

Preface: The importance of a hydrological research framework for water balance studies in mountain basins

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Hydrological Process. 19, 2323–2328 (2005)

Published online in Wiley InterScience (www.interscience.wiley.com). DOI: 10.1002/hyp.5886
<http://www3.interscience.wiley.com/journal/110574032/abstract?CRETRY=1&SRETRY=0>

Abstract

This Preface is to special issue of Hydrological Processes that is the combined outcome of both the 2001 EGS session on the 'Water balance of mountain basins' in Nice and the 2002 Annual Meeting of the German Hydrological Working Group in Berlin. A variety of hydrological and meteorological research topics presented at these meetings focused on water resources, modelling, parameterization, remote sensing, snow and ice melt, evaporation and transpiration. Case studies concentrated especially on mountain areas, which ranged in altitude from 1500 to 6000 m, and on a variety of regions, such as the Himalayas, Karakorum, Hindukush, Yemen Mountain Massif, Norwegian Scandes and Alps. The analysis of water balance components was conducted at many different temporal and spatial scales, ranging from annual and seasonal to daily and hourly, and from entire basins to single lysimetric analyses.

The current discussion about climatic–hydrologic change and bio-adaptability reflects the necessity for more comprehensive and more detailed knowledge about water balance in mountain basins. Since mountain watersheds are source areas for large rivers, an understanding of the water balance is invaluable. This should include a variety of components, such as water input, water storage, water loss, and water transfer potentials on steep, heterogeneous surfaces. Many of the associated processes are insufficiently investigated, although they are of major significance for both hydrologists and water resource managers.