[JJ] Evening Poster | A (Atmospheric and Hydrospheric Sciences) | A-CG Complex & General

[A-CG40]Material Circulations in Land Ecosystems

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Terrestrial ecosystem influences global climate through circulations of water, carbon, and nitrogen between land surface and atmosphere. For better understanding of those behaviors, a great effort has been paid for developing varieties of approaches and techniques such as biometric survey, eddy and chamber methods, near and satellite remote sensing, biosphere modeling and so on.

In particular, the JapanFlux, founded in 2006 as a researchers network of CO2, H2O and other trace gas flux measurement, has promoted the multi-disciplinal studies not only for flux measurement community, but also for remote sensing and biosphere modeling communities. Moreover, the Research-Group-on-Integrated-Land-Processes, which was founded in 2006, also has contributed to build networks between Japanese researchers to better understanding of physical and biological processes on interactions between terrestrial surface and atmosphere.

This session unites those multi-disciplinal activities, and promotes the oral and poster presentations on the role of terrestrial ecosystem in material circulations of water, carbon, nitrogen, energy and other substances by any approaches and technics. This session takes over the former session in last year: A-CG47.

[ACG40-P03]Soil respiration and its components in a subtropical evergreen broadleaf forest in Okinawa, Japan

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We examined the factors controlling the spatial variation in the soil CO_2 efflux (soil respiration) in a subtropical mature evergreen broadleaf forest in northern Okinawa Island. At four locations with different soil respiration values (2.2, 2.5, 10.8, and 15.5 μmol m^{-2} s^{-1}), we examined the flux components constituting soil respiration (i.e., root respiration and heterotrophic respiration originating from the surface litter and other belowground organic matter) in November 2016. To measure the first two, we sampled roots and the litter layer after measuring soil respiration, and then measured the flux from both *in situ* using a chamber with an infrared gas analyser. Then, we estimated the heterotrophic respiration from belowground organic matter by subtracting both of these from the total soil respiration. This showed that, at the two locations with the highest soil respiration, the heterotrophic respiration from belowground organic matter was large (7.5 and 10.6 μmol m^{-2} s^{-1}) and accounted for 68–69% of the total soil respiration. In comparison, it was small at the two locations with low soil respiration. The root biomass and root respiration (0.7–4.3 μmol m^{-2} s^{-1}) were positively correlated with the soil respiration. Although the biomass of the surface litter was positively correlated with soil respiration, the heterotrophic respiration originating from it was small (0.3–0.7 μmol m^{-2} s^{-1}). A negative correlation between soil density and soil respiration was found. Based on the results, we postulated that the CO_2 flux from live roots, and especially from microbes consuming dead

belowground organic matter supplied by litterfall, largely contributes to the spatial variability in the soil CO_2 efflux in this forest.