

# **Understanding of the sensitivity of East Antarctic Ice Sheet to global climatic and oceanic changes based on reconstruction/observation of the ice sheet geometry, volume, and interactions in ocean-ice-solid earth**

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The East Antarctic Ice Sheet (EAIS) is one of the largest potential contributors to future sea-level changes. Recently, acceleration of the EAIS volume loss through basal melting and iceberg calving, in addition to the West Antarctic Ice Sheet, has been reported by several studies based on satellite observations, such as radar altimetry, interferometer, and gravity measurements. The latest IPCC report shows a higher sea-level rise scenario for the next 500 years based on ice sheet models. However, no data constrain for the basal melting and iceberg calving process as major drivers of the retreat of the EAIS in a longer timescale (centennial-to millennial). Moreover, the calibration or reproducibility of the sea-level rise projection from the models partially relies on the geological reconstruction for the past warm intervals. These suggest that highly reliable reconstruction and precise observation of the AIS changes are essential to evaluate their sensitivity to global climatic and oceanic changes. Especially, the magnitude and timing of ice sheet changes during the last several million years, including the past warm periods, will be important for a better constant of the interaction between the Southern Ocean, Ice Sheet, and Solid Earth. Relative sea-level reconstruction along the East Antarctic coast since the last interglacial period is essential to understand the EAIS sensitivity to the global climatic and oceanic changes, via glacial isostatic adjustment (GIA) modeling. Marine sediment records will contribute to understanding the mechanisms of the basal melting and iceberg calving as major drivers of the retreat of the EAIS. Crustal heat flow and basement geology are also vital factors for refining the ice sheet models and provenance studies for the ice sheet reconstruction. In this presentation, we will introduce achievements from the field campaigns for the last decades with the remaining questions and discuss future scientific plans for the Prioritized Research Project during the phase X of the Japanese Antarctic Research Expedition.