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Spatial distribution of soil respiration in the central Amazon

F. B. **Zanchi** (1), J. M. Waterloo (1), J. Kesselmeier (2), A.C. de Araujo (1), A. J. Dolman (1) and F.J. Luizão(3).

(1) Dept. Geo-Environmental Sciences, VU University Amsterdam, The Netherlands (fabricio.zanchi@falw.vu.nl); (2) Max-Planck-Institut fuer Chemie, Mainz Germany; (3) Instituto Nacional de Pesquisas da Amazônia - INPA, Manaus Amazonas

Understanding the role of soil Respiration (R_soil) is one of the significant contributions to understand the Carbon budget of an ecosystem. Soil Respiration is poorly described for the Amazon region and the issue is especially relevant for the knowledge of forest functionality and quantification of CO2 losses in the natural ecosystems. Here observations of soil respiration measurements in the Central Amazon region are presented. The measurements were done along a transect of a plateau, slope and valley in the Campina forest. An automatically working system (LI-8100, Lincoln-USA) was used. It was randomly installed in the ecosystem in the years 2006 and 2007. A further but different system was permanently measuring during 2006 and 2007 in the valley. The latter used four automatic chambers switching over all chambers within one hour. The field measurements also included soil moisture and temperature. The soil respiration was different in all locations, although close in a distance of 1 km of each other. The respiration rate were highest at the slopes and decreased from slope>Campinarana>Valley>Plato>Campina. Soil respiration always exhibited a close relation to soil temperature cycle and soil moisture content. Soil temperature had an exponential relation for the diurnal cycle and the relation with soil moisture showed a polynomial pattern for the whole period of measurements.