

## **Skill of Persistence Forecasts of Arctic Sea Ice Concentration, Area and Extent on Monthly to Seasonal Time-Scales**

**Adrienne TIVY**

*National Research Council, Canada, [tivya@nrc-cnrc.gc.ca](mailto:tivya@nrc-cnrc.gc.ca)*

Persistence or “memory” in the climate system is a measure of potential predictability and a benchmark for the evaluation of statistical and dynamical models. The skill of persistence forecasts of monthly pan-Arctic sea ice concentration on a 25km equal area grid is evaluated for each month of the year at lead times ranging from 1 to 12 months. To generate a persistence forecast, anomalies in sea ice concentration at each grid point for each lag are projected forward. The study period is 1981 to 2010 and the lag correlation coefficient is the main measure of skill. During the winter months when the variability in ice concentration inside the marginal ice zone is extremely low, the persistence of anomalies in ice thickness and the concentration of multi- year ice are evaluated. Forecast skill is evaluated at each grid point and field averaged correlation coefficients, along with time-series of regional sea ice area and extent, are used to quantify regional differences. The results of this study highlight significant differences in regional and seasonal predictability of Arctic sea ice.