

Board T-11: Land use and cover change and CO₂ atmospheric measurements in the Amazon forests



Tuesday, 27 August 2019



18:40 - 20:30



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Abstract

In the last years, global CO₂ concentrations have reach levels never seen before reaching more than 400 ppm. Among the main causes of these emissions are the burning of fossil fuels and the land use and cover change (LUCC) related emissions. In the Amazon region, the main CO₂ emissions are related to deforestation. Multitemporal LUCC datasets have been restrict to Brazil, but now has been released a pan-Amazon dataset for all the countries sharing the Amazon, opening the possibility of studying the Amazon forests as a whole. On the other hand, the lower-troposphere greenhouse gas (GHG) monitoring program “Carbam project”, has been collecting biweekly GHGs vertical profiles in four sites of the Amazon since 2010, filling a very important gap in regional GHGs measurements. Our purpose is to understand the relationships between regional LUCC and CO₂ aircraft measurements in the Amazon. Here we present the relationships between annual LUCC data from 2010 to 2017 in the Amazon forest and in each mean influence area of Carbam sites comparing them with mean annual CO₂ fluxes. Considering the whole Amazon forests and the mean annual CO₂ fluxes, the years with more forest loss and agriculture increase are 2010 and 2016, showing relation with CO₂ fluxes. On the other hand, 2011 and 2017 also have deforestation (less than 2010 and 2016), but the CO₂ fluxes are lower, showing that droughts could also influence the CO₂ concentrations. Looking at each influence area, total carbon flux of Alta Floresta and Rio Branco have the same tendency as the forest loss from 2013 to 2017, but no in 2010 and 2012. In Tabatinga, Tefé and Santarem there is no a direct relationship between the carbon fluxes and the forest loss. To understand better the relationships at each site, we have to consider the years of measurements. Also, the temporal scale, carbon fluxes are measure biweekly and the LUCC data is annual. Looking at the potentialities and limitations of this relationship, it will be possible to improve the methodology to better understand the interaction of human activities and CO₂ emissions on the carbon balance.

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