[JJ] Evening Poster | A (Atmospheric and Hydrospheric Sciences) | A-CC Cryospheric Sciences & Cold District Environment

[A-CC29]Ice cores and paleoenvironmental modeling

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Tue. May 22, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)

Analyses of ice cores from polar and mountain regions have contributed to the reconstruction and understanding of the past environmental changes on timescales from years to several hundred thousand years. In this session, we welcome paleoenvironmental studies using ice cores and paleoclimatic modeling. Studies on reconstruction methods, recording processes and new paleoenvironmental proxies, technical aspects of paleo-modeling are also welcomed. Studies with marine sediment cores, terrestrial sediment cores and tree-rings on similar timescales are also important and welcomed, in order to discuss past environmental changes from multidisciplinary viewpoints.

[ACC29-P07]Sensitivity studies of the position and elevation of Dome Fuji, Antarctica using a high-resolution numerical ice-sheet model

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Keywords:Ice-sheet modeling, Dome Fuji

Ice divides are important locations for deep drilling on ice-sheets. Precise computation around a divide requires spatially very high resolution due to the characteristics of ice-flow around the divide, therefore, one effective way to simulate the evolution of divide flow for a long time scale (e.g., more than 1Myr) is to apply a `nesting' of a local high resolution model into a large low resolution model. Moreover, ice flow pattern is significantly different between an ice divide and the other areas: the flow around the divide requires more terms to compute than the other area, which prefers a nesting model again. A simple way to introduce the nesting is to fix the nested area through the computation, therefore, sensitivity of the ice-divide shapes (position and/or elevation) to changes in various boundary conditions should be investigated beforehand.

Saito (2002) presents a series of numerical experiments of Antarctic ice sheet using an ice-sheet model IcIES. Possibility of changes in the position of Dome Fuji driven by the evolution of glacial/interglacial climate, as well as a variety of ice-grounded area are discussed, however, the resolution of the ice-sheet model in the study was relatively low (40km). Moreover, only maximum possible or even overestimated patterns of the ice-grounded area were used in the study.

In this study, the work of Saito (2002) is updated using a latest version of IcIES with higher resolution (8km). More detailed sensitivity study of the position/elevation of Dome Fuji to a variety of boundary condition is discussed.