



## **Evaluating Antarctic sea ice predictability at seasonal to interannual timescales in global climate models**

Sylvain Marchi (1), Thierry Fichefet (1), Hugues Goosse (1), Violette Zunz (2), Steffen Tietsche (3), Jonny Day (4), and Ed Hawkins (4)

(1) Université catholique de Louvain, ELIC, TECLIM, Belgium (sylvain.marchi@uclouvain.be), (2) Rayference, Bruxelles, Belgium, (3) European Centre for Medium-Range Weather Forecasts, Reading, UK, (4) NCAS-Climate, Department of Meteorology, University of Reading, Reading, UK

Unlike the rapid sea ice losses reported in the Arctic, satellite observations show an overall increase in Antarctic sea ice extent over recent decades. Although many processes have already been suggested to explain this positive trend, it remains the subject of current investigations. Understanding the evolution of the Antarctic sea ice turns out to be more complicated than for the Arctic for two reasons: the lack of observations and the well-known biases of climate models in the Southern Ocean. Irrespective of those issues, another one is to determine whether the positive trend in sea ice extent would have been predictable if adequate observations and models were available some decades ago.

This study of Antarctic sea ice predictability is carried out using 6 global climate models (HadGEM1.2, MPI-ESM-LR, GFDL CM3, EC-Earth V2, MIROC 5.2 and ECHAM 6-FESOM) which are all part of the APPOSITE project. These models are used to perform hindcast simulations in a perfect model approach. The predictive skill is estimated thanks to the PPP (Potential Prognostic Predictability) and the ACC (Anomaly Correlation Coefficient). The former is a measure of the uncertainty of the ensemble while the latter assesses the accuracy of the prediction. These two indicators are applied to different variables related to sea ice, in particular the total sea ice extent and the ice edge location. This first model intercomparison study about sea ice predictability in the Southern Ocean aims at giving a general overview of Antarctic sea ice predictability in current global climate models.