

2015 GSA Annual Meeting in Baltimore, Maryland, USA (1-4 November 2015)

Paper No. 308-7

Presentation Time: 9:00 AM-6:30 PM

INITIAL GEOLOGIC MAPPING OF THE AC-H-7 KERWAN QUADRANGLE OF CERES USING DAWN SPACECRAFT DATA

WILLIAMS, David A.¹, CROWN, David A.², MEST, Scott C.², BUCZKOWSKI, Debra L.³, SCHENK, Paul M.⁴, SCULLY, Jennifer E.C.⁵, JAUMANN, Ralf⁶, ROATSCH, Thomas⁷, PREUSKER, Frank⁷ and PLATZ, Thomas⁸, (1)School of Earth and Space Exploration, Arizona State University, Tempe, AZ 85287, (2)Planetary Science Institute, Tucson, AZ 85719, (3)Johns Hopkins University Applied Physics Laboratory, Laurel, MD 20723, (4)Lunar and Planetary Institute, Universities Space Research Association, 3600 Bay Area Boulevard, Houston, TX 77058, (5)Earth, Planetary and Space Sciences, University of California, Los Angeles, 595 Charles Young Drive East, Box 951567, Los Angeles, CA 90095-1567, (6)Institute of Planetary Research, German Aerospace Center (DLR), Rutherfordstr. 2, Berlin, 12489, Germany, (7)German Aerospace Center (DLR), Institute of Planetary Research, Rutherfordstr. 2, Berlin, 12489, Germany, (8)Planets and Comets Department, Max Planck Institute for Solar System Research, Justus-von-Liebig-Weg 3, Göttingen, 37077, Germany, David.Williams@asu.edu

We are using geological mapping to identify the geologic processes that have modified the surface of dwarf planet Ceres, which NASA's Dawn spacecraft began orbiting in April 2015. Framing Camera data from the Approach (1.3 km/px) and Survey (415 m/px) orbits, including grayscale and color images and digital terrain models derived from stereo images, have enabled an initial characterization of the surface. Ceres has been divided into 15 quadrangles, and this abstract discusses the geology of the Ac-H-7 Kerwan Quadrangle, located between -22-22° and 72-144°E.

The Kerwan Quadrangle is dominated by the 284 km diameter impact basin Kerwan, whose rim is degraded and whose interior has been filled with a 'smooth material' that hosts a significantly lower impact crater density than most of the rest of Ceres' surface. This smooth material extends beyond Kerwan to the west and east, and a key goal of ongoing mapping will be to determine the possible resurfacing processes that formed this unit. To the north of Kerwan is the 125 km diameter crater Dantu, whose ejecta field covers the NE corner of this quadrangle. Color data show that the Dantu ejecta have multiple colors, suggesting excavation of materials of different compositions. The western portion of the quadrangle is dominated by a heavily cratered plains unit that appears to be the dominant unit across Ceres surface. Future work includes more detailed definition and characterization of surface units and estimates of their compositional variations through study of color images and Visible and Infrared spectrometer data, and application of crater statistical techniques to obtain model ages of surface units.

Support by R.A. Yingst, C.M. Pieters, A. Nathues, M. Hoffmann, M. Schaefer, S. Marchi, M.C. De Sanctis, C.T. Russell, C.A. Raymond, and the Dawn Instrument, Operations, and Science Teams is grateful acknowledged. This work is supported by grants from NASA through the Dawn project, and from the German Space Agency.

Session No. 308--Booth# 344

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

Wednesday, 4 November 2015: 9:00 AM-6:30 PM

Exhibit Hall (Baltimore Convention Center)

Geological Society of America *Abstracts with Programs*. Vol. 47, No. 7, p.782

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