



Fog in a marginal agricultural area surrounded by montane Andean cloud forest during El Niño climate

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The aim of the present study was to evaluate temporal variations of water inputs, rainfall and fog (cloud water), and its contribution to the water balance in a marginal agricultural area of potato surrounded by tropical montane cloud forest in Colombia. Fog in the air boundary layer was estimated using a cylindrical fog collector. Liquid water content of fog events were evaluated before and during natural climate event of El Niño. Our study shows the temporal variation of these two water inputs in both daily and monthly cycles on Boyacá at 2900 m a.s.l. Rainfall was the most frequently observed atmospheric phenomenon, being present on average 62% of the days per year, whereas fog was 45% of the time. Reflected on the lower frequency, annual amount of fog was 11% of precipitation. However during the anomalous dry climate of El Niño, total amount of rainfall was negligible and the few fog events were the only water source for plant growth. Estimated water crop requirements were higher than the water inputs. The survival of the crops was explained by meteorological conditions during dew and fog events. High relative humidity might have eased the plant's water stress by decreasing transpiration and temperature in leaves and soil, affecting the water balance and the heat exchange between the atmosphere–land interfaces in the marginal agricultural areas during exceptional dry climate.