Present state and recent changes of glaciers on the territory of the former Soviet Union

Tatiana Khromova[†]; Gennady Nosenko [†] Institute of Geography Russian Academy of Sciences, Russia Leading author: <u>tkhromova@gmail.com</u>

Glaciers are widely recognized as key indicators of climate change. Recent evidence suggests an acceleration of glacier mass loss in several key mountain regions. Glacier recession implies the landscape changes in the glacial zone, origin of new lakes and activation of natural disaster processes, catastrophic mudflows, ice avalanches, outburst floods, and etc. Glaciers influence strongly on influenceonon human life, economic activity and growing infrastructure. Economical and recreational human activity in mountain regions requires relevant information on snow and ice objects. Absence or inadequacy of such information results in financial and human losses. A more comprehensive evaluation of glacier changes is imperative to assess ice contributions to global sea level rise and the future of water resources from glacierized basins. One of the urgent steps is a full inventory of all ice bodies, their volume and changes The first estimation of glaciers state and glaciers distribution on the territory of the former Soviet Union has been done in the USSR Glacier Inventory published in 1966 -1980 as a part of IHD activity. The Inventory is based on topographic maps and air photos and reflects the status of USSR glaciers in 1957-1970y. There is information about 23796 glaciers with area of 78222.3 km2 in the Inventory. It covers all glacier systems on territory of Soviet Union. In the 80th the USSR Glacier Inventory has been transformed in the digital form as a part of the World Glacier Inventory. Resent satellite data provide a unique opportunity to look again at these glaciers and to evaluate changes in glacier extent for the second part of XX century. In the paper we report about 15 000 glaciers outlines for Caucasus, Pamir, Tien-Shan, Altai, Kamchatka and Russian Arctic which have been derived from ASTER and Landsat imagery and could be used for glacier changes evaluation. The first results show that glaciers are retreating in all mountain regions of the former Soviet Union. There is, however, a rather large variability in degree of reduction very much depending on special local conditions.