



Wet season 2019 (1/3 of the year) at "Faidherbia Flux" Observatory, located in the center Senegal representing the main Rainfed agriculture region (accounting for over 35% of household revenue of local population); <https://lped.info/wikiObsSN/?Faidherbia-Flux>

Research Question:

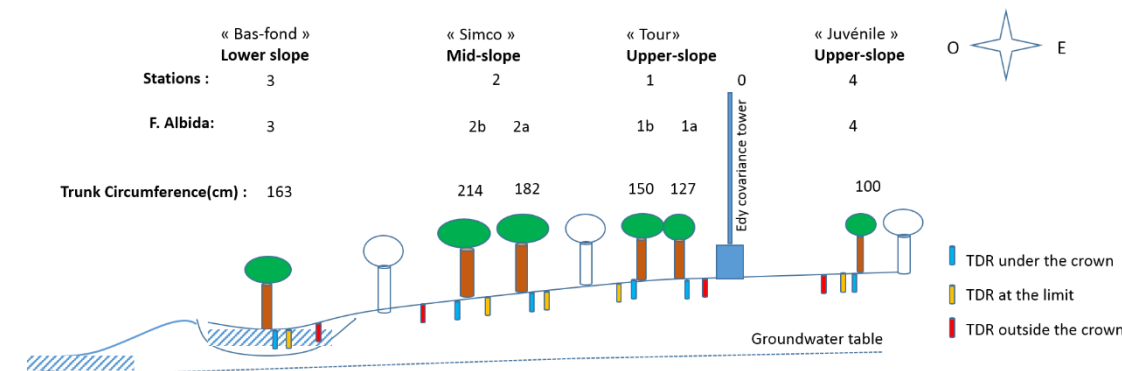
How do *F. albida* and the topography (slope) influence soil water content (SWC) dynamics in semi-arid regions?

Experimental design:

SWC at multiple depths was monitored with a portable TDR (IMKO, Germany) at 15 locations distributed along a transect (upper slope, mid-slope and lower slope) and different FA tree position (under, at the limit and outside canopy) during the rainy season 2020 (bi-monthly from August to October)

Hypothesis:

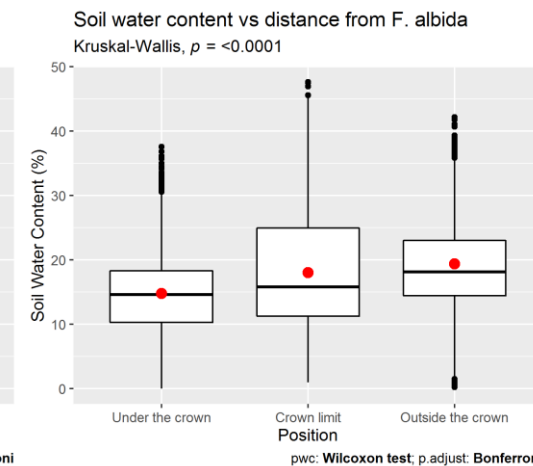
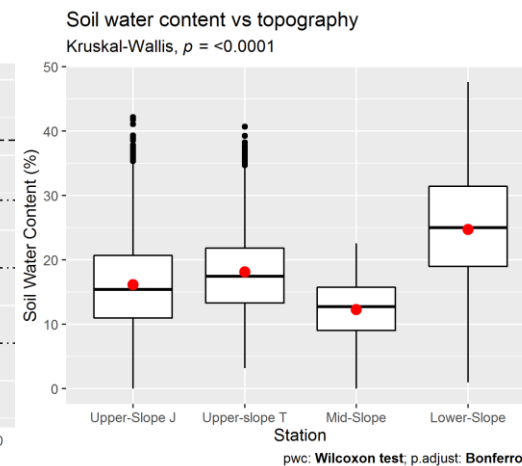
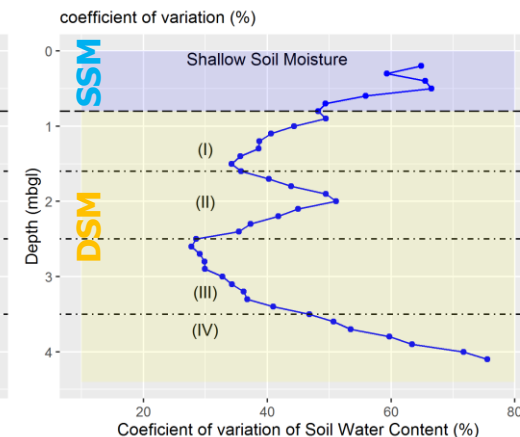
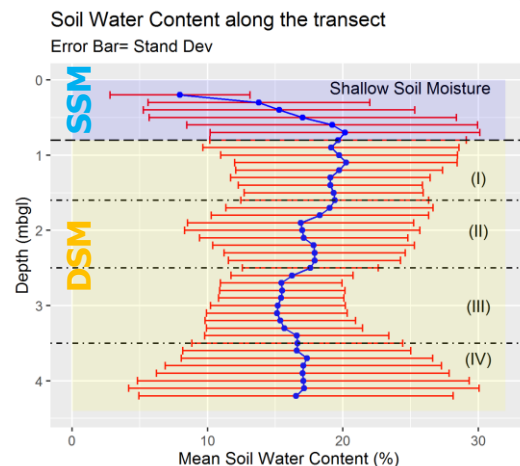
- (1) SWC is expected to be higher under the canopy as compared to outside the crown of *F. albida*;
- (2) SWC is usually negatively correlated with slope %.



Portable TRIME TDR (IMKO, Germany)

Results:

- SWC vertical profile exhibits 2 zones: **Shallow Soil Moisture** and **Deep Soil Moisture**.
- DSM** can be further divided into 4 sub-layers.
- The Higher SWC for both SSM and DSM are observed outside FA crown. **(H1 no)**
- Total average of SWC in lower slope (24.7%) are significantly higher than at middle (12.3%) and upper slope (17.1%). **(H2 yes)**
- SWC are positively correlated with the distance from FA, regardless the slope.



Findings are not in line with Hypothesis 1 and support a more detailed analysis of methodology, branch interception, infiltration capacity and soil texture variability in relation to *F. Albida*