

Comment towards the Editor comment in the access review phase about the motivation to introduce the 'PSC evidence' instead of PSC backscatter ratios.

Besides the motivation provided in the discussion manuscript (i.e. "The advantage of the use of the PSC mask product in our opinion is that it reduces the possibility to misinterpret the aerosol information which would be the case if backscatter data would be used instead. (..) We also consider the detection sensitivity which is provided in the PSC product where the horizontal averaging which was necessary to detect PSC is provided. To be able to match an OCIO SCD at a given location which is not altitude resolved with a single piece of information about PSCs, we merge the PSC existence profile information as well as the altitude resolved detection sensitivity to a single generic quantity."), we now investigated in a case study the altitudinal mean of the backscatter ratios and compared them to the PSC evidence as well as to the OCIO SCDs. We could not find a benefit of using it as a measure of PSC information. Indeed the PSC evidence showed a slightly better sensitivity towards the OCIO SCDs especially for periods with low PSCs where the mean backscatter ratios provide just scatter. We added the study in the Appendix B and added the following information to the main text (end of Sect. 3):

"A sensitivity study we performed (see Appendix B) indicates that the PSC evidence is better suited as an indicator of the presence of PSCs than the mean backscatter ratios, especially for low level PSCs."