



## High resolution Ceres HAMO atlas derived from Dawn FC images

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**Introduction:** NASA's Dawn spacecraft entered the orbit of dwarf planet Ceres in March 2015, and will characterize the geology, elemental and mineralogical composition, topography, shape, and internal structure of Ceres. One of the major goals of the mission is a global mapping of Ceres.

**Data:** The Dawn mission was mapping Ceres in HAMO (High Altitude Mapping Orbit, 1475 km altitude) between August and October 2015. The framing camera took about 2,600 clear filter images with a resolution of about 140 m/pixel during these cycles. The images were taken with different viewing angles and different illumination conditions. We selected images from one cycle (cycle #1) for the mosaicking process to have similar viewing and illumination conditions. Very minor gaps in the coverage were filled with a few images from cycle #2.

**Data Processing:** The first step of the processing chain towards the cartographic products is to ortho-rectify the images to the proper scale and map projection type. This process requires detailed information of the Dawn orbit and attitude data and of the topography of the targets. Both, improved orientation and a high-resolution shape model, are provided by stereo processing (bundle block adjustment) of the HAMO stereo image dataset [3]. Ceres's HAMO shape model was used for the calculation of the ray intersection points while the map projection itself was done onto the reference sphere of Ceres with a radius of 470 km. The final step is the controlled mosaicking of all images to a global mosaic of Ceres, the so-called basemap.

**Ceres map tiles:** The Ceres atlas was produced in a scale of 1:750,000 and consists of 15 tiles that conform to the quadrangle scheme proposed by Greeley and Batson [4]. A map scale of 1:750,000 guarantees a mapping at the highest available Dawn resolution in HAMO. The individual tiles were extracted from the global mosaic and reprojected.

**Nomenclature:** The Dawn team proposed 81 names for geological features. By international agreement, craters must be named after gods and goddesses of agriculture and vegetation from world mythology, whereas other geological features must be named after agricultural festivals of the world. The nomenclature proposed by the Dawn team was approved by the IAU [<http://planetarynames.wr.usgs.gov/>] and is shown in Fig. 1. The entire Ceres HAMO atlas will be available to the public through the Dawn GIS web page [<http://dawnngis.dlr.de/atlas>].

**References:** [1] Russell, C.T. and Raymond, C.A., Space Sci. Rev., 163, DOI 10.1007/s11214-011-9836-2; [2] Sierks, et al., 2011, Space Sci. Rev., 163, DOI 10.1007/s11214-011-9745-4; [3] Preusker, F. et al., this session; [4] Greeley, R. and Batson, G., 1990, Planetary Mapping, Cambridge University Press.