

Home

Online Library ACP

- ▣ Recent Final Revised Papers
- ▣ [Volumes and Issues](#)
- ▣ Special Issues
- ▣ Library Search
- ▣ Title and Author Search

Online Library ACPD

Alerts & RSS Feeds

General Information

Submission

Review

Production

Subscription

Comment on a Paper



▣ [Volumes and Issues](#) ▣ [Contents of Issue 5](#)

Atmos. Chem. Phys., 6, 1155-1164, 2006

www.atmos-chem-phys.net/6/1155/2006/

© Author(s) 2006. This work is licensed under a Creative Commons License.

Measurements of optical properties of atmospheric aerosols in Northern Finland

V. Aaltonen¹, H. Lihavainen¹, V.-M. Kerminen¹, M. Komppula¹, J. Hatakka¹, K. Eneroth², M. Kulmala³, and Y. Viisanen¹

¹Climate and Global Change Research, Finnish Meteorological Institute, P.O. Box 503, 00 101 Helsinki, Finland

²Department of Applied Environmental Science, Stockholm University, 106 91 Stockholm, Sweden

³Department of Physical Sciences, Division of Atmospheric Sciences, P.O. Box 64, 00 014 University of Helsinki, Finland

Abstract. Three years of continuous measurements of aerosol optical properties and simultaneous aerosol number size distribution measurements at Pallas GAW station, a remote subarctic site in the northern border of the boreal forest zone, have been analysed. The scattering coefficient at 550 nm varied from 0.2 to 94.4 Mm⁻¹ with an average of 7.1±8.6 Mm⁻¹. Both the scattering and backscattering coefficients had a clear seasonal cycle with an autumn minimum and a 4–5 times higher summer maximum. The scattering was dominated by submicron aerosols and especially so during late summer and autumn. The Ångström exponent had a clear seasonal pattern with maximum values in late summer and minimum values during wintertime. The highest hemispheric backscattering fraction values were observed in autumn. To analyse the influence of air mass origin on the aerosol optical properties a trajectory climatology was applied to the Pallas aerosol data. The most polluted trajectory patterns represented air masses from the Kola Peninsula, Scandinavia and Russia as well as long-range transport from Britain and Eastern Europe. These air masses had the largest average scattering and backscattering coefficients for all seasons. Higher than average values of the Ångström exponent were also observed in connection with transport from these areas.

▣ [Final Revised Paper](#) (PDF, 6239 KB) ▣ [Discussion Paper](#) (ACPD)

Citation: Aaltonen, V., Lihavainen, H., Kerminen, V.-M., Komppula, M., Hatakka, J., Eneroth, K., Kulmala, M., and Viisanen, Y.: Measurements of optical properties of atmospheric aerosols in Northern Finland, Atmos. Chem. Phys., 6, 1155-1164, 2006. ▣ [Bibtex](#) ▣ [EndNote](#) [Reference Manager](#)

Search ACP

Library Search

Author Search

News

- ▣ [Sister Journals AMT & GMD](#)
- ▣ [Financial Support for Authors](#)
- ▣ [Journal Impact Factor](#)
- ▣ [Public Relations & Background Information](#)

Recent Papers

01 | ACPD, 06 Jan 2009: Time-span and spatial-scale of regional new particle formation events over Finland and Southern Sweden

02 | ACPD, 06 Jan 2009: Comment on "Classification of aerosol properties derived from AERONET direct sun data" by G. P. Gobbi et al. (2007)

03 | ACPD, 06 Jan 2009: Observations of high rates of NO₂ – HONO conversion in the nocturnal