Quaternary melting history of Antarctic ice sheet derived form glacial isostatic adjustment modelling

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Spatial and temporal variations of the Quaternary sea-levels provide the important constraints on the melting history of the major ice sheets. The prediction of relative sea-level (RSL) calculated by glacial isostatic adjustment (GIA) modelling in Antarctica is critically dependent on the reconstruction of the configuration and thickness of the Antarctic ice sheet during the Late Pleistocene and Holocene. In previous studies, various deglaciation models of Antarctica were published (e.g., Nakada et al., 2000, Ivins & James, 2005). However, the previous models are different in the geometry and thickness in the last deglaciation, significantly. And there are two problems in those models. The one is that the previous models have no constraint on the starting time of deglaciation, the other is that the ice sheet at last glacial maximum (LGM) is covered on the edge of a continental shelf around Antarctica. Particularly, because the continental shelf around Antarctica is very deep about 800 - 1000 m below present sea-level, the ice sheet at LGM can not extent to the continental shelf. In this study, we have compared the predictions of the RSL and other geophysical signals in Antarctica using the previous deglaciation models, and improved the melting history of Antarctic ice sheet complexes in the last deglaciation.