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Surface-Atmosphere Exchange: Impact on Biogeochemistry

Guest Editor:

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Deadline for manuscript submissions:
closed (31 March 2019)

Message from the Guest Editor

Physical, chemical, and biological processes transform elements into molecular substances within the various spheres of the Earth system (i.e., atmosphere, biosphere, cryosphere, hydrosphere, pedosphere, geosphere) and circulate the species through the global environment. Soil-atmosphere exchange is key to understanding the global cycles of CO_2, CH_4, and N_2O and important for NO. Organic compounds emitted by vegetation affect the oxidizing capacity of the atmosphere and are important precursors of carbonaceous aerosol. Cryosphere-atmosphere exchange of NO_x, O_3, Hg, and Br, Cl, and I species affects atmospheric chemistry in high-latitude regions. Oceanic emissions of biogenic chlorine, bromine, and iodine deplete ozone and produce light-scatering aerosol. We invite manuscripts on:

(a) process-scale investigations and modeling studies, which evaluate effects of pedosphere-, biosphere-, cryosphere-, and hydrosphere-atmosphere exchange on atmospheric biogeochemistry.

(b) investigations of biogeochemical processes in the pedosphere, biosphere, cryosphere, and hydrosphere, which generate trace gas emissions that determine atmospheric composition and affect the climate system.

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Editor-in-Chief

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Message from the Editor-in-Chief

Continued developments in instrumentation and modeling have driven atmospheric science to become increasingly more complex with a deeper understanding of concepts, mechanisms, and interactions. This is the field that innovation built and it has led to a better appreciation for the complexity with atmosphere. Human life is intertwined in this complexity as we strive to better understand our atmosphere. Climate change is constantly stretching the limits of our thinking and forcing new ideas and concepts to be played out. Welcome to the Anthropocene!

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