

Biophysical variables in fertile islands of the Argentinian Arid Chaco

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INTRODUCTION

Arid ecosystems usually present emergent tree species interspersed within a shrubby matrix, forming patches, known as “fertile islands” and result from the ecosystem dynamics in degraded environments where a major soil particles, water, nutrients and biomass accumulation occur. The study of the changes in the biotic and abiotic variables under and outside the fertile islands is of great importance in arid ecosystems in order to determine the management and rehabilitation guidelines. The objective is to determine the influence of *Prosopis flexuosa* and *Larrea divaricata* over some biophysical variables within fertile islands.

MATERIAL AND METHODS

The topographic slope, soil moisture, apparent density, soil infiltrability, soil temperature, electrical conductivity, pH, air temperature, air humidity and light variables were surveyed undercanopy (UC), at the limit of the canopy (LC) and in the intercanopy (IC) in *Prosopis* (n=10) and *Larrea* (n=10) fertile islands in June and December, in two sites of the Pocho Department (31°S).



Fig. 1: *Larrea* island condition



Fig. 2: *Prosopis* island condition

RESULTS

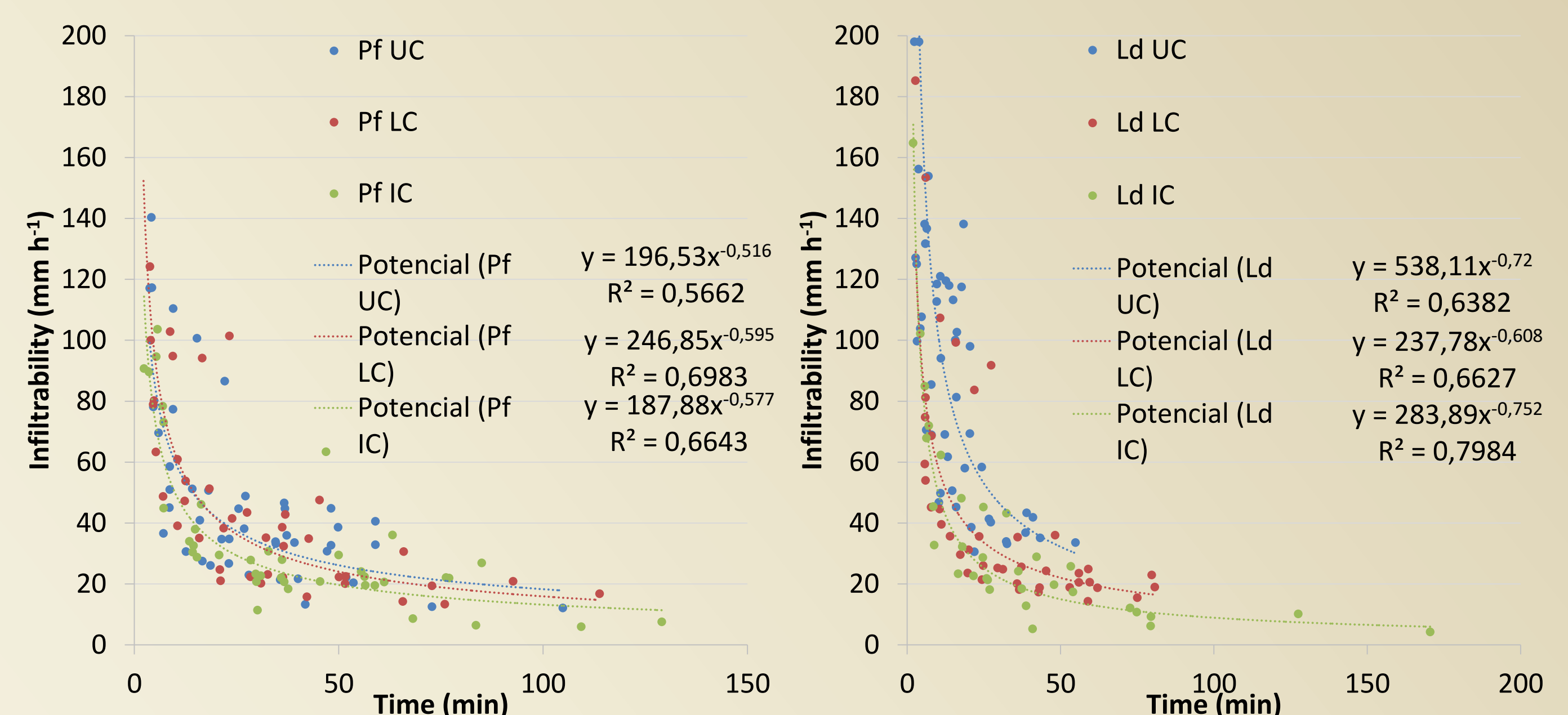


Fig. 3: Soil infiltrability. Pf=*P. flexuosa* islands; Ld: *L. divaricata* islands. UC: Under canopy; LC: Limit of canopy; IC: Intercanopy.

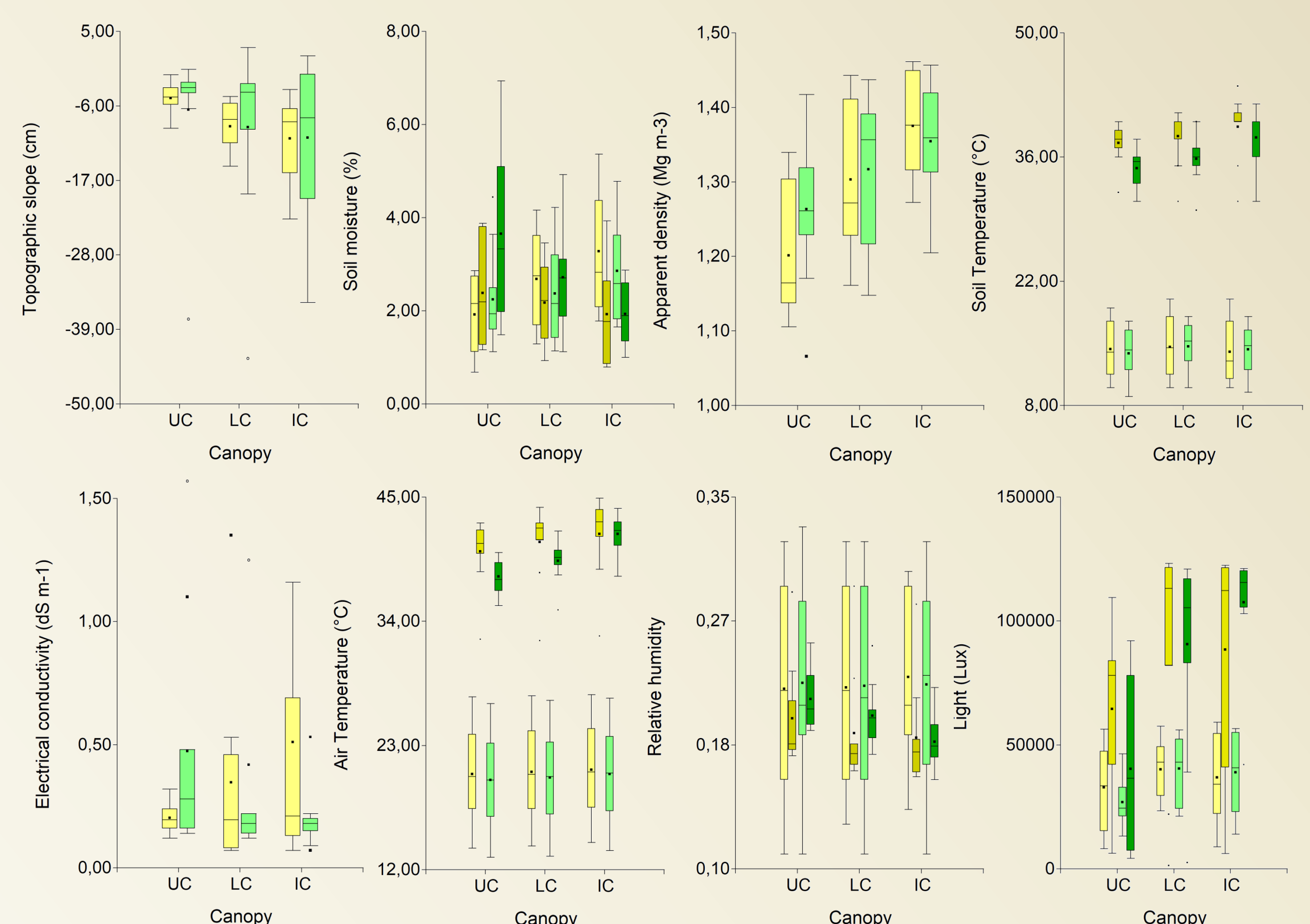


Fig. 4: Biophysical variables. Yellow: *L. divaricata* islands; Green: *P. flexuosa* islands. Lighter colors: June measurements; darker colors: December measurements. UC: Under canopy; LC: Limit of canopy; IC: Intercanopy.

CONCLUSIONS

The *Prosopis* canopy affects soil properties, increasing soil infiltrability and soil moisture (Dec), and reducing apparent density and soil temperature. It also reduces air temperature (Dec) and light intensity, and increases air humidity (Dec). The *Larrea* canopy increases infiltrability and reduces apparent density, while it has no effect over the rest of the biophysical variables.