[JJ] Evening Poster | M (Multidisciplinary and Interdisciplinary) | M-IS Intersection

[M-IS14]Biogeochemistry

convener:Keisuke Koba(Center for Ecological Research, Kyoto University), Hideaki Shibata(Field Science Center fot Northern Biosphere, Hokkaido University), Naohiko Ohkouchi(海洋研究開発機構, 共同), Youhei Yamashita(Faculty of Environmental Earth Science, Hokkaido University)
Wed. May 23, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)
Biogeochemistry is an interdisciplinary study field including ecology, geochemistry, oceanography, limnology, hydrology, soil science and environmental sciences. Respective researches have tended to be conducted separately so far. This session aims to provide a common platform for biogeochemists of different disciplines, which facilitates the interactive discussion and information exchanges for further development of biogeochemical studies.

[MIS14-P02]Atmospheric phosphorus deposition in a suburban-forested site, western Japan

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Keywords:Atmospheric nitrogen deposition, Dry deposiiton, Phosphate, Dissolved organic phosphorus, Throughfall

Atmospheric P deposition contributes significantly to P source as well as rock weathering. However, quantitative information is limited about atmospheric P deposition, especially dry deposition, when evaluating the effects of elevated N deposition on N saturation in temperate forested ecosystems where other nutrients including P could be limited. This study measured atmospheric P deposition using throughfall method as well as bulk rainfall to evaluate the contribution of atmospheric P deposition to P cycling in advanced stage of N-saturated forested ecosystems, suburban area, Fukuoka, western Japan. Throughfall and stemflow were collected in the forested site and rainfall was also collected at nearby open sites from October 2016 to September 2017. Dissolved total phosphorus (DTP), consisting of phosphate (PO_4^{3-}) and dissolved organic phosphorus (DOP), were measured. Atmospheric N deposition was 9.3 kg N ha^{-1} yr^{-1} via bulk deposition and 17.6 kg N ha^{-1} yr^{-1} via throughfall plus stemflow, indicating high atmospheric N deposition enough to potentially induce N saturation in forested ecosystems. Atmospheric wet and dry deposition of DTP was 0.036 and 0.009 kg P ha^{-1} $y1^{-1}$, respectively. Kosa phenomenon increased dry deposition of particulates including Ca^{2+} and DTP. However, total atmospheric P deposition in this study sites was considerably lower than the referred values in other sites, suggesting that the lower atmospheric P deposition at the study site may contribute to advanced N saturation in forested ecosystems. Overall, we highlight the need for information about atmospheric P deposition when assessing the impacts of N deposition.