



## **Analysis, diagnosis and proposal of protection measures to mitigate hydrological alterations in the basin “Rio Calandaima” derived from climate change**

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Climate change and its effects represent a challenge for decision makers and for scientific communities, given the complexity and uncertainty associated. Rainfall reduction and evapotranspiration increase are expected phenomena associated to the climate change which will affect water resources of Calandaima River Basin (Colombia), which implies the need of designing suitable mitigation measures based on the qualitative and quantitative diagnosis of water resources. The objectives of this work were: 1) hydrological characterization of the catchment to carry out a diagnosis of rainfall-runoff current patterns and availability of water resources; 2) to implement a water balance model to complete dataserie gaps as well as modeling future climate change scenarios; 3) risk assessment based on guarantee indicators to propose mitigation measures. Firstly, detailing characteristics such as climatic zonification, slope range, drainage network and land use were described. A simple water balance model was calibrated through the adjustment of 4 parameters with an efficiency coefficient of 0.51. The indicators of supply guarantee (demand-supply analyses) determined a high risk of water deficit in the catchment for the current conditions and for the studied scenarios. A dramatic rise in costs to provide water may be envisaged, given the reduction in supply associated with climatic scenarios where the phenomenon “El Niño” takes place. Thus, not only is more investment needed to monitor the dynamics of the alterations but it is also essential to promote, among farmers and owners, incentives to apply water harvesting techniques and at the same time, to control floods.