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AGU FALL MEETING

San Francisco | 14 - 18 December 2015

P53E-2176: Preliminary Geological Map of the Ac-H-9 Occator Quadrangle of Ceres: An Integrated Mapping Study Using *Dawn* Spacecraft Data

ABSTRACT

**Friday, 18 December 2015****13:40 - 18:00***Moscone South - Poster Hall*

We used geologic mapping applied to Dawn spacecraft data as a tool to understand the geologic history of the Ac-H-9 Occator quadrangle of dwarf planet Ceres. This region, located between 22°S-22°N and 216-288°E, is one of two longitudinally distinct regions on Ceres where ESA Herschel space telescope data suggested a release of water vapor [1] and hosts: 1) the 92 km diameter impact crater Occator in the NW of the quadrangle, whose rim is scalloped and whose interior encompasses Hubble "Bright Spot 5"; 2) the 115 km diameter crater Kirnis, a degraded crater that contains a large dome-like feature on the western half of its floor; and 3) regional linear structures, that both cut crater rims (including Occator and Kirnis) and affect crater shapes. Key goals of the ongoing mapping are to 1) determine the source of the bright spots in Occator; 2) determine if the dome-like feature in Kirnis resulted from a mass-wasting or is a product of uplift; and 3) assess the relationships between linear structural features and impact craters, including the effects of surface stress regimes on crater formation and modification. At the time of this writing geologic mapping was performed on Framing Camera (FC) mosaics from late Approach (1.3 km/px) and Survey (415 m/px) orbits, including clear filter and color images and digital terrain models derived from stereo images. In Fall 2015 images from the High Altitude Mapping Orbit (140 m/px) will be used to refine the mapping, followed by Low Altitude Mapping Orbit (35 m/px) images starting in December 2015.

Support of the Dawn Instrument, Operations, and Science Teams is acknowledged. This work is supported by grants from NASA through the Dawn project, and from the German and Italian Space Agencies.

Reference: [1] Küppers, M., et al. (2014). *Nature*, v. 505, 525-527.

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