



Abstract ID : 295

Antarctic-wide quantification of ice core SMB spatial representativeness

Content

Ice cores are the only high temporal resolution proxy for measuring past surface mass balance, and yet, it remains difficult to quantify how representative they are of the region in which they have been drilled. Is it a case of square meters, square kilometers?

Understanding the spatial footprint of ice cores is important for model calibration, model data assimilation, data-model intercomparisons, as well as large scale proxy reconstructions (e.g. Thomas et al., 2017), both in terms of the trend of the SMB signal and the temporal variability of the SMB signal measured in the ice cores.

To answer this question, we use several ground-penetrating radar (GPR) surveys, in East and West Antarctica, in coastal and interior regions, which have co-located ice core SMB data. The comparison of the SMB signals of the GPR and the ice core records allow us to estimate the spatial footprint of the ice cores, as a function of the regional and climatic conditions of the region surveyed.

We explain the difficulties in collating such a large dataset, and in determining the uncertainties associated with our study.

Primary authors: CAVITTE, Marie (UCLouvain); GOOSSE, Hugues (Earth and Life Institute, Université catholique de Louvain, Louvain-la-Neuve, Belgium); MATSUOKA, Kenichi (Norwegian Polar Institute); Dr MELOTH, Thamban (National Centre for Polar and Ocean Research, Goa, India); Mr DEY, Rahul (National Center for Polar and Ocean Research, Goa, India); WAUTHY, Sarah (Université libre de Bruxelles (ULB)); Dr VERFAILLIE, Deborah (Centre National de Recherches Météorologiques,); VAN LIEFFERINGE, Brice (Laboratoire de Glaciologie, Université libre de Bruxelles, Brussels, Belgium); Dr MEDLEY, Brooke (NASA, Goddard Space Flight Center, Greenbelt, MD); THOMAS, Liz (British Antarctic Survey)

Presenter: CAVITTE, Marie (UCLouvain)

Track Classification: Progress in proxy development and interpretation