

Einladung zum Kolloquium

Hydrology of the páramo in the southern Andes of Ecuador

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The páramo (Buytaert et al., 2006), is a collection of neotropical alpine grassland ecosystems covering northern Andes above 3500m and below the snow limit from Venezuela to the north of Peru. The páramo is well known for its very high water yield and sustained base flow, feeding the rivers descending to both the coastal regions and the Amazon basin. Therefore they are essential for domestic, agricultural and industrial water supply, and the generation of hydropower. Recently, the páramo is increasingly under pressure from more intensive cattle grazing, cultivation, and pine planting, among others. This land use change along with global climate change has altered the hydrological regime.

The high altitude ecosystems lack meteorological data as most stations are in the cities located in interandean depressions. A good estimation of the reference evapotranspiration (ET_o) and rainfall in function of the elevation and other factors is therefore a first challenge. Most páramo soils are volcanic in origin and classified as Andosols, Regosols, Umbrisols and Histosols in FAO's World Reference Base for Soil Resources. Especially in Ecuador they form a uniform blanket covering the tertiary bedrock. The hydrological processes were studied in Ecuador at different scales from plot (300 m²), hill slope to micro-catchment and basin (24.6 km²) scale. As saturated overland flow is one of the major processes special attention was given to the subsurface lateral flow creating the saturated areas. Also soil water content was given attention in order to estimate the actual water use by vegetation. The top model has been quite successful in modelling the hydrology of the páramo.