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GLACIER AND ROCK TEMPERATURE CHANGES IN THE SUNTAR-KHAYATA RANGE (NORTHEASTERN RUSSIA) OVER THE LAST 50 YEARS

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Sparsely populated alpine areas are most representative for studying the long-term dynamics of global climatic change. However, there are not so many alpine regions on the Earth for which long-term instrumental observations are available. One such area is the Suntar-Khayata Range in northeastern Russia. First studies on the thermal regime of glaciers and rocks were conducted by the Kolyma Division of the USSR Hydrometeorological Service and the Obruchev Permafrost Institute of the USSR Academy of Sciences in 1957-1959 as part of the International Polar Year program (Grave et al., 1963). Temperature observations were conducted in the middle part of Glacier 31 (altitude 2250 m a.s.l.) and in rocks of a mountain pass (between 2040 and 2060 m a.s.l.). In 2011-2014, a Russian-Japanese research expedition was undertaken in this area. One of research tasks of this expedition was to study the thermal conditions of glaciers and rocks. For better comparability of results, temperature measurements were repeated at the same locations as in 1957-1959. Data from Oymyakon, the nearest weather station, indicate that the mean annual air temperature has increased by 3°C over the period between 1957 and 2014. The tongue of Glacier 31 has retreated about 400 m, and the surface of its middle part has lowered in places by 50 m. Temperature of Glacier 31 at 10 m depth has increased by 1.2-1.4°C over this period. Rock temperatures at depths of 0.5-1.5 m have increased by 2.1-2.3°C.