

## **2.040 Regional air quality degradation in Northern South America due to biomass burning transboundary pollution .**

Early Career Scientist

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Abstract:

The Orinoco river basin is a 98-million hectares (Mha) savanna ecosystem shared by Colombia and Venezuela, of which 35 Mha are located in Colombia. The savanna ecosystem undergoes periodic biomass burning, particularly during the dry season. It is estimated that on average ~3 Mha are burned per year only in the Colombian side. Fire activity in the Orinoco region can be natural or human induced. The latter includes among other causes the pest control and the use of fire for pasture management due to the low palatability of native pastures, which is improved in the fresh regrowth. By April, the raining season starts in Colombian llanos and fire activity is reduced. However, in Venezuelan llanos there is still high fire activity during April and May. These differences on period and duration of dry seasons imply that biomass burning plumes from one country can be transported to the other. The environmental authority of Arauca and Yopal (two cities located at the Colombian Orinoco Foothills) made particulate matter measurements during April and May 2015. We will present the analysis of particulate matter levels in those cities and their relation with biomass burning in Venezuelan Orinoco savannas. Concentrations of PM<sub>10</sub> were considered high taking account that are small cities with little industrial activity and little mobile sources. There were some concentrations over the daily air quality standards of Colombia (100 µg/m<sup>3</sup>). Both the levels and tendencies of PM<sub>10</sub> were similar for both cities, which suggest a regional effect of pollution sources. Back trajectories simulations using STILT model showed that for most of the sampling days, air masses arriving to Arauca and Yopal came from Venezuela. High correlation was found between the PM<sub>10</sub> average concentration and fire activity in Venezuela, which evidenced the existence of a transboundary pollution problem.