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The changes of glaciers on northern Baikal ridges over 50 years using in-situ and remotely sensed observations

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All the glaciers lying over the Baikalsky and Barguzinsky ridges of Northern Baikal are small. They are located in hard-to-reach regions both for In-situ such and for remotely sensed observations. A researcher can reach glaciers only by using special alpine equipment. The deep ruggedness of hollows and the being of glaciers in the shade over a period of significant time prevent from remotely sensed observations.
The Glaciers of Baikalsky ridge are not registered in the catalogue of the Eurasia glaciers since there are no data about the glaciers in the catalogue of the glaciers of USSR. In result of our expedition works and the analyzing of satellite photograph it was determined that the largest cirque glacier- Cherskogo sufficiently stable. Its retreat has been insignificantly in over 50 years – from 0.446 to 0.407 sq. km, id est on 8,7 %.
The glaciers of Barguzinsky ridge are very poorly explored. IG SB RAS in 2011 year for the first time completed the expedition with the object of inventory of these ridge glaciers. This region is extremely difficult to approach.
The space survey of ultrahigh resolution for the study area (0.5 m) was ordered before the start of the expedition. Also the accessible archive data of Landsat resolution by 15-30 meters have been received. The comparison of cartographical, distance and expedition data show essential retreat of most of glaciers and its degradation from cirque to slope glaciers. Discovered snow-glacial formations can be divided on 3 main groups: 1 –real glaciers; 2 – slope pendent glacier remains; 3 - permanent snow patches. The region is interesting because there practically are all the forms of little glaciations. In addition it can be observed not only glacier's degradation but their origins too. In the favorable year conditions the snow patches are increased with occupying of the basic of cirque bed and form the ice core and continue the formation of the cirque.
The second group of glaciers has actually been reserved owing to the northern exposition and steep cirques edges, for instance, the Potaynoi glaciers in the river head of tributary of Wright Froliha under peak 2160,1 m by Zamok pass and Nastennyi glacier under peak Gladkyi 2224,4 m.
The snow-glacial objects of source of Tala Svetlinskaya river are referred to the first group (real glaciers). The glaciers are localized in two cirques i.e. 3 glaciers in 3 different level-sensitive corries of one big cirque in the area of lake Sapog (the north slope of the ridge between high peak 2388,2 m and peaks 2296 and 2377). The biggest glacier Akuli near with dividing ridge of rivers Upper Akuli and Svetlaya and one of the highest peak of Barguzinsky ridge Akulimashkit (2436,6 m) was identified by remote sensed observation. However, according to the space survey, it is disjoint and crusted by debris cover. The square of Barguzin glacier over a period 50 years decreased from 0.271 to 0.18 sq. km and in early of past century it likely was united cliff glacier in adjacent cirque.