

The Impact of Source Area Relief Changes on Paleogene to Miocene Sedimentation on Foreland Basin Sedimentation, Mendoza Province, Argentina

By

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Traditional studies of sedimentary basins have been unable to isolate the effects of long wavelength topography (10s of Km) on sediment supply and accumulation. This study proposes to evaluate what role long wavelength topography has on (1) sediment accumulation rate, character, and geometry, and (2) abrupt facies shifts. Because the stratigraphy and facies of the Cuyo basin, Argentina are well documented, this project focuses on determining the history of elevation increase of the flanking Andes.

The ^{18}O of authigenic minerals (paleosol clays and carbonates) formed within a rain-shadow basin have been demonstrated to reflect the elevation history of the adjacent mountain range. The upper Paleogene to Miocene Cuyo basin lies in the rain-shadow of the Andes and has an excellent chronostratigraphic record with abundant paleosol exposures making it an excellent locality to conduct this research. This investigation will also better constrain the temporal variability of Andean topography over the last 25 Ma. Previous attempts to constrain the timing of major mountain building in the Andes have been made in thermochronological, structural, stratigraphic and paleofloral studies. However, the isotopic signature of authigenic minerals formed in a rain-shadow basin likely supplies a more direct means of evaluating the timing of relief generation, because the strength of the isotopic signal is a function of the height of the orographic barrier.

A more direct determination of how sedimentation is affected by changes in relief will serve to improve our understanding of the architecture of non-marine stratigraphic sequences.