AGU FALL MEETING
San Francisco | 14 – 18 December 2015

B43F-0612: Improved tropical forest biogenic VOC emission factors based on GoAmazon2014/5 airborne observations

Thursday, 17 December 2015
13:40 - 18:00
Moscone South - Poster Hall

Biogenic volatile organic compounds (BVOCs) emitted from terrestrial ecosystems play an important role in atmospheric chemistry and global climate feedbacks. The immense biological and chemical diversity of BVOC is a challenge for the numerical modeling of BVOC emissions, especially for tropical forests. The fast response airborne PTR-MS measurements of BVOC mixing ratios during the GoAmazon2014/5 campaign provide an opportunity to estimate BVOC emissions from tropical forest landscapes using eddy covariance and mixed layer variance techniques. The average isoprene emissions based on airborne measurements are 6.16±4.62 mg m^{-2} h^{-1} during wet season and 12.89±8.93 mg m^{-2} h^{-1} during dry season. These observations are compared with the spatial and temporal distributions of BVOC emissions estimated using the Model of Emissions of Gases and Aerosols from Nature (MEGAN) within the framework of the Community Land Model (CLM). By comparing the emissions estimated from airborne observations with that from MEGAN simulations, the predictive capability for diverse tropical land cover types are evaluated and an approach for improving model estimates is outlined. Satellite observations are also applied to investigate the environmental driving variables for BVOC emissions. OH concentrations are calculated from the observed BVOC mixing ratios by using the mixed layer mass balance technique and by the gradient in measured eddy covariance fluxes. The calculated values are in general agreement with OH CIMS observations at the T3 ground site near Manacaparu.

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