



## **EGM 08 searches for hidden impact craters, with support from point mass modelling**

Ivan Pesek (1), Carl A. Wagner (2), Jaroslav Klokocnik (3), Jan Kostecky (1,4), Josef Sebera (1,3)

(1) Department of Advanced Geodesy, FCE CTU in Prague, CZ-166 29 Praha (pesek@fsv.cvut.cz), (2) NOAA, Lab. for Satellite Altimetry, 1315 E/W Highway, Silver Spring, MD 20910, USA , (3) Astronomical Institute of Acad. Sci. of CR, Fricova 1, CZ-251 65 Ondrejov (jklokocn@asu.cas.cz), (4) Research Institute of Geodesy, Topography and Cartography, Geodetic Observatory Pecny, CZ-251 65 Ondrejov 244 (kost@fsv.cvut.cz)

With a resolution of  $5' \times 5'$ , the EGM 08 combined geopotential model makes it possible to detect faint features such as volcanoes and river canyons, and also large impact (meteoritic) craters, the latter with fine structural details. Some meteoritic craters, e.g. Popigai (Siberia, Russia) and Chicxulub (Yucatan, Mexico), are accompanied with crater-like formations showing in their gravity anomalies a similar structure as in the known primaries. Here we present simple mass models of both the proved craters and their hypothetical companions. The parameters of these (such as density contrasts) are based on generic crater models by geologists. They are constrained so that the resulting gravity anomalies and the second radial derivatives of the disturbing potential from the mass models are as close to those of the EGM 08 as possible. We conclude that the crater-like formations accompanying the known meteoritic craters indicate the presence of so far unacknowledged companions of the primaries, making Popigai and Chicxulub candidates for multiple impact-craters. Detailed geological research of the regions is of course necessary to confirm this indication by the detailed and accurate gravity data of the EGM 08.