

Isotopic and snow accumulation stacked record in East Antarctic site during satellite era

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Abstract

In the framework of the International Partnerships in Ice Core Sciences (IPCS) initiatives the GV7 site (70°41' S - 158°51' E) in East Antarctica was chosen as the drilling site for the Italian contribution to the understanding of the climatic variability in the last 2000 years (IPICS 2k Array). During the 2013-2014 Antarctic field campaign the expedition traverse based on an Italian-Korean partnership reached GV7 site and drilled one 250 m long ice core, four firn cores and two snow pits.

Water stable isotopes ($\delta^{18}\text{O}$ and δD) measured values from the uppermost 25 meters of four of the new drilled cores were used in order to define the annual snow accumulation time series (SMB). Results were compared with the data obtained from the older core drilled in GV7 during the 2001-2002 International Trans-Antarctic Scientific Expedition (ITASE) traverse. On annual basis $\delta^{18}\text{O}$ (and δD) and SMB show a good agreement between each of the selected cores. A stacked record of annual GV7 isotopes and SMB, based on the analysis of the upper part of the considered cores, is presented for the time period 1970-2012 and compared with the ECMWF model snowfall reanalysis datasets (SF).

Keywords: stacked record, water stable isotopes, snow accumulation, reanalysis data