higher concentrations of quartz, K-feldspar, biotite and presence of pertites. The secondary mineralogy is dominated by alumina smectites. Alteration route with K-feldspar / biotite > Ilite> beidelite. It presented pedalities with b-factories and biological cavities. In point 2 the quartz domain and higher concentrations of placiocases in relation to alkalis-feldspar, domain of smectites with octahedral sites of negative charge in the secondary, possible route Plagioclase / sericite / biotite > kaolinite / montmorilonoite. It presented weak pedality.

Keywords: Desertification; Mineral alteration; feldspar; plagioclase; perthitas; beidelitas; montmorillonite

C1.3.3 - Anthrosols - the human constructed soils

(7005 - 1629) Amazonian Dark Earth: proposal of modification of the pretic horizon criteria

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The Amazonian Dark Earths (ADE) were formed by influence of pre-Columbian anthropic activities and have being reported mainly in the Amazon Basin. According to the World Reference Base for Soil Resources (WRB), among the diagnostic horizons for the Anthrosol class, the pretic horizon is a mineral surface horizon characterized by its dark colour, the presence of artefacts and high contents of organic carbon, phosphorus, calcium, magnesium and micronutrients, usually contrasting with natural soils in the surrounding area. It typically contains visible remnants of charcoal. It has as diagnostic criteria: dark color; organic carbon (C org) ≥ 10 g kg^{-1}, P (Melich I) ≥ 30 mg kg^{-1} and $Ca^{2+} + Mg^{2+} \geq 2.0$ cmol$_c$ kg^{-1}. The objective of this work was to classify profiles identified in Brazil as ADE using the WRB system. The profiles were compiled through a bibliographical research of soil surveys, thesis and dissertations, and other publications. Thirty profiles with anthropic horizons were identified with data sufficient to classify the soils using WRB. These ADE are distributed in the Brazilian states of Amazonas (24 profiles), Roraima (1 profile), Rondônia (1 profile), and Pará (4 profiles). From the horizons identified as anthropic (Au), only 30% were classified as pretic horizon. Therefore, considering the low correspondence of the taxonomic classification in the WRB with the identification of the ADE by Brazilian standards, new quantitative criteria are proposed for the pretic horizon: (i) thickness ≥ 20 cm; (ii) color (wet) with value ≤ 4 and chroma ≤ 3; (iii) $Ca^{2+} + Mg^{2+}$ weighted: Σ [($Ca^{2+} + Mg^{2+}$ x thickness of the Au sub-horizons) / total thickness of the Anthropic A horizon] ≥ 2.0 cmol$_c$ kg^{-1}; (v) P (Melich I) weighted: Σ [(P x thickness of the sub-horizons Au) / total thickness of the anthropic horizon A] ≥ 30 mg kg^{-1}; and (v) C org weighted: Σ [(C org x thickness of the sub-horizons Au) / total thickness of the anthropic horizon A] ≥ 6.0 g kg^{-1}. It is also proposed to reduce the thickness of the pretic horizon required to be included in the Anthrosols class from 50 to 30 cm. Using these criteria 50% of the profiles that had a pretic horizon were classified as Anthrosols. The current WRB criteria for classification of pretic horizon and Anthrosols exclude 70% of the profiles identified in the literature from Brazil as ADE. Therefore, a revision of the criteria is recommended, since this horizon was created to encompass the so called Amazonian Dark Earths.

Keywords: Diagnostic surface horizon; 'Terra Preta de Indio'; Anthrosols.

(7561 - 2497) Amazonian dark earths located in the fertile floodplains in the central Amazon - Brazil

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Amazonian Dark Earths (ADEs) are highly fertile soils horizons created by pre-Columbian Amerindian societies of the Amazon basin. However, there is still not agreement on whether these Anthrosols were produced intentionally to improve the unfertile Amazonian upland soils or whether resulted from the accumulation of waste from sedentary settlements. This study brings a pedogeochemical characterization of ADE found in the naturally fertile alluvial floodplains of the Amazon river in the Central Brazilian Amazon. The analyzes quantify total, exchangeable and available contents of elements and organic carbon in soil profiles. The ADEs showed higher contents of available, and total P, Ca, Zn and Cu. High contents of total Cr, Ni, Co and V indicate contribution of mafic minerals in the soil genesis, while higher contents of P, Zn, Ba and Sr in the ADEs indicate anthropic enrichment. The occurrence of ADE in floodplains brings strong evidence of non-intentional anthropic fertilization of the alluvial soils, which, in natural conditions have contents of P, Ca, Zn, Cu above of the critical levels to cultivate the most common plants. The presence of archaeological sites in the floodplains shows also that pre-Columbian populations lived on the floodplains as well as on the bluffs overlooking the Amazon river.

Keywords: Terra Preta de Índio, Gleisols, Anthrosols, pretic, Amazonian archaeology

(6704 - 2734) Anthropic soils in central Brazil archaeological sites

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Everything that surrounds us involves physical and chemical transformations, so that the understanding of these phenomena is essential for human development in every aspect. Making use of geochemistry, archaeometry and micromorphology techniques is fundamental to study the soils in archaeological context and its indicators of human occupation. Amid the biomes in Central Brazil, the *Cerrado* stands out for its biodiversity and tropical climate with two well defined seasons, humid in the summer and dry in winter and with a higher thermal amplitude than in the equatorial climate and lower rainfall. In this sense, the environment is an extremely important variable when it comes to chemical phenomena. An example is phosphorus which is considered a nutrient of low mobility in tropical soils, a behavior attributed to its fixation by the clay minerals. This element has a relevant presence in archaeological sites located in tropical environments that also present high levels of iron and aluminum oxides - with which P has a great affinity. Considering this, we use the archaeological sites Cangas I and Lago Rico (Goiás, Central Brazil) to study and understand the behavior of the chemical composition of anthropogenic soils in tropical environments and their pedological features (features inherited from the parental rock or formed by processes of deposition of transported material). Carbon, organic matter and some minerals stand out in the analyzes including phosphorus, calcium, zinc, potassium, barium and strontium. Among