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One Atmosphere: Building a Collective Knowledge

IGAC Conference Abstracts

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Abstract ID	Abstract Title	Presenting Author and Affiliation
1.158	Spatial distribution of gaseous pollutants (NOx, SO2, NH3, HNO3 and O3) in Abidjan, Côte d'Ivoire	DAGAUD JULIEN EYMARD BAHINO (Early Career Scientist), Laboratoire de Physique de l'Atmosphere et de Mécanique des Fluides , UFR SSMT, Universite Felix Houphouet Boigny, Abidjan, Cote d'Ivoire
1.159	Chemical composition and source apportionment of PM2.5 in Beijing based on daily samples collected in 2012-2014	Yanhua Fang (Early Career Scientist), State Key Joint Laboratory of Environmental Simulation and Pollution Control,College of Environmental Sciences and Engineering, Peking University, Beijing, China
1.165	An estimation of NOx emissions from OMI-observed NO2 columns over East Asia	Kyung Man HAN, Gwangju Institute of Science and Technology, School of Earth Science and Environmental Engineering, Gwangju, South Korea
1.167	Urban areas of central and southern Chile exceed particulate matter air quality thresholds	Manuel A. Leiva Guzmán, Center for Environmental Sciences and Chemistry Department, Faculty of Sciences, University of Chile
1.168	Clean Air and Urban Landscapes: Towards a Clean Air Plan for Western Sydney	Clare Murphy (Paton-Walsh), Centre for Atmospheric Chemistry, University of Wollongong, Australia
1.169	Are Selective Catalytic Reduction Systems on Diesel Engines an Atmospheric Source of Isocyanic Acid?	Shantanu Jathar, Colorado State University, Mechanical Engineering, Fort Collins, CO, USA
1.170	Development of a reactive plume model and its applications	Dasom Lee (Early Career Scientist), GIST, School of Earth and Environmental Engineering, Gwangju, South Korea
1.171	Indoor air quality in Temuco, Chile (38°44'S, 72°36W)	Hector Jorquera, Departmento de Ingeniería Química y Bioprocesos, Pontificia Universidad Católica de Chile, Avda. Vicuña Mackenna 4860, Santiago 7820436, Chile.
Session 2: Atmospheric Chemistry, Ecosystems and Agriculture		
2.001	Transport and deposition of wildfire-emitted black carbon on Arctic ice (2002–2013)	Wei Min Hao, US Forest Service
2.004	Ozone Enhancement and Attribution to Wildfires: A Study in the Colorado Front Range	Audra McClure-Begley (Early Career Scientist), University of Colorado-CIRES and National Oceanic and Atmospheric Administration Global Monitoring Division, Boulder CO
2.005	Spatial and temporal distribution of agricultural fires in Mexico and Central America: A 14-year preliminary climatology	Blanca Estela Rios Ramos (Early Career Scientist), Centro de Ciencias de la Atmosfera, UNAM
2.007	Impact of severe drought on photosynthesis, isoprene emission and atmospheric formaldehyde in the Missouri Ozarks	Yiqi Zheng (Early Career Scientist), Yale University
2.009	Long-term measurement of isoprene in a South East Asian tropical rainforest. Initial results and conclusions	Shani Garraway (Early Career Scientist), WACL, Department of Chemistry, University of York, United Kingdom
2.011	Impacts of ozone-vegetation coupling and feedbacks on surface ozone air quality	Amos TAI, Earth System Science Programme, Faculty of Science, Chinese University of Hong Kong, Hong Kong
2.012	Global and regional comparison of biomass burning emissions	Katerina Sindelarova, LATMOS, UPMC, Paris, France; Czech Academy of Sciences, Czech Rep.

1.170 Development of a reactive plume model and its applications.

Early Career Scientist

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Abstract:

A reactive plume model (RPM) was developed to comprehensively consider power-plant plume photochemistry with 255 condensed photochemical reactions. The RPM can simulate two main components of power-plant plumes; turbulent dispersion of plumes and compositional changes of plumes via photochemical reactions. In order to evaluate the performance of the RPM developed in the present study, two sets of observational data obtained from the TexAQS II 2006 (Texas Air Quality Study II 2006) campaign were compared with RPM-simulated data. Comparison shows that the RPM produces relatively accurate concentrations for major primary and secondary in-plume species such as NO_2, SO_2, ozone, and H_2SO_4. Statistical analyses show good correlation, with correlation coefficients (R) ranging from 0.61 to 0.92, and good agreement with the Index of Agreement (IOA) ranging from 0.70 to 0.95. Following evaluation of the performance of the RPM, a demonstration was also carried out to show the applicability of the RPM. The RPM can calculate NO_x photochemical lifetimes inside the two plumes (Monticello and Welsh power plants). Further applicability and possible uses of the RPM are also discussed together with some limitations of the current version of the RPM.