[JJ] Evening Poster | M (Multidisciplinary and Interdisciplinary) | M-IS Intersection

[M-IS21]Arctic and Antarctic Science and Future Plan

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The global environmental change is of great interest for both governments and general public, as well as scientists studying on the earth and planets. The Arctic and the Antarctic regions significantly affects global environmental variation and also provide invaluable information on itsthe variation. In the Arctic region, for example, temperature increase due to the global warming is the largest on the globe. The climate change is most significantly emerging which causes change of ecology, human economic activity and life. On the other hand, very little is known on the response of the huge Antarctic ice sheet of the Antarctic to the global warming, and hence a possible change in Antarctica on a global scale ility of a huge global change and its prediction are of greatest interest. Variations in the bipolar regions are not independent but connected through ocean and atmosphere circulations, and therefore it is necessary to consider them to be one unified system. Moreover, the Arctic and Antarctic regions are the best observation and/or investigation field for space/planetary sciences, atmospheric/hydrospheric sciences, and solid earth sciences, indicating that the polar regions are important windows for earth and planetary sciences. This session is devoted to a forum to present Antarctic and Arctic sciences in many different aspects. Scientific discussions for building up a proposal for the master plan 2020 of the Science Council of Japan are expected.

[MIS21-P01]Effect of the solid Earth response to ice sheet change on the precise projection of future sea-level rise

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Ice sheet and sea water act as surface mass loads on the solid Earth. Past and present variations of the ice sheets in both polar regions make the solid Earth deform as the elastic and the viscous responses. These deformations have been observed by geodetic, geographical and geological methods based on the field survey and the satellite measurement. To predict the sea-level change due to ice mass change and solid Earth's response based on these observations, we need to apply the numerical modelling described by the Glacial Isostatic Adjustment (GIA) theory. GIA modelling results indicate that the predicted sea-level changes in any sites are spatially non-uniform because of the crustal deformation due to the GIA depending on geometry of the surface mass loads, namely distribution of ice and water. Therefore, the precise evaluation of the GIA is vital to reconstruct present and past sea-level changes. In this presentation, we show the crustal deformation derived from GIA due to present and past ice mass changes, and illustrate the importance of GIA component for precise projection of the future sea-level rise associated with the global warming.