

## ***Interactive comment on “A cloud identification algorithm over the Arctic for use with AATSR/SLSTR measurements” by Soheila Jafariserajehlou et al.***

### **Anonymous Referee #2**

Received and published: 16 December 2018

This paper propose a new algorithm for cloud identification over the Arctic area, which is a relevant topic for the scientific community. The results shown in the paper are promising, although the paper needs to be revised. Here are my major comments:

Please check you English. The content of the paper really suffer from lack of structure, wrong grammar and misplaced commas. Also, you should not use an article before ASCIA, except when it is used as adjective. Example: “ASCIA retrieves clouds over Arctic” or “The ASCIA retrieval over Arctic”. This is true for all acronyms and abbreviations (e.g. SLSTR). Since (which certainly does not require a comma) introduces a subordinate sentence, which cannot be separated from the main clause by a full stop.

C1

It is not clear to me whether or not your algorithm is applicable during winter. At line 357 you write that your targeted seasons are spring, summer and autumn and then you choose March, May and July. This is already confusing by itself. Later, at line 362 you write that ASCIA is not optimized for winter time. Could you please clarify this?

Fig. 5 The left panel over Greenland shows 2 rectangles in left part of the image. Could you please discuss where they arise from? Your algorithm shows promising results, but it is always worthwhile to discuss its limitations.

L398 You say the computing time is higher. How higher? Please give an estimate.

L428 I agree with the other reviewer, 45 minute time difference seem to me quite large for validation purposes. Maybe you should introduce a filtering?

Sections Results and Validation could be compressed in one section, as even when presenting the results you do some qualitative validation against other cloud products.

L454 Could you please show part of the evaluation against AERONET? AS the latter is a well-known reference for every reader, the validation against it deserves more than 2 lines of text. Also, which version are you using? And why L1.5 instead of L2.0?

Technical comments L151 The SLSTR revisit time is 1.9 day at the equator with one satellite and 0.9 day with two satellites, not single/dual view.

Table 3. The title of the second column should be something like “Test”

Figures 1-2, fig. from 5 to 13 and fig. 16 should indeed be larger.

L339-347 please simplify these lines. Throughout your manuscript sentences are often too long, but here they really affect the readability. Simplify the lines here and maybe add more information on the caption of the figures (for example the exact coordinates of the corners).

L16 reflection at 3.7  $\mu\text{m}$

C2

L18 e.g. e.g.  
 L32 Though the attribution of the origins of this phenomenon  
 L76 the aim is  
 L104 it is also planned to apply it to the observations acquired by SLSTR  
 L123 In the upper right  
 L131 Each scene is  
 L142 These algorithms are typically not optimized  
 L168 For example, they are almost absent in the central parts  
 L187 AERONET is ...  
 L206 Then the PCC can be written as  
 L207 function of the covariance  
 L241 no new line  
 L254 Here you should compact everything in one sentence  
 L285 AATSR provides  
 L310 found that a PCC of 06  
 L319 ASCIA starts looking for remaining small cloud scenes within a block, i.e. scenes  
 ... (R3.7 >0.04)  
 L333 it is important to note that one scene, ...  
 L334 The latter mix with soil and becomes  
 L339 a representative example  
 L373 cloud free scene which ISTO failed to detect but are correctly labeled by ASCIA.

C3

L393 Both the ESA and ISTO  
 L447 would be expected from SYNOP

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