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Interactive comment on “Candidates for multiple impact craters: popigai and chicxulub as seen by EGM08, a global 5' × 5' gravitational model” by J. Klokočník et al.

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Received and published: 21 April 2010

Klokočník et al. observe a circular feature in the gravity data over the Chicxulub impact crater, and suggest that this feature might be indicative of a secondary crater. The proposed secondary crater is located 85 km northeast of the main crater center. Although Klokočník et al. reference several papers that present seismic profiles across the crater, they do not mention that two of the profiles image the region of their proposed secondary crater (Fig. 1).

In Fig. 2 we display the velocity model [Christeson et al., 2009] and line drawing for seismic profile Chicx-C [Gulick et al., 2008]. Uninterpreted seismic sections can be

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found in Morgan et al. [1999] and Gulick et al. [2008]. These data show no evidence for a secondary crater at a distance of 85 km from the crater center. Seismic stratigraphy is faulted but continuous across this region; if a secondary crater were present reflectors would be absent owing to excavation [Morgan et al., 1997] as observed along Chicx-C at distances <30-40 km from the crater center. A more likely explanation for the perturbation in the gravity field is that it is associated with a pre-existing Cretaceous basin proposed for this location [Gulick et al., 2008].

Christeson, G. L., G. S. Collins, J. V. Morgan, S. P. S. Gulick, P. J. Barton, and M. R. Warner (2009), Mantle deformation beneath the Chicxulub impact crater, *Earth Planet. Sci. Lett.*, 284, 249-257, DOI: 10.1016/j.epsl.2009.04.033.

Gulick, S. P. S., P. J. Barton, G. L. Christeson, J. V. Morgan, M. McDonald, K. Mendoza-Cervantes, Z. F. Pearson, A. Surendra, J. Urrutia-Fucugauchi, P. M. Vermeesch, and M. R. Warner (2008), Importance of pre-impact crustal structure for the asymmetry of the Chicxulub impact crater, *Nature Geosci.*, 1, 131-135, 10.1038/ngeo103:10.1038/ngeo103.

Morgan, J., M. Warner, and Chicxulub Working Group (1997), Size and morphology of the Chicxulub impact crater, *Nature*, 390, 472-476.

Morgan, J., and M. Warner (1999), Chicxulub: The third dimension of a multi-ring impact basin, *Geology*, 27, 407-410.

Interactive comment on *Solid Earth Discuss.*, 2, 69, 2010.

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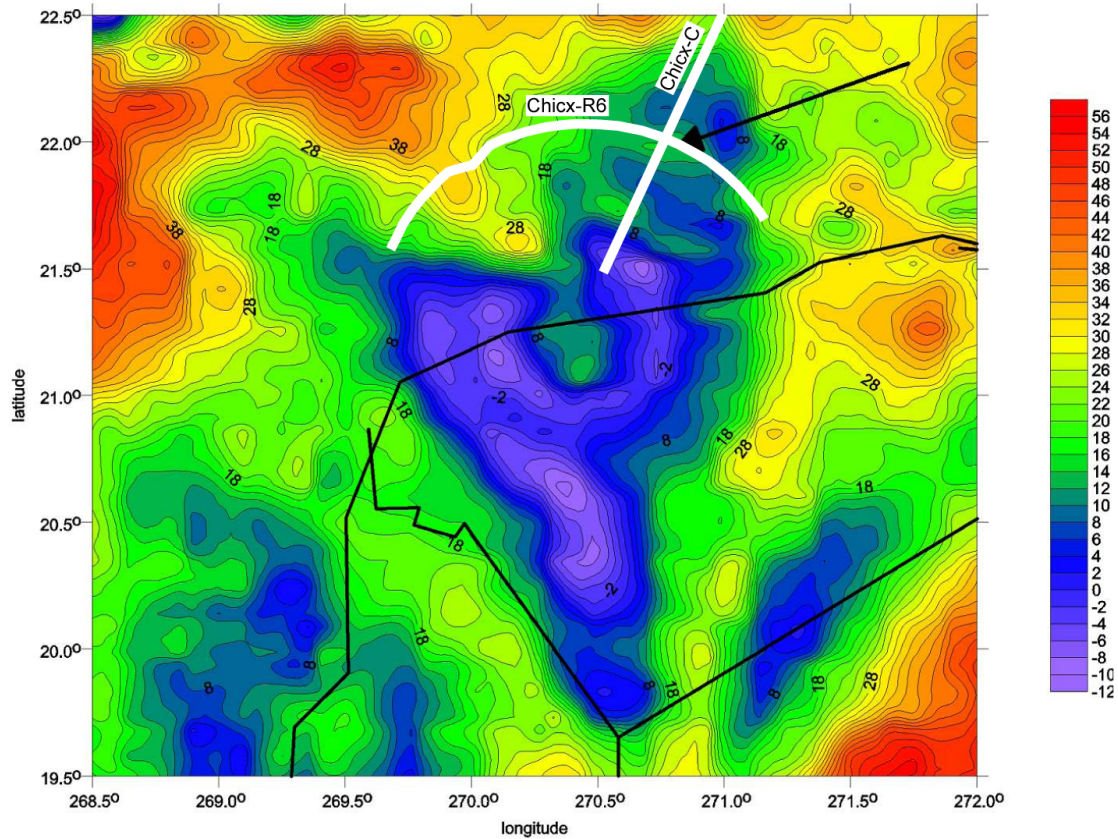


Fig. 1. Location of seismic profiles crossing proposed secondary crater at Chicxulub.

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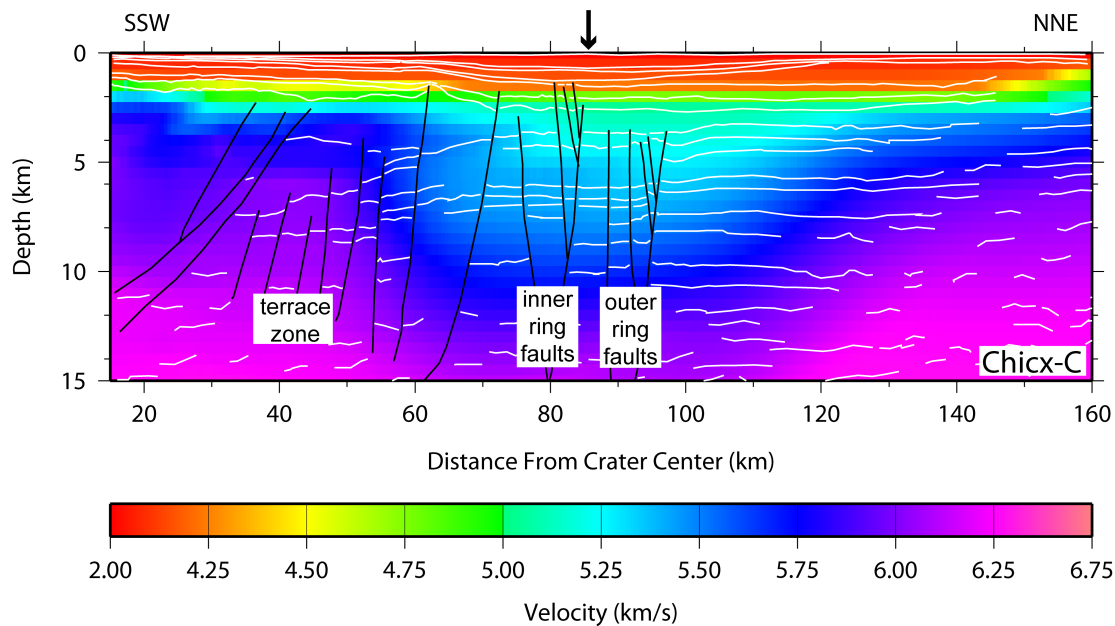
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Fig. 2. Seismic profile Chicx-C: velocity model and line drawing.

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