INACHO AND NEARBY MAGMATIC CENTRES IN NW PARGA CHASMATA, VENUS: DETAILED MAPPING OF ASSOCIATED GRABEN SYSTEMS (DYKE SWARMS). K. Eloualda[1], H. El Bilali[2,3] R.E. Ernst[2,3], J.W. Head[4], N. Youbi[1], [1] Department of Geology, Faculty of Sciences-Semlalia, Cadi Ayyad University, Marrakesh, Morocco, karima.eloualda@gmail.com, [2]Department of Earth Sciences, Carleton University, Ottawa, Ontario, Canada; [3]Faculty of Geology and Geography, Tomsk State University, Tomsk, Russia, [4]Department of Earth, Environmental and Planetary Sciences, Brown University, Providence, Rhode Island, USA

Introduction: A strong relationship has been observed between coronae and chasmata in space and time, and is the subject of much discussion and debate (e.g. [1-7]). We have selected a region for study (Fig. 1) along the 10,000 km long Parga Chasmata, which connects Atla Regio with Themis Regio (Fig. 1).

A broad goal of our research is to provide detailed mapping (1:500,000 scale) of the graben-fissure systems, lava flows and rift faults, integrated with topographic variation in order to provide insights into the setting of corona within the rift zone, and their relationships and history. Our mapping builds on previous reconnaissance-scale mapping (1:5,000,000 scale) of Taussig Quadrangle (V–39) [8].

Study Area: Our selected study area along Parga Chasmata is about 2600 km SE from the centre of Atla Regio (Fig. 1). This area features Inacho Corona, Emegelji Coronae (a cluster of three coronae), and Villepreux-Power Patera (Figs. 2-3). We note the alignment of Inacho Corona with the Emegelji Corona Cluster (Fig. 2-3).

Results of Mapping: Initial mapping of the graben-fissures is shown in Fig. 2a with generalized lines shown in Fig. 2b. Most distinctive are the circumferential set associated with Inacho, and the three associated with Emegelji Coronae. Radiating sets may also be centred on the three centres associated with Emegelji coronae (Fig. 2b). In addition, a major NE trending set is parallel to the alignment of Villepreux-Power Patera and Inacho Corona.

Future Work: Ongoing mapping focusses on 1) expanding the mapping of grabens, identifying additional sets, and evaluating which sets are underlying by dykes, 2) determining the relative ages of all the magmatic centres through the crosscutting relationships of their circumferential and radiating sets. 3) explaining the NW-SE alignment of centres (blue topographic profile in Fig. 3 including whether such an alignment may indicate an underlying rift, and 4) providing insights into Dali Chasma vs other rifts in the context of the global geological evolution of Venus [5].

References: [1] Hamilton V.E. and Stofan E.R. (1996) Icarus, 121, 171–194. [2] Martin P. and Stofan E.R. (2004) 35th LPSC, Abstract no. 1576. [3] Martin, P. et al. (2007). JGR, 112, E04S03. [4] Smrekar S.E. et al. (2010). JGR, 115, E07010. [5] Ivanov M.A. and Head J.W. (2015) Planet. Space Sci., 113-114, 10-32. [6] Graff J.R. et al. (2018) Icarus, 306, 122-138. [7] Guseva E.N. and Ivanov M.A. (2019) Solar System Res., 53, 411-422. [8] Brian A.W. et al. (2005). USGS SIM 2813. [8] Grosfils E.B. and Head, J.W. (1994) GRL, 21: 701–704. [9] Christensen P. R. et al. (2009) AGU Fall Meeting, Abstract #IN22A-06.

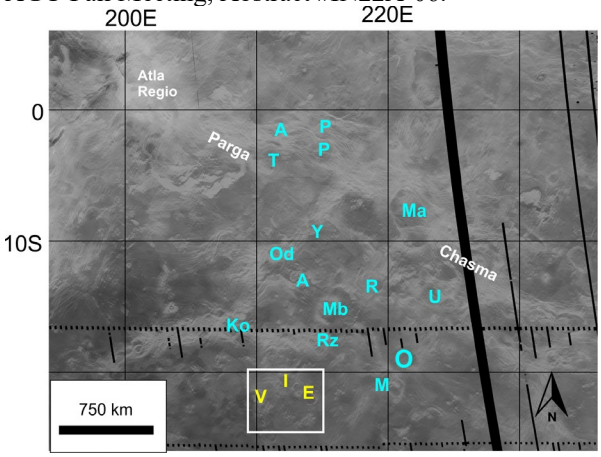

Figure 1: *Location map of study area with Inacho and Emegelji Coronae, and Villepreux-Power Patera as part of a regional cluster of large coronae associated with Parga Chasma. Named coronae (in blue letters) are: A = Attabeira, C = Chantico, E = Emegelji, I = Inacho, K = Kolias, Ma = Maram, M= Momu, O = Onenhste, Od= Oduduwa, P= Pazar-ana, R = Repa, Rz = Rzhanitsa, T = Tadaka, and Y = Ya-Yerv. V = Villepreux-Power Patera. Mb = Mbokomu Mons. Box shows location of Figure 3. From JMARS [9].*

.

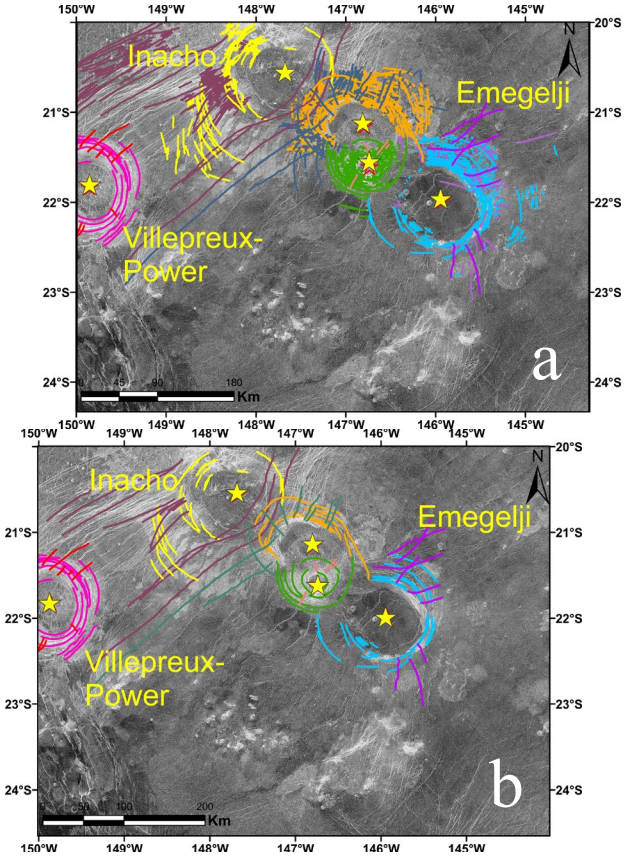

***Figure 2**: Detailed mapping of graben systems superimposed on Magellan SAR image (left-looking from Cycle 1) and b) generalized line work.*

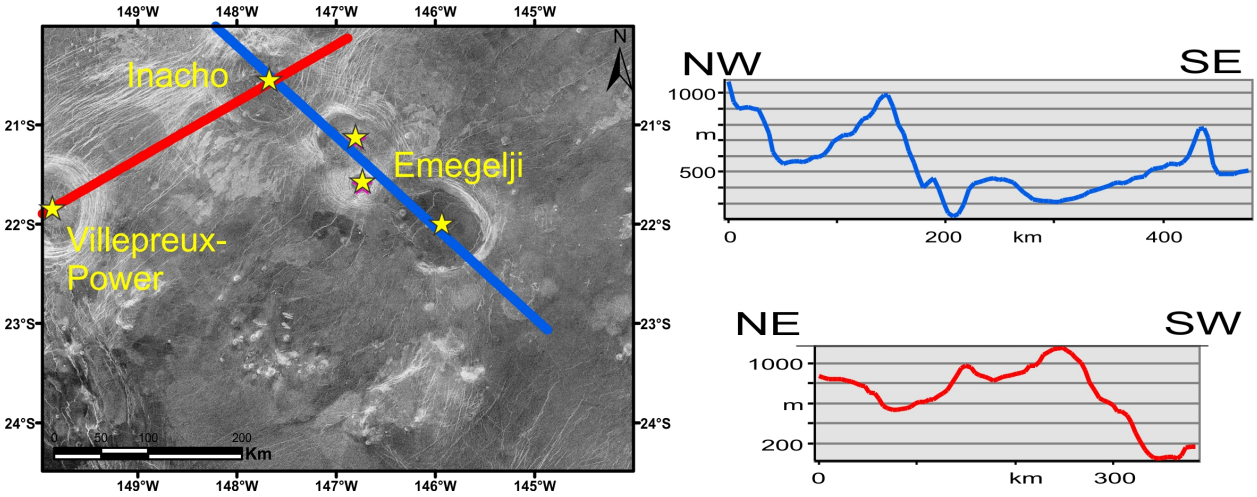

***Figure 3**: Topographic profiles along Inacho-Emegelji trend and between Inacho corona and Villepreux-Power Patera.*