, land, ocean and cryosphere;
- Develop and exploit ensemble prediction systems with appropriate representation of initial and model uncertainty for polar regions;
- Develop data assimilation systems that account for the unique characteristics of polar regions;
- Provide guidance on optimizing polar observing systems, and coordinate additional observations to support modelling and verification.



## IMPLEMENTATION

In order to deliver its goals the WWRP Polar Prediction Project has established:

- A Steering Group representing both the research and operational communities. The Steering Group is responsible for the implementation of the project;
- An international coordination office to coordinate the day-to-day activities of the project and manage the logistics of workshops and meetings.
- A science committee dedicated to Societal and Economic Research and Applications (PPP-SERA).

The Polar Prediction Project comprises:

- An intensive observing and modelling effort to advance polar prediction. This activity, termed the Year of Polar Prediction (YOPP), will take place in mid-2017 to mid-2019. A YOPP endorsement process has been established to ensure close coordination;
- Establishment and exploitation of special research datasets that can be used by the wider research community and forecast product users;
- A series of science workshops and webinars on polar prediction;
- Special activities focussing on polar-lower latitude linkages and sea ice prediction;
- Effective collaboration with the World Climate Research Programme (WCRP) Polar Climate Predictability Initiative (PCPI) and activities of other partners and working groups;
- A strong educational component with summer schools and webinars which are jointly implemented with the Association of Polar Early Career Scientists (APECS).

This comprehensive project is a decadal effort and covers the period from 2013 to 2022.