



## **Statistical Prediction of Sea Ice Concentration over Arctic**

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In this study, a statistical method that predict sea ice concentration (SIC) over the Arctic is developed. We first calculate the Season-reliant Empirical Orthogonal Functions (S-EOFs) of monthly Arctic SIC from Nimbus-7 SMMR and DMSP SSM/I-SSMIS Passive Microwave Data, which contain the seasonal cycles (12 months long) of dominant SIC anomaly patterns. Then, the current SIC state index is determined by projecting observed SIC anomalies for latest 12 months to the S-EOFs. Assuming the current SIC anomalies follow the spatio-temporal evolution in the S-EOFs, we project the future (upto 12 months) SIC anomalies by multiplying the SI and the corresponding S-EOF and then taking summation. The predictive skill is assessed by hindcast experiments initialized at all the months for 1980-2010. When comparing predictive skill of SIC predicted by statistical model and NCEP CFS v2, the statistical model shows a higher skill in predicting sea ice concentration and extent.