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CONTINUOUS MEASUREMENTS OF SOIL CO₂ AND CH₄ FLUXES IN TWO TROPICAL PEAT FORESTS WITH HIGH AND LOW GROUND WATER LEVEL IN SARAWAK, MALAYSIA, BY USING AN AUTOMATED MULTI-CHAMBER SYSTEMS

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We will present new observations on soil carbon dioxide (CO₂) and methane (CH₄) fluxes, which were started in September 2015 in two tropical peat forests in Sarawak, Malaysia. The sites were one tropical swamp forest with a high groundwater level and one with a low groundwater level. At each site we installed an automated multi-chamber system consisting of 16 chambers of opaque PVD cylinders (40 cm high and 25 cm in internal diameter). The chambers were closed for 225 s sequentially and it took one hour for one rotation. The air from the closed chamber was pumped into a gas analyser (Ultraportable Greenhouse Gas Analyser, Los Gatos Research). In each site, soil and trenching plots were established to divide soil respiration into root respiration and microbial respiration. CO₂ and CH₄ fluxes were found to be strongly affected by groundwater levels, so comparison of tropical peat forests with different groundwater levels is useful for understanding the mechanisms of soil CO₂ and CH₄ fluxes. Degradation of peatlands and less precipitation cause lowering groundwater level. Therefore, we will know how soil greenhouse gases change by land use change and climate change through comparison between tropical swamp forests. Comparison of CO₂ and CH₄ fluxes between these two sites will provide useful information about water management for reducing greenhouse gases.

Keywords: -