

Characteristics of Himalayan Snow Covered Region Using SSM/I Data

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The snow cover in the northern part of India controls the climatic conditions of Indian continent. The knowledge of the snow cover and thickness of the snow is very important in understanding the radiation budget and also useful in estimating the surface runoff in the Indo-Gangetic plains, flood conditions and recharge of ground water. The visible remote sensing data has limitations due to the cloud cover and it also fails to provide any quantification estimate of snow cover. Detailed analysis of SSM/I data over the northern part of India covered with snow for various frequencies and polarizations for the year 1989-2000 show cyclic nature of brightness temperature variations with minimum value during winter season and maximum value during summer season. The brightness temperature shows a linear trend with small variations during 1989 - 2000. From brightness temperature data emissivity of the snow covered region for seven locations have been extracted. At these seven locations, the ground parameters are routinely recorded by the scientists from Snow Avalanche Studies Establishments (SASE), Chandigarh. The inter annual variability of brightness temperature and emissivity for the period 1989 - 1999 will be discussed in view of the nature of snow cover. The use of SSM/I data in monitoring of snow avalanches will be presented.