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Energy and water balance of Mizoro-ga-ike Pond

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Mizoro-ga-ike (35$_o$03'N, 135$_o$50'E, 75m a.s.l.) 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 may be a reason for the unusual richness of flora and fauna species in the pond, where a set of relic species of the cold-temperate and subtropical zones coexist within such a small pond. The former are established in the plant community of *Sphagnum cuspidatum* and *Menyanthes trifoliata* forming the high moorland which is floating in the middle of the pond; and the latter are found in the *Phragmites communis* and *Zizania latifolia* community in the littoral zone of the pond.

This pond has a floating island which has been formed with the accumulation of bog moss. Due to the specific structure of the pond, the energy and water balance may be different from other vegetation or water surface. 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. Basic meteorological elements, such as down-ward radiation, wind, precipitation, are measured as reference value. Furthermore, up-ward ratiation fluxes, Bowen ratio, and water temperature profile are measured at each surface. The targets of this measurement are selected from the dominating condition. First and second one are bog moss (*Sphagnum cuspidatum*) and bush on floating island. Third one is *Menyanthes trifoliata* that covers the water surface. Forth one is open water. Last one is surrounding deciduous broad-leaf forest.

Although only short term data have been available so far, some important and unique heat budget characteristics has already been obtained. For example, heat storage term of the floating island (bog moss) is large even in winter time. Also vertical profile of temperature indicates the existence of seasonal phase shift of energy balance, which will contribute to mild the temperature environment of the pond.

Keywords: energy balance; water balance; high wetland; floating island