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Influence of snowmelt water and frozen soil on summer climate in eastern Siberia

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The effect of snowmelt water on summer climate in eastern Siberia has been examined by using surface meteorological data. The snow-hydrological effect contributes to surface climate in the following summer over the Lena basin, where the persistence of summer climate is strong. Furthermore, interannual variation of the surface air temperature in May (snowmelt season) corresponds quite well with that of August of the next year. It appears that the soil moisture stored as ice in the soil throughout cold season contributes to surface climate in summer of the next year as a climate memory effect. Snowmelt water produces two types of effects on summer climate in the Lena basin, one the seasonal snow-hydrological effect in the following summer and the other the climate memory effect in summer of the next year. Instead of soil moisture data due to poor observations, surface meteorological data are useful to detect the effect of snowmelt water, and would become good climate prediction factors in eastern Siberia.

Keywords: land-atmosphere interactions, soil moisture, climate memory