

[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](#)

Impact
Factor
4.865

ISI
indexed

[Volumes and Issues](#) [Contents of Issue 4](#) [Special Issue](#)

Atmos. Chem. Phys., 4, 889-902, 2004

www.atmos-chem-phys.net/4/889/2004/

© Author(s) 2004. This work is licensed under a Creative Commons License.

Size-segregated aerosol mass closure and chemical composition in Monte Cimone (I) during MINATROC

J.-P. Putaud¹, R. Van Dingenen¹, A. Dell'Acqua¹, F. Raes¹, E. Matta², S. Decesari², M. C. Facchini², and S. Fuzzi²

¹European Commission, Joint Research Centre, Institute for Environment and Sustainability, Ispra (Va), Italy

²Consiglio Nazionale delle Ricerche, Istituto delle Scienze dell'Atmosfera e del Clima, Bologna, Italy

Abstract. Physical and chemical characterizations of the atmospheric aerosol were carried out at Mt. Cimone (Italy) during the 4 June-4 July 2000 period. Particle size distributions in the size range 6nm-10 μ m were measured with a differential mobility analyzer (DMA) and an optical particle counter (OPC). Size-segregated aerosol was sampled using a 6-stage low pressure impactor. Aerosol samples were submitted to gravimetric and chemical analyses. Ionic, carbonaceous and refractory components of the aerosol were quantified. We compared the sub- and super μ m aerosol mass concentrations determined by gravimetric measurements (m_{GM}), chemical analyses (mm_{CA}), and by converting particle size distribution to aerosol mass concentrations (mm_{SD}). Mean random uncertainties associated with the determination of mm_{GM} , mm_{CA} , and mm_{SD} were assessed. The three estimates of the sub- μ m aerosol mass concentration agreed, which shows that within experimental uncertainty, the sub- μ m aerosol was composed of the quantified components. The three estimates of the super- μ m aerosol mass concentration did not agree, which indicates that random uncertainties and/or possible systematic errors in aerosol sampling, sizing or analyses were not adequately accounted for. Aerosol chemical composition in air masses from different origins showed differences, which were significant in regard to experimental uncertainties. During the Saharan dust advection period, coarse dust and fine anthropogenic particles were externally mixed. No anthropogenic sulfate could be found in the super- μ m dust particles. In contrast, nitrate was shifted towards the aerosol super- μ m fraction in presence of desert dust.

[Final Revised Paper](#) (PDF, 1206 KB) [Discussion Paper](#) (ACPD)

Citation: Putaud, J.-P., Van Dingenen, R., Dell'Acqua, A., Raes, F., Matta, E., Decesari, S., Facchini, M. C., and Fuzzi, S.: Size-segregated aerosol mass closure and chemical composition in Monte Cimone (I) during MINATROC, Atmos. Chem. Phys., 4, 889-902, 2004. [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, 27 Feb 2009: Effects of boundary layer particle formation on cloud droplet number and changes in cloud albedo from 1850 to 2000

02 | ACPD, 27 Feb 2009: A product study of the isoprene+NO₃ reaction

03 | ACPD, 26 Feb 2009: Discriminating low frequency components from long range persistent fluctuations in daily atmospheric temperature variability