2.085 Biomass burning emission inventories over Africa: AMMABB and GFED uncertainties investigations.

Early Career Scientist

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Abstract:

Fires occur frequently in most vegetated ecosystems across the world, mostly in tropical and subtropical savannahs where fires are deliberately set during the dry season for multiple purposes. Gases and particles from biomass burning are released into the atmosphere and interact with climate at both local and regional scales. Biomass burning therefore constitutes a complex phenomenon which comprises feedback interactions between ecosystems, humans and climate. Over the past 20 years, several studies have estimated biomass burning aerosol emissions both at global and regional scales. However, large uncertainties still exist in these biomass burning emission inventories particularly over Africa. This study aims to investigate vegetation parameters such as biomass density (BD) and burning efficiency (BE) role in the biomass burning emissions inventories uncertainties. To achieve this purpose, a new inventory over Africa was developed for 2001-2012 using MODIS fire product, Global Land Cover (GLC) vegetation map, current emission factors and same 'bottom-up' methodology were used. Moreover, sensitivity tests on factors of African Monsoon Multidisciplinary Analysis Biomass Burning (AMMABB) and Global Fire Emission Database (GFED) vegetations parameters were conducted. Results showed that, BD and BE are important parameters for biomass burning emissions in Africa and explained the large differences observed between AMMABB and GFED emissions inventories.