GRABEN SYSTEMS OF SITH AND KHABUCHI CORONA ALONG DALI CHASMA, SOUTHWEST OF ATLA REGIO. M.A. Mediany[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; acheraf17@gmail.com, [2]Department of Earth Sciences, Carleton University, Ottawa, Ontario, Canada; hafidaelbilali@cunet.carleton.ca; richard.ernst@ernstgeosciences.com, [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: The Dali-Diana Chasmata (rift zone) trends SW from Atla Regio (Fig. 1). This region is part of Quadrangle V-37 which was mapped at 1:5,000,000 scale [1]. The present detailed 1:500,000 scale study focuses on the magmatic component along Dali Chasma and specifically, the grabens associated with two important corona along Dali Chasma, Sith (Si) and Khabuchi (K) coronae (Fig. 2). It is anticipated that detailed mapping of the graben sets associated with corona in rift systems (in this case Khabuchi and Sith coronae) will further elucidate the nature of the frequent association of corona with rift systems [2-8].

Results: Detailed mapping of graben (18,000 lineaments so far) is revealing a complex distribution of radiating, linear and circumferential graben sets, distinguished by colour (Fig. 3). To better visualize these distributions and relationships, we have begun to produce generalized versions of the linework (Fig. 4). Two radiating swarms (green and yellow lines in Fig. 4) are centred on Khabuchi corona. Two radiating systems are associated with Sith corona (dark green and orange in Fig. 4).

The green swarm of Khabuchi has a maximum radius >200 km but swings into a more linear SSW trend after about 100 km. Such relationships indicate the transition of a central radial stress toward the regional stress field, and can indicate the size of an upwelling underlying diapir (cf. [9, 10]. Additional sets (in red in Fig. 4) generally have more linear to slightly arcuate trends suggesting links to additional magmatic centres in the corona; such links will be sorted out through additional mapping and analysis.

A major goal of the analysis is to distinguish those grabens linked to underlying dyke swarms [9-10], and those which are associated with rift zone extension, and to place these into the global geologic and magmatic evolution of Venus.

Acknowledgments: Magellan SAR images obtained from https://astrogeology.usgs.gov/search/?pmi-target=venus.

References: [1] Hansen, V.L., DeShon, H.R. (2002). USGS Geol. Invest. Series. [2] Hamilton, V.E., Stofan, E.R. (1996) Icarus, 121, 171–194. [3] Martin, P., Stofan, E.R. (2004) 35th LPSC, Abstract no. 1576. [4] Martin, P., et al. (2007). JGR, 112, E04S03. [5] Smrekar, S.E., et al. (2010). JGR, 115, E07010. [6] Ivanov, M.A., Head, J.W. (2015) Planet. Space Sci., 113-114, 10-32. [7] Graff, J.R., et al. (2018) Icarus, 306, 122-138. [8] Guseva, E.N. (2019). Solar System Res., 53, 151-160. [9] Grosfils, E.B., Head, J.W. (1994) GRL, 21, 701–704. [10] Buchan, K.L., Ernst, R.E. (2021). Gond. Res., 100, 25–43.

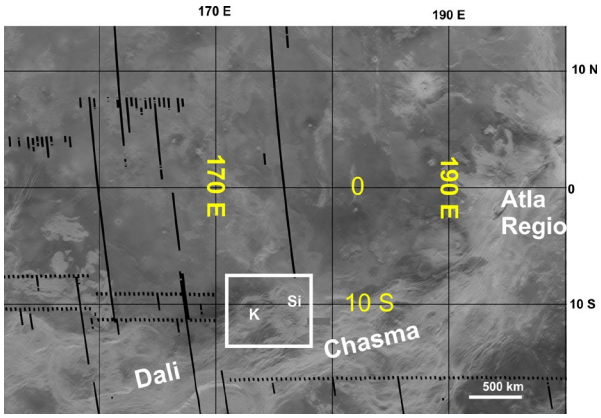

Figure 1*. Location map for study area along Parga Chasma.*

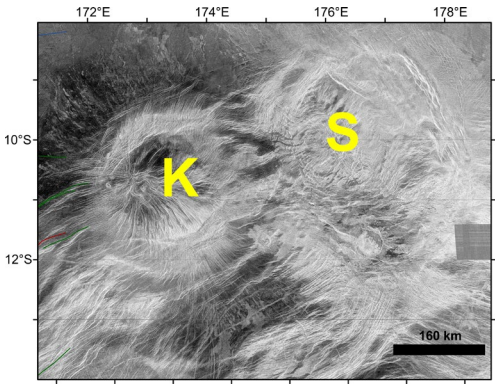

Figure 2. *Magellan Left Look (Cycle 1) SAR image of study area. S = Sith and K = Khabuchi coronae.*

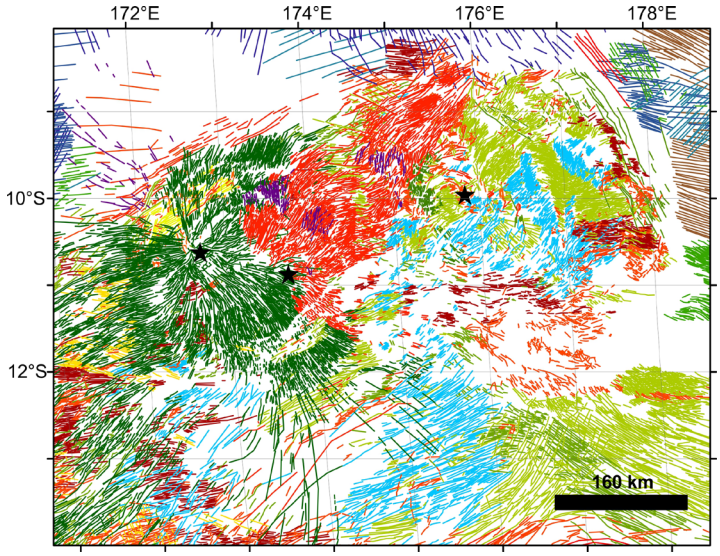

Figure 3. *Detailed mapping of graben in study area and grouping by colour into sets based on geometry, linear, radiating or circumferential.*

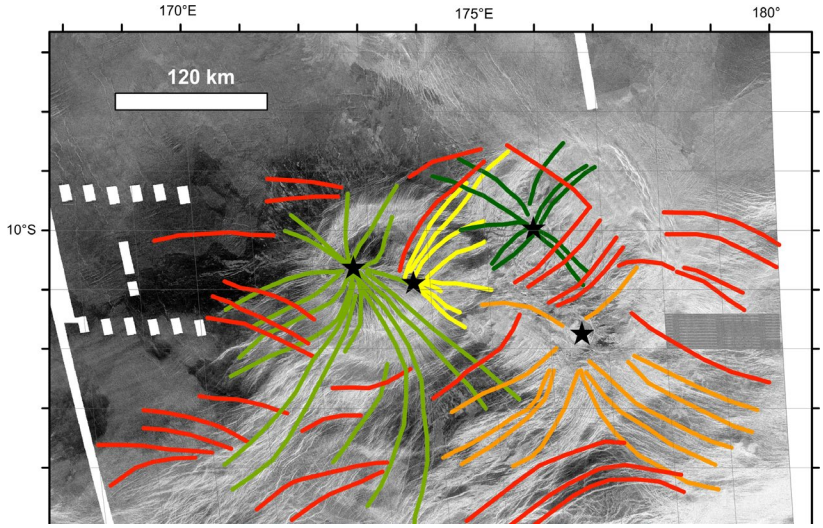

Figure 4. *Generalized graben distributions distinguished by colour. Superimposed on Magellan SAR image.*