FIRE AS A FACTOR OF VARIATION OF SOIL RESPIRATION IN PERUVIAN AMAZON

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Severe changes are affecting the role of Amazon in the Earth system. One of these possible effects could be the modification of the role of soils in the carbon cycle due to land use and land cover change activities mainly involving the change of forest by crops. In this sense, fire is the main tool used by farmers for land use and also is an important factor for mobilizing C from the soil to the atmosphere, mainly as CO_2. This could have an important effect in the global warming.

This proposal will evaluate the variation of the soil respiration related to the seasonality and the fire effects on soils in the Amazon of Peru and Brazil. In experimental parcels of locations of Peru with different vegetation cover (forest and pasture), we measured soil respiration along with the organic carbon and the microbial biomass of soils during campaigns covering wet and dry seasons. Complementary measurements of soil temperature, water and nutrient content were performed. Also, we reproduced a fire experiment simulating agricultural local activity by the technique of "slash and burn" to evaluate fire effects on soil respiration. Measurements were taken after the soil cooled and at least 3 days after the fire. Additionally, the carbon stocks of the subplots were evaluated. Evaluation of the variations of CO_2 fluxes and the capacity of adaptation to fire and water content are discussed through the comparisons of the different locations, type of soils and concentration of available N (nitrate and ammonium) as an indicator of nutrient content.