

## **Author's response to comments of anonymous reviewer**

### **Authors**

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### **Paper Title**

Sodankylä manual snow survey program

Thank you for a complete and relevant review of the paper. We will answer to your comments in the presented order.

We will submit a modified version of the paper after the review period. As suggested by reviewers, we will modify the paper structure to include presentation of all sites, detailed measurement procedures and description of each instrument. We will add more citations, including references to this special issue. A short comparison with other measurement sites (Weissfluhjoch and Col de Porte) will be added as other reviewer suggested. In addition, some of the measurements described in the paper are now available online. Details for downloading the data will be added to the paper.

We will include more figures and tables to show the data, and add more analysis and comparison of data from different sites. However, the aim of this paper is to present the available data and be a reference for anyone who wants to use the Sodankylä snow measurements in their research. The added references to the papers using this data set present the advancements in the understanding of environmental processes.

### **Specific Comments**

1. We agree. We will add figures and tables to present more data, including long time series of SWE (non-pit), and SWE and SD from all available measurement sites since 2006 (the beginning of snow pit measurements).
2. We will modify the paper structure to include presentation of all sites and detailed measurement procedures, and description of each instrument. We will also update the current map (Fig. 1) and include another one which shows Lake Orajärvi and Tanhua. We will also add more details about the measurement sites (topography, vegetation, substrate, surface). Few details about the site history are relevant for the long time series of SD.
3. We agree. We will restructure the paper into sections Methods (subsections Measurement sites, Measurements and instrumentation) and Data sets, and include more analysis of spatial differences. We will replace Fig. 6 with a table.
4. Other reviewers requested better description of instruments, especially of the ones not available commercially. We will replace Fig 4. with more but smaller pictures of instruments. We will also remove Fig. 5. A figure of temporal and spatial variability of SWE and SD will be added, and as well as time series of some other snow pit parameters.
5. This paper focuses on manual measurements, and therefore we do not include any wider presentation or analysis of the automatic measurements. However, as manual measurements are often used together

with automatic data (as another reviewer pointed out), we will include listing of all the automatic measurements at the sites.

6. We will add another table that shows the electronic availability of each data set as well as the ownership of the data. Table 1 will be modified to show time periods when different instruments have been used.
7. Some of the data are now publicly available at <http://litdb.fmi.fi/>. We will add a list of all the manual measurements to this web site to indicate where the rest of the data can be requested.