

## **EVOLUTION OF A MOUNTAIN BELT ON VENUS: AKNA MONTES-ATROPOS TESSERA REGION**

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A detailed geological analysis has been performed in western Ishtar Terra, a large highland in the northern hemisphere of Venus. Ishtar Terra is a complex feature because it is the site of both compression along its border and volcanism within its interior; four mountain belts surround a large volcanic plateau, Lakshmi Planum. The investigated area comprises an arcuate mountain belt, Akna Montes associated with an outboard plateau, Atropos Tessera, to the West and a volcanic plateau, Lakshmi Planum, to the East. Eight geologic units have been recognized on the basis of their geomorphic and tectonic characteristics as they appear on radar images. Our stratigraphic analysis shows the geological evolution of the study area can be explained in four main steps: 1) formation of the older substrata of Atropos Tessera and Lakshmi, 2) extensive plains emplacement, 3) orogenic phase and formation of Akna Montes, 4) local emplacement of younger plains. The tectonic evolution shows a deformational sequence characterized by contraction, shear and topographic relaxation which is interpreted to be a consequence of the variation of crustal stresses and crustal thickening during orogenic events as observed for terrestrial high plateau associated with a mountain belt. Using two end-members for structural style of Akna Montes, we estimated the amount of crustal shortening associated with the mountain belt for a symmetric fold model and a fault-bend folds model. A large difference between these values has been found, underscoring the importance of strain estimation to define a geodynamic model for orogeny on Venus.