**GRAVITY-SPREADING ORIGIN OF THE VENUSIAN TESSERAE**; R.C. Kozak and G.G. Schaber, U.S. Geological Survey, Flagstaff, AZ 86001

The tesserae ("parquet") terrains of Venus [1] are probably generated by some form of gravity spreading, as suggested by their flow-like structure, structural correlation with topography, and association with mantle-induced regions of uplift, as well as by Martian and terrestrial analogs. A similarity between tesserae and tensional-deformation features on Earth was first noted by [1,2] who alluded to gravity as a possible mechanism.

The tesserae regions, though commonly lacking any obvious internal ridge pattern, at places have recognizable patterns with flow-like structural grain that correlates well with topography. Examples include the southeastern part of Laima Tessera (fig. 1), the eastern slope and foothills of Maxwell Montes, and the west border of Tellus Regio. Gravity spreading [3] has been championed as the origin of the morphologically similar Olympus Mons aureole on Mars [4-6] and the Hart Mountain allochthon on Earth [7]. In both of these cases, the detachment is areally extensive ($1.6 \times 10^6$ km$^2$ and $3.4 \times 10^3$ km$^2$, respectively), has a thin upper sheet (1-4 km) consisting of "tiles" offset laterally 20-30 km, is characterized by a regional basal detachment plane sloping 0.2°-2°, and is genetically linked to a large volcanic construct or thermally induced regional uplift [4-6]. All of these features can be considered characteristic of the Venusian tesserae as well, if we assume the presence in them of a basal detachment plane. It seems likely, too, that some aspects of various models of thin-skin distension proposed for the southwestern United States (e.g., [8-12]) are probably similar to those of the tesserae.

We suggest that Laima Tessera may be genetically associated with the early stages of a rifting event now expressed by Sigrun Fossae: the tessera's orthogonal orientation of structure to the axis of Sigrun, and the crustal upwarping and increased thermal flux that would have preceded such a rift, strongly suggest such a relation. In the case of Fortuna Tessera (about $3 \times 10^6$ km$^2$), in western Ishtar Terra, the volcanic construct of Maxwell Montes is the clear candidate for having provided the gravitational potential and thermal impetus for spreading. The great extent of Fortuna Tessera and its decrease in width away from Maxwell suggests some tentative hypotheses: (1) a steadily growing, westward-moving hot spot that is expressed as present-day Maxwell; and (2) destruction of the tessera by a westward-propagating rift (manifested by the disrupted zones Kamari and Allat Dorsa), which appears to be continuous with Sigrun Fossae (nomenclature from [13]).

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Figure 1. Venera 15/16 8-cm radar image of the southeastern part of Laima Tessera, illustrating the correlation of flow-like structure with surface relief. Elevations in kilometers (from Pioneer-Venus); scale approximately 1:5 million.