

The range varied from 34 to 48 m, with the highest range obtained for pH at the sample density of 10 x 10 m. The coefficients of spatial determination (R²) for pH and potassium obtained values above 0.71 at both depths. This result was also evidenced by cross validation. The geostatistical technique identified the spatial variability of the pH, phosphorus and potassium attributes through the kriging maps. The 20 x 20m spacing can be used for soil sampling and identification of the variability of chemical attributes pH, phosphorus and potassium.

Keywords: Soil management soil sampling, spatial variability.

Financial support: Secretary of State for Economic and Technological Development of Piauí – SEDET.

(9658 - 1480) Usage of pedometrics for data evaluation and harmonization in soil profiles from Cerrado region, Mato Grosso do Sul

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Usage of pedometric tools to analyze information on soil properties relevant to classification and interpretation of potential is increasing. Harmonization of key soil properties, such as granulometry, organic carbon, pH, cation exchange capacity, allows comparison between soils, facilitates transfer of information among scientists and users, and contributes to modeling of soil horizons spatial distribution. The global consortium for soil mapping suggests harmonization of data in depths at predefined intervals, to compile the global database and to generate maps for different properties. The objective of this study is to point out similarities between soils from a collection of 19 profiles, sampled in the state of Mato Grosso do Sul, latitude 20°26'34" South and longitude 54 ° 38'47" West. The total surface is of 8,096,051 km². The climate is tropical with dry season, average annual rainfall of 1534 mm and temperature of 25 °C. It belongs to domains of the phytogeographic region of savanna with deciduous trees, Cerrado Biome. It has a dominantly flat topography, and geology is of Serra Geral Formation that has a sequence of basalt from Jurassic to Cretaceous periods in Mesozoic Era. These effusive rocks covered sandstones of the Botucatu Formation. The elevation ranges from 490 to 701 meters, with 532 meters average. The most important cause of soil variability in the study area is parent material, composed of basic eruptive rocks (basalt), sandstones and colluvial sediments derived from them. The most representative soil classes, according to Brazilian Soil Classification System, are *Latossolos*, *Neossolos* and *Planossolos*, but also occur *Gleissolos*, *Cambissolos* and *Organossolos*. The motivation for the research is that with the data harmonization a more detailed analysis of the soil classes and their spatial distribution will be possible. The quantitative pedology algorithms, known as the AQP package (Beaudette et al., 2013), were applied in the R software. The application of the slice-wise algorithm of the AQP package allowed to define values for soil properties in each one centimeter layer of the soil profiles. After that, the data in different layer thicknesses were grouped, allowing analysis of the similarity between the profiles, using a dissimilarity matrix for each depth slice. The results are presented in the form of graphics and tables that simplify the comparisons and interpretation of dominant classes and soil properties in the area.

Keywords: Quantitative pedology; algorithms for quantitative pedology- AQP; harmonization of soil data.

Financial support: Embrapa Soils, CAPES - PPGA-CS/UFRRJ, CNPq, FAPERJ

(5151 - 3045) Use of magnetic susceptibility for the Identification of Pedogenetic Environments in Archaeological Black Earth in southern Amazonas, Brazil

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In the Brazilian Amazon region, it is common the existence of archaeological sites in which there are significant changes in the physical, morphological and chemical aspects of the soils, promoted by the human action known as Archaeological Black Earth (ABE). Although many studies have been conducted in order to understand the magnitude of these modifications and their reflexes in soil genesis, many questions need to be clarified, especially those related to the mineralogy of these soils. The objective of this study was to use the magnetic susceptibility (MS) to identify different pedogenetic environments in ABE in the southern region of the Amazonas. Thirteen profiles of ABE and one (1) a forest profile (non-anthropogenic) were analyzed, being collected samples by horizon in each profile. Mineralogical analysis was performed, and certain minerals of the clay fraction hematite (Hm_012), goethite (Gt_110) and maghemite (Mh_220 and Mh_400) being characterized by x-ray Diffraction (XRD) at blades made with powdered material. Were determined the iron contents extracted with dithionite–citrate–bicarbonate of sodium (FeDBC (in %)), iron contents extracted with ammonium oxalate (FeOAA (in %)) and total iron (in %). The MS was evaluated in soils (earth thin air-dried), in the ashes of plants and in ceramic fragments found in ABE areas, being determined to SM in low frequency (MS_{lf}) and the percentage of frequency-dependent magnetic susceptibility (χ_{fd}). The ceramic fragments have greater magnetic susceptibility compared to soils with archeological black earth (earth thin air-dried), and can be one of the reasons of the highest values of magnetic susceptibility in relation to non-anthropogenic soil. On the other hand, it is possible to observe through the diffractograms the characterization of clay fraction oxides Hm and Gt, including discreet expression of Mh in ABE. The ashes of the plants showed low values of magnetic susceptibility, indicating the phytogenetic influence in the values of MS of ABE can occur as a result of the cumulative process of burning of the plants over the years. The χ_{fd} has greater variation in subsurface in the archeological black earth, due to the mixture and accumulation of minerals formed in normal conditions (hypothesis pedogenetic and/or lithogenetic), in addition to the influence of fire (pedogenic hypothesis) and ashes of the plants (hypothesis phytogenetic).

Keywords: Amazonian soils, minerais ferrimagnéticos, mineralogia

Financial support: FAPEAM, Unesp, IFPA

(8513 - 957) Using the Toposhape algorithm as a tool to automatic generation of terrain variables applied to digital soil mapping in a watershed

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Terrain inclination and surface shape are the elements of the relief that largely control the dynamics of the surface water. Additionally, the slope orientation affects the amount of solar radiation that reaches the soil surface. These elements influence deeply the development of a given soil, reason for what their use is quite common as auxiliary variables in digital soil mapping (DSM). The present work aimed to generate terrain auxiliary variables for DSM in a watershed by applying a computational algorithm for automatic classification of the surface shapes. The study area encompass the Ceveiro watershed (SP, Brazil) and the employed algorithm was the Toposhape, developed by Pellegrini in 1995 (*apud* Herrington and Pellegrini, 2000). This algorithm works from a digital elevation model (DEM), runs in a geographical information system environment and