



Almost ten years (1998 - 2007) of water and energy balance studies at a Siberian Arctic polygonal tundra site- what do we observe?

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The prediction of the response of land surface water and energy fluxes to environmental change is a major challenge for experimentalists and climate modelers alike. Meteorological and soil temperature and moisture data for the period 1998 - 2007 are presented from a long term monitoring station in the central Lena River Delta. The Lena River Delta is the largest river delta in northern Asia and one of the richest areas in the Arctic for both species diversity and breeding densities of migratory birds. The investigation site, Samoylov Island, is situated at 72°N, 126°E in the zone of continuous permafrost and is characterized by wet polygonal tundra. The goals of this contribution are to characterize the site's climatology for the years 1998-2007, and to quantify and discuss the coupled energy and water balance. The summer water balance of the tundra was found to be mainly controlled by precipitation. The partitioning of the available energy was controlled by precipitation via the soil moisture regime, and by the synoptic weather conditions via radiation and the advection of maritime cold or continental warm air masses. During wetter years, regular high precipitation resulted in a constant recharge of polygonal ponds. During drier years, low precipitation resulted in a loss of polygonal pond waters and a drying of upper soil layers. This led to lower latent heat flux, higher ground heat flux and a considerably higher soil thaw depth compared to the wetter year.