P53E-2171: Preliminary Geological Map of the Ac-H-4 Ezinu Quadrangle of Ceres: An Integrated Mapping Study Using Dawn Spacecraft Data

ABSTRACT

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

The Dawn team divided the surface of Ceres into fifteen quadrangles to facilitate systematic geological mapping, which is a tool used to methodically observe and interpret the surfaces of planetary bodies. Here we present a geological map of Ezinu quadrangle, along with initial interpretations of the quadrangle's geological history. Ezinu quadrangle is located from 21-66°N and 180-270°E and includes the following dominant features. (1) Ezinu crater (120 km diameter), which contains a cluster of small craters, sinuous grooves and mass wasting deposits in its interior. Ezinu crater is associated with dark mantling material, which corresponds to the northern part of the HST #8 dark albedo region observed by Li et al. (2006). (2) The northern portion of Occator crater (92 km diameter), which is associated with dark mantling material that we interpret as Occator ejecta. This dark mantling material corresponds to part of the HST #10 dark albedo region observed by Li et al. (2006). (3) Northwest-striking crater chains and grooves, which cross-cut the southern part of Ezinu quadrangle. It is possible that the crater chains and grooves were formed by material ejected during formation of the Yalode and/or Urvara impact craters in the southern hemisphere. In addition, Ezinu quadrangle is located in one of two possible source regions of water vapor detected around Ceres (Küppers et al., 2014). Ongoing work will include the identification of possible water vapor source regions and the development of a detailed geological history of the quadrangle. Currently, the geological mapping is based on Approach (~1.3 km/pixel) and Survey (~400 m/pixel) mosaics of clear and color filter data from the Dawn spacecraft's Framing Camera. In addition, shape models derived from Framing Camera data are used as a mapping aid. Dawn will begin the High Altitude Mapping Orbit (HAMO) in mid-August, and our geological mapping will incorporate the higher resolution HAMO mosaics (~140 m/pixel).

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