not apparently result in a completely analogous platelike tectonic configuration.

On Earth, the mantle is mainly cooled by the cold subducting lithosphere [8]. Lithospheric subduction on Venus should play a similar role in cooling the mantle. We can evaluate the potential importance of subduction on Venus to planetary heat transfer by estimating the total length of subduction zones on Venus [9] and comparing it with the total length of terrestrial subduction zones (37,000 km [10]). Retrograde subduction on Venus may be occurring not only at the marginal trenches of the large coronae Artemis, Latona, and Eithinoha, but also at arcuate trenches such as Dali and Diana chasmata in Eastern Aphrodite Terra [4] and elsewhere on the planet (e.g., Hecate Chasma, Hestia Rupes, Nightingale Corona, and Parga Chasma). The total length of these arcuate trenches is about 15,000 km [11]. The estimate would be greater if features such as Quetzalpetlatl Corona and the margins of plateau highlands such as Western Ishtar Terra and Thetis Regiones [12] were included. Of course, we do not know if any of these features are presently active. Assuming that they are all active and have terrestrial convergence rates, this trench-length estimate indicates that mantle cooling by lithospheric subduction is a potentially important process on Venus.

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OVERVIEW OF VENUS GEOLOGY: PRELIMINARY DESCRIPTION OF TERRAIN UNITS FOR VENUS GLOBAL GEOLOGIC MAPPING.

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Venus terrain units can be categorized on the basis of morphology, reflectivity, backscatter, roughness, and emissivity. Morphology can be inferred from Magellan left-looking nominal incidence angle image mosaics, right-looking coverage, and more limited left-looking stereo. The typical resolution is about 300 m down to about 120 m near periapsis in the cycle one nominal coverage. The scale of geologic mapping governs definition of mappable terrain units. Initial global mapping is being compiled at a scale of 1:50 million. At this scale, the smallest individual features that can be mapped is about 125 km. The categories of terrain types are plains, complex ridge terrain, features with morphology suggesting volcanic or volcano-tectonic origin, features interpreted to be tectonic in origin, crater units, and surficial units such as splotches and streaks. The following are brief descriptions of terrain units that are being mapped globally at the 1:50 million scale.

Plains:

Smooth plains—Planar surfaces with low radar backscatter and smooth texture.

Smooth plains with wrinkle ridges—Plains with widely spaced (10 km or more) linear to sinuous ridges.

Mottled plains—Plains with many apparently overlapping lobate outline subunits creating a light and dark mottled appearance.

Gridded plains and lineated plains—One or more crossing sets of parallel radar bright lineaments cross the plains.

Complex ridge terrain (CRT):

CRT1—Single trend of generally parallel but irregular ridges and troughs of various wavelengths from a few kilometers to tens of kilometers; individual ridges may exceed 50 km in length.

CRT2—CRT1 disrupted by sets of crosscutting lineaments; Morphology varies from long, sinuous ridge sets to blocky.

CRT3—Two prominent sets of ridges and troughs that are approximately orthogonal; relatively short ridges (25 km) and longer disrupting linear zones (50 km).

CRT4—Chaotic arrangement of ridges and troughs intersecting at a variety of angles and scales; may have lensate or hummocky appearance.

Morphology suggesting volcanic and volcano-tectonic origin:

Corona—Annular arrangement of ridges and troughs; interior varies.

Arachnoid—Circular to quasicircular features with radial systems of lineaments.

Shield—Low h/w often with radial flow-like patterns; diameter 50 to several hundred kilometers.

Dome—Small shield structure with steep sides and broad convex or concave summit; generally simple circular in plan.

Dome field—Cluster of approximately one hundred or more 3- to 10-km dome forms.

Scalloped dome—Dome with radial ridges separating scoop or theater-shaped grooves. Many have surrounding landslide debris.

Flow field—Complex of individual lobate flow-like features typically with parallel alignments and common source.

Channel—Sinuous trough or sinuous linear contrasting pattern on plains.

Features interpreted to be tectonic in origin:

Linear troughs and bright lineaments resembling graben or fractures—Generally steep-sided straight troughs and bright lineaments interpreted to be graben faults and fractures.

Lineament zone—Bands of linear features and broad troughs and basins.

Ridges—Positive linear features similar to lunar wrinkle ridges.

Ridge belts—Bands of ridges having a generally common trend.

Crater units—Various crater related features including ejecta, flow material and pababolic halos.

Splotch—Dark and bright quasicircular features.

Windstreak—Bright and dark streaks generally terminating at one end at a topographic feature such as a dome or ridge.