Geophysical Research Abstracts
Vol. 12, EGU2010-5397, 2010
EGU General Assembly 2010


# Models as multiple working hypotheses: Hydrological simulation of neotropical alpine wetlands

Wouter Buytaert (1) and Keith Beven (2)

(1) Imperial College London, London, United Kingdom (w.buytaert@imperial.ac.uk), (2) Lancaster Environment Centre, Lancaster University, UK, Geocentrum, Uppsala University, Sweden, and ECHO/ISTE, EPFL, Lausanne, Switzerland.

Tropical alpine grasslands, locally known as páramos, are the water towers of the northern Andes. They are an essential water source for drinking water, irrigation schemes and hydropower plants. But despite their high socio-economic relevance, their hydrological processes are very poorly understood. Since environmental change, ranging from small scale land-use changes to global climate change, is expected to have a strong impact on the hydrological behaviour, a better understanding and hydrological prediction is urgently needed.
In this study, we apply a set of nine hydrological models of different complexity to a small, well monitored upland catchment in the Ecuadorian Andes. The models represent different hypotheses on the hydrological functioning of the páramo ecosystem at catchment scale. Interpretation of the results of the model prediction and uncertainty analysis of the model parameters reveals important insights in the evapotranspiration, surface runoff generation and base flow in the páramo. However, problems with boundary conditions, particularly spatial variability of precipitation, pose serious constraints on the differentiation between model representations.