Cretaceous-Tertiary Boundary in the Orocual Field, Northeastern Venezuela

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Upper Cretaceous and Paleocene microfossils reflect the subsidence history and paleoceanography of the northeastern Venezuela. The San Juan Formation is a siliciclastic sequence deposited during the Maastrichtian in response to both, tectonic subsidence and worldwide sea level changes. The Maastrichtian is characterized by the occurrences of certain palynomorphs and nannofossils. Foraminifers are not found at this stage. The occurrence of dinoflagellate cysts and the content of terrestrial material indicates that the upper part of the San Juan Formation was deposited in an inner shelf setting. Vidoño Formation occupies a transitional position between the late Cretaceous and early Tertiary. The San Juan Formation is overlain by a transgressive bioclastic limestone which grades into a condensed section. The Paleocene is represented by a very few planktonic foraminifera taxa and a relatively diversified “Lizard Spring type” assemblage. The identification of nannofossils and palynomorphs present at this level, allows to calibrate the biochronology through the Paleocene. The presence of bathyal agglutinated benthic foraminiferal assemblage in Paleocene sediments reflect the subsidence of the sea floor in a benthic environment where the rapid deposition of fine-grained clastic sediments result unfavorable for the preservation of calcareous foraminifera. X-ray diffraction analyses distinguish two main clay mineral groups which allow, using biostratigraphic data, to determine the Cretaceous-Tertiary transition. Kaolinite, illite and an interstratified illite/smectite clay characterize the Cretaceous interval. The Maastrichtian-Paleocene boundary is marked by the presence of smectite, glauconite, and a sudden increase of the amount of kaolinite+chlorite, mineralogic composition characteristic of the Paleocene-Eocene sequence.