

Interactive comment on “Intercomparison of snow density measurements: bias, precision and spatial resolution” by M. Proksch et al.

Anonymous Referee #2

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General Comments:

This paper compared the different snow density measurement methods with substantial experimental data (lab and field). It does not only clearly list the overestimation and underestimation of different results, but also explain the reasons of the difference in detail. The precise measurement of snow density is very important to understand the snow physical processes and few studies have focused on comparing the different methods before. This paper will be a very good reference to further investigate snow density measurement.

The paper is well written and is recommended to publish. Below are some minor revisions.

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Specific Comments:

3583-5: Parametrization of snow properties such as are lined to density.

Snow mechanics is significantly related to snow density, which should not be ignored [Schneebeli and Johnson, 1998; Wang and Baker, 2013]

3585-15: A stragraphic layer is a certain stratum with similar properties in snow layer. It is better to list several properties used to define a stragraphic layer. Is there any special calibration method to define the layer in the field?

3586-10: For Gaussian filter used in CT measurement, how to define support and sigma, how do those parameters influence the measurement?

3589-10: Different samples size was set with different scan resolution. The different resolution will influence the measured ice volume to some extent. Could you explain how the difference of 18 um and 10 um affect or not affect the results?

3589-25: The field measurement has any temperature record during the sample collection? It will be good to compare with lab measurements temperature (-10 OC) and also be useful to analyze the different density results among different methods.

3610-figure2: The figure is not very straightforward. What does the length of red line and blue line represent? Could you explain more about those details of the graph?

Interactive comment on The Cryosphere Discuss., 9, 3581, 2015.

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