Seasonal predictability of Arctic sea ice

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Significant changes in the Arctic environment have occurred over the historical record and are projected to continue and possibly accelerate in the future. These could have important implications for the predictability characteristics of sea ice. Here ensemble global climate model simulations with the Community Climate System Model, 3 are used to assess the inherent predictability of sea ice on seasonal to interannual timescales. Assessing the divergence among ensemble members, which are initialized with identical ice-ocean-terrestrial conditions, reveals that sea ice area exhibits potential predictability during the first summer and for winter conditions after a year but little predictability during the spring transition season. Comparing experiments initialized with different mean ice conditions indicates that ice area in a thicker sea ice regime has higher potential predictability for a longer period of time. In all regimes, ice thickness has high potential predictability for at least two years.