

Review of manuscript egosphere-2026-596

Characterization of a huge transatlantic smoke transport event by constructing an Aelus smoke dataset in synergy with multi-platform data

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General Remarks

The manuscript describes a detailed study of intercontinental aerosol transport. Although there have been numerous transport studies including satellite data, the use of HSRL data from the ALADIN lidar extends such work by the capability of providing information on the modification of optical properties during the transport. The manuscript is well written and should be published after considering suggestions in the comments listed below.

Specific Comments

A lot of work was invested by the ALADIN team to make possible these observations, which deserves a few more words. “Data are available” is not a good attitude. The authors should either offer a co-authorship or add a statement in the Acknowledgements such as “We appreciate the enormous effort of”.

Line 16: “The backscatter coefficient was corrected”: An abstract should be devoted to results. Either drop this purely technical statement here or tell the reader what you learnt from it (e.g., combine with the sentence in lines 22-23).

Line 32: Twohy et al. is missing in the list of references.

Line 50: Please, add a reference or web site for EARLINET.

Line 60: The references in the following are just a few examples in the existing literature. I suggest to add a statement like “Numerous transport studies exist based on satellite data. For example,”

Line 68: Are you sure that Ohneiser et al. clearly proved exclusive absorption-driven lifting (e.g., by comparing the altitudes with those from trajectories)? Otherwise, you could include “to a major extent”.

Line 68: Please, replace “were in” by (e.g.) “took place”.

Lines 90-93: Please, add references or web sites for these platforms.

Lines 96-97: Here, you need a clear justification for/explanation of the correction, not in the Abstract. Or refer to Sect. 4.2.

Line 117: Please, specify SCA.

Line 120: “extinction coefficient”.

Line 171: Please, add information of the meteorological model data used.

Line 179: “process” looks weird. You describe different phases of the transport.

Lines 217-219: “In summary of this section”. I miss here some purpose, in view of the following sections.

Line 241: Please, specify RH.

Line 244 and elsewhere: In many cases throughout the manuscript you use Aeolos instead of ALADIN. Please, change where necessary.

Line 249: Confusing! Better: “Since Aeolos missed ...”

Line 252-252: It would be helpful for the reader if you could start that paragraph with this information.

Line 258: “should” looks misleading. Do you mean “elsewhere”, or do you mean “is discussed in the following”?

Line 322: “extinction coefficients”

Lines 380, 382, 388: : Please, rephrase “extensive” and “intensive” for more clearness.

Fig. 8: Is it possible to add one or more lines to separate the air masses?

Line 495: “The smoke was mainly transported in the free troposphere.”

Line 507: Decreasing trend: What about Fig. 10?

Line 509: What explains the rise afterwards?

Line 510: “characteristic aerosol properties during a long-range smoke transport event”.

Line 514: Please, add references or web sites.

Style

Line 31: Using the tilde here is not good style. I think you mean “about”. Also, the tilde is the mathematical symbol for “proportional”.

Line 76: Perhaps “profiles of ...” (the expression is rather long).

Lines 77, 418 (and possibly elsewhere): “but” must be preceded by a comma if two full sentences are separated.

Line 109: Flamant!

Line 173: The header looks much like a figure caption. It would be helpful if you could shift the figure to a position behind the beginning of this section.

Line 236: “Selection of bins”.

Line 268: “do not”. “are reliable”: in general???? I think you mean just 550 nm case.

Lines 337-338: “propagated to”.

Line 367: “To characterize better” (split infinitive!)

Table 1. left column: $Mm-1$ should be replaced by Mm^{-1} .

Line 402: “during the transport”.

Line 406: “ALADIN”

Line 413: Circumstantial! I suggest: “Firstly, panel (a) is divided ...”

Line 435: “To characterize the features more quantitatively ...” (split infinitive!).

Line 460: Do you mean “weakened”? Please, rephrase “abnormal”.

Line 481: “transport event”.

Line 488: for deriving smoke data”.

Line 496: “during the transport”.

Line 493: “preliminarily”: Do you mean “as the first case”?

Line 506: “during the transport”.