Geoscientific
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Discussions

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Interactive comment on "PRACTISE – Photo Rectification And ClassificaTIon SoftwarE (V.2.0)" *by* S. Härer et al.

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The authors present a paper outlining new developments and modules in their photo software PRACTISE. The software was primarily designed to determine maps of snow covered area from photos by terrestrial cameras. The updates described in the current paper mainly deal with an improvement of the handling of shadowed areas within a picture as well as the use of satellite images as source for deriving snow cover maps. Here, especially the very important and difficult determination of the NDSI threshold is addressed by the paper, but other useful features such as the import of an externally generated cloud mask are also described. Finally, some additional improvements mostly concerning the user friendliness of the software are introduced. All the new modules are explained with examples from the Zugspitze basin so that the reader can

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get an impression of what the new improvements of the software are capable of.

The paper is very well written. The graphics are generally good although some minor adjustments might enhance their usefulness for the reader (see comment section). The topic falls well within the scope of the journal and does in my opinion represent a valuable contribution to the modelling science community. The use of photographs of any nature as a source for snow cover mapping is becoming more and more prominent with the increased availability of webcams and affordable and reliable time lapse cameras, as well as the increased resolution of satellite images. An easy to use tool to cope with all these image sources therefore presents a very valuable tool for the modelling community. The associated example dataset, the manual, and the code ensure that the reader (and modeler) can easily reproduce the results of the study and can quickly move on to use the software for their own purposes. My only substantial comment concerns the differences between the new and traditional method of the derivation of a snow cover map from satellite images. Here I would have liked some more discussion or graphic content (see comment section). All other comments are (very) minor in nature. I would recommend publication of this article after the comments have been addressed.

General comments:

As mentioned I only have one general comment regarding the processing of snow cover maps from satellite images. A large portion of the paper deals with introducing a new objective approach of determining the NDSI threshold. This is very important as the procedure of setting this threshold has often been one of the major weaknesses of studies. The authors find in their example some substantial deviations of this threshold from the traditionally used literature value. I would appreciate some more discussion of what these deviations mean for the produced snow cover maps. A short section at the very end of the results section is devoted to this analysis but since this is one of the major innovations of the study, I feel this could be expanded. This would also maybe shed some light on earlier studies that have used the literature value. A suggestion

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would be to show "old" and "new" snow cover maps side by side and maybe discuss where differences in snow or no snow areas are especially apparent. In this respect, I appreciate the authors plan to focus future research on analyzing the NDSI threshold variability.

Specific Comments:

P. 8482 line 19: "The results have shown..." I wouldn't use past tense here as the results are still valid. P. 8483 line 13 Remove the "And" at the start of the sentence. P. 8487 line 12 I think it would be very useful to provide some further explanation as to what a "camera target position" is, and how it can be determined. The authors used GCPs, but I think there are other methods. A reader that's not (yet) familiar with photo processing might benefit from such an extended explanation. P 8490 line 2 and 16 I'm not sure about the term "disposes over". I would replace it with "provides" or "includes" P. 8491 line 21 The authors state that "shaded snow pixels normally have higher PC 2 values than PC 3... Can you maybe quantify this a little more precisely? Approximately, what percentage is "normally"? P 8492 line 3 This may be semantics, but the area of snow derived from the PC analysis in Figure 4 looks more green rather than yellow to me. P. 8492 line 18 What happens to the pixels labeled as "unsure" if the user wants a final map that only shows "snow" or "no snow"? During the description of the calibration procedure on p. 8494 it is stated that the user can either exclude them or use them in weighted form according to their probability value. I assume that this is the also the case when just processing a terrestrial photograph into a snow cover map, but I'm not sure. Please clarify. p. 8498 line 5 ff The authors state that they made a detailed visual analysis of the pixels in the two April photographs and discuss the "probably" and "unsure" pixels in detail. However, no information is given, whether they found any misclassifications in the pixels identified by the software as "snow" or "snow free" in the SLR photos. Since (the very few) misclassifications are discussed for the webcam photos, it can be assumed that there were no misclassifications at all for those two categories in the SLR photos. I would appreciate some info on this matter. (And

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if there were no evident misclassifications at all in the SLR photos, I would definitely mention that as this is a rather remarkable show of how good the software is working). P 8499 line 29 I might have missed it, but how large is the Zugspitzblatt catchment over which the analysis for the satellite images was carried out?

Figures:

I find the legends in the top right corner of Figures 3b/4/6/9/10/11 too small and therefore very hard to read.

Interactive comment on Geosci. Model Dev. Discuss., 8, 8481, 2015.