

Interactive comment on “Overview of NASA’s MODIS and VIIRS Snow-Cover Earth System Data Records” by George A. Riggs et al.

Anonymous Referee #4

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The manuscript provides overview of recent modification of two essential for snow-cover investigation Earth System Data Records: MODIS and VIIRS. The content and scope of executed work is great, informative and, certainty, is worth to be published within a very short time. Based on read text, I propose only a few general and more specific corrections which can be taken into account at the will of author. First of all, for me it was difficult to perceive a structure of manuscript clearly. The reason, probably, lies in not enough explicit image of average reader. The task to combine a few Guide books and wide literature review to produce short overview is very difficult, that is why often the authors refer to different sources for additional reading. Therefore, the purpose of the overview is to provide only recent improvements and new achievements, and as it was mentioned in manuscript in the beginning, it should be clear along whole article just like the fact that the average reader is already familiar with previous data

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sets. That is why when on page 10 a brief description of daily product appears due to, as it pointed, its popularity, I think, it overloads text and confuses the reader concerning a purpose of the paper (if it is written to cover popular points or new ones). Another purpose of overview is to be more understandable especially to compare with reading of guide books. For that matter, I found this text a little bit too technical. Sometimes, it is difficult to read, and a lack of coherence is felt. Some example is presented here (page 6, line 16-18): "Snow cover has an NDSI > 0.0. However other features e.g. salt pans, and cloud contaminated pixels at the edges of cloud, and features with very low visible reflectance can have NDSI > 0.0, and thus be erroneously detected as snow, which results in a snow commission error". Probably, the word "too" after second mentioning of NDSI threshold is missed, and it leads to difficulties in perception. Another structural confusion consists in providing reasons of C5 algorithm improvement only by the end in 4th chapter. I find that they should be delineated in the beginning, but at the same time, I see the difficulties to put it before theoretical backgrounds. Therefore, the main advice is to revise a text and structure one more time to make it more plain and coherent. More specific comments concern, at first, already mentioned by one of referee, 1300 threshold for mountains. It would be really interesting to read possible explanation of such chosen value and why it is "linked with height" (page 8, line 28). Another point which needs an explanation, as I see it, the choice of data format (page 12, line 31-32). As it is placed in text, it is interesting to know why this difference takes place. Further on, on the figure 6, C5 FSC and C6 NDSI Snow Cover are compared. The advantage of C6 is visible here but it is interesting to compare them with C5 Snow cover data too. Actually, the question about whether this improvements so significant or not appears a few times along text. As "significantly" improved product on line 12 of page 3 turns into "notable" (line 29 on 7 page) while "the accuracy of the MODIS C6 products is similar to, or better than MODIS C5". At the same time, the merits of new data set is still obvious, but a lack of more critical improvement assessment confuses a little bit in a few moments of different chapters.

In conclusion, I want to admit that a huge work had been done and such an article will

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be very useful for every researchers in sphere of snow investigation. I hope that my notes will help to make the text with description of this important work a little bit more clear and structured.

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