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Dyke Swarms and Magmatic Centers of Tilli-Hanum Planitia and Ananke Tessera, Venus.

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Our research covers the Tilli-Hanum Planitia (THP) and southern portions of the Ananke Tessera (AT). This region has widespread extensional lineaments, including grabens, fractures, and fissures, interpreted to represent the surface expression of underlying mafic dykes. The northern portion of the area has been previously mapped as part of V-4 Atalanta Planitia Quadrangle at 1:5,000,000 scale.

The study area is 47° to 55° N and 117° to 135° E. The goals of this study are to: (1) provide more detailed (1:500,000 scale) mapping of the study area with an emphasis on graben-fissure-fracture systems, (2) organize mapped lineaments into circumferential, radiating, and linear dyke systems, relating them to magmatic centers where possible, and (3) develop relative age relationships and construct a regional geologic history. Mapping is done using NASA's Magellan Synthetic Aperture Radar (SAR) data at a resolution of 75 m per pixel and altimetry data at a 4.6 km per pixel resolution.

Mapping of over 18,000 lineaments has revealed several distinct features, including several magmatic centers and unnamed coronae. *Unnamed Corona 1:* This corona represents a 170 km diameter multi-center system composed of distinct circumferential swarm components, each with different relative age, likely recording a sequence of magmatic pulses within the cluster, consistent with lateral migration or branching of the underlying upwelling plume, similar to the successive magma pulses of discrete lobes in terrestrial large igneous provinces such as the Bushveld Intrusive Complex. *Unnamed Coronae 2-4:* Other unnamed coronae pervade throughout the study. UC2 is the largest of this group with a diameter of 150 km with a nearly complete annulus. UC3 and UC4 represent small, approximately 50 km diameter annulur structures, each with radiating swarms.

Large Cryptic Corona: A large arcuate swarm (C2) is spatially associated with an extensive radiating swarm (R3) of similar proposed origins. The scale of the circumferential and radial swarms is consistent with dyke emplacement driven by an underlying mantle plume of approximately 660 km diameter. This large event likely occurred earlier which facilitated formation of younger swarms, coronae, and magmatic systems, including but not limited to unnamed coronae 1-4 (UC1, -2, -3, -4).