Evaluation of suitability of shallow ice coring site at the seashore of West Antarctica

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It has been known that the Southern Annular Mode (SAM), which is the large scale circulation of atmosphere in the Southern Hemisphere, contribute much to the climate change of the Antarctica and the variability of the SAM is closely related with the strength of westerly winds around the Antarctica and thus can sensitively affect on the variability of Amundsen Sea Low (ASL). However, up to date, there have been few researches to identify the natural variability of the SAM before industrial revolution in the past even though it may be critical to understand its variability in the present and future.

This is the main driving factor to start the shallow ice coring program on the seashore of West Antarctica and the final goal is to reconstruct the major components of SAM (atmospheric circulation, temperature, mean sea level pressure, and so on) in the past (especially before industrial revolution, spanning the last ~ 200 years) using ice core. As a preliminary study, on the 17-19th February 2012, snow pit works and a glaciological survey during 2012 Amundsen Expedition of KOPRI were conducted in order to evaluate the suitability of shallow ice coring site (74°21´45.6˝S, 111°20´54.0˝W) of Moore Dome in the bear peninsula at the seashore of West Antarctica as the archive of the variability of ASL in the past and, as an important factor of evaluation, the ice thickness, accumulation rate, the possibility of surface melting of snow layer at the top of Moore Dome were investigated and the preliminary results will be presented in detail.