

ABSTRACT

Paramo soils store exceptional amounts of carbon due to edaphic and climatic conditions on which they develop. This large carbon reservoir is threatened due to the effects of climate change and the dynamics of land use. The objective of the present research was to carry out the digital map of organic soil carbon (COS) of the herbaceous paramo ecosystem in the Austro area of Ecuador. The sampling units were defined according to their geological formation using the drilling method; 130 samples were collected at two depths 0-30 and 30-60 cm. A database with 15 environmental covariates and classification and regression trees (CART) was used to generate the COS maps. The COS at the first depth formed three groups: (a) constituted by the Bartolito geological formation with an average value of 90 g C / kg, (b) Zaraguro and Tarqui formations, with an average value of 120 g C / kg and 130 g C / kg respectively and (c) Zamora Series formation, with an average value of 231 g C / kg. With this information, distribution maps of the COS were generated at two depth intervals (0-30 and 30-60cm). The CART model successfully determined the spatial distribution of the COS and identified: geology and taxonomy, as the most important predictors. The maps and models produced in this research are a useful tool for decision-making since they will access better management and rational use of the carbon stock present in the grassland ecosystem of the moor in the Austro area of Ecuador.

Keywords: Paramo, carbon, geological formation, taxonomy, classification and regression trees, CART model, Austro zone



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