



Mass-balance modelling of Ak-Shyirak massif Glaciers, Inner Tian Shan

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Tian Shan is a water tower of Central Asia. Rapid and accelerating glacier downwasting is typical for this region. Study sites – Sary-Tor glacier and Glacier No.354 are located in Ak-Shyirak massif, Naryn headwaters. Sary-Tor was chosen as representative for Ak-Shyirak (Ushnurtsev, 1991; Oledeniye TianShanya, 1995) for direct mass-balance measurements in 1985-1991. Glacier No.354 was an object of direct mass-balance measurements for 2011-2016. An energy-balance distributed A-Melt model (Rets et al, 2010) was used to reconstruct mass-balance for the glaciers for 2003-2015. Verification of modeling results showed a good reproduction of direct melting measurements data on ablation stakes and mass loss according to geodetic method. Modeling results for Glacier No. 354 were compared to different modeling approach: distributed accumulation and temperature-index melt (Kronenberg et al, 2016)