

***Interactive comment on* “Global stratospheric aerosol extinction profile retrievals from SCIAMACHY limb-scatter observations” by F. Ernst et al.**

Anonymous Referee #2

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General comments:

This is a good introduction to SCIAMACHY results covering the whole mission time. The scientific community awaits the final papers about SCIAMACHY data. Unfortunately, from the prospective of a user of aerosol data, this work is perceived as quite technical, with a limited description of the actual aerosol results, save the sole exception of Figure 13 and the relevant brief discussion. Clearly, this study is the first in a series of articles. Thus, it may be assigned number 1; besides, the authors should add few words about the upcoming papers.

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Specific comments:

1. The main problem of the described algorithm is in the current lack of ability to evaluate the Angstrom coefficient, although the multi-wavelengths nature of the data calls for it. The Angstrom coefficient is at least as valuable aerosol characteristic as the extinction coefficient. Since the multi-wavelengths data are relatively rare, the potential of the SCIAMACHY data should be used completely. I'm sure that the authors have a plan for evaluation of the Angstrom coefficient and, again, it would be nice to mention such plans in the paper.

2. Figure 13 shows that SCIAMACHY can retrieve the zonal means of the aerosol extinction coefficient for each month (or two months? - this is not clear from the text) of observations. This is really informative, considering the long mission lifetime. However, in order to study dynamic structuring (e.g., Junge layer) of the stratospheric aerosols, one should map the latitudinal and longitudinal distributions of aerosols at a week- or a month-timescale. Note that OSIRIS routinely generates daily maps of the stratospheric aerosols. Also, the Langley (NASA) team produces CALIPSO zonal means for the extinction of stratospheric aerosol in a latitude-height frame of reference. It may benefit the article, if authors describe the capability of SCIAMACHY to generate similar plots/data in a "latitude vs longitude" and "latitude-height" grid, in order to be compared with data of other sensors.

3. The Australian, February 2009, fire is marked on Figure 13. Is there any supporting evidence that this fire was the cause of a massive aerosol' loading into the stratosphere?

Interactive comment on Atmos. Meas. Tech. Discuss., 5, 5993, 2012.

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