CHARACTERIZATION OF THE HYDROGEOLOGICAL BEHAVIOR OF HIGH ANDEAN PEATLANDS – THREE CASE STUDIES IN THE BOLIVIAN

ALTIPLANO

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**Abstract:** How much water is stored in the peatlands of the Bolivian Altiplano? What is the residence time of water in the peatlands? What is the contribution of this flow to the hydrological cycle? What influence does climate change and climatic phenomena have on them? Is it reasonable to exploit the water resources from peatlands? These are some of the questions that are answered through the characterization of the hydrogeological behavior of high Andean peatlands and to understand the relationship between these peatlands and the hydrological cycle.

To achieve this objective, the hydrological and hydrogeological variables of three peatlands located near glaciers in the Bolivian altiplano have been studied, achieving the development of hydrogeological conceptual models of these “bofedales” (high altitude wetlands or peatlands). All this work was carried out through the implementation of a piezometric monitoring network, field tests, soil laboratory tests, topographic and geophysical surveys, geological mapping and water balance; completing this characterization with the analysis of water quality and isotopic data of both groundwater and surface water bodies.

The results show a typical stratification of the bofedal in three vertically arranged layers: an organic layer (variable thickness from 0.20 to 1.0 meters), a transition layer (of very variable thickness) between the organic layer and the last impermeable or clayey layer, which in all studies exceeds several tens of meters in depth.

**Keywords:** High altitude wetlands, hydrogeological behavior, peatlands