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Volatile Organic Compounds and Oxidation Capacity of the Atmosphere in the Brazilian Amazon during the GoAmazon2014/5 Campaign

Roger Seco¹, Daun Jeong¹, Saewung Kim¹, Jeong-Hoo Park², Steven J Sjostedt³, Alex B Guenther¹, James N Smith¹, Yingjun Liu⁴, Dasa Gu¹, Jose Oscar Vega Bustillos⁵, Julio Tota⁶, Rodrigo Augusto Ferreira de Souza⁷, Scot T Martin⁴ and GoAmazon Science Team, (1)University of California Irvine, Irvine, CA, United States, (2)NIER National Institute of Environmental Research, Incheon, South Korea, (3)CIRES, Boulder, CO, United States, (4)Harvard University, Cambridge, MA, United States, (5)IPEN, San Paulo, Brazil, (6)Federal University of Western Para, Santarem, Brazil, (7)Universidade do Estado do Amazonas, Manaus, Brazil

Abstract Text:

Atmospheric volatile organic compounds (VOCs) have key environmental and biological roles, and can influence atmospheric chemistry, secondary aerosol formation, and also regional climate. The GoAmazon2014/5 campaign included measurements of VOCs in pristine to polluted air of the Amazon basin, depending upon the influences from the pollution plumes originating in the city of Manaus, Brazil. Observations at the T3 site in Manacapuru during the second Intensive Operating Period (dry season, August-October 2014) using a Switchable Reagent Ion (SRI)-ToF-MS will be presented to investigate isoprene oxidation processes in a wide spectrum of anthropogenic influences. The SRI capability was utilized to quantify ratios of Methyl Vinyl Ketone (MVK) to Methacrolein (MACR) in order to assess photochemical age of air masses at T3 and examine isoprene peroxy radical reaction pathways as a function of NO levels. Given recently identified ISOPOOH interference to MVK and MACR measurements, the current analysis focus on high NO_x conditions when the contribution of ISOPOOH was small. In addition, the results will be critically compared with previously reported relationships between MVK, MACR and isoprene to explore potential systematic analytical interferences that may affect regional OH level estimations. These OH estimates will be evaluated using in-situ OH observations.

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Submitter's E-mail Address:

email@rogerseco.cat

Preferred Presentation Format:

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First Presenting Author

Presenting Author
Roger Seco

Primary Email: email@rogerseco.cat

Affiliation(s):

University of California Irvine
Irvine CA 92697 (United States)

Second Author
Daun Jeong

Primary Email: daunj1@uci.edu

Affiliation(s):

University of California Irvine
Irvine CA 92697 (United States)

Third Author
Saewung Kim

Primary Email: saewungk@uci.edu
Phone: 9498244531

Affiliation(s):

University of California Irvine
Irvine CA 92697 (United States)

Fourth Author
Jeong-Hoo Park

Primary Email: jeonghoo@korea.kr
Phone: 3034971461

Affiliation(s):

NIER National Institute of Environmental Research
Incheon 404 (South Korea)

Fifth Author
Steven J Sjostedt

Primary Email: steven.sjostedt@noaa.gov

Phone: (678)713-0086

Affiliation(s):

CIRES
Boulder CO 80305-3337 (United States)

Sixth Author
Alex B Guenther

Primary Email: alex.guenther@uci.edu
Phone: 5093726467

Affiliation(s):

University of California Irvine
Irvine CA 92697 (United States)

Seventh Author
James N Smith

Primary Email: jimsmith@ucar.edu
Phone: 3034971468

Affiliation(s):

University of California Irvine
Irvine CA 92697 (United States)

Eighth Author
Yingjun Liu

Primary Email: yliu@seas.harvard.edu

Affiliation(s):

Harvard University
Cambridge MA (United States)

Ninth Author
Dasa Gu

Primary Email: dasagu@gmail.com
Phone: 5093752380

Affiliation(s):

University of California Irvine
Irvine CA 92697 (United States)

Tenth Author
Jose Oscar Vega Bustillos

Primary Email: ovega@ipen.br

Affiliation(s):

IPEN
San Paulo (Brazil)

Eleventh Author
Julio Tota

Primary Email: julio.tota@ufopa.edu.br

Affiliation(s):

Federal University of Western Para
Santarem (Brazil)

Twelfth Author
Rodrigo Augusto Ferreira de Souza

Primary Email: souzaraf@gmail.com

Affiliation(s):

Universidade do Estado do Amazonas
Manaus (Brazil)

Thirteenth Author
Scot T Martin

Primary Email: smartin@seas.harvard.edu
Phone: 6174950627

Affiliation(s):

Harvard University
Cambridge MA (United States)