

The thermophysics of Hunder Glacier of Eastern Hindu Kush

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Abstract

Mountain glaciers covered with different thickness of debris have their own thermal resistance and its influence on ablation zone. The comparison of thermal resistance data at regional and global level allows estimating augmentation run-off from glaciers in relation with climate change. The thermal resistance studies show caucuses southern and northern glacier basins especially Djankuat glacier high resistance value then world. The Baltoro glacier of Karakoram Range has less thermal resistance in compression with Djankuat glacier. Therefore, an attempt has been made to evaluate thermophysics model of Hunder glacier of Eastern Hindu Kush situated in Yasin Valley of Gilgit-Baltistan. The glaciers of Eastern Hindu Kush of Yasin are less studied in relation with glaciers of Karakoram Range.

The objective of present study was to study thermal resistance of Hunder glacier of Eastern Hindu Kush gateway of westerlies and high solar radioactivity situated at higher altitude then caucuses's glacier and correlate with Djankuat and Baltoro Glacier of Karakoram Range. The mathematical modeling of vertical thermal gradient of Hunder Glacier of Eastern Hindu Kush illustrates high thermal resistance. The correlation of thermal resistance with available thermal resistance of different glaciers of Karakoram Range, Altai, and Caucasus allows suggesting Hunder glacier has high thermal resistance in the world. It is also observed that Hunder Glacier has tension flow in accumulation zone and compression flow in ablation zone. Whereas Djankuat glacier is characterize with alternation of tension and compression flows. The presence of vegetation on debris covers demonstrates stability of Hunder Glacier.