THE ATLASES OF VESTA. Th. Roatsch[1], E. Kersten[1], K.-D. Matz[1], F. Preusker[1], F. Scholten[1], R. Jaumann[1], C.A. Raymond[2], and C.T. Russell [3], [1]Institute of Planetary Research, German Aerospace Center (DLR), Berlin, Germany; [2]Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; [3]Institute of Geophysics, UCLA, Los Angeles, CA. (Thomas.Roatsch@dlr.de)

Introduction: NASA's Dawn spacecraft entered orbit of the inner main belt asteroid 4 Vesta on July 16, 2011, and has spent 14 months in orbit to characterize the geology, elemental and mineralogical composition, topography, shape, and internal structure of Vesta before it departed to asteroid 1 Ceres in September 2012. One of the major goals of the mission is a global mapping of Vesta.

Data: The Dawn mission has been mapping Vesta from three different orbital heights during Survey orbit (2700 km altitude), HAMO (High Altitude Mapping Orbit, 700 km altitude), and LAMO (Low Altitude Mapping Orbit, 210 km altitude) (Russell and Raymond, 2011). The Dawn mission is equipped with a framing camera [FC (Sierks et al., 2011)], which was the prime instrument during the HAMO phase. The framing camera took about 1,100 clear filter images with a resolution of about 200 m/pixel during the Survey phase, about 2,500 images with a resolution of about 60 m/pixel during the first HAMO phase and about 10,000 images with a resolution of about 20 m/pixel during the LAMO phase. A second HAMO phase with about 2,100 images completed the imaging campaign. The second HAMO phase was necessary to image the Northern polar area during spring time.

Data processing: The first step of the processing chain is to ortho rectify the images to the proper scale and map projection type. This process requires detailed high-resolution information of the local topography of Vesta and high-accurate orbit and pointing information. Both the global topgraphy and the improved orbit and attitude data were calculated during the stereo processing of the HAMO images [3] and were used here. The shape model was used for the calculation of the ray intersection points while the map projection itself was done onto a sphere with a mean radius of 255 km. The next step was the mosaicking of the images from the different orbit phase to three global mosaics of Vesta, the so called basemaps.

Vesta map tiles: The Survey atlas was produced in a scale of 1:1,500,000 and consists of four quadrangles on 3 sheets (the sub-division of the synoptic format) [Fig.1.]. The HAMO atlas was produced in a scale of 1:500,000 and consists of 15 tiles [Fig.2] that conform to the quadrangle scheme proposed by Greeley and Batson [4] whereas the LAMO atlas consists of 30 tiles with a scale of 1:200,000 [Fig. 3].

Nomenclature: The dawn team proposed to the International Astronomical Union (IAU) to use the names of vestal virgins and famous Roman women as names for the craters and to use names of places and festivals associated with vestal virgins for other feature names. This proposal was accepted by the IAU and 65 names for geological features were approved by the IAU. 39 additional feature names are currently under review by the IAU. All approved feature names were applied to the map tiles. All three Vesta atlases are available to the public through this web page: http://dawn_gis.dlr.de/

References: : [1] Russell, C.T. and Raymond, C.A., Space Sci. Review, 163, 3-23; [2] Sierks, et al., 2011, Space Sci. Rev., 163, 263-327; [3] Preusker, F. et al., 2012, LPSC, # 2012; [4] Greeley, R. and Batson, G., 1990, Planetary Mapping, Cambridge University Press.

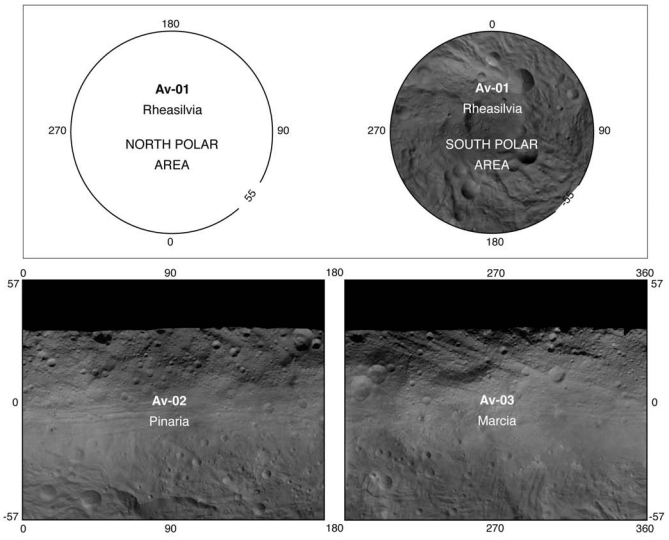

Fig. 1: Tiling scheme of Vesta's Survey atlas

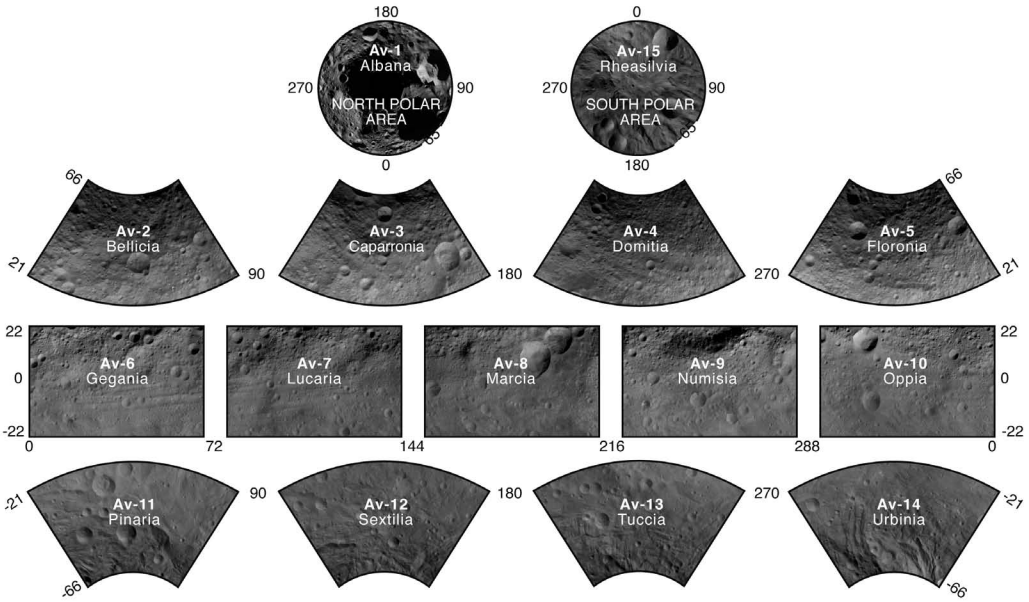

Fig. 2.: Tiling scheme of Vesta's HAMO atlas

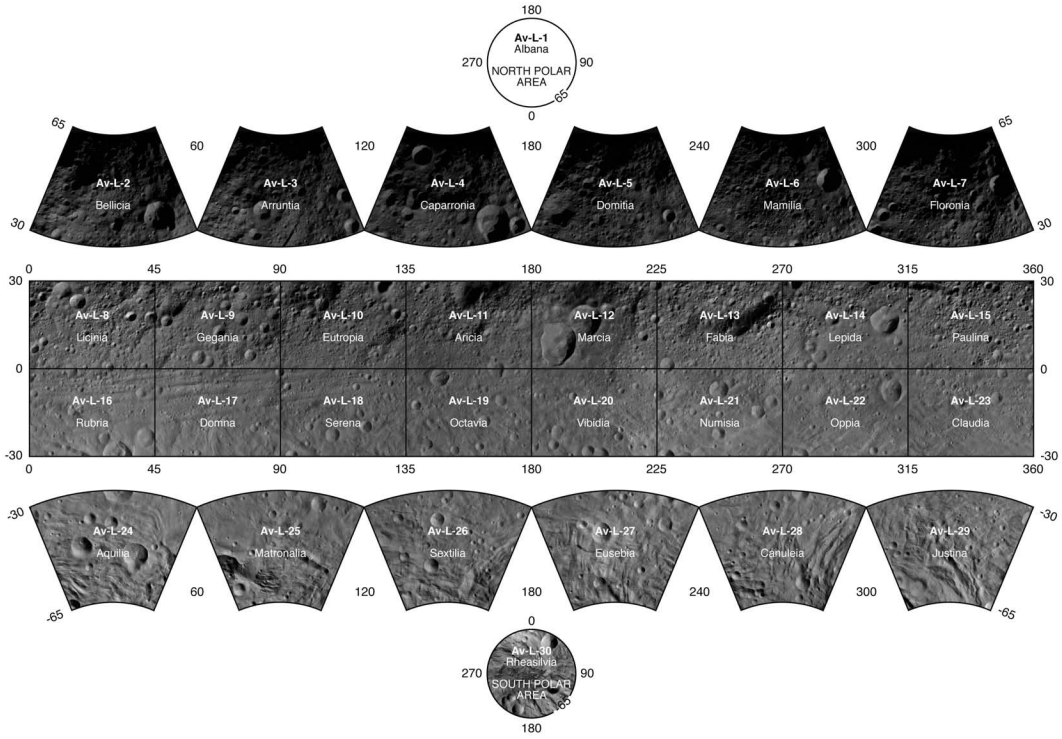

Fig. 3: Tiling scheme of Vesta's LAMO atlas