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Atmospheric Measurement Techniques Discussions

Interactive comment on "A weighted least squares approach to retrieve aerosol layer height over bright surfaces applied to GOME-2 measurements of the oxygen A band for forest fire cases over Europe" *by* Swadhin Nanda et al.

Anonymous Referee #2

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The manuscript entitled "A weighted least squares approach to retrieve aerosol layer height over bright surfaces applied to GOME-2 measurements of the oxygen A band for forest fire cases over Europe" by Nanda et al. proposes the modified retrieval method from former's one. The method has been evaluated the effects of geometrical thickness of aerosol layer and surface albedo by using RT based simulated satellite signal. The authors have applied the method to large wildfire cases observed by GOME-2. Retrieved ALH and AOD are also compared with satellite- and ground- based lidar, and ground based sun photometric results. The proposed method improves the retrieved

area, and retrieved AOD is more reasonable compared to the formal method. From those results, the manuscript is suitable for the AMT journal, but a reviewer has some questions shown as below.

The authors tested the algorithm with synthetic experiments with high AOD (1<AOD<5) conditions. However the retrieved parameters of ALH are showed with low AOD (<1) results in Figure 5c. How much does the improved method increase the accuracy with low AOD (<1) case? What is the smallest value of AOD with the proposed method compared to formal one?

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