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Status of Glacier inventories in China

Shiyin Liu, Wanqin Guo, Junli Xu, and Donghui Shangguan

State Key Laboratory of Cryospheric Sciences, Cold and Arid Regions Environmental and Engineering Research Institute, Chinese Academy of Science, 320# Donggang West Road, Lanzhou 730000, China. liusy@lzb.ac.cn

The first glacier inventory in China (here referred to as CGI1960s) was completed based on aerial photos and topographical maps. During the inventory, efforts have been devoted to correct errors for mapping glaciers on the maps. However, the digital boundaries of the glacier inventory were basically from coarse resolution maps, e.g., 1:500,000 or index maps of the same scale. During recent years and supported by a national project, glacier boundaries corresponding to the first inventory have been digitized based on the working maps at scales of 1:50,000 and 1:100,000. At the same time algorithms for calculating glacier attribute parameters were developed with the available digital elevation model of topographical maps mentioned above. This update indicates that the glacier number and area were larger than that published.

The recent glacier inventory is underway to be completed based on ASTER and Landsat TM/ETM+ imageries mostly acquired during late summer of 2005-2008. A semi automatic method based on band ratio threshold was applied to images orthorectified for extraction of glacier outlines which were then carefully verified and modified (here referred to as CGI2008). The above-mentioned methods have also been applied for attribute calculation based on available GDEM. Currently about 85% of the glaciers as inventoried in the first time were updated in western China. The left parts were mainly located at southeastern Tibetan Plateau, where fine quality ASTER and TM scenes could hardly be available during 2005-2008.

A comparison of the two glacier inventories indicates that glaciers in China have been in general retreating during the inventoried interval of around 50 years with the retreat more pronounced in the surrounding mountains than that of the central Tibetan Plateau.