Effect of Hydrological Gradient on Greenhouse Gas Productions in a Gulf Coast Forest. (S10-yu153659-Poster)

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Abstract:

Production of greenhouse gases, CO2, CH4, and N2O, in a Gulf coast forest soil was measured at three locations along the hydrological gradient, ridge (dry), intermediate, and swamp (wet). The ridge showed less accumulation of gases. Largest amount of CH4 was accumulated in the swamp, thus surface CH4 emission to the atmosphere is expected to be high when water level drops. The intermediate was most affected by the seasonal hydrological fluctuation, but it was unlikely to be an important source of CH4 because anaerobic condition developed only temporally. However, seasonal hydrological fluctuation could make the intermediate and even the ridge an important source of N2O. The variation of CO2 accumulation in soils was large, but the average accumulation was generally uniform. It is predicted that the carbon storage in the swamp cannot offset the CH4 production and emission, and N2O production is generally small due to less nitrogen input in such a natural environment. The results indicated the potential of the ridge as a sink of atmospheric CH4, and the swamp as a sink of atmospheric N2O.

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