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Identification of driving factors of cloud water interception estimates in the canopy vegetation using a canopy water budget approach: a case-study in the Galapagos Islands

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Cloud water interception (CWI) by canopy vegetation is an important source of water for terrestrial ecosystems, specially to those subject to fog occurrence and low rainfall inputs. In such environments, not only CWI quantification is important, but the identification of its controlling factors is fundamental for the water management. In this study, we assess CWI by vegetation in two study sites located in the highlands of the main islands of the Galapagos Archipelago: Santa Cruz and San Cristobal Islands. In these sites, meteorological variables are measured with a weather station and an identical passive fog gauge system. In addition, throughfall records under an endemic forest are obtained from an identical sampling scheme in both sites. We used a Rutter-type interception canopy model to measure CWI, as the remaining variable from a canopy water budget. The model not only allows to quantify CWI, but it also allows to identify its driving factors. Results show contrasting CWI estimates between both sites despite they are located at a similar altitude and under relative similar conditions. Such difference could be attributed to differences in the air liquid water content and differences in the terrain slope and orientation. These results could be important for suitable water management policies in regions with limited water resources and subject to land use change, such as Galapagos.