

ELEMENTS OF THE CHICXULUB IMPACT STRUCTURE AS REVEALED IN SRTM AND SURFACE GPS TOPOGRAPHIC DATA

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Pope *et al* have utilized elevations from the Petroleos Mexicanos (PEMEX) gravity data files to show that the main component of the surface expression of the Chicxulub Impact Structure is a roughly semi-circular, low-relief depression about 90 km in diameter. They also identified other topographic features and the elements of the buried impact which possibly led to the development of these features. Kinsland *et al* presented a connection between these topographic anomalies, small gravity anomalies and buried structure of the impact.

Shaded relief images from recently acquired SRTM elevation data clearly show the circular depression of the crater and the moat/cenote ring. In addition we can readily identify Inner trough 1, Inner trough 2 and Outer trough as defined by Pope *et al*. The agreement between the topographic maps of Pope *et al*, Kinsland *et al* and SRTM data are remarkable considering that the distribution and types of data in the sets are so different.

We also have ground topographic data collected with a special “autonomous differential GPS” system during summer 2002. Profiles from these data generally agree with both the gravity data based topographic maps and profiles extracted from the SRTM data.

Preliminary analyses of our new data, SRTM and GPS, have uncovered features not previously recognized: 1) as shown by the GPS data the moat/cenote ring consists of two distinct depressions separated by about 10 km...perhaps separate ring faults, 2) in the SRTM data over the southern part of the crater and on southward for perhaps 20 km beyond the moat/ cenote ring there exists a pattern, as yet unexplained, of roughly concentric topographic features whose center lies at about 21deg 40min N and 89deg 25min W, about 50km NNE of the moat/cenote ring center.

The corroboration and better definition of the previously recognized topographic features yielded by the two new forms of data strengthens the cases for these features and for their relevance to the underlying collapsed crater structure.