

modelled response of the volume and thickness of the Antarctic ice sheets to transient retreat of the grounding lines

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The volume of Antarctic ice sheet is about 60 meters equivalent sea level.

besides of climate change, interaction between ice shelves and ocean may be significant to Antarctic ice sheet.

The grounding line shift is a important factor in considering interaction between ice shelf and ocean. The position of grounding line is thought to be governed by ice flow and mass balance between ice shelves and ocean. Last retreat of grounding line (20ka to present) is reconstructed from marine data.

To simulate evolution of Antarctic ice sheet, explicit treatment of grounding line movement also should be included. However, simulation of transient behavior of the grounding line is still difficult using a numerical large-area ice sheet model. Instead, grounding line is prescribed as a boundary condition.

According to Saito and Abe-Ouchi (2010) , grounding line position is a most important factor of Antarctic Ice Volume while climate factor is relatively small.

In this study, Antarctic ice sheet volume at prescribed grounding line patterns and Antarctic ice sheet volume change since last glacial maximum by retreat of grounding line is tested. Results show that Antarctic ice sheet volume has high sensitivity to grounding line in a term of deglaciation.

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