

Reconstruction of Antarctic ice sheet dynamics in the Last Interglacial

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Ongoing global warming could cause various problems in the future. One of the serious concerns is a sea level rise due to the melting of the ice sheet. Antarctic ice sheet, which hold a massive amount of fresh water was considered to be stable even if global warming progresses in the future. However, recent studies have shown that Antarctic ice sheet is more sensitive to global warming than previously thought. Therefore, it is an important to better understand extent to which Antarctic ice sheet is sensitive to global warming.

Study of past warm period proves an useful insight into the prediction of sea level rise in a future. Especially, Sea level in the last interglacial (MIS 5e), which was $\sim 1^{\circ}\text{C}$ warmer than the preindustrial was estimated to be several meters higher than that of the present with the sudden and abrupt rises in sea level. This suggests significant loss of Antarctic ice sheet during MIS 5e. However, Antarctic ice sheet variability during the MIS 5e has been poorly understood. In this study, we reconstruct dynamics of Antarctic ice sheet during MIS 5e from the marine sediment core GC1407 collected from Dumont d'Urville Sea, East Antarctica (130.518°E , 63.74°S).

Interval of MIS 5e has been determined based on abundance of radiolaria in GC1407. Variability of iceberg discharge is reconstructed by measurement of iceberg rafted debris (IBRD) in sediments. IBRDs are found to be recognized only during MIS 5e. This suggests that the significant discharge of large icebergs possibly from Wilkes Land basin, East Antarctica happened only during warmer than present climate condition.

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