Longitudinal profiles of sinuous rilles on Venus; Jay C. Langdon[1)], Goro Komatsu[1)2)], Victor R. Baker[1)3)], in cooperation with the Planetary Image Research Laboratory, and Space Imagery Center at the University of Arizona, and the Space Grant Program. 1) Lunar and Planetary Laboratory, University of Arizona, Tucson, Arizona, 85721. 2) School of Geology, University of Tokyo, Japan. 3)Department of Geosciences, University of Arizona, Tucson, Arizona, 85721.

Venusian sinuous rilles are generally short (less than 150 km) channels originating in a collapsed pit , have a measurable width, and appear to flatten out gradually with distance [1]. Working with an initial data set of more than 60 sinuous rilles previously identified [1], a systematic study is being conducted on gradient, length, shape, and other features. The analysis of these data in digital and photographic formats will enable us to establish the geomorphometry of sinuous rilles as well as provide the basis for comparison to other types of channels. We suspect that these data will verify a working hypothesis that sinuous rilles are younger types of channels when compared to canali and that they will therefore show a lesser degree of deformation.

All data studied for this project are from Magellan Spacecraft synthetic-aperture radar (SAR) imagery and altimetry, and were viewed in distinct phases. First, using the NIH Image program on MacIntosh to view CD-ROM's or photographic prints, approximate locations, sizes, shapes and placements were determined. Second, using the MGMDQE program developed by M.I.T., sinuous rilles were displayed, corresponding altimetric footprints were overlaid on sinuous rille locations, and the data were manually recorded. Using the XV and Snapshot programs we were able to make a printout of every step taken to help identify problems in data acquisition and/or processing [2]. Finally, the data were analyzed in an Excel program which produced graphical plots.

At the time of publication of this abstract, approximately twenty sinuous rilles had been studied. A higher percentage of upwardly deformed sinuous rilles was found than was initially expected. However, this may be anomalous. The studied channels are located predominantly in groups in terrains which show heavy tectonic and volcanic activity. Sinuous rilles also appear in less rugged terrains in significant numbers. Figure 1 shows a graphical representation of a sinuous rille which trends downhill. Figure 2 shows an example of an upwardly deformed sinuous rille. Figure 3 is a geological map of the channel in Figure 2. This channel was deformed as a result of nearby volcanic doming.

As the study continues to progress, additional channels are being located. These will be added to the initial data set and will certainly yield significant statistics as a whole. Stereo measurements of sinuous rilles will establish the downgradient shallowing, the depths of channels relative to surrounding terrain, and provide a more clear understanding of these channels in general.

References: [1] Komatsu et al. 91993), *Icarus*, **102**, 1-25. [2] G. Komatsu and Baker, V.R. (1994), Icarus, **110**, 275-286.

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Fig. 1 Sinuous rille located at 00N255, (C1_00N249)

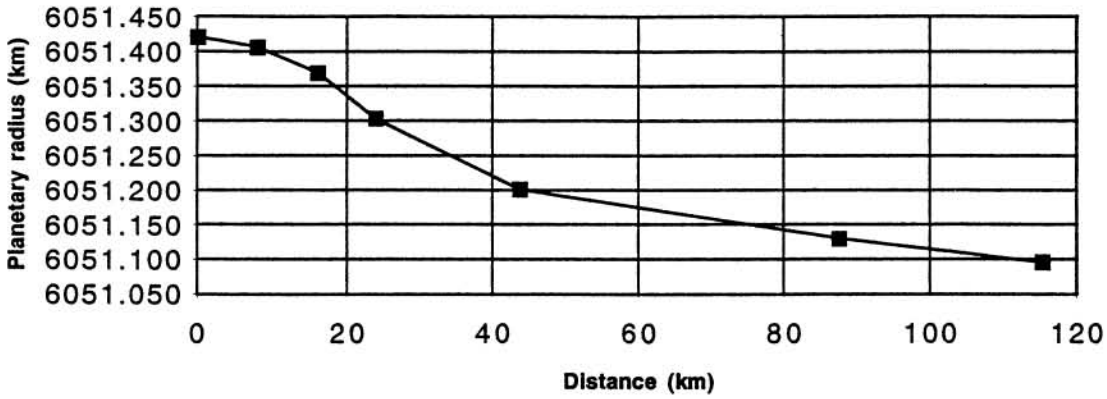

Fig. 2 Upwardly deformed sinuous rille located at 01N259, (C1_00N266)

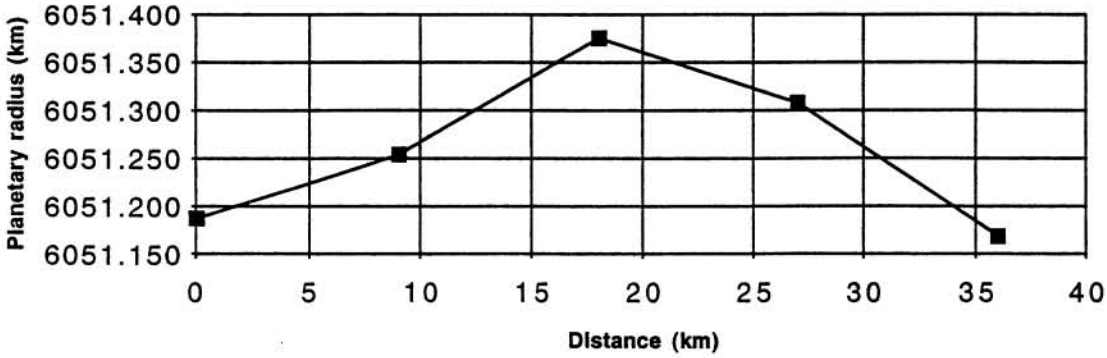

Fig. 3 Geologic map of sinuous rille in figure 2.