

GEOLOGICAL HISTORY OF THE REGION OF POLIK-MANA MONS, VENUS. V.E. Rozhin¹, R. E. Ernst^{1,2}, H. El Bilali^{1,2}. ¹Faculty of Geology and Geography, Tomsk State University, Tomsk, Russia: malyshev.danil13@gmail.com, ²Department of Earth Sciences, Carleton University, Ottawa, Canada.

Introduction: Polik-mana Mons volcano (24.8°N, 264°E) is located in the Asteria Regio lowlands along Latona Chasma which is the part of the 7000 km long Hecate Chasmata rift zone and 1500 km west of Beta Regio (Fig. 1). Polik-mana Mons is a large volcano with a diameter of 600 km.

Previous mapping of this region was done as part of Quadrangle scale (1:5,000,000) mapping. The western part of our area is in Hecate Chasma V-28 quadrangle mapped by [1]. The eastern part of this area is within Devana Chasma Quadrangle V-29, for which initial mapping of V-29 was reported [2].

Our mapping in this region is at 1:500,000 (which is 10x more detailed than the previous quadrangle mapping). The present contribution builds on our previous work [3] on the distribution of graben-fissure systems (marking dyke swarms) and mapping of lava flows on the southern side of Polik-mana mons. The focus of the present contribution is to expand the lava flow mapping and interpretation across Polik-mana Mons and surrounding area.

Lava flows: Our map (Figs. 2-3) includes the main lava flows of the Polik-mana Mons, the Latona Chasma rift zone passing through it, as well as the surrounding region.

At this stage of the mapping, 7 lava flow groups were identified, 4 belonging to Polik-mana Mons and 3 others not related to the Polik-mana volcano (blue, red, yellow flows) (Fig. 3).

Discussion: According to the collected statistics it is possible to make some following conclusions about the volume of flows:

1. The total volume of the lava material of northern, eastern and western directions, with source Polik-mana Mons is 5,317 km³ (area = 239,840 km²). The volume of all mapped lava flows is 9,417 km³ (area = 376,651 km²). The volume of all mapped

material, belonging to Polik-mana Mons is 7,622 km³ (area = 304,840 km²). A thickness of 25 m was used for the volume calculations.

2. The greatest volume of lava material is the north-east flow, which tells us that this zone has a large number of lava sources.

3. Most of the lava flows accumulate in areas with elevations between 1200 m and 1400 m.

4. The greatest concentration of the three types of lava (by radar brightness) is as follows: "white" lava in the central part of the P-m volcano and its slopes; "gray" lava in the northwestern part of the study area, and near the end of the eastern northeastern flow; and "black" lava in the northeastern and eastern sections of the study area.

References: [1] Stofan E. R. et al. (2012) *USGS Scientific Investigations*, Map 3163. [2] Tandberg E. R. and Bleamaster L.F. (2010) *XLI LPS*, Abstract #1402. [3] Rozhin et al. (2022) *LPSC Abstr.* 1281.

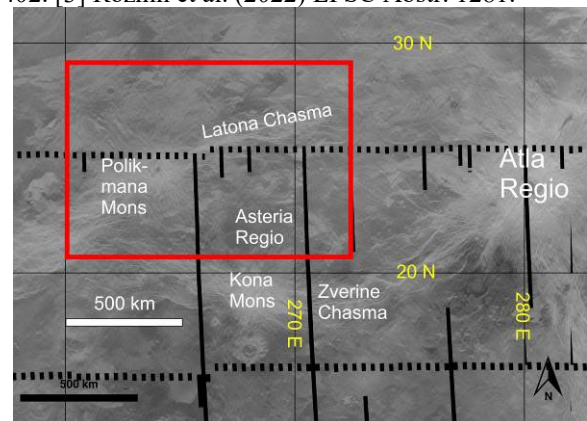


Figure 1: Magellan SAR image of the Asteria Regio region with main features labelled.

