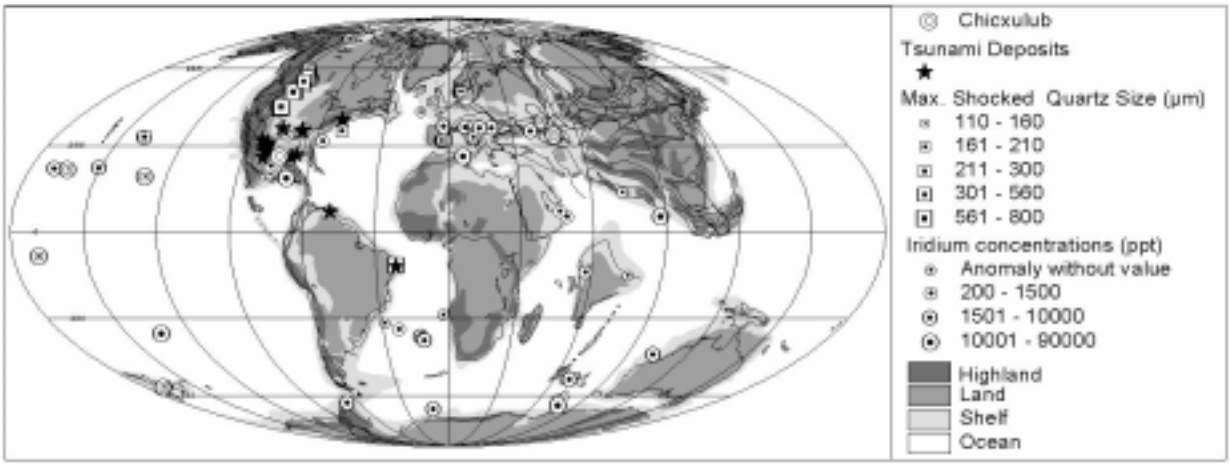
GLOBAL DISTRIBUTION OF CHICXULUB EJECTA. P. Claeys[1] W. Kiessling[1] and W. Alvarez[2], [1]Institut fuer Mineralogie, Museum fuer Natrukunde, Berlin, D-10099 Germany (philippe.claeys@rz.hu-berlin.de), [2]Dept. of Geology and Geophysics, University of California, Berkeley, CA. 94720-4767, USA (platetec@socrates.berkeley.edu).

Chicxulub, - *the* only crater to have well preserved, proximal to distal ejecta deposit sequence - can be used to study crater-ejecta relationships. Our KT boundary data base (KTbase) contains detailed mineralogical, geochemical and sedimentological information on the type, abundance and characteristics of the ejecta. It is coupled with a Geographic Information System (GIS) to document the global distribution of the ejecta (Fig. 1).

Fig. 1 Distribution of KT ejecta



The concentration of the Ir anomaly does not correlate with distance from the crater. The lower concentrations detected at proximal KT sites can be attributed due to the dilution of the Ir carrier by the high volume of sediment in suspension in the Gulf of Mexico waters, due to tsunami effects and the collapse of the platform edges. The westward skewed distribution of shocked quartz is corroborated. The presence of large grains in Brazil [1] conflicts with the view that this distribution results from an oblique impact originating from the southwest [2]. It is perhaps more compatible with the hypothesis that the rotation of the Earth affects differently the ballistic trajectory and orbit of the eastbound and westbound particles [3]. More data is needed from KT boundary sites in the Northern part of South America. Altered glass spherules with tektite-like morphologies are found within a ~ 4000 km radius from Chicxulub (Fig. 2). In the Gulf of Mexico region only, they occur together with limestone fragments of comparable size and shape. Their close association and intimate mixing of carbonate and silicate phases indicates that they coalesced in flight in an ejecta curtain formed of a mixture of solid, shocked and molten silicate and carbonate material. Tsunami deposits are restricted to the Gulf of Mexico region (Fig. 2). But mass failure of the slope margin extends along the Eastern margin of North America all the way to the Bermuda raise [4]. These can maybe inducelocal tsunamis as those reported in the Atlantic. In Southern Mexico, collapse of the margins of the Yucatan platform is demonstrated by the accumulation in deeper water of a thick breccia formed of shallow water carbonate material (Fig. 2) [5]. The ejecta blanket extends all over Yucatan up to ~ 300 km from the crater rim (Fig. 2). In the UNAM 5, 6, and 7 wells it is formed of a polymict breccia mixing basements, evaporite and carbonate clasts. Further away, the breccia contain essentially locally reworked material admixed by secondary cratering and erosion. In Quitana Roo, Campeche and Belize, it is formed by a > 20 thick diamictite-like breccia with large (>10 m) dolomite blocks [6]. The breccia rests on upper Cretaceous stratified dolomite which bedding becomes progressively fractured upward. Basal Paleocene strata (P. eugubina) is missing above the diamictite. Little primary crater material occurs in the breccia, mainly in the form of millimeter-size greenish spherules (Fig. 3). Locally metric-size pockets of pure clay mineral are visible. They resemble glass-bombs and contain millimeter-size fragments similar to the basement clasts from the Chicxulub suevite.

[1] Albertão, G.A., and Martins, P.P.J., (1996), , Sedimentary Geology, 104, 189-201, [2] Schultz, P. H., and D'Hondt S., (1996), Geology, 24, 963-967, [3] Alvarez, W., Claeys, P., and Kieffer, S.W., (1995), Science, 269, 930-935, [4] Norris, R. D., (1999), GSA, 31th annual meeting, Abstracts with Programs, 31, A-123, [5] Grajales *et al.*, (2000), Geology *in press*, [6] Pope *et al.*, 1999, EPSL, 170, 351-3

Fig. 2 Distribution of proximal ejecta

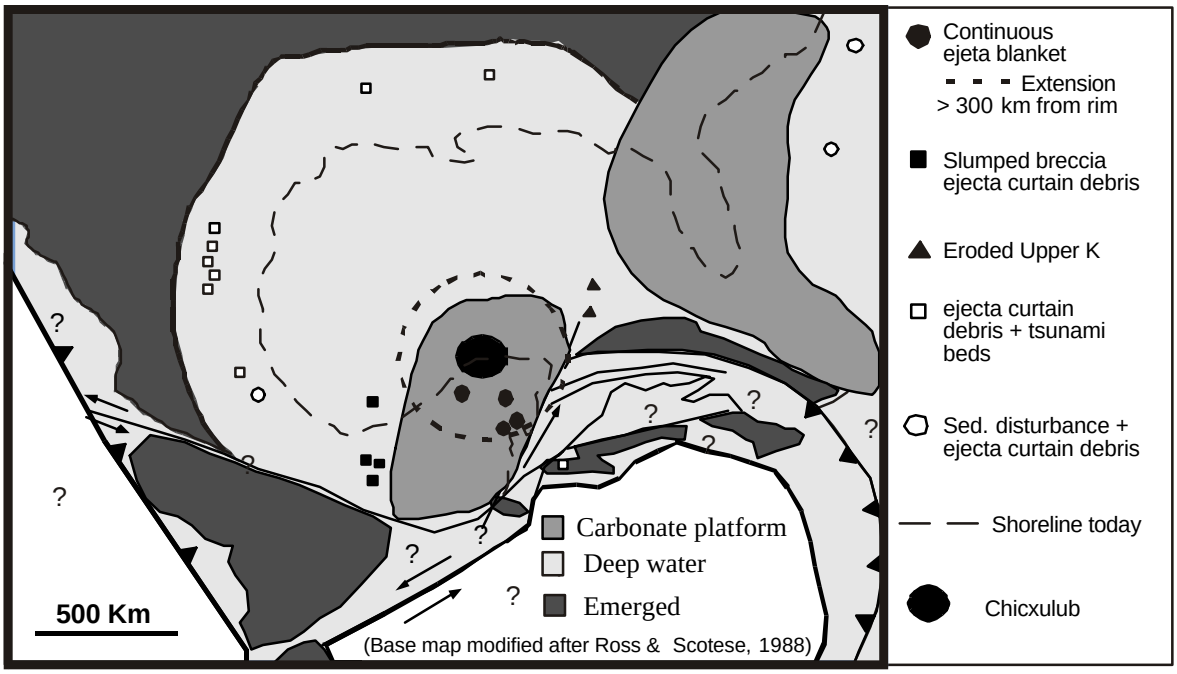


Fig. 3 Altered glass spherule from the ejecta blanket near the Mexican-Belize border.