

Singh S. K., Bahuguna I. M., Rathore B.P. and Ajai, 2013, Spatial distribution of glacier mass balance using remote sensing data in the Himalayan region, Climate Change and Himalaya, Natural Hazards and Mountain Resources (Editors- J. Sundaresen, Pankaj Gupta, K.M. Santosh and Ram Boojh), Scientific Publishers (India), ISBN: 978-81-7233-881-7, pp 1-6.

Abstract:

Glaciers extent has shown oscillation in the geological past and continues to do so in the present time too. The most conspicuous reason to the current variations is attributed to climate change due to natural cycles and anthropogenic activities. Harsh climate and rugged terrain conditions restrict repetitive monitoring of glaciers at regular interval using conventional methods in the Himalayan region where remote sensing (RS) has played a key role in mapping and monitoring of these resources. One of the major RS applications is the estimation of mass balance using accumulation area ratio (AAR) approach. The basic premise of AAR approach is mapping of snow line on the glaciers from a series of satellite images. This study presents use of satellite images of AWiFS data (repetivity 5 days) of Indian Remote Sensing Satellite (IRS)/Resoucesat to estimate AAR and mass balance of glaciers in parts of the Chenab and Ganga basins, and its variability across the Himalayan region. More than 700 glaciers have been monitored in the present analysis and it has been observed that overall all the sub-basins have shown a positive mass balance for the year 2010. Spatial distribution of mass balance have shown that Ganga basin has high number of glaciers representing negative mass balance in comparison to Chenab basin. Maximum numbers of glaciers in Chandra, Bhaga and Bhagirathi basins have shown positive mass balance whereas maximum numbers of glaciers in Dholiganga and Goriganga basins have shown negative mass balance.