

Interactive comment on “The detection of cloud free snow covered areas using AATSR measurements” by L. G. Istomina et al.

Anonymous Referee #1

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The work presents effort to detect clear snow under unique Arctic conditions. It is inherently challenging to tell the difference of snow/ice surface from cloud in the Arctic. In this study, information from multiple channels is taken into account for clear snow detection. The manuscript is well organized and clearly written, though text from 1108 to 1110 can be more concise.

The detection method proposed in this study, in my opinion, is basically the group threshold method, as approach 2 the authors categorized in the text, though relative thresholds are used instead of absolute thresholds. However, this does not affect the importance of this work, since it is easier to implemented, e.g. for AATSR, and it provides an alternative to the approach MODIS took.

Some minor remarks:

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1. Line 22 on page 1102, instead of cite MODIS ATBD MOD-06 2002, more appropriate references are Ackerman, Steven A.; Strabala, Kathleen I.; Menzel, W. Paul; Frey, Richard A.; Moeller, Christopher C. and Gumley, Liam E.. Discriminating clear sky from clouds with MODIS. Journal of Geophysical Research, Volume 103, 1998, pp.32,141-32,157. Liu, Yinghui; Key, Jeffrey R.; Frey, Richard A.; Ackerman, Steven A. and Menzel, W. Paul. Nighttime polar cloud detection with MODIS. Remote Sensing of Environment, Volume 92, 2004, pp.181-194. Call Number: Reprint # 3815

2. Page 1103, line 21, TIR is not clear. 3. I am wondering how the authors get the numbers in the text, e.g. Line 19-23 on Page 1110. 4. On figure 8-15, the authors might want to indicate clearly in the text there is difference in AATSR mask (clear snow mask) and MODIS mask (cloud and clear mask). Also, the last sentence on page 1112 is misleading.

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