

## Spectral properties of snow and assessment of regional climate: A case study of Himalayan glaciers, India

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The Himalayas form the source of most of north India's river systems, which form the life line for the millions of people living in their lower basins. The Seasonal snow cover has a significant role in hydropower generation, water management, climate study, avalanche forecasting, flood forecasting and many other developmental activities that contribute to national economy. Physical properties of a snowpack such as crystal structure, density, and liquid water content are also important for transfers of heat and water. Snow-climate feedbacks such as snow-albedo feedback mechanisms involved are often complex and are not properly understood. Considering the impact of snow properties on regional climate and subsequent impact on natural and human systems, the present study of the Satopanth and Bhagirath Kharak glaciers which are the sources of the Alaknanda river, a major tributary of the Ganga, has been undertaken. It also attempts adopted methodology for assessment of snowmelt for the Parvati Basin, a tributary of Beas river in Kullu District, Himachal Pradesh. The monthly average rainfall, temperature and discharge data at Bhuntar station (Indian Meteorological Department) was used to compute the total precipitation input over the basin. In order to find out the snow-covered area in the basin, various remote sensing datasets were used. This study makes an attempt to investigate and assess spectral properties of snow and to analyze how snow properties affect albedo and its subsequent effects on the regional climatic variability using hyper spectral datasets and then finally to assess the hydrological effects with response to variability in regional climate with the help of Snowmelt Runoff Model (SRM) while validating the results from space born spectroscopy sensor with respect to field based data collection. Thus, this study will attempt to reveals the role of the spectral properties of snow affecting climate at regional level. Finally an attempt will also be made analyze the socio-environmental vulnerability in the region due to possible climatic changes in the study area.

### Biography

Milap Punia has completed his PhD at the age of 32 years from University of Rajasthan and Masters in Technology (Remote Sensing) from Birla Institute of Technology, Ranchi. He did Professional Masters in Geovisualisation from University of Twente - ITC, The Netherlands. He is Associate Professor, in Centre for the Study of Regional Development, Jawaharlal Nehru University (JNU), New Delhi since 2006. He also worked as a Scientist in Photogrammetry and Remote Sensing Division at Indian Institute of Remote Sensing part of Indian Space Research Organization (ISRO) from 2001 to 2006. He has published more than 25 papers in reputed journals.

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## Climate and climate change effects on livestock farming in the Mediterranean area

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The Mediterranean basin has been categorized as a global warming hotspot, in that the area is expected to face particularly high impact from global warming and climate change and to be most vulnerable to their deleterious effects. Weather and climate may exert negative effects in farm animals and the ability to predict the effects of climate variables on livestock is important to guarantee animal health, welfare and performances. Climate may affect animal production both indirectly and directly. Indirect effects include primarily those that meteorological factors exert on growth and quality of grassland and crops, and on water availability. Additionally, climate may also affect survival of pathogens and/or their vectors, which may cause risks for health in animal and human populations. The direct effects of climate on animal production depend primarily on the ability of animals to maintain a normal body temperature under unfavourable meteorological conditions. A series of indexes has been suggested to describe the influence of warm climate on animal response. The temperature humidity index (THI) combines temperature and humidity into a single value, and even if with some limitations it is still widely considered of great help to predict the effects of environmental warmth in farm animals. A series of studies were carried out in the last years to describe the THI dynamics over the Mediterranean basin to provide farmers, nutritionists, veterinarians, and policy-makers with a basis to develop adaptation strategies to limit consequences of climate change for the livestock sector in the Mediterranean countries

### Biography

Nicola Lacetera has completed PhD in "Hygiene, safety and quality of animal products" from University of Perugia, Italy. He is Professor, in University of Tuscia, Viterbo, Italy. He has published more than 30 papers in reputed peer reviewed journals in the field of animal biometeorology.

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