

Impact on Sedimentation into the North-Central Deepwater Gulf of Mexico as a Result of the Chicxulub Event

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ABSTRACT

The Chicxulub bolide impact on the Yucatan Peninsula at the Cretaceous-Paleogene (K/Pg) boundary has been postulated as the trigger that re-mobilized large quantities of sediment into mass transport flows on the submerged shelf along eastern North and Central America as well as around the Gulf of Mexico and redistributed sediment out into the deepwater Atlantic, Caribbean and Gulf of Mexico. Well log and biostratigraphic data from Cretaceous well penetrations in the north-central deepwater Gulf of Mexico show a distinctive calcareous micrite deposit at the K/Pg boundary that is similar in composition to age-equivalent sediments found near the Chicxulub Crater, in Deep Sea Drilling Program (DSDP)/Ocean Drilling Program (ODP) cores and outcrops in Cuba. Investigation of seismic volumes in the north-central Gulf of Mexico shows distinctive sedimentary wedges that exhibit high-amplitude reflections situated at the top of the section interpreted as Cretaceous. This interval is thought to be the resulting deposit from the mass transport flows and suspension fallout initiated by the impact. As the Chicxulub impact occurred, the northern Gulf of Mexico was undergoing allochthonous salt movement from the Jurassic Louann Salt that included numerous salt highs shaping potential clastic sediment fairways. Sediment redistribution caused by the Chicxulub impact from the shelf and slope to the deepwater environment filled in available accommodation space around salt highs, as well as deposited sediments on the highs themselves, and altered the seafloor topography across the central northern Gulf of Mexico.