INTERDISCIPLINARY ALTITUDINAL TRANSECT AND RIVER CATCHMENT STUDIES IN MOUNTAIN REGIONS

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Mountain regions are gaining increasing interest as valuable hydrological and ecological resources. They feed downstream areas with water during dry periods when water shortage is often observed. To better understand the hydrological and ecological regimes in mountain regions, with respect to their dependence on climate and land-use conditions (and potential changes in these), has recently become one of the primary challenges for research. Major international programmes, such as the International Geosphere-Biosphere Programme, the International Hydrological Programme of UNESCO, and the World Climate Research Programme, are increasingly taking this into account and have initiated special research projects and activities including large-scale interdisciplinary field experiments. A brief overview of these activities and initiated special projects is presented in this paper.

It is clear that topography and land-surface heterogeneieties related to topography, such as land cover, land use, soil, geology, etc, as well as topography-driven lateral redistributions of water in mountain regions, represent special problems in the understanding and modelling of processes on all relevant temporal and spatial scales. Considering the strong dependence of land-surface features and processes on topography, the application of an approach combining altitudinal transects and nested river catchment studies has been suggested. Coordinated measurements and field studies, supported by areally distributed detailed modelling, are planned to be implemented in selected mountain regions of specific interest.

Results of pilot studies in German and French middle mountain ranges have been presented and briefly discussed. They provide guidance in the further preparation and implementation of the suggested combination of altitudinal transects and nested catchment studies.