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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Enhancement of aerosols in UTLS over the Tibetan Plateau induced by deep convection during the Asian summer monsoon" *by* Q. S. He et al.

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Dear Authors, dear Editor,

I would like to point you to the likely explanation of the observations described in the underlying manuscript.

On 13 June 2011 the Nabro volcano, located in northeastern Africa, erupted. Approximately 1.3 Tg of SO2 were released into the upper troposphere and lower stratosphere during the first days after the eruption.

Within the following months the plume spreat over the whole northern hemisphere.

It's development was documented from space (Clarisse et, 2013) and from ground (Sawamura et al., 2013; Uchino et al., 2013, Mateshvili et al., 2013).

The time of occurrence, vertical distribution, and optical properties presented in the underlying manuscript fit perfect to the presence of layers stemming from the Nabro volcano and volcanic aerosol in general. Also the lidar ratio of 30 sr agrees well to volcanic aerosol (Wandinger et al., 1995) whereas small, freshly nucleated aerosol particle should have small sizes (and be non-absorbing) and should therefore feature rather high lidar ratios (Müller et al., 2007).

I strongly suggest to the Editor to propose a withdrawal of the manuscript because the presented interpretation of the measurements may lead to misleaded follow-up studies. Of course, the paper can be renamed and re-submitted to provide information about the Nabro aerosol above the Tibetean Plateau. Due to the high altitude of the lidar station, the data quality obtained from the stratospheric layers is apparently quite good. If the authors still claim that the observed aerosol layers stem from new-aerosol-particle formation, they should provide a thorough model that can explain the formation of stratospheric aerosol by deep convection.

Yours sincerely, Patric Seifert.

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