



Measuring skill of Arctic Ocean models in temperature-salinity space

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We examine volumetric census in temperature-salinity (TS) as a way of measuring and analyzing the fidelity of Arctic Ocean models. We separate the Arctic Ocean and adjacent seas into 8 precisely defined domains.

We examine output from three models: global and regional configurations of the MITgcm/ECCO2 at the Jet Propulsion Laboratory and the NEMO/ORCA1 at Bedford Institute of Oceanography. For each model in each domain we gather the model's long-term annual mean TS census. We then devise quantitative measures of skill of models' TS relative to observed compilations including PHC and WOA05. Among our early results, we observe systematic model failure to maintain cold halocline structure. Devising measures specific to cold halocline, we investigate possible misrepresentation of salt brine rejection during seaice freezing. A brine-rejection parameterization is implemented in the regional MITgcm configuration and initial TS results show that a cold halocline is reproduced and maintained throughout the 17-year model integration. We look to extend the implementation of the brine-rejection scheme to NEMO/ORCA1 in an effort to improve representations of Arctic Ocean water masses

in models which participate in the Arctic Ocean Model Intercomparison Project.