# Revealing the spatial pattern of subsurface soil salinity over the Argentinean Dry Chaco

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The South-American Dry Chaco is a unique ecoregion as it is one of the largest sedimentary plains in the world hosting the planet's largest dry forest. The 787.000 km² region covers parts of Argentina, Paraguay, and Bolivia and is characterized by a negative climatic water balance as a consequence of limited rainfall inputs (800 mm/year) and high temperatures (21°C). In combination with the region's extreme flat topography (slopes < 0.1%) and shallow groundwater tables, saline soils are expected in substantial parts of the region. In addition, it is expected that large-scale deforestation processes disrupt the hydrological cycle resulting in rising groundwater tables and further increase the risk for soil salinization.

In this study, we identified the regional-scale patterns of subsurface soil salinity in the Dry Chaco. Field data were obtained during a two-month field campaign in the dry season of 2019. A total of 492 surface- and 142 subsurface-samples were collected along East-West transects to determine soil electric conductivity, pH, bulk density and humidity. Spatial regression techniques were used to reveal the topographic and ecohydrological variables that are associated with subsurface soil salinity over the Dry Chaco. The hydrological information was obtained from a state-of-the-art land surface model with an improved set of satellite-derived vegetation and land cover parameters.

In the presentation, we will present a subsurface soil salinity map for a part of the Argentinean Dry Chaco and provide relevant insights into the driving mechanisms behind it.