

Deglaciation history of the East Antarctic Ice sheet revealed by exposure ages and marine-lake sedimentary records in Lützow-Holm Bay

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The Antarctic Ice Sheet (AIS) is one of the most significant potential contributors to future sea-level changes. Recently, the acceleration of mass loss of the AIS has been reported by several studies based on satellite observations, such as radar altimetry, interferometer, and gravity measurements. In these studies, the main cause of the modern ice mass loss is thought to be an inflow of modified Circumpolar Deep Water (mCDW). However, the role of the mCDW for the large-scale deglaciation of the AIS, such as the deglaciation since the Last Glacial Maximum (LGM), remains unclear due to the lack of the geological data. Therefore, highly-resolved reconstruction of the deglaciation history of the AIS since the LGM is essential to understand the role of the mCDW, which will be a useful analog for calibrate the climate and ice sheet models and refine the future ice sheet retreat projection. In this presentation, we show an overview of our recent activities in the Lützow-Holm Bay, Dronning Maud Land, East Antarctica. Newly obtained surface exposure ages and sedimentary records from the Lützow-Holm Bay show a rapid thinning of the EAIS during the early-mid Holocene likely due to an inflow of mCDW. We, therefore, suggest that it will be a key to obtain both terrestrial and marine-based geological data in the Antarctic margin to understand the potential impact of ocean warming to the rapid and large scale ice sheet melting of the AIS.

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