

GRABEN SYSTEMS (DYKE SWARMS) OF THE MBOKOMU MONS REGION, ALONG PARGA CHASMATA, 2400 KM SE OF ATLA REGIO, VENUS. N. Hannour¹, H. El Bilali^{2,3}, R.E. Ernst^{2,3}, J.W. Head⁴, N. Youbi¹

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Introduction: The relationship between coronae and chasmata has been extensively discussed but is still enigmatic (e.g. [1-6]). One such relevant region is along the 10,000 km long Parga Chasmata which connects Atla Regio with Themis Regio. On the basis of detailed mapping of graben fissure systems and interpreted rift faults along a 1500 km long segment of Parga Chasmata, [6] recognized that many coronae represent the locus of local triple junction rift centres; extrapolating this observation to the entire length of Parga Chasmata (and also Hecate Chasmata), and then compared it to the Atlantic rift system of Earth.

To explore these relations more fully, we have selected a region along Parga Chasmata for detailed study. The general area is about 2000 km SE of the centre of Atla Regio (Figs. 1, 2) and we focus on Mbokomu Mons. The goal of the present research is to provide detailed mapping (1:500,000 scale) of the graben fissure systems, lava flows associated with Mbokomu Mons (and in the surrounding area), in order to provide insights into the setting of coronae within the broad Parga Chasmata rift system. Our mapping builds on the previous reconnaissance mapping (1:5,000,000 scale) of Taussig Quadrangle (V-39) [7].

Initial mapping of the graben associated with Mbokomu Mons is shown in Fig. 3; these are provisionally grouped into distinct sets in Figure 3b, which we provisionally interpret to mainly represent dyke swarms of both radiating, circumferential and linear geometry, on the basis of previously established criteria [e.g. 8,9]. We are attempting to identify potential magmatic centres as sources for these swarms. Flow systems to the east, and north and west of Mbokomu Mons are visible and mapped in Figure 3D. Topographic profiles are provided for Mbokomu Mons (Fig. 4).

Upon completion, this detailed mapping will provide significant insight into the relationship between chasmata and associated coronae, of relevance to chasmata across Venus.

References:

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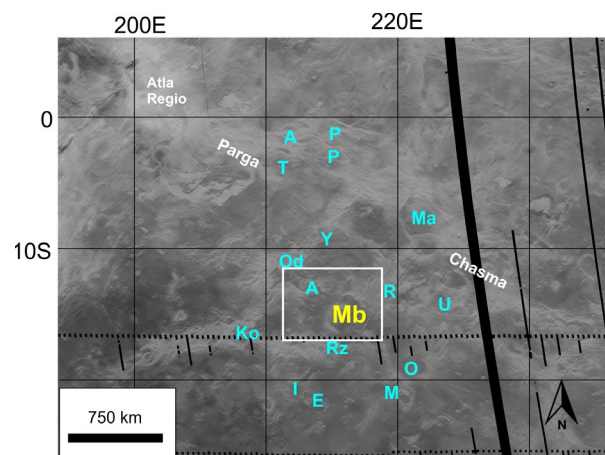


Figure 1: Location map of study area. Mb = Mbokomu Mons (with associated circumferential swarm) is part of a regional cluster of large coronae associated with Parga Chasmata. Named coronae are: A = Attabeira, C = Chantico, E = Emegeli, I = Inacho, K = Kolias, Ma = Maram, M = Momu, O = Onenhste, Od = Oduduwa, P = Pazar-ana, R = Repa, Rz = Rzhantsa, T = Tadaka, and Y = Ya-Yerv. Box shows location of Figure 3.

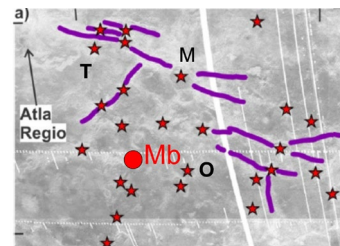


Figure 2: Location of rift segments along NW end of Parga chasmata from [6]. Mb = Mbokomu Mons. Stars located corona, and for comparison with Figure 1, three are labelled: T = Tadaka, M = Maram and O = Onenhste coronae.

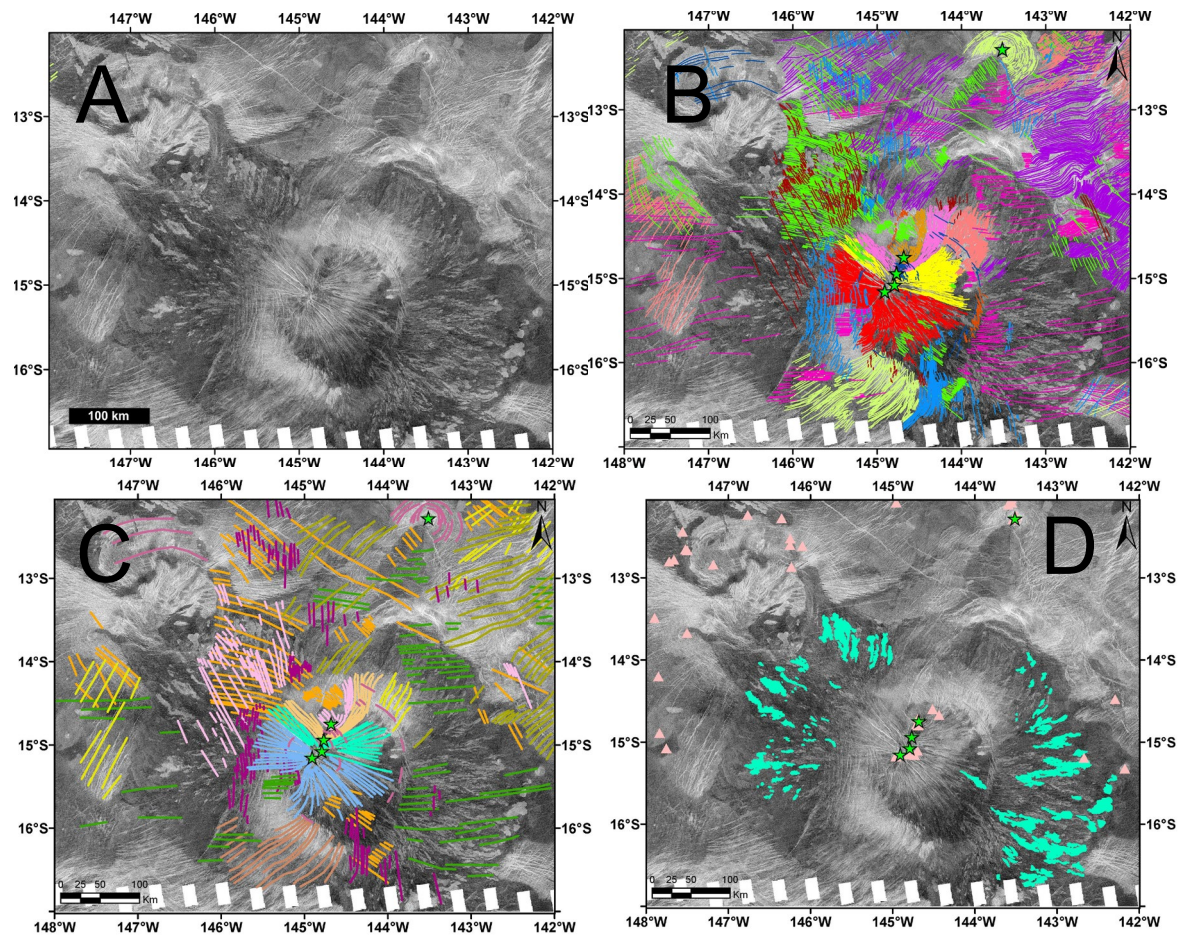


Figure 3: A) Magellan SAR left look image of Cycle 1. B) Extensional lineaments; 6,650 mapped so far at 1:500,000 scale. Grouped into graben sets based on trend and geometry. C) Generalized mapping of grabens in the vicinity of Mbokomu Mons superimposed on SAR image. Stars locate multiple centres of radiating graben systems associated Mbokomu Mons. Note presence of circumferential set associated (purple) indicating a corona-like character associated with this Mons [9]. Number of additional linear and circumferential sets are present (see discussion in text). D) Lava flows and shield volcanoes.

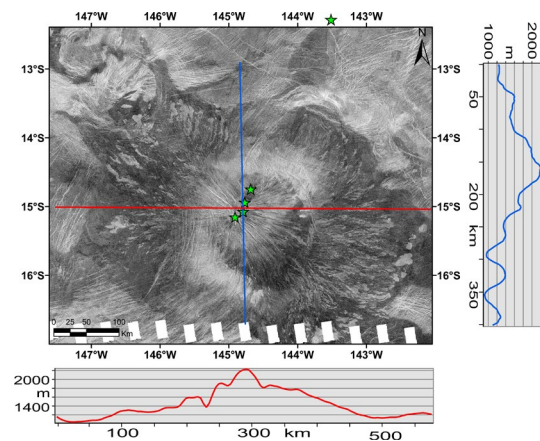


Figure 4: Topographic profiles across Mbokomu Mons.