



Characterising Chicxulub Impact Ejecta: Dating the Event Stratigraphy

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Based on Geochemical, Mineralogical and Petrographical Analysis on Chicxulub Impact Ejecta (Tektites, Spherules) of various Tektite layers of the Golf of Mexico, the Caribbean and the southern US, a detailed eventstratigraphy was developed. In most of the investigated sections, multiple spherule layers are present, indicating reworking form an older, original spherule layer. In NE-Mexico and Texas, multiple Ejecta layers are exposed up to 10 m below the K/T-boundary, with the oldest and original Ejecta deposit predating the K/T boundary by about 300,000 years. In Texas, preliminary analyses suggest that the original Ejecta, now a highly altered Smectite layer, is also interbedded in late Maastrichtian clay. In Guatemala, Belize and Haiti the spherule layers are generally found above the K/T boundary in the early Danian and apparently eroded and reworked from the older original deposit. Both geochemical and petrological features are well preserved and permit correlation to Chicxulub basement rocks, e.g. granites, gneisses, amphibolites and impact melt rocks. Several distinct silicic phases (Al-Fe-rich glasses) are observed. These characteristics strongly imply an Ejecta origin from mafic and felsic rocks of the Chicxulub-Basement. However, the occurrence of different glass phases in the upper (reworked) Ejecta layers of NE Mexico strongly suggests post-sedimentary mixing and/or fractionation of the Ejecta. In contrast, the stratigraphically oldest Ejecta layer (300,000 yrs pre-K/T) is geochemical more uniform, which reflects the absence of erosion, mixing and transport.