
[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-disciplinary 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-disciplinary 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 techniques. This session takes over the former session in last year: A-CG47.

[ACG40-P11]Plans for developing an Earth system model with CH₄ dynamics

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Methane (CH₄) is one of the important GHGs for climate prediction due to its relatively high radiative forcing next to that of CO₂, and now it is necessary to pay more attention to global CH₄ dynamics after Paris agreement. Under the control of CO₂ emission to keep a global temperature rise this century below 2 degrees Celsius above pre-industrial level, concentration of CH₄ in the atmosphere will be more influential to climate change. Furthermore, the atmospheric life time of CH₄ is around 9 years, it could be a good target for climate change mitigation. However, current Earth system models (ESMs) cannot project CH₄ concentration with fully coupled manner: some models can predict atmospheric CH₄ concentration but its predicted concentration is not based on the anthropogenic/natural CH₄ emission under climate interactions. In order to make climate projection with fully coupled CH₄ processes, we have started to couple CH₄ dynamics into our ESM, by introducing atmospheric chemistry model and the terrestrial CH₄ emission scheme into an ESM. In this presentation, brief introduction and the progress of our ESM development will be made, and plans for application of the ESM to CH₄-related simulations will be shown.