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Paper No. 282-11

Presentation Time: 10:35 AM

GLOBAL AND REGIONAL STRATIGRAPHY OF CERES FROM GEOLOGIC MAPPING AND CRATER COUNTING IN IMAGING DATA OF THE DAWN FC2 FRAMING CAMERA

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Since March 6, 2015, the Dawn spacecraft has been in orbit around the dwarf planet Ceres, gaining imaging data with increasing spatial resolution from continuously lower altitudes. In order to investigate the global and regional stratigraphy of Ceres we use images from orbital phases RC2 (Rotational Characterization; orbit altitude ~48000 km) to the Survey orbit (altitude ~4900 km). Geologic mapping and measurements of crater frequencies superimposed on mapped units are carried out in image basemaps (global mosaics) and mosaics of selected areas. Geologic units are identified with respect to albedo, color, morphology, and topography. Information on topography is obtained from a digital terrain model (DTM) derived from stereo imagery. In a first campaign, we mapped global units in an RC2 data mosaic, mainly based on morphology and topography. Seven units could be defined: (a) three varieties of densely cratered plains, topographically high, low, and at a medium level (designated as *cpdh*, *cpdl*, and *cpdm* respectively); (b) three varieties of more sparsely cratered plains, similarly high, low, and medium (designated as *cpsh*, *cpsl*, *cpms*); and (c) the interior of impact basins (or large craters) such as Kerwan, Urvara and Yalode. Even at the comparably low spatial resolution of RC2 data (~ 4 km/pxl) and in spite of the restricted range of measurable crater diameters, these units can be separated by crater frequency and put into a stratigraphic column. The oldest units are the densely cratered plains, with a tendency that the topographically lower (and medium) unit is younger than the high-standing plains unit. Youngest unit is an area of topographically low-lying sparsely cratered plains (*cpsh*), possibly due to resurfacing by the ejecta blankets from the large craters/basins Urvara and/or Yalode. The interior of Kerwan is the second-youngest unit measured so far. Ongoing work is being carried out in Survey orbit imaging data, based on the geologic context obtained with RC2 data described here. Support by K. Krohn, K. Otto, D. Crown, E. Kersten, F. Preusker, T. Roatsch, S. Schröder.

Session No. 282

[T172. Geology of Dwarf Planets: First Results from NASA's Dawn Mission to Ceres](#)

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