

Interactive comment on “Experimental observation of transient $\delta^{18}\text{O}$ interaction between snow and advective airflow under various temperature gradient conditions” by Pirmin P. Ebner et al.

Anonymous Referee #2

Received and published: 20 April 2017

The manuscript is devoted to the results of the laboratory experiments aimed to study the post-depositional changes of snow isotopic composition due to interaction of snow matrix with water vapor. The processes occurring in snow after the snow precipitation is deposited are one of the least studied and understood elements of the formation of the climatic signal of an ice core isotopic profile. Thus the present work is timely and up-to-date. The obtained results are clear and convincing so I think the manuscript may be accepted with minor corrections. My suggestions to improve the manuscript are as follows: I do not agree that the “results represent the first direct experimental observation showing interaction between the water isotopic composition of the snow” (line

C1

467-468), since several similar laboratory experiments have been already contacted (e.g., Sokratov & Golubev, 2009). I think this work would benefit from short discussion of the previous studies. Second, I suggest to shorten or completely eliminate the long discussion of an experiment that has not been conducted yet (lines 412-432). Finally, some sentences look awkward or not finished. One of the examples is on the lines 361-362, but there are some more in the text. So I ask authors to look through the text more carefully.

Reference: Sokratov, S.A. and V.N. Golubev 2009. Snow isotopic content change by sublimation. *J. Glaciol.*, 55(193): 823-828.

Interactive comment on The Cryosphere Discuss., doi:10.5194/tc-2017-16, 2017.

C2