



## **Wind drifted snow influence on the water and mass balance in the mountainous catchment "Modry potok", the Giant Mountains, Czech Republic.**

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There are very specific components of the water balance in the mountain headwater regions. Beside the point of cloud- and fog-water deposition it is mainly accumulation of water in the snow cover drifted into the watershed by the wind. Uneven distribution of the snow cover over the mountainous terrain is a well known phenomenon in all alpine and arctic areas. The result of this unevenness is a mosaic of microhabitats with various snow depths, different melting dates and snow free periods.

Wire probes can be reliably used up to snow depths of 3 m only. To get more realistic data, two digital models using kinematic carrier phase-based GPS measurements were developed: (1) a model for snow surface data, applied at the end of winter seasons from 2000 to 2008, and (2) a model for the underlying snow free ground surface, applied after the snow melting in August 2000. These two models, overlaid in the GIS environment, have identified snow depths. For the creation of digital elevation models (DEMs), the TOPOGRID command in ArcInfo was used, which generated a grid of elevations from 3-D point, line, and polygon data. The snow depths were obtained and snow maps constructed accordingly. These "snow" results can be used for more realistic estimation of water content of snow in the watershed, distribution of snow depth during the winter seasons and define the water and mass balance more precisely.

The objectives of this study were to highlight water storage in the snow-beds and show the GPS kinematic measurements as a contribution to understand more the snow accumulating and melting processes in the Modry potok catchment (2,62 km<sup>2</sup>, 1010 - 1554 m a.s.l.) in the Giant Mts.

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