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MODEL SKILL AND SENSITIVITY TO INITIAL CONDITIONS IN A SEA-ICE PREDICTION SYSTEM

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en salle de conférences Joël Noilhan

Résumé:

We explore the skill in seasonal forecasts of September Arctic sea-ice extent in dynamical models that are members of the Sea Ice Outlook. We find that the multi-model ensemble only offers skill for the latest summer submission in August, and skill is lower than in hindcasts of sea-ice extent performed during earlier periods of the modern satellite record. The model-mean ensemble offers slightly higher skill, but does not beat a damped persistence forecast. We also find that the models are equally unsuccessful at predicting each other, indicating a large divergence in model physics and/or initial conditions. Motivated by this, we perform an initial condition sensitivity experiment with four Sea Ice Outlook dynamical models. We apply a fixed perturbation to the initial conditions of minus one meter sea ice thickness anomaly, and find that the response varies significantly across models. This suggests that different model physics across the Sea Ice Outlook make a significant contribution to model uncertainty and forecast skill degradation. Finally, we explore whether the recent SIO years have been inherently more unpredictable than past decades with the use of an idealized experiment.

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