1123-60-311 **Xiaojun Yuan*** (xyuan@ldeo.columbia.edu), Lamont-Doherty Earth Observatory of, Columbia University, Palisades, NY 10964, and **Dake Chen**, **Cuihua Li**, **Lei Wang** and **Wanqiu Wang**.
Arctic Sea Ice Seasonal Prediction by a Linear Markov Model.

A linear Markov model was developed to predict Arctic sea ice concentration (SIC) at the seasonal time scale. The model was built to capture co-variabilities in the atmosphere-ocean-sea ice system defined by SIC, sea and air surface temperatures. Multivariate empirical orthogonal functions of these variables served as building blocks of the model. A series of model experiments were carried out to determine model's dimension. The predictive skill was evaluated by anomaly correlation and root-mean-square errors in a cross-validated fashion. On average, the model is superior to the predictions by anomaly persistence, damped anomaly persistence and climatology. The model shows good skill in predicting SIC anomalies within the Arctic Basin during summer and fall. Long-term trends partially contribute to the model skill. However, the model still beats the anomaly persistence for all targeted seasons after linear trends are removed. The model predicts well the interannual variability of the total sea ice extent (SIE) but underestimates its long-term decline, resulting in a systematic model bias. The bias can be reduced by a linear regression bias correction, leading to an improved correlation skill of 0.92 for the two-month lead September SIE prediction. (Received August 29, 2016)