



Volume 95

October 2014

ISSN 1352-2310

# ATMOSPHERIC ENVIRONMENT

**Air Pollution:** Air Quality • Emissions • Transport and Transformations • Atmospheric Composition • Deposition and Fate • Pollution and Climate Change • Environmental Policy  
• Special Themes



## CONTENTS

### Reviews

M.P. Keuken, M. Moerman, J. Jonkers, J. Hulskotte, H.A.C. Denier van der Gon, G. Hoek and R.S. Sokhi

M. Grote, I. Williams and J. Preston

M. Masiol and R.M. Harrison

### Regular papers

P. Siudek, L. Falkowska, M. Frankowski and J. Siepak

E. Sommer-Quabach, M. Piringer, E. Petz and G. Schauberger

C. Coscollà, A. Muñoz, E. Borrás, T. Vera, M. Ródenas and V. Yusà

K. Hayashi, K. Ono, M. Kajiura, S. Sudo, S. Yonemura, A. Fushimi, K. Saitoh, Y. Fujitani and K. Tanabe

Y. Xue, X. He, H. Xu, J. Guang, J. Guo and L. Mei

B. Witkowski and T. Gierczak

Z. Wang, L. Chen, J. Tao, Y. Liu, X. Hu and M. Tao

A. De Marco, M. Vitale, U. Kilic, Y. Serengil and E. Paoletti

N. Gai, J. Pan, H. Tang, K.-Y. Tan, D.-Z. Chen, X.-H. Zhu, G.-H. Lu, S. Chen, Y. Huang and Y.-L. Yang

1 Impact of inland shipping emissions on elemental carbon concentrations near waterways in The Netherlands

214 Direct carbon dioxide emissions from civil aircraft

409 Aircraft engine exhaust emissions and other airport-related contributions to ambient air pollution: A review

10 An investigation of atmospheric mercury accumulated in the snow cover from the urbanized coastal zone of the Baltic Sea, Poland

20 Comparability of separation distances between odour sources and residential areas determined by various national odour impact criteria

29 Particle size distributions of currently used pesticides in ambient air of an agricultural Mediterranean area

36 Trace gas and particle emissions from open burning of three cereal crop residues: Increase in residue moistness enhances emissions of carbon monoxide, methane, and particulate organic carbon

45 China Collection 2.0: The aerosol optical depth dataset from the synergetic retrieval of aerosol properties algorithm

59 Early stage composition of SOA produced by  $\alpha$ -pinene/ozone reaction:  $\alpha$ -Acyloxyhydroperoxy aldehydes and acidic dimers

71 An empirical method of RH correction for satellite estimation of ground-level PM concentrations

82 New functions for estimating AOT40 from ozone passive sampling

89 Selected organochlorine pesticides and polychlorinated biphenyls in atmosphere at Ruoergai high altitude prairie in eastern edge of Qinghai-Tibet Plateau and their source identifications

*Continued on inside back cover*

Abstracted/indexed in: Acid Precipitation Digest, Air Pollution Titles, Analytical Abstracts, Applied Science & Technology Abstracts, Applied Science and Technology Index, Aqualine Abstracts, BIOSIS, Cambridge Scientific Abstracts, Chemical Abstracts, Current Contents / Physics / Chemistry & Earth Science, Current Contents/Agriculture, Biology & Environmental Sciences, EMBASE, Elsevier BIOBASE Environmental Periodicals Bibliography, FLUIDEX, GEOBASE, Geographical Abstracts: Physical Geography, Geological Abstracts, INSPEC, Meteorological and, Geoastrophysical Abstracts, PASCAL/CNRS, Research Alert, SCISEARCH, Science Citation Index, Scopus, Theoretical Chemical Engineering Abstracts Also covered in the abstract and citation database Scopus. Full text available on ScienceDirect®.



1352-2310 (2014) 95; 1-3

Printed by Henry Ling Ltd, The Dorset Press, Dorchester, UK



ISSN 1352-2310  
95 (2014) 1-644

L. Gandois, Y. Agnan, S. Leblond, N. Séjalon-Delmas, G. Le Roux and A. Probst	96	Use of geochemical signatures, including rare earth elements, in mosses and lichens to assess spatial integration and the influence of forest environment
N.K. Richards-Henderson, A.K. Hansel, K.T. Valsaraj and C. Anastasio	105	Aqueous oxidation of green leaf volatiles by hydroxyl radical as a source of SOA: Kinetics and SOA yields
E. Athanasopoulou, D. Rieger, C. Walter, H. Vogel, A. Karali, M. Hatzaki, E. Gerasopoulos, B. Vogel, C. Giannakopoulos, M. Gratsea and A. Roussos	113	Fire risk, atmospheric chemistry and radiative forcing assessment of wildfires in eastern Mediterranean
J.L. Crooks and H. Özkaynak	126	Simultaneous statistical bias correction of multiple PM <sub>2.5</sub> species from a regional photochemical grid model
N. Hu and S.A. Green	142	Acetyl radical generation in cigarette smoke: Quantification and simulations
M. Sestelo, J. Roca-Pardiñas and C. Ordóñez	151	Predicting SO <sub>2</sub> pollution incidents by means of additive models with optimum variable selection
B. Koo, E. Knipping and G. Yarwood	158	1.5-Dimensional volatility basis set approach for modeling organic aerosol in CAMx and CMAQ
M. Aikawa, M. Kajino, T. Hiraki and H. Mukai	165	The contribution of site to washout and rainout: Precipitation chemistry based on sample analysis from 0.5 mm precipitation increments and numerical simulation
M. Pascal, G. Falq, V. Wagner, E. Chatignoux, M. Corso, M. Blanchard, S. Host, L. Pascal and S. Larrieu	175	Short-term impacts of particulate matter (PM <sub>10</sub> , PM <sub>10-2.5</sub> , PM <sub>2.5</sub> ) on mortality in nine French cities
L.Y. Li and S.D. Xie	185	Historical variations of biogenic volatile organic compound emission inventories in China, 1981–2003
H. Calvete-Sogo, S. Elvira, J. Sanz, I. González-Fernández, H. García-Gómez, L. Sánchez-Martín, R. Alonso and V. Bermejo-Bermejo	197	Current ozone levels threaten gross primary production and yield of Mediterranean annual pastures and nitrogen modulates the response
Z. Wang, Z. Xie, A. Möller, W. Mi, H. Wolschke and R. Ebinghaus	207	Atmospheric concentrations and gas/particle partitioning of neutral poly- and perfluoroalkyl substances in northern German coast
Z.-G. Zhou, B. Zhao, L. Qi, P.-J. Xu, Y. Ren, N. Li, S. Zheng, H. Zhao, S. Fan, H. Zhang, T. Zhang, A.-M. Liu and Y.-R. Huang	225	Level and congener profiles of polybrominated dibenzo-p-dioxins and dibenzofurans in the atmosphere of Beijing, China
L. Tripathee, S. Kang, J. Huang, C.M. Sharma, M. Sillanpää, J. Guo and R. Paudyal	231	Concentrations of trace elements in wet deposition over the central Himalayas, Nepal
K. Clarke, H.-O. Kwon and S.-D. Choi	239	Fast and reliable source identification of criteria air pollutants in an industrial city
K. Sabaliauskas, C.-H. Jeong, X. Yao and G.J. Evans	249	The application of wavelet decomposition to quantify the local and regional sources of ultrafine particles in cities
J. Lin, A. van Donkelaar, J. Xin, H. Che and Y. Wang	258	Clear-sky aerosol optical depth over East China estimated from visibility measurements and chemical transport modeling

Continued on BM II



Available online at [www.sciencedirect.com](http://www.sciencedirect.com)

**ScienceDirect**

ISSN 1352-2310  
95 (2014) 1–644

N.-H. Hsieh and C.-M. Liao	268	<i>In vitro</i> measurement and dynamic modeling-based approaches for deposition risk assessment of inhaled aerosols in human respiratory system
H. Fakhraei, C.T. Driscoll, P. Selvendiran, J.V. DePinto, J. Bloomfield, S. Quinn and H.C. Rowell	277	Development of a total maximum daily load (TMDL) for acid-impaired lakes in the Adirondack region of New York
C.M. Salvador and C.C.-K. Chou	288	Analysis of semi-volatile materials (SVM) in fine particulate matter
M.D. Wright, A.J. Buckley, J.C. Matthews, D.E. Shallcross and D.L. Henshaw	296	Air ion mobility spectra and concentrations upwind and downwind of overhead AC high voltage power lines
Y.M. Noh	305	Single-scattering albedo profiling of mixed Asian dust plumes with multiwavelength Raman lidar
X. Wang, X. Ye, H. Chen, J. Chen, X. Yang and D.S. Gross	318	Online hygroscopicity and chemical measurement of urban aerosol in Shanghai, China
C.L. Blanchard, J.C. Chow, E.S. Edgerton, J.G. Watson, G.M. Hidy and S. Shaw	327	Organic aerosols in the southeastern United States: Speciated particulate carbon measurements from the SEARCH network, 2006–2010
K. Matsumoto, Y. Yamamoto, H. Kobayashi, N. Kaneyasu and T. Nakano	334	Water-soluble organic nitrogen in the ambient aerosols and its contribution to the dry deposition of fixed nitrogen species in Japan
J. Antonel and Z. Chowdhury	344	Measuring ambient particulate matter in three cities in Cameroon, Africa
M. Xie, M.P. Hannigan and K.C. Barsanti	355	Gas/particle partitioning of <i>n</i> -alkanes, PAHs and oxygenated PAHs in urban Denver
P. Waldner, A. Marchetto, A. Thimonier, M. Schmitt, M. Rogora, O. Granke, V. Mues, K. Hansen, G. Pihl Karlsson, D. Žlindra, N. Clarke, A. Verstraeten, A. Lazzins, C. Schimming, C. Iacoban, A.-J. Lindroos, E. Vanguelova, S. Benham, H. Meesenburg, M. Nicolas, A. Kowalska, V. Apuhtin, U. Napa, Z. Lachmanová, F. Kristoefel, A. Bleeker, M. Ingerslev, L. Vesterdal, J. Molina, U. Fischer, W. Seidling, M. Jonard, P. O'Dea, J. Johnson, R. Fischer and M. Lorenz	363	Detection of temporal trends in atmospheric deposition of inorganic nitrogen and sulphate to forests in Europe
J. Inoue, A. Momose, T. Okudaira, A. Murakami-Kitase, H. Yamazaki and S. Yoshikawa	375	Chemical characteristics of Northeast Asian fly ash particles: Implications for their long-range transportation
F. Santos, M.P. Fraser and J.A. Bird	383	Atmospheric black carbon deposition and characterization of biomass burning tracers in a northern temperate forest
E. Gómez Alvarez, M. Sörgel, S. Gligorovski, S. Bassil, V. Bartolomei, B. Coulomb, C. Zetzsch and H. Wortham	391	Light-induced nitrous acid (HONO) production from NO <sub>2</sub> heterogeneous reactions on household chemicals
K.R. Kumar, V. Sivakumar, Y. Yin, R.R. Reddy, N. Kang, Y. Diao, A.J. Adesina and X. Yu	400	Long-term (2003–2013) climatological trends and variations in aerosol optical parameters retrieved from MODIS over three stations in South Africa
A.C. Valach, B. Langford, E. Nemitz, A.R. MacKenzie and C.N. Hewitt	456	Concentrations of selected volatile organic compounds at kerbside and background sites in central London
O.A. Søvde, S. Matthes, A. Skowron, D. Iachetti, L. Lim, B. Owen, Ø. Hodnebrog, G. Di Genova, G. Pitari, D.S. Lee, G. Myhre and I.S.A. Isaksen	468	Aircraft emission mitigation by changing route altitude: A multi-model estimate of aircraft NO <sub>x</sub> emission impact on O <sub>3</sub> photochemistry
B.N. Bailey, R. Stoll, E.R. Pardyjak and W.F. Mahaffee	480	Effect of vegetative canopy architecture on vertical transport of massless particles
S. Girard, I. Korsakissok and V. Mallet	490	Screening sensitivity analysis of a radionuclides atmospheric dispersion model applied to the Fukushima disaster
S.K. Guttikunda, R. Goel and P. Pant	501	Nature of air pollution, emission sources, and management in the Indian cities
C.-M. Kang, D. Gold and P. Koutrakis	511	Downwind O <sub>3</sub> and PM <sub>2.5</sub> speciation during the wildfires in 2002 and 2010

G.R. Johnson, A.M. Juwono, A.J. Friend, H.-C. Cheung, E. Stelcer, D. Cohen, G.A. Ayoko and L. Morawska	525	Relating urban airborne particle concentrations to shipping using carbon based elemental emission ratios
G. Haq, G. Martini and G. Mellios	537	Cost effectiveness of introducing a new European evaporative emissions test procedure for petrol vehicles
T. Wu, Q. Zha, W. Chen, Z. Xu, T. Wang and X. He	544	Development and deployment of a cavity enhanced UV-LED spectrometer for measurements of atmospheric HONO and NO <sub>2</sub> in Hong Kong
J. Tao, L. Zhang, J. Cao, S.-C. Hsu, X. Xia, Z. Zhang, Z. Lin, T. Cheng and R. Zhang	552	Characterization and source apportionment of aerosol light extinction in Chengdu, southwest China
J. David Felix, E.M. Elliott, T. Gish, R. Maghirang, L. Cambal and J. Clougherty	563	Examining the transport of ammonia emissions across landscapes using nitrogen isotope ratios
S. Mehta, H. Sbihi, T.N. Dinh, D.V. Xuan, L. Le Thi Thanh, C.T. Thanh, G. Le Truong, A. Cohen and M. Brauer	571	Effect of poverty on the relationship between personal exposures and ambient concentrations of air pollutants in Ho Chi Minh City
I. Kloog, A.A. Chudnovsky, A.C. Just, F. Nordio, P. Koutrakis, B.A. Coull, A. Lyapustin, Y. Wang and J. Schwartz	581	A new hybrid spatio-temporal model for estimating daily multi-year PM <sub>2.5</sub> concentrations across northeastern USA using high resolution aerosol optical depth data
F. Salazar, J. Martínez-Lagos, M. Alfaro and T. Misselbrook	591	Ammonia emission from a permanent grassland on volcanic soil after the treatment with dairy slurry and urea
J. Hu, Y. Wang, Q. Ying and H. Zhang	598	Spatial and temporal variability of PM <sub>2.5</sub> and PM <sub>10</sub> over the North China Plain and the Yangtze River Delta, China
L. Pan, D. Tong, P. Lee, H.-C. Kim and T. Chai	610	Assessment of NO <sub>x</sub> and O <sub>3</sub> forecasting performances in the U.S. National Air Quality Forecasting Capability before and after the 2012 major emissions updates
M. Belcik, A. Trusz-Zdybek, E. Galas and K. Piekarska	620	Mutagenicity of organic pollutants adsorbed on suspended particulate matter in the center of Wrocław (Poland)
A.J. Curtis, D. Helmig, C. Baroch, R. Daly and S. Davis	634	Biogenic volatile organic compound emissions from nine tree species used in an urban tree-planting program
<b>Technical notes</b>		
Q. Wang, F. Yang, L. Wei, G. Zheng, Z. Fan, S. Rajagopalan, R.D. Brook, F. Duan, K. He, Y. Sun and J.R. Brook	520	Measurement of particle sulfate from micro-aethalometer filters
S.-H. Lee, S.A. McKeen and D.J. Sailor	629	A regression approach for estimation of anthropogenic heat flux based on a bottom-up air pollutant emission database