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The Holocene loess-paleosol sequences in the subtropical region of northwest Argentina: characterization and paleoclimatic implications

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The western Chaco plain situated in the transition between the tropical and temperate zones of South America cover an extensive territory from the pre-Andean ridges of northwest to the Paraná River. At a macro-regional level is an extensive loessic plain covered by the paleochannel fluvial pattern of Salado, Bermejo and Pilcomayo lower river basin. In this work the loess-paleosol sequences covering the interfluvial areas are studed from a litho-stratigraphic, mineralogical and geochronological perspective. Sections representative of the loess-paleosol sequences in both the pre-Andean ridges (Sierras Subandinas) piedmont and the Western Chaco plain are described and compared. The loessic materials show similarity with those of the Late Pleistocene but with an important presence of cineritic products and minerals from regional provenance. The paleosols show also similarity with the present soils but a higher illuviation would suggest development under wetter conditions. It is suggestive that periods of soil development in the Chaco plain are contemporary with glacial expansion in the Patagonian Andes. In summary the sequence reflects a great climatic cyclicity with dry periods of loess erosion-deposition and more humid intervals with paleoedaphic development. From the paleoclimatic perspective is possible to hypothesize about the correlation between wet periods in tropical South America and glacial advances in southern Patagonia. In addition, the temporal matching of the Holocene Greenland (GISP2)

cold intervals with periods of soil development at tropical latitudes and glacial expansion in southern Patagonia would allow to speculate that the perturbation affecting air and ocean circulation over the North Atlantic might have also influence the climatic conditions of South America during the Holocene.