

New Release of the High-Resolution Mimas Atlas derived from Cassini-ISS Images

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1. Introduction

The Cassini Imaging Science Subsystem (ISS) acquired 128 high-resolution images (< 1 km/pixel) of Mimas during its tour through the Saturnian system since 2004. We combined new images from orbit 249 (Nov. 2016) and orbit 259 (Jan. 2017) with the high-resolution global semi-controlled mosaic of Mimas from 2012. This global mosaic is the baseline for the new high-resolution Mimas atlas that still consists of three tiles mapped at a scale of 1:1,000,000 [1]. The nomenclature used in this atlas was proposed by the Cassini imaging team and was approved by the International Astronomical Union (IAU). The entire atlas will become available to the public through the Imaging Team's website [<http://ciclops.org/maps>] and the Planetary Data System (PDS) [<https://pds-imaging.jpl.nasa.gov/volumes/carto.html>].

2. Data Processing

The image data processing chain consists of the same steps as described in [2]: radiometric calibration, geometric correction, map projection, and mosaicking. Spacecraft position and camera pointing data are available in the form of SPICE kernels [<http://naif.jpl.nasa.gov>]. While the orbit information is sufficiently accurate to be used directly for mapping purposes, the pointing information must be corrected using limb fits. The coordinate system adopted by the Cassini mission for satellite mapping is the IAU "planetographic" system,

consisting of planetographic latitude and positive West longitude. The surface position of the prime meridian as defined by the IAU cartography working group [3] is defined by the small crater Palomides.

3. Mimas map tiles

The Mimas atlas was produced in a scale of 1:1,000,000 and consists of three tiles that conform to the quadrangle scheme proposed by Greeley and Batson [4]. In 2008 the Cassini imaging team proposed 6 names for geological features, in addition to the 36 features already named by the Voyager team that are used in the maps. By international agreement, the features must be named after people or places from Malory's „Le Morte d'Arthur“ legends.

Reference

- [1] Roatsch, T. et al., 2013, Recent improvements of the Saturnian satellites atlases: Mimas, Enceladus, and Dione, *Planetary and Space Science* 77, 118-125.
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- [3] Archinal, B. et al., 2011, Report of the IAU Working Group on Cartographic Coordinates and Rotational Elements: 2009, *Celest. Mech. Dyn. Astr.* 109, 101-135
- [4] Greeley, R. and Batson, G., 1990, *Planetary Mapping*, Cambridge University Press