

Thermal Insulation Effect by Floating Island in Mizoro-Ga-Ike Pond

KENJI TANAKA¹, KOHEI TASAKI¹, YASUHIRO TAKEMON¹

¹*Disaster Prevention Research Institute, Kyoto University*

Mizoro-ga-ike is a small natural pond of 9 ha in area and 1 km in circumference, located in the north of Kyoto City, Japan. The age of the pond as a wetland has been estimated at more than 20, 000 years. This pond has a floating island which has been formed with the accumulation of bog moss. To clarify and quantify the energy and water balance of Mizoro-ga-ike and its surrounding area, observation system for collecting micrometeorological elements and related hydrological elements has been set up from the beginning of 2005. Due to the specific structure of the pond, some important and unique heat budget characteristics has already been obtained. From the vertical profile of water temperature, water cycling (convection) is observed in the top 80cm depth in winter time. This convective motion is to break out the instability which is caused by the cooling of the surface water in the night time. On the other hand, the depth of water cycling is limited to 40cm by the existence of submerged plant in summer time. As for seasonal cycle, 40cm depth water temperature is ranging from 5.0 degC to 28.3 degC at open water, while it is from 9.0 degC to 24.8 degC at floating island. This is clearly a thermal insulation effect of floating island which can mild the temperature environment of the pond.