

# Importance of the moss below a larch canopy on water and energy balances in the southern mountain taiga, eastern Siberia

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## Abstract

In regard to the water source in the Lena River, Ma et al. (2000) showed that most of the river water came from the southern part of the mountain regions. The land surface is predominantly covered by larch forest, but birch forest partly covers the ridge area and higher elevations are covered by pine forest and the understory of the forest was about 10cm thick true moss (*Aulacomnium turgidum*, *Cetrari cucullate*) and lichen (*Cladina arbuscula*), and continuous permafrost existed throughout the watershed. We carried out an intensive observation in the Mogot experimental watershed from mid-August 2000 to the end of May 2002. Observation included both meteorological and hydrological elements, above and below larch forest canopy. Turbulent fluxes above the moss were observed by using a three-dimensional ultra-sonic anemometer (DA-600, Kaijo) and open-path infrared gas analyzer (AH-300, Kaijo) below a larch forest canopy at the LF site. The measurement interval was 10 Hz. The data was collected by data logger (LG-300, Oriental Electronics Inc.) and written to the hard disk every hour. The results showed that more than 90% energy balance components were closed by hourly data. The Bowen ratio above the understory was less than 1 and the maximum daily evaporation from the moss during May 2002 was about 1.67mm. Thus, the moss was important water source when the larch canopy had free-leaves after snow disappearance date. The evaluation of the heat flux into the moss was also important because the more than 20% of net all-wave radiation above the understory contributed to the heat flux into the moss.

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