POSSIBLE EMPLACEMENT HISTORY OF THE CITLALPUL CANALI SYSTEM, NSOMEKA PLANITIA, VENUS. D. Studd[1], R.E. Ernst[1,2], C. Samson[1], H. El Bilali[1,2], J. Demorcy[1], and D.W. Desnoyers, [1]Department of Earth Sciences, Carleton University, Ottawa, Canada, K1S 5B6; duncan.studd@gmail.com, [2]Faculty of Geology and Geography, Tomsk State University, Tomsk, Russia.

Introduction: Venus canali are narrow sinuous channels which typically have widths of about <1-3 km and extend for distances of up to several thousand km. They are in part constructional and in part erosional. They are generally interpreted to orginate from the flow of a highly fluid lava, either komaiitic- or sulphur-rich [1-3]. Alternative origin as a subsurface erosion process has been proposed [4].

Although the longest canale, Baltis Vallis, extends up to 6800 km [5] most canali are much shorter, with lengths between tens to hundreds of km [5]. It is likely, however, that many of these shorter lengths represent segmentation of originally longer canali by crosscutting younger lava flows and structures. Knowing the full extent and distribution of canali is essential to identifying their source areas and terminations, and also to unraveling their flow histories.

Our mapping in the Nsomeka Planitia region (Fig. 1) uses full resolution Magellan SAR images in order to test the potential of tracing canali as more subtle features, and toward correlating between separate segments. We identify additional canali segments to those found by Lang and Hansen 2006 [4], and based on our mapping the canali group into two independent canali systems: the Nahid Vallis and Citlalpul (Vesper-Xulab) System.

Flow history of Citlalpul (Vesper-Xulab) Vallis System: The topographic profile along Citlalpul Vallis in Figure 2 shows large variations of up to 700 m over short distances, but an overall decrease of 500 m from east to west which could suggest flow in that direction. Dramatic topographic variations are common along canali and are typically interpreted as due to post-canali topographic changes [6-7]. For instance, Johnson et al. [7] suggested that a change of channel flow direction from east of Barrymore Crater (Fig. 1) may have resulted from basin formation.

We offer a possible emplacement history from west to east (Fig. 1) that is consistent with the numerous three-way intersections (Fig. 3). We propose that all of Vesper and Xulab Valles emerged from Citlalpul Vallis, pointing to the western termination of Citlalpul Vallis as the source point for all three canale. This system can be traced westward into Henie Quadrangle where it may be linked to Fotla Corona as the source [8].

References: [1] Baker et al. (1992) JGR 97 (E8), 13421-13444. [2] Komatsu et al. (1993) Icarus 102: 1-25. [3] Kargel et al. (1994) Icarus 112: 219-252. [4] Lang, N.P., and Hansen, V.L. (2006) *JGR,111, E04001*. [5] Baker et al. (1997) in: Venus II, Univ Ariz Press, pp. 757-793. [6] Komatsu G. and Baker V.R (1994) Icarus, 110, 275-286. [7] Johnson J.R. et al. (1999) USGS GIS I-2610. [8] Demorcy, J. et al. (2022) LPSC. [8].

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Figure 1 (is on page 2).

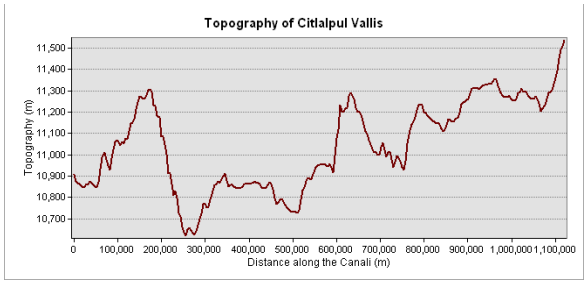

***Figure 2**. Topographic profile along Citlalpul Vallis from west to east.*

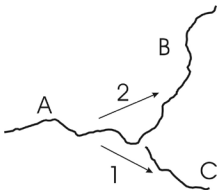

***Figure 3.** Possible criterion for determining flow direction at intersection of canali. Original path 1 follows A-C, and subsequent path 2, follows A-B.*

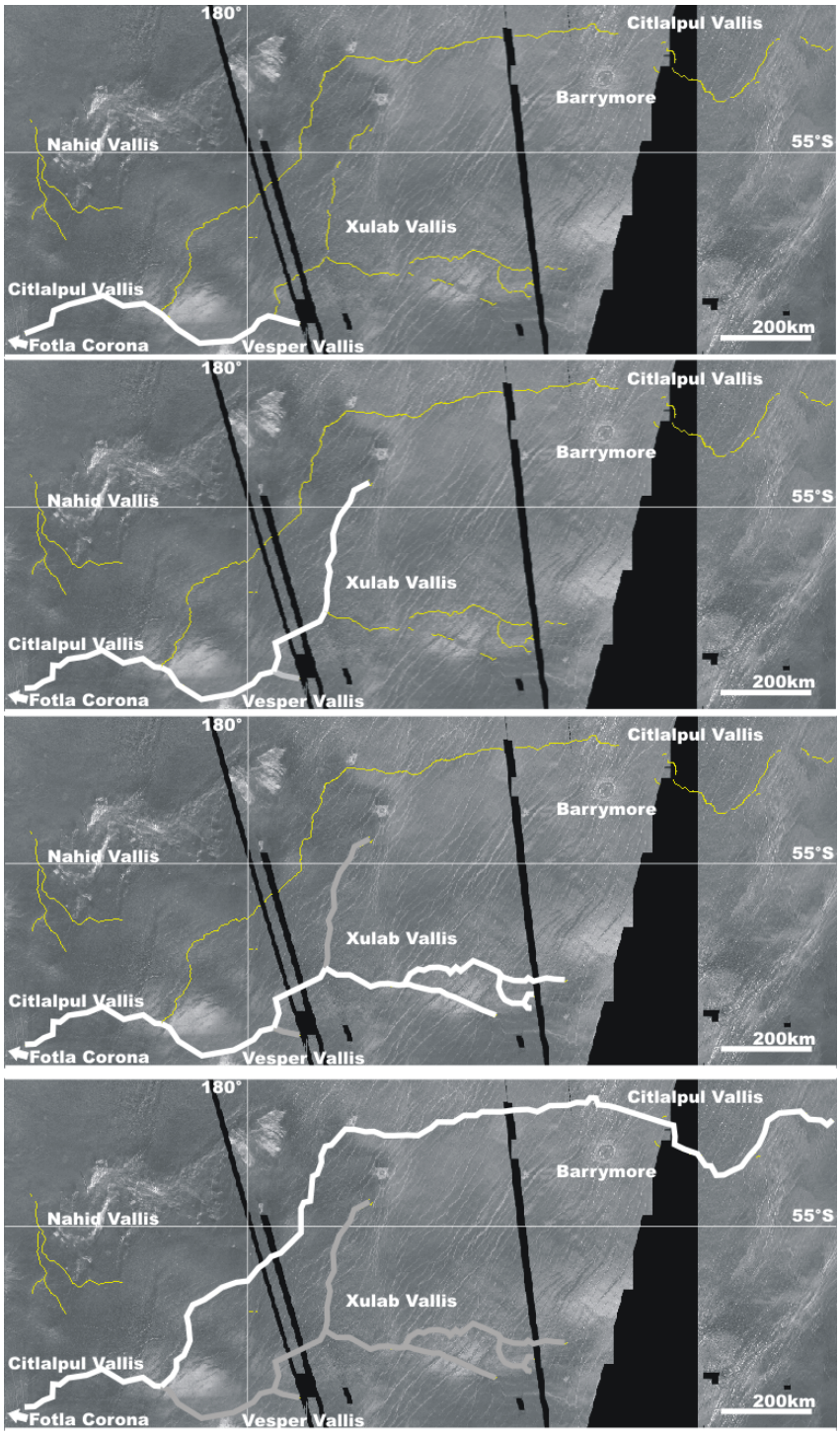

Figure 1. *Possible flow history for Citlalpul, Vesper, and Xulab Valles. White lines denote the active flow route in each map, grey lines represent abandoned channels, and yellow indicate channels not yet used.*