



Meteorology, surface energy and melting during 2015-2017 ablation seasons at the Glacier No. 18, East Sayan Range, southeast Siberia

Eduard Osipov (1) and Olga Osipova (2)

(1) Limnological Institute SB RAS, Irkutsk, Russian Federation (eduard@lin.irk.ru), (2) V.B. Sochava Institute of Geography SB RAS, Irkutsk, Russian Federation

Mass-balance changes of glaciers in high-mountain catchments are significantly influenced by meteorological conditions closely related to global, regional and local climate change. It is believed that small glaciers are more sensitive to these changes however hydro-meteorological processes in high-mountain environments are characterized by strong spatial heterogeneity. Thus obtaining new field data on mountain glaciers is very important to calibrate glacier-climate models. During the 2015-2017 July-August ablation seasons meteorological characteristics (temperature, humidity, precipitation, atmospheric pressure, solar radiation, wind speed and direction) were measured by automatic weather station installed on a cold-based glacier (Glacier No. 18, at elevation 2550 m a.s.l.), East Sayan Range, southeast Siberia. The study glacier is the second largest glacier (0.93 km²) of the East Sayan Range. We found that air temperature and precipitation time series are in line with those of the nearest low altitude weather station (Orlik) and meteorological conditions at the glacier are closely related to atmospheric circulation over the study region. Based on meteorological data and stack measurements surface melting was quantified. Also we estimated energy fluxes at the glacier surface. We found that net shortwave radiation is the main component of the glacier's energy budget. At the same time, summer snowfalls have a significant impact (albedo effect) on the heat budget of the glacier. This study was supported by the Russian Foundation for Basic Research (project No. 15-05-04525).