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[EE] Evening Poster | A (Atmospheric and Hydrospheric Sciences) | A-HW Hydrology & Water Environment

## [A-HW22]Hydrological Cycle and Water Environment

convener:Seiya Nagao(Institute of Nature and Environmental Technology, Kanazawa University), Isao Machida(Geological Survey of Japan), Shin'ichi Iida(国立研究開発法人森林研究・整備機構森林総合研究所森林研究部門森林防災研究領域水保全研究室, 共同), Takeshi Hayashi(Faculty of Education and Human Studies, Akita University)

Thu. May 24, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)

We focus on various issues of water cycle and environment and aim to answer questions of hydrological and earth system sciences including 1) surface, subsurface and evapotranspiration processes of water cycle; 2) natural and anthropogenic hydrothermal systems, 3) environments issues and studies on a watershed or global scale, 4) water-related issues with ecological, environmental, and geochemical aspects, and 5) other issues in hydrological sciences. This session welcomes presentations regarding various kinds of approaches and techniques such as field survey, remote sensing, isotope tracers, numerical simulation, and theoretical analysis.

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### [AHW22-P09]Difference between the transpiration rates of Moso bamboo (*Phyllostachys pubescens*) and Japanese cedar (*Cryptomeria japonica*) forests in a subtropical climate in Taiwan

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Keywords:Moso Bamboo, Japanese cedar, transpiration, transpiration seasonality

Bamboo forests have been expanding rapidly in Asian countries for the past 50 years. Whether natural or artificial, this expansion involves the replacement of other vegetation types by bamboos, which could impact the local water cycle. Previous studies in Japan have reported that bamboo forests have higher transpiration than coniferous forests under temperate climates, but it is unknown whether this finding applies to subtropical climates. Thus, we examined whether a Moso bamboo (*Phyllostachys pubescens*) forest would exhibit higher transpiration in a subtropical climate. We used the sap-flux method to estimate the stand transpiration ( $E$ ) of Moso bamboo and Japanese cedar (*Cryptomeria japonica*) forests in Taiwan. As was observed in the Japanese studies, annual  $E$  for bamboo (478 mm) was higher than that for cedar (122 mm), although we found a difference in the seasonality of  $E$  between the Taiwanese and Japanese sites. If this finding is indeed generally applicable, the results of this study and previous studies suggest a significant change in  $E$  and, therefore, the terrestrial water cycle when Japanese cedar forests are replaced by bamboo forests. Furthermore, the difference in canopy conductance ( $G_c$ ) for bamboo was higher than that for cedar in Taiwan, which was reported previously for Japan. This difference in  $G_c$  between bamboo and cedar suggests that such replacements will result in considerable changes in the terrestrial carbon cycle.