

EGU21-12761

<https://doi.org/10.5194/egusphere-egu21-12761>

EGU General Assembly 2021

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



## Dryland landscapes in Brazil: the relationship between soils and vegetation

**Grace Alves**

UFBA - Federal University of Bahia, Geoscience, Geography, SALVADOR, Brazil ([gracebalves@gmail.com](mailto:gracebalves@gmail.com))

The Brazilian semiarid have a diversity of soils and parent material, and this influences its flora. We observed different landscapes, and we revised papers about the vegetation surveys and their relationship with the landscape elements and their evolution. Brazil's semiarid area is between average latitudes 2° and 17° South, and longitudes 35° and 46° West, on the same latitude position of Amazon Forest and Savanna biomes, and one of the few sub-equatorial dryland regions. The semiarid biome is named Caatinga and characterized by Seasonally Dry Forests and Woodlands (SDFW), one of Brazil's most degraded and least studied biomes. It was considered low in species diversity and endemism for a long time, mainly because of the semiarid climate and low research quantities. Recent studies indicated high biodiversity, surpassing the Amazon concerning the number of plant species per area. The landscape presents vast rocky pediments scattered with Proterozoic crystalline massifs and elevated sedimentary basins forming table-like plateaus. Caatinga shows an average annual rainfall of around 600mm/year; marked by seasonal irregularity, the dry season occurs between August and October, and the rainy season concentrates during the summer. Orography effects are significant, and in the higher areas such as Plateaus, the precipitation can exceed 1000mm/year, and the lack of rainfall is distributed among depressions. Dry conditions started in the Miocene when the SDFW arrived at the Brazil northeastern by connecting with two large SDFW of South America. The crystalline shield is the basement of the Sertaneja Depression and the Borborema Plateau, both own soils related to semiarid conditions like Luvisols, Planosols, Phaeozems, Vertisols, and shallow soils, besides Lixisols at the colluvium materials at the foot of the hills. These soils are mainly above granites, gneisses, and schists exposed during the notching of the Sertaneja surface, with some elevated areas by most resistant rocks. These areas harbor the most typical SDFW of the Caatinga with deciduous and spiny woodlands or small forests, in the high altitude also influenced the vegetation assembly. On the Sedimentary regions, distinct floristic communities show seasonal dynamics not controlled exclusively by the rainfall supply; at least 50% of them maintain their leaves throughout the year. Flora presents independent events of ecological speciation over the last 1,5 Ma. Predominant soils are Ferrasols and Arenosols; the latter, in some cases, may represent an advanced stage of the Ferrasol with high clay loss. These soils did not form under current climatic conditions as they demand more and regular precipitation. We noted the close relationship between parent materials, soils, and vegetation controlling the landscape characteristics and their time and space evolution.

