

Canadian forest fires and their effect on aerosol optical properties measured over the European Arctic in summer 2015

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Keywords: biomass burning, Arctic, aerosols, aerosols optical properties.
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In this presentation the authors describe a biomass burning episode from summer 2015 and its consequences for aerosol load over the European Arctic. The wild fires, analysed by the authors, occurred in central Canada between late June and early July 2015. According to Global News Canada 2015 is one of the worst years in last 5 years in terms of a number of forest fires. As a result of these fire outbreaks biomass burning aerosols reached such remote areas as Spitsbergen, and even northern Europe, where the authors observed and measured the properties of those aerosols. With southerly winds the pollution and aerosols were advected into the Arctic region and travelled vast distances causing, temporary, however, significant in numbers, distortion of radiative budget.

In the low stratosphere a shallow aerosol layer existed at least 4 weeks. We found extremely high value of AOD measured in Ny-Alesund and Hornsund as well as in the Northern Scandinavia (in Andenes) during that time. Although the presented data do not include final calibration and final cloud screening, which may remove the highest values of AOD, the retrieved values are very high and consistent between lidars and photometers. For example the long-term mean AOD in Hornsund station at 500 nm is about 0.08 (between March and September) and 0.09 in Andenes (between March and October) and during this event AOD exceed the value 1.0 in Spitsbergen and 0.7 in Andenes.

Acknowledgements

The authors would like to acknowledge the support for this research from the Polish-Norwegian Research Programme operated by the National Centre for Research and Development under the Norwegian Financial Mechanism 2009-2014 in the frame of Project Contract No Pol-Nor/196911/38/2013 and also project KNOW, Leading National Research Centre received by

the Centre for Polar Studies for the period 2014-2018 established by regulation No. 152 (2013, Nov 14) of the Rector of the University of Silesia.

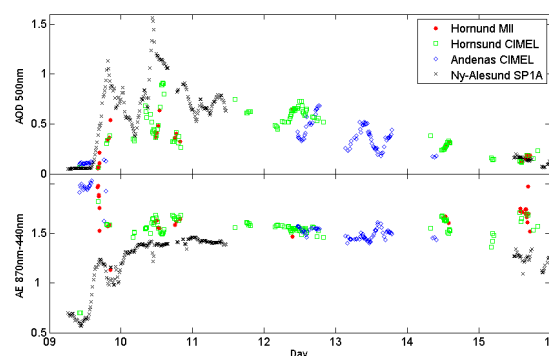


Figure 1. AOD at 500 nm (a) and AE (440/870 nm) (b) temporal variability measured with sunphotometers between 9 and 16 July 2015. Red and green markers correspond to Hornsund results obtained from Microtops II and CIMEL, blue to Andenes (CIMEL), and black to Ny-Alesund (SP1A).