



Seasonal Snow Coverage Depletion in alpine Environments micro- to meso-scale statistical Modelling

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Seasonal snow cover distribution and depletion depend on climatic conditions, vegetation and topography. Conventional approaches of snow cover monitoring are based on point measurements and remote sensing techniques. None of these approaches is suitable for meso-scale spatial and temporal observations of snow cover variations. Meso-scale analyses are an important basis for the understanding of ecologic, hydrologic and micro-climatic interactions in mountain systems. To analyse the meso-scale influence of topography on snow cover, two automatic digital cameras (MetSupport?) are positioned on opposite slopes above the tree-line as an example of the *Lötschental* (Swiss-Alps). Daily variations of snow patterns were monitored at a north-west and south-east-facing slope. The investigations were supported by five meteorological stations measuring temperature, precipitation, wind, radiation and snow depth as hourly means. The use of UTL-data logger allowed calculations of snow coverage depletion on 25 sites. Using a spatial resolution of 10 m and a temporal resolution of 5 days the classified and georeferenced images enabled statistical analyses of the impact of topography on snow coverage depletion. The combination of our high temporal resolution digital images, snow and climatic measurements at representative sites allowed micro- and meso-scale statistical modelling of seasonal snow coverage depletion in alpine environments.