

# Needs in the Quantification of Páramo Ecosystems Hydrology-Applicable Model Proposal

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**Abstract.** Páramos are vulnerable ecosystems in the High Andean Mountains, between 3000 and 4800 meters above the sea level. Various interests are centered upon these ecosystems. They have an important ecological and scientific function due to the genetic value of their endemic flora. Páramos also play an important social role for many isolated families that base their economy on non-formal, non-technical traditional agricultural activities. On the other hand, they play an important role in the natural hydrologic regulation of many river networks born in them. They are also a very important water supply for most of the north Andean mayor cities. These interests have led to many conflicts and uncertainties related to management and conservation policies.

In Páramo hydrosystems little has been studied about the hydrological processes in the atmosphere known as fog drip or horizontal precipitation, and their interaction with endemic vegetation and soils. In this paper the hydrological particularities of these ecosystems are described. The effects of these particular hydrological processes and soil characteristics on the water balance are shown in three study cases that use conventional hydrological models.

The need of further studies and model developments is stressed in order to have hydrological quantifications for Páramo ecosystems oriented to improve analytical tools for the evaluation of different management scenarios to support decision making and to resolve interest conflicts. The conceptualization of a preliminary mathematical model is also shown in response to these needs.

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