

## **CHICXULUB SEISMIC SURVEY - IMAGING THE THIRD DIMENSION OF A TERRESTRIAL MULTI-RING IMPACT BASIN**

WARNER, M. R. and MORGAN, J. V. TH Huxley School, Imperial College, London SW7 2BP, UK

The buried 65 Ma Chicxulub impact structure in Mexico is the best preserved of the three largest impact craters known on Earth. In October 1996, we acquired a series of marine deep-seismic reflection profiles and wide-angle onshore-offshore seismic lines across the impact site. These data provide high-resolution images of the buried crater, relating original surface morphology to deep structure. We are able to constrain the position of the collapsed inner edge of the original transient cavity to within a few kilometres, and consequently to constrain the diameter of the uncollapsed transient cavity to be 90 - 105 km, measured at the original surface level. Chicxulub is revealed to be a multi-ring basin, similar in surface morphology to the largest Venusian craters, with a topographic peak ring and two outer rings that show ~ 500 m-high, inward-facing, asymmetric scarps. Multi-ring formation appears to involve whole-crustal collapse on low-angle normal faults which offset the crust-mantle boundary. The peak ring overlies the inner edge of the collapsed transient-crater rim. Peak-ring formation appears to involve an outwardly collapsing central uplift overriding the inwardly collapsing transient-crater rim.