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Effect of different surface forcings on the circulation and stratification in a global model with focus on the Northwest Pacific Ocean

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The subarctic oceans like the Sea of Okhotsk, the Bering Sea, the Labrador Sea or the Greenland-Irminger-Norwegian (GIN) Sea react particularly sensitive to global climate changes and have the potential to reversely regulate climate change by CO_2 uptake in the other areas of the world. So far, the natural processes in the Arctic and Subarctic system, especially of the Pacific realm, remains barely studied in terms of sedimentary records, but especially in terms of numerical modeling. In this study we focus on the marginal seas of the Northwest Pacific (e.g. the Sea of Okhotsk, the Bering Sea and the Sea of Japan), which have nowadays a significant role in the climate system of the Northwest Pacific by influencing the atmospheric and oceanic circulation as well as the hydrology of the Pacific water masses. Especially the Sea of Okhotsk is characterized by a highly dynamical sea-ice coverage, where in autumn and winter due to massive sea ice formation and brine rejection, the Sea of Okhotsk Intermediate Water (SOIW) is formed contributing to the mid-depth (500-1000m) water layer of the North Pacific known as newly formed North Pacific Intermediate Water (NPIW). We use the Finite-Element Sea-Ice Ocean Model (FESOM) in a global configuration with a regional focus on the marginal sea of the Northwest Pacific Ocean with a resolution of up to 8 km. As a preliminary study we compare the influence of the Comprehensive Ocean Ice Reference Experiment version 2 (COREv2) and ECMWF Era 40/interim forcing data set on the general circulation and stratification of the Northwest Pacific Ocean. We evaluate the reliability of both forcing data sets based on a comparison with observational derived data from the World Ocean Atlas 2013.