



The 1:3M geologic map of Mercury: progress and updates

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After the end of Mariner 10 mission a 1:5M geologic map of seven of the fifteen quadrangles of Mercury [Spudis and Guest, 1988] was produced. The NASA MESSENGER mission filled the gap by imaging 100% of the planet with a global average resolution of 200 m/pixel and this led to the production of a global 1:15M geologic map of the planet [Prockter et al., 2016]. Despite the quality gap between Mariner 10 and MESSENGER images, no global geological mapping project with a scale larger than 1:5M has been proposed so far. Here we present the status of an ongoing project for the geologic mapping of Mercury at an average output scale of 1:3M based on the available MESSENGER data. This project will lead to a fuller grasp of the planet’s stratigraphy and surface history. Completing such a product for Mercury is an important goal in preparation for the forthcoming ESA/JAXA BepiColombo mission to aid selection of scientific targets and to provide context for interpretation of new data. At the time of this writing, H02 Victoria [Galluzzi et al., 2016], H03 Shakespeare [Guzzetta et al., 2016] and H04 Raditladi [Mancinelli et al., 2016] have been completed and H05 Hokusai [Rothery et al., 2017], H06 Kuiper [Giacomini et al., 2017], H07 Beethoven and H10 Derain [Malliband et al., 2017] are being mapped. The produced geologic maps were merged using the ESRI ArcGIS software adjusting discontinuous contacts along the quadrangle boundaries. Contact discrepancies were reviewed and discussed among the mappers of adjoining quadrangles in order to match the geological interpretation and provide a unique consistent stratigraphy. At the current stage, more than 20% of Mercury has now a complete 1:3M map and more than 40% of the planet will be covered soon by the maps that are being prepared.

This research was supported by the Italian Space Agency (ASI) within the SIMBIOSYS project (ASI-INAF agreement no. I/022/10/0).

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