@article{Bushuk2024,
  abstract = {This study quantifies the state-of-the-art in the rapidly growing field of seasonal Arctic sea ice prediction. A novel multi-model dataset of retrospective seasonal predictions of September Arctic sea ice is created and analyzed, consisting of community contributions from 17 statistical models and 17 dynamical models. Prediction skill is compared over the period 2001–2020 for predictions of Pan-Arctic sea ice extent (SIE), regional SIE, and local sea ice concentration (SIC) initialized on June 1, July 1, August 1, and September 1. This diverse set of statistical and dynamical models can individually predict linearly detrended Pan-Arctic SIE anomalies with skill, and a multi-model median prediction has correlation coefficients of 0.79, 0.86, 0.92, and 0.99 at these respective initialization times. Regional SIE predictions have similar skill to Pan-Arctic predictions in the Alaskan and Siberian regions, whereas regional skill is lower in the Canadian, Atlantic, and Central Arctic sectors. The skill of dynamical and statistical models is generally comparable for Pan-Arctic SIE, whereas dynamical models outperform their statistical counterparts for regional and local predictions. The prediction systems are found to provide the most value added relative to basic reference forecasts in the extreme SIE years of 1996, 2007, and 2012. SIE prediction errors do not show clear trends over time, suggesting that there has been minimal change in inherent sea ice predictability over the satellite era. Overall, this study demonstrates that there are bright prospects for skillful operational predictions of September sea ice at least three months in advance.},
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