

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 5](#)

Atmos. Chem. Phys., 6, 1389-1407, 2006
www.atmos-chem-phys.net/6/1389/2006/

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

Relative humidity impact on aerosol parameters in a Paris suburban area

H. Randriamiarisoa¹, P. Chazette¹, P. Couvert^{1,†}, J. Sanak¹, and G. Mégie^{2,††}

¹Laboratoire des Sciences du Climat et de l'Environnement/Institut Pierre-Simon Laplace, Orme des Merisiers Bât 701, C.E.Saclay, 91191 Gif-sur-Yvette Cedex, France

²Service d'Aéronomie/Institut Pierre-Simon Laplace, 4 place Jussieu, 75252 Paris, France

[†]deceased, June 2005

^{††}deceased, June 2004

Abstract. Measurements of relative humidity (RH) and aerosol parameters (scattering cross section, size distributions and chemical composition), performed in ambient atmospheric conditions, have been used to study the influence of relative humidity on aerosol properties. The data were acquired in a suburban area south of Paris, between 18 and 24 July 2000, in the framework of the "Etude et Simulation de la Qualité de l'air en Ile-de-France" (ESQUIF) program. According to the origin of the air masses arriving over the Paris area, the aerosol hygroscopicity is more or less pronounced. The aerosol chemical composition data were used as input of a thermodynamic model to simulate the variation of the aerosol water mass content with ambient RH and to determine the main inorganic salt compounds. The coupling of observations and modelling reveals the presence of deliquescence processes with hysteresis phenomenon in the hygroscopic growth cycle. Based on the Hänel model, parameterisations of the scattering cross section, the modal radius of the accumulation mode of the size distribution and the aerosol water mass content, as a function of increasing RH, have been assessed. For the first time, a crosscheck of these parameterisations has been performed and shows that the hygroscopic behaviour of the accumulation mode can be coherently characterized by combined optical, size distribution and chemical measurements.

[Final Revised Paper](#) (PDF, 1322 KB) [Discussion Paper](#) (ACPD)

Citation: Randriamiarisoa, H., Chazette, P., Couvert, P., Sanak, J., and Mégie, G.: Relative humidity impact on aerosol parameters in a Paris suburban area, Atmos. Chem. Phys., 6, 1389-1407, 2006. [Bibtex](#) [EndNote](#) [Reference Manager](#)

Copernicus Publications
The Innovative Open Access Publisher

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 atmospheric
boundary layer in
Kathmandu, Nepal