

Interactive comment on "Cloud base height retrieval from multi-angle satellite data" *by* Christoph Böhm et al.

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Thank you for your constructive feedback. We have addressed your comments in the following way:

"The attempt to derive cloud base heights from MISR data is interesting, but as far as I can tell they basically take the minimum retrieved cloud height, assume it corresponds to the base height and move on from there. The authors need to state more clearly that this algorithm is only valid over broken clouds, [...]"

As also other reviewers commented on the dependence on cloud types, we introduced two new sections "3.4 Scene limitation" and "4.1 Scene structure influence" into the

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manuscript and modified abstract and conclusions accordingly. Specifically we added: "The occurrence of a broken cloud field is a basic assumption of MIBase." to Section 3.1.

"[...] indeed I would be very interested in seeing a study of the accuracy of the results as a function of scene structure and degree of brokenness, [...]"

Figure 8 in Section 4.1 of the revised manuscript shows the dependence of RMSE, bias and correlation coefficient on the configuration of the stereo-derived cloud mask. In particular, the dependence on the number of z retrievals marked high confidence cloud within the considered cloud field can serve as a proxy for cloud cover fraction.

"[...] and also as a function of the number of unobscured cloud top and side pixels as available in the MISR TC_ALBEDO product. I am willing to reconsider the paper if the authors perform such a study as I think that would be much more interesting than just the minor algorithm parameters such as R, N and P."

The TC_ALBEDO (MIL2TCAL) product provides the number of unobscured top and side pixels at a resolution of 2.2 km. This means, the number of pixels at the actual MISR resolution (275 m) within a 2.2 km area which observe the same reflecting layer are counted. Therefore, the product might suffice as an indicator of a more or less complex scene structure. As the influence of the scene structure on the MIBase performance has been brought up also by other reviewers, we decided to extent the discussion on this (new Section 4.1). Instead of using the MIL2TCAL product to further investigate the scene structure, we decided to exploit the stereo-derived cloud mask in more detail because it is already included in the MIL2TCSP product which builds the base for MIBase. Furthermore, we investigated the influence of z_{top} and Δz on the the performance of MIBase. These parameters are also characterizing the scene structure in more detail. An additional figure is included in the supplement (Fig. 2).

"Additionally they need to clarify which MISR product they are using (TC_STEREO or TC_CLOUD), and which type of SDCM (WindCorrected or WithoutWindCorrection). I

am unsure if they are using Stereo or Cloud, because they mention the correct short name for Cloud, but list the wind resolution as being 70.6 km and Stereo is at 70.4 km and Cloud retrieves its winds at 17.6 km. I am hoping this is just a typo on their part but I'm not sure. It is my opinion that they need to use the WindCorrected heights from the TC_CLOUD product."

Thank you for pointing this out. Unfortunately, a typo occurred which has been corrected. As we state in the manuscript, we are using the MISR Level 2TC Cloud Product (MIL2TCSP) which provides the cloud top height and the stereo-derived cloud mask at a 1.1 km resolution with and without wind correction. Here, we are using only the wind corrected data sets. As stated in the MISR Level 2 Cloud Product Algorithm Theoretical Basis (Mueller et al., 2013) the wind correction is carried out via a Cloud Motion Vector which is determined at a resolution of 17.6 km, like you mention. We added a sentence about the wind correction to Section 2.1 to make this clear.

Please also note the supplement to this comment: https://www.atmos-meas-tech-discuss.net/amt-2018-317/amt-2018-317-AC3supplement.pdf

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