formed contemporaneously with mountainous topography in Ishtar Terra by folding or faulting in response to regional-scale horizontal compression of the lithosphere. Folding may have been facilitated by an interlayering of volcanic and sedimentary rock units within the Venus crust [*Warner*, 1983]. Evidence supporting a compressional origin for banding includes the linearity and continuity of individual bands, the relationship between band trends and topographic contours in some regions near the ends of mountain ranges, the suggestion of closure in radar images of several bands, and the very different manifestations of lithospheric extension evident in highland areas elsewhere on Venus. The geometric characteristics of the bands and the details of their relationship to topography are presently being analyzed further in an effort to test these ideas [*Head et al.*, 1983*a*, *b*]. The various tectonic models developed in this paper should serve as a basis for continued analysis of existing data and for distinguishing among the competing hypotheses for highland formation and global tectonic evolution on Venus against future radar images of Ishtar Terra and other regions at a resolution substantially improved over that achievable with present earth-based techniques.

A principal new result from the tectonic models for band formation developed in this paper is that the surficial layer of elastic-brittle or high-viscosity behavior within the Venus highland crust was no more than a few kilometers in thickness at the time the bands formed. On the basis of independent information on the thermal structure of the Venus crust and on the deformational behavior of crustal rocks as determined in laboratory experiments, the elastic lithosphere of the Venus highlands is also likely to be no more than a few kilometers thick. We therefore suggest that banded terrain may be the response to folding or faulting of the Venus elastic lithosphere.

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