

GEOLOGICAL MAPPING OF MAWRTH VALLIS, MARS: FIRST LOOK

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Introduction: Mawrth Vallis (~~Figure 1~~~~Figure 1~~) is generally understood to be one of Mars' catastrophic outflow channels. It is incised into Noachian (> 3.7 Ga) terrain and is associated with thick (> 150 m) clay deposits [1]. These clays are well-documented [e.g. 1–3], and have made Mawrth Vallis a candidate landing site for multiple rover missions. However, the atypical geomorphology of the channel is less well-studied. In the PLANMAP project, we will produce a geological map of Mawrth Vallis to establish its history of erosion and deposition and relationship with the clays.

PLANMAP: PLANMAP aims to provide standards for planetary geological map production to aid the dissemination of European maps, ~~which would otherwise be prepared for publication via the USGS.~~

PLANMAP is producing exemplar maps [e.g. 4] where various data (visual images, elevation models, spectra, crater size-frequency distributions) will be fused to make more fully-integrated geological maps.

The availability of abundant and diverse data

types at Mawrth Vallis makes this region particularly suitable to be a PLANMAP exemplar.

Data and Methods: The basemap will be a Context Camera (CTX; 6 m/pixel) mosaic, with CTX digital elevation models (DEMs; ~20 m/pixel) to assess stratigraphic relationships, and High Resolution Imaging Science Experiment (HiRISE; 25–50 cm/pixel) images for unit definition. Mapping will focus on channel geomorphology. Linework will be drawn at ~1:200,000. Our map will undergo compositional analysis integration with other PLANMAP partners.

Results: We have mapped several smaller channel-types associated with Mawrth Vallis, including inverted channels on the floor of Mawrth Vallis, indicating a rich history of sedimentation and erosion.

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References: [1] Loizeau D. et al. (2007) *J. Ge-*

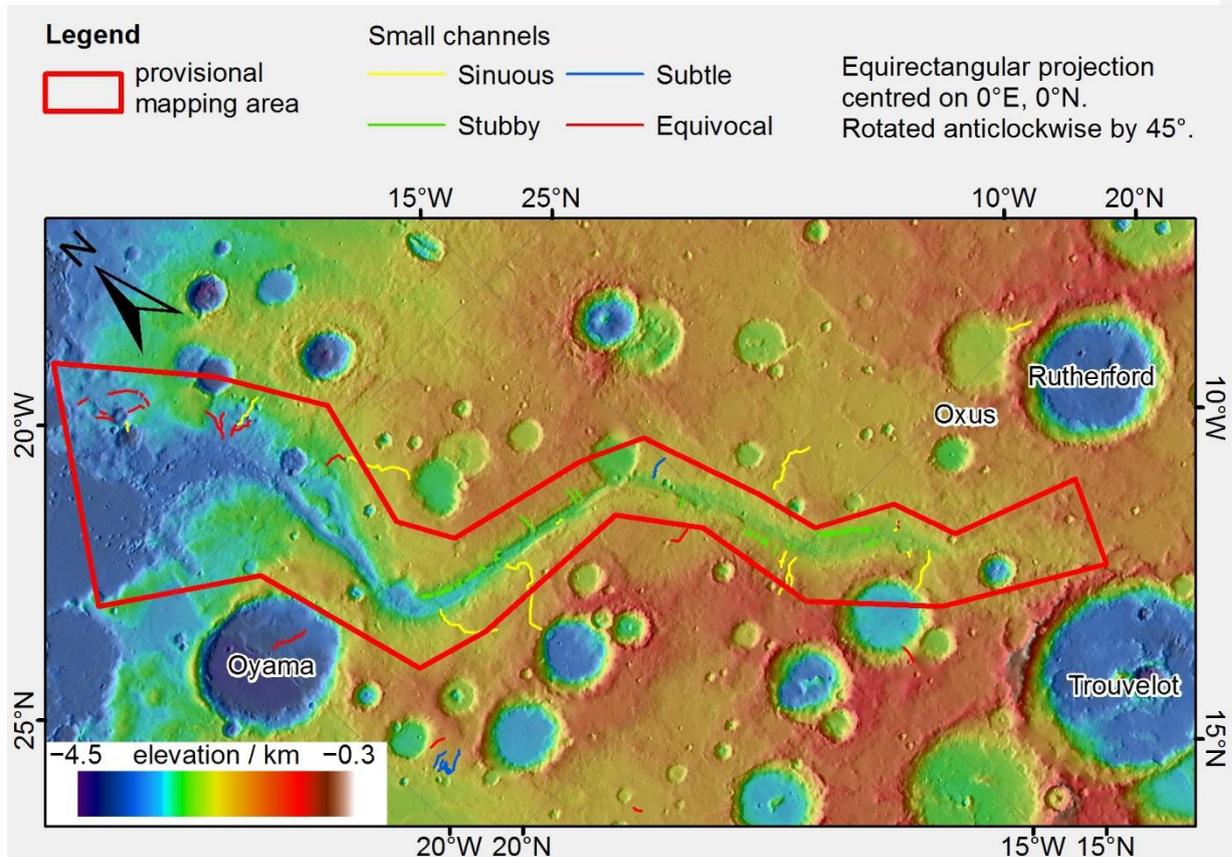


Figure 1. Mawrth Vallis, western Arabia Terra, Mars. MOLA topography is shown overlain on a MOLA hillshade. Smaller channels were digitised during early reconnaissance mapping of the region.

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