

SEDIMENTOLOGICAL EVIDENCE OF AN INCREASE IN PRECIPITATION EXTREMES ACROSS THE PALEOCENE-EOCENE BOUNDARY IN THE SAN JUAN BASIN OF NEW MEXICO

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ABSTRACT

A growing number of studies document a change from sedimentary deposits characteristic of perennial river systems to deposits characteristic of highly seasonal river systems occurring at the Paleocene-Eocene (P-E) boundary in multiple Laramide sedimentary basins. This shift is indicative of a change to more seasonal precipitation in the form of prolonged droughts punctuated by intense terrestrial flooding occurring in coincidence with a rapid global warming event, the Paleocene-Eocene Thermal Maximum (PETM). The San Juan Basin (SJB) of New Mexico and Colorado is the southwestern-most Laramide basin known to contain a succession of sedimentary deposits spanning the (P-E) boundary. This study will investigate the late-Paleocene Nacimiento formation and the early-Eocene San Jose formation (Cuba Mesa - Regina members) in the San Juan Basin. The goals of this study are to (1) better constrain the location of the Paleocene-Eocene boundary within the San Juan Basin deposits, (2) document river morphodynamics across the late-Paleocene to early-Eocene, and (3) compare the data collected with published datasets from the Bighorn Basin, Piceance Creek Basin, and Uinta Basin. The methods applied will include the collection of detailed measured sections, channel measurements, photomosaics of outcrops, and samples for stable isotope analysis of bulk organic carbon. Based on the results of preliminary research, we hypothesize that the Cuba Mesa member of the San Jose formation records a shift in the seasonality of precipitation that is similar to what has been documented in the more northerly basins, and the change may coincide with the PETM.

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