[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-P09]Climatic factors influencing soil respiration fluxes in a taiga forest of northeastern Siberia, revealed by 9 years of field measurements

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A large amount of organic matters are accumulated in forest soils, which can be a significant source of greenhouse gas emissions when decomposition is accelerated by increasing temperatures. Understanding greenhouse gas release from the soils is particularly critical in high latitude forests where more organic carbon would be available for microbial decomposition when soil temperature rises and permafrost thaws. The goal of this study is to determine the primary factors influencing soil respiration in the permafrost regions of northeastern Siberia. Soil respiration fluxes were measured using a closed chamber method at Spasskaya-Pad Research Forest Station, near Yakutsk, Russia. Meteorological data were also measured at this research station, including air and soil temperatures and soil moistures. Soil respiration flux and environmental variables were measured at 30-minutes intervals year around. We used a 9 years of soil respiration data from 2004 to 2014 (excluding missing data in 2007 and 2011). A large inter-annual variation was found in the daily soil respiration fluxes over the study period. Simple linear regression showed a strong positive correlations between monthly air and soil temperatures and soil respiration, while no correlation was found with soil moistures. Correlations between temperature and soil respiration fluxes were further examined at different soil moisture levels using daily averages. Temperature effects appeared to be present at any moisture levels, even under very dry or very wet

conditions, suggesting that temperature is a strong predictor of soil respiration at this site. We did not detect any moisture effects on soil respiration, possibly because respiration flux data was not obtained in a year of extremely wet event. These results will help to develop soil carbon dynamic models to predict the potential impacts of warming on soil respiration and entire forest carbon fluxes.