

An modeling study of Antarctic ice sheet of the Last Glacial Maximum and the last deglaciation

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Reconstructions indicate Antarctic ice sheet extent and volume were decreased during the last deglaciation. Sea level reconstruction of the Last Interglacial (LIG), after the penultimate deglaciation, indicate the volume of Antarctic ice sheet was smaller than the present interglacial. Climate reconstructions indicate surface temperature in the Antarctic continent and sea surface temperature in the Southern Ocean during the LIG were higher than the present interglacial. A transient climate simulation of the last deglaciation using MIROC suggests that this higher surface temperature in the Antarctic region is a result of weaker AMOC during the deglaciation and bipolar warming in the Southern Hemisphere.

In the present study, we utilize a 3-dimensional Antarctic ice sheet model (SICOPOLIS) to conduct quantitative assessment of the impact on retreat of Antarctic ice sheet during deglaciations. At first, the configuration of LGM Antarctic ice sheet is prepared using reconstructed climate and sea level changes, and is compared with reconstructions to verify the initial state of deglaciation. We will present preliminary results of Antarctic ice sheet changes of the last deglaciation using climate model outputs of the last deglaciation.