Nansen Environmental and Remote Sensing Center

François Counillon
Francois.Counillon@nersc.no

Enhancing the skill of seasonal prediction in the Arctic

Assimilating sea ice concentration data within the Norwegian Climate Prediction Model (NorCPM) can greatly reduce error in the initial condition of sea ice thickness and enhances its prediction skill

NorCPM combines the Norwegian Earth system model with the Ensemble Klaman Filter (EnKF). The EnKF can succesfully update jointly the ocean and the multicategory sea ice state. We compare the performance of NorCPM assimilating ocean data only versus one assimilating sea ice concentration (HadiSST2) in addition. Performance of the reanalysis and seasonal restrospective hindcast are assessed for the period 1980:2010 (Kimmritz et al. 2019).
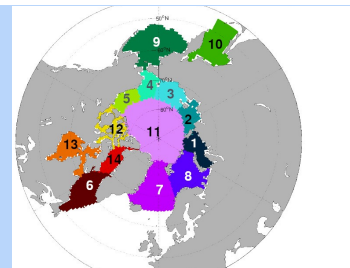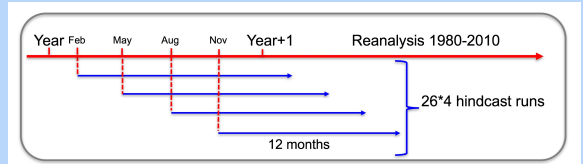

Figure 1. Reanalysis scheme (upper figure) and regions for the seasonal prediction (lower figure)

The developement have been used for production in CMIP6 Decadal Prediction Project (Bethke et al. submitted). The usefulness of the forecast for stackeholder in the maritime transport is investigated in the Centre for Research-based Innovation Climate Futures.
We are now tesing the added value of sea ice thickness from C2SMOS

References

Kimmritz, et al. (2019). Impact of ocean and sea ice initialisation on seasonal prediction skill in the Arctic. https://doi.org/10.1029/2019MS001825

Bethke et al., NorCPM1 and its contribution to CMIP6 DCPP, submitted to GMD
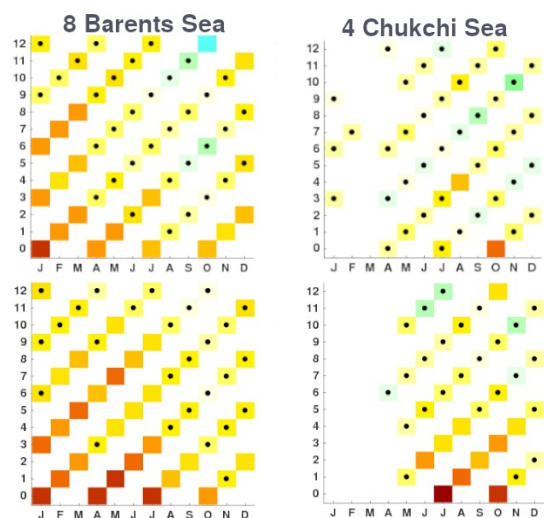
Figure 2. Detrended correlations skill of sea ice extent in two regions of the Arctic. The x-axis is the starting month and the y-axis the lead month. Upper row with ocean data only and lower with ocean and se ice data. Dots mark insignificant correlations.

Contributors: M. Kimmritz and F. Counillon