



Spatial variability of recent glacier area and volume changes in central Asia using Corona, Landsat, ASTER and ALOS optical satellite data

C. Narama (1, 2), A. Kääb (1), T. Kajiura (3), K. Abdrakhmatov (4)

(1) Department of Geosciences, University of Oslo, (2) Department of Environmental Studies, Nagoya University, (3) Department of Geography, Rishsho University, (4) Institute of Seismology, Kyrgyz Academy of Science (narama@nagoya-u.jp / Phone: +81-52-789-3477)

The climatic conditions of central Asian mountains are characterized by the interaction of the Westerlies and Siberian high pressure systems, and by the complicated mountain topography. Under the present atmospheric warming, the regional pattern of precipitation mechanisms might lead to different glacier changes in the central Asian mountains. In this study, we try to identify the regional differences of glacier area and volume changes by inter-comparing glacier changes at several sites in the Tien Shan and Pamir-Alay. Our work is based on Landsat, ASTER, ALOS, and Corona satellite data, and 1:50'000 topographic maps. Corona data from 1970 and Landsat data from the 2000s are used to assess glacier area changes for the recent 30 years. Volume changes are derived between Digital Elevation Models (DEMs) from Corona stereo data and topographic maps for the 1970s, and from the Shuttle Radar Topography Mission (SRTM) and ASTER stereo data for the 2000s. In the Western part of Terskey-Alatoo Range (a section of the northern Tien Shan), the about 270 mountain glaciers investigated in the study lost about 8% in area between 1971 and 2002. Glaciers in the Ak-Shiirak Range, located to the south of the Terskey-Alatoo Range, lost about 9% in area (see Aizen et al., 2006). Thus, glacier changes in these two, climatically similar regions show similar rates of glacier area loss. The results for other study sites will be presented, too.