



Observations of Ring-Mold Craters on Ceres

Katrin Krohn (1), Ralf Jaumann (1), Katharina A. Otto (1), Katrin Stephan (1), Roland J. Wagner (1), Federico Tosi (2), Francesca Zambon (2), Tanja Michalik (1), Isabel von der Gathen (1), David A. Williams (3), Carol A. Raymond (4), and Christopher T. Russell (5)

(1) German Aerospace Center (DLR), Institute of Planetary Research, Berlin, Germany (katrin.krohn@dlr.de), (2) INAF-IAPS, National Institute for Astrophysics, Rome, Italy, (3) School of Earth & Space Exploration, Arizona State University, Tempe, USA, (4) NASA JPL, California Institute of Technology, Pasadena, California, USA, (5) UCLA, Los Angeles, California, USA

We found different shapes of ring-mold craters within the huge ice-rich Occator crater on Ceres. The craters contain either a central pit, bowl or a central peak. The ice-rich material of Occator's crater floor is supposed to have caused the formation of ring-mold craters. Ring-mold craters are common on lineated valley fill and lobate debris aprons on Mars. They are thought to be formed on layers with subsurface glacial ice [1]. Impacts into ice warm the ice and cause it to flow into the ring mold shape. We found similar craters within Occator crater on Ceres. The observed craters are found within Occator crater and show an almost circular shape. The craters seem to be subsiding into the surface and, therefore, the rims are less elevated above the surrounding terrain. They show the typical ring-mold shape as known from Mars [1]. The craters contain either a central pit, bowl or a central peak. The crater diameters range between 0.4 and 1.2 km. Latest results by the Dawn Spacecraft indicate that Ceres is a weakly differentiated body containing a shell dominated by an ice-rock mixture [4] and ammoniated phyllosilicates [5]. Recent observations also show that hydrated salts could be warm enough to be mobile at a depth of 1.5-5 km below Ceres' surface and would explain the buoyancy of ice and salt-enriched crustal reservoirs [6]. Occator is thought to have impacted in such a reservoir layer and triggered the mobility of ice and formed several ice-rich flow features and plain material [7]. The plains and flow materials also originate from the subsurface and their release is triggered by impacts [7]. So, it is likely that impacts hitting this material could form such ring-mold craters.

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