Geophysical Research Abstracts
Vol. 18, EGU2016-5344, 2016
EGU General Assembly 2016
© Author(s) 2016. CC Attribution 3.0 License.

Uplifting of carbon monoxide from biomass burning and anthropogenic sources to the free troposphere in East Asia

Ke Ding (1,6), Jane Liu (1,2,6), Aijun Ding (1,6), Qiang Liu (1,6), Tianliang Zhao (3), Jiancheng Shi (4), Yong Han (1), Hengmao Wang (5), and Fei Jiang (5)

(1) School of Atmospheric Sciences, Nanjing University, Nanjing, China, (2) University of Toronto, Toronto, Canada, (3) Nanjing University of Information Science and Technology, Nanjing, China, (4) Institute of Remote Sensing Applications, Chinese Academy of Sciences, Beijing, China, (5) International Institute for Earth System Sciences, Nanjing University, Nanjing, China, (6) Collaborative Innovation Center of Climate Change, Nanjing, China

East Asia has experienced rapid development with increasing carbon monoxide (CO) emission in the past decades. Therefore, uplifting CO from the boundary layer to the free troposphere in East Asia can have great implications on regional air quality around the world. It can also influence global climate due to the longer lifetime of CO at higher altitudes.
In this study, three cases of high CO episodes in the East China Sea and the Sea of Japan from 2003 to 2005 are examined with spaceborne Measurements of Pollution in the Troposphere (MOPITT) data, in combination with aircraft measurements from the Measurement of Ozone and Water Vapor by Airbus In-Service Aircraft (MOZAIC) program. Through analyses of the simulations from a chemical transport model GEOS-Chem and a trajectory dispersion model FLEXPART, we found different CO signatures in the elevated CO and distinct transport pathways and mechanisms for these cases.