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

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

convener: Takuji Nakamura (National Institute of Polar Research), Atsuko Sugimoto (Arctic Research Center, Hokkaido University), Shin Sugiyama (北海道大学低温科学研究所, 共同), Yoshifumi Nogi (National Institute of Polar Research)

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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 its the 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-P04] Ice coring projects in Antarctica and the Arctic

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Polar ice cores and borehole measurements provide us with valuable information on the past climate and environment, as well as that on ice sheet and glacier dynamics. Such information is prerequisite to understanding of the mechanisms of climatic and environmental changes, and is expected to contribute to better projections of future climate and sea level. In the next phases of Antarctic glaciological research, National Institute of Polar Research (NIPR) together with Dome Fuji Ice Core Consortium (ICC) plans to perform various activities related to the third deep ice-core drilling in the vicinity of Dome Fuji, in order to obtain the "oldest ice" with age much older than 800 kyr. This is also a contribution to International Partnership in Ice Core Sciences (IPICS), which defines the oldest ice project as most challenging. We plan to (i) investigate glaciological conditions (ice sheet surface conditions, englacial conditions and subglacial conditions) of the candidate site area; (ii) determine the exact location of the drilling site, and (iii) carry out deep drilling at the selected site. In Greenland, NIPR and collaborating universities have participated in international deep ice coring projects. Currently we participate in the East Greenland the East Greenland Ice Core Project (EGRIP). The purposes of the EGRIP are to advance our knowledge on the dynamics and past changes of the Greenland Ice Sheet and to reconstruct the climate and environment changes during the early Holocene, which was known to be warmer than today and should be an excellent analogue to the future Greenland affected by global warming. After the EGRIP, other deep ice coring projects will be carried out in Greenland to obtain

spatial information on climate and ice sheet variability. By analyzing ice cores from both polar regions, we expect to understand the mechanisms and impacts of abrupt climate changes as well as glacial-interglacial climate changes.