

COSMOGENIC NI IN THE CRETACEOUS-PALEOGENE BOUNDARY CLAY AT BLAKE NOSE (NW ATLANTIC)

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The Cretaceous-Paleogene boundary (KPB) sequence at Blake Nose Plateau recovered by Ocean Drilling Project (ODP) Leg 171B (site 1049, hole A, core 17X, section 2) contains the biogenic calcite-poor spherule-rich bed marking a late Cretaceous asteroid impact. The nature and geochemical composition of this bed imply that it originated mainly from the target rocks of the Chicxulub impact site (Yucatan Peninsula, Mexico), the site of the presumed asteroid impact.

Mineralogical analyses reveal that the carbonate-free fraction of the spherule bed is mainly (>95 %) composed of (cheto-type) dioctahedral smectite. In the layers below and above the spherule bed, the predominant clays are smectite, illite and kaolinite.

Ni in the whole-rock smectite samples and their carbonate/smectite fractions of the samples studied was analyzed by inductively coupled plasma-optical emission spectrometry. The spherule bed shows strongly enhanced concentrations of Ni within the calcite fraction (up to 165 ppm) and the smectite concentrate (up to 300 ppm).

We reason that these Ni enrichments represent the sudden and rapid airfall of high cosmogenic Ni into ocean surface on Blake Nose Plateau. The source of the metal was probably the Chicxulub impacting (carbonaceous) C1chondrite-type body (CM2).

Keywords: Cretaceous-Paleogene, Blake Nose, nickel.