

## ***Interactive comment on “Simulating the temperature and precipitation signal in an Alpine ice core” by S. Brönnimann et al.***

### **Anonymous Referee #2**

Received and published: 1 April 2013

Ice core record is an important way to understanding the past climatic and environmental changes. However the climatic significances of proxies in ice core should be clarified firstly. This paper simulated the temperature and precipitation signals in an ice core from Grenzgletscher, Switzerland, using a simple forward model, and found that there was a significant correlation between accumulation and precipitation over the study period (1938-1993) and there were some limitations to the use of  $\delta^{18}O$  for temperature reconstructions. The results acquired and the method used in the paper have made very important contributions for the Alpine ice core study and assimilating ice core data into climate models. The manuscript could be published after some revisions. The suggestions are as follows: 1) owing to that there are big differences among the number of precipitation days in the three meteorological data sets during 1980-2008, it should be analyzed that if there are differences among the monthly/seasonal

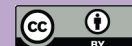
C3608

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



Interactive  
Comment

variations in precipitation days and/or precipitation amounts in the three data set, and evaluated the possible influences of the differences for the coefficient before the parameters in the forward model and thus for A-P and  $\bar{\Delta}T_{180}$ -T correlations. 2) it should be pointed out that if there is a difference between the precipitation-weighted average temperatures and annual mean temperatures, this can help us to understand if the mean temperature over the precipitation days in the year (and thus the mean  $\bar{\Delta}T_{180}$  in the year) could represent annual mean temperature. 3) adding a figure to show the variations in precipitation at the meteorological station and point out the wet and dry periods, and then analyzing the  $\bar{\Delta}T_{180}$ -T correlations during the different periods. 4) the significant levels of A-P and  $\bar{\Delta}T_{180}$ -T correlations have been stated in Table 1, these should also be stated in other parts of the text, meanwhile please note that the degree of freedom can be decreased sharply when calculating the correlations using 3yr or 5yr running average data sets.

---

Interactive comment on Clim. Past Discuss., 8, 6111, 2012.

[Full Screen / Esc](#)[Printer-friendly Version](#)[Interactive Discussion](#)[Discussion Paper](#)