



Northwest Pacific Ocean during the last 20,000 years: Initial results of the Sino-German Pacific Ocean Experiment (SiGePax)

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Arctic and Subarctic Regions are most sensitive to climate change, and reversely provide dramatic feedbacks to the global climate. Paleoclimate studies in these regions are of vital importance for a better understanding of the natural processes in the climate system prior to the influences of human activities. With a focus on discovering paleoceanographic evolutions in the Northwest Pacific Ocean during the last 20,000 years, we show first results of the German-Sino cooperation programme SiGePax. We present a collection of sediment cores covering climatical key regions in the Northwest Pacific Ocean. Our climate simulations provide the first step towards 'Data-Model Syntheses', which are crucial for exploring the underlying mechanisms of observed changes in proxy records. Analyses of Holocene sea surface temperature records on a basin-wide scale show a spatially heterogenous, but no simple warming or cooling pattern, indicating that extratropical atmospheric dynamics is involved. The temperature data are compared to model scenarios. We use the Finite-Element Sea-Ice Ocean Model (FESOM) in a global configuration, with a regional focus on the marginal seas of the Northwest Pacific Ocean to provide the underlying dynamics. We find that the Okhotsk Sea is characterized by a highly dynamical sea-ice cover, where due to brine release, the Okhotsk Sea Intermediate Water is formed, contributing to North Pacific Intermediate Water.