

New Imaging of Mercury by MESSENGER

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The MESSENGER spacecraft flew by Mercury on 14 January 2008 and acquired over 1200 color and monochrome images of the planet's surface. Most of these images were of regions of Mercury's surface not previously observed by a spacecraft. The MESSENGER spacecraft carries the Mercury Dual Imaging System (MDIS), which consists of a narrow-angle (1.5° field of view) camera and a wide-angle (10.5°) camera with 11 filters over the range 430 to 1010 nm. During the flyby, observation sequences included inbound and outbound movies, high-resolution (100-250 m/pixel) image mosaics, and 11-color frames and mosaics (~2.5 km/pixel) for color analysis and photometry. In addition, MESSENGER viewed portions of the planet previously imaged by Mariner 10 under different lighting conditions and resolutions, allowing identification of new features in some these areas.

We summarize results from the analysis of the new images, including a discussion of such morphological and tectonic features as lobate scarps and the newly discovered radiating trough complex shown in Figure 1. We also discuss inferences on Mercury's surface composition from analysis of color data and their implications for volcanic activity on Mercury.

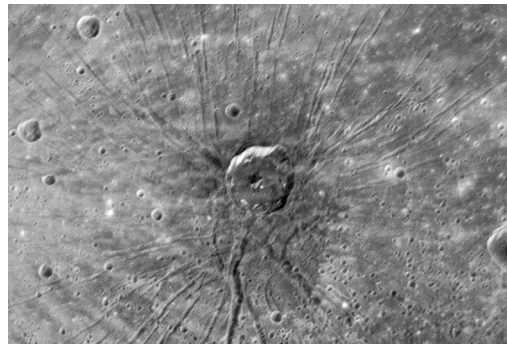


Figure 1. Unusual pattern of radiating troughs near the center of the Caloris basin. No similar features have been observed elsewhere on Mercury.