

Integrated multidisciplinary study on change in the Southern Ocean and the Antarctic ice sheet

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The Antarctic ice sheet holds 90% of ice, which is equivalent to about 70 m height of sea level. On the other hand, the Southern Ocean produces densest seawater, called the Antarctic bottom water, which drives ocean circulation. The Antarctic ice sheet and the Southern Ocean are the most significant components that control global climate and sea level changes. However, the Antarctic ice sheet and the Southern Ocean are the mostly unknown components in the Earth system due to the difficulties of the observation in these areas, especially in the East Antarctica.

The primary processes and the mechanism of the interactions among the atmosphere, ice sheet, solid earth and ocean should be made clear in the context of the global environmental changes driven by the Antarctic ice sheet and the Southern throughout the various kinds of the interactions. The integrated multidisciplinary study is required with the different fields of the observation data from geological to present time scale together with modeling studies. Furthermore, the developments of the observation instruments are important element to obtain the field observation data in the unexplored under and edge of sea ice. The project of the integrated multidisciplinary study focused on changes in the Southern Ocean and the Antarctic ice sheet are introduced, and the prospects of this program are discussed.

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