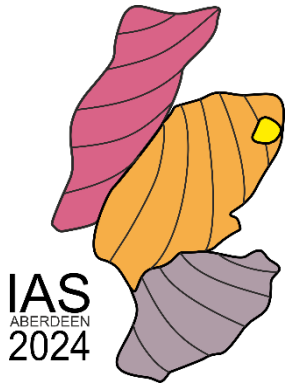

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Abstracts Poster Presentations

Late Cenozoic paleosols as climatic proxies: the Sauce Grande River, Buenos Aires province, Argentina, as a study case

Late Cenozoic Paleosols As Climatic Proxies: The Sauce Grande River, Buenos Aires Province, Argentina, As A Study Case Lara Manoccio[1,2,3], Elisa Beilinson[1,2,3], Maria Sol Raigemborn[1,2,3]
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The Late Cenozoic of the Sauce Grande River basin (Pampas plain, Argentina) is represented by fluvial, eolian and alluvial units that, in part, are pedogenically modified. The aim of this work is to present the different recognized paleosols to characterize the main paleopedogenic processes and to infer preliminary paleoclimatic conditions.
Characterization of the paleosols was made based on macro- and micromorphological features recognized in a detail outcrop study. Ten paleosols samples were analyzed using geochemical analysis (ICP-MS) to calculate climofunctions, and X-ray diffraction used to identify the clay mineral composition. We used samples from Bt, Btk and Bw horizons to calculate PWI, CIA-K and clayness, and to estimate mean annual precipitation (MAP), and mean annual temperature, (MAT).
Four pedotypes were defined. Calcic Argillisols (P1) present argillic coatings, micritic nodules and incomplete sparitic infillings (Btk, Bk horizons). Smectite predominates over illite, CIA-K is 44, MAP(CIA-K) is 535±182 mm/yr and MAT(PWI) is 9° ±2.1°C. Calcisols (P2) are characterized by micritic groundmass, sparitic hypocoatings and micritic nodules (Bk horizons). Clay minerals are smectite and illite, CIA-K is 57, MAP(CIA-K) is 674.76±182 mm/yr and MAT(PWI) is 10.3°±2.1°C. Argillisols (P3) show argillic coatings (Bt horizons). Illite is the main clay mineral. CIA-K is 68, MAP(CIA-K) is 841±182 mm/yr and MAT(PWI) is 10.6°±2.1°C. Protosols (P4) present channels and Fe and Mn nodules (Bw horizons). Clay minerals are illite and smectite. CIA-K is 62, MAP(CIA-K) is 756±182 mm/yr and MAT(Clayness) is 11°±0.6°C.
Macro- and micromorphology, geochemical analyses, and X-ray diffraction, indicate that the main pedogenic processes were calcification in P1, illuviation and calcification in P2, illuviation in P3, and bioturbation and hidromorphism in P4. A cyclical alternation is interpretated between Calcic Argillisols and Calcisols that formed under seasonal semiarid temperate conditions, while Protosols and Argillisols develop under subhumid temperate conditions.