

## ***Interactive comment on “Validation of a modified AVHRR aerosol optical depth retrieval algorithm over Central Europe” by M. Riffler et al.***

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Overall, I do not have any serious concerns about this manuscript, which is a continuation of previous efforts of this team on aerosol retrievals from AVHRR. New developments improved the quality of results which show reasonable consistency between satellites and other retrievals. It is also worth to note that MERIS/ENVISAT shows significant systematic overestimation of AOT. It is almost obvious, however, it is still not corrected in the ESA MERIS processing scheme. The weakness of Riffler et al retrieval scheme that can be traced to original paper of Hauser et al (2005) has several components: 1) 45 day period for assessing of background surface reflectance is too long. 2) SMAC radiative transfer scheme mentioned in the manuscript is not a radiative transfer scheme per se, it is very crude parameterization of 5S (6S) output. 3) The

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work would benefit if more discussion was included about properties of aerosol phase function. Authors discussed in details single scattering albedo, which is good. However, the main effect of aerosol (in a single scattering approximation) is defined by a product of AOT x SSA x PHASE\_FUNCTION.

Consistency of AVHRR calibration in solar bands is still a problem, which may certainly introduce biases in historical retrievals, especially without tuning to AERONET. This, however, is a responsibility of authors, but should be taken into account in historical data analysis.

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