spreading rate. *Menard* [1984] showed that serrate ridges and transforms could develop during asymmetrical spreading. *Stoddard* [1987] described sinuous and complex patterns of magnetic lineations and abyssal hills on the Gorda plate located between the convergent Blanco and Mendocino fracture zones, and he analyzed models related to mechanisms of rotation of rigid subplates and nonrigid deformation to explain the origin of these patterns on the plate moving toward the apex of the two fracture zones.

In summary, oceanic crust is commonly characterized by a distinctive orthogonal pattern (fracture zones and abyssal hills) whose orthogonal elements differ in their characteristics in the two directions (Figure 3). We now proceed to compare the general fabric of the ocean floor to the fabric of the trough-and-ridge tessera on Venus.

4. COMPARISONS

The basic dimensions, spacing, and geometric characteristics and relationships between the terrains examined on Venus and Earth are summarized in Table 1, and this provides a basis for comparison of similarities and differences between the two terrains. There are numerous similarities between the components of the trough-and-ridge tessera terrain type and basic terrestrial seafloor fabric and structure.

TABLE 1. Comparison of Dimensions of Venus Troughs and Ridges and Earth Fracture Zones and Abyssal Hills

	Dimensions, km		
	Length	Width	Spacing
Venus troughs	up to 1400	10-12	~50
Earth fracture zones	up to 4000	5-20	30-70

	Dimensions, km		
	Length	Height	Spacing
Venus ridges	20-100	?	6-12
Earth abyssal hills	10-50	0.05-0.2	4-10

4.1. *Orthogonal orientation of different components.* Oceanic abyssal hills and fracture zones bear relationships to each other similar to those of elements in the corrugated terrain and troughs in the tessera, i.e., a much greater length of troughs and fracture zones, and orientation of the shorter corrugated terrain elements and abyssal hills orthogonal to troughs and fracture zones.

4.2. *Fracture zones and troughs/fractures.* Oceanic fracture zones and tessera troughs/fractures are similar in their general linearity, in their often arcuate tendency, in their length (measured in hundreds of kilometers with the largest extending over 1000 km across the width of Laima Tessera), and in the width of the central trough (Figures 1-3 and Table 1). On Earth, the "transform domain" is defined as the width of the portion of the seafloor oriented perpendicular to the strike of the FZ that is affected by the presence of the FZ itself (i.e., thinned oceanic crust) (see Figure 3*a*). With existing Venus imaging data, we can see surficial expressions of troughs/ridges but not the more subtle effects of the fracture zone thermal structure. Additional high-resolution altimetry data are required to determine the actual width of the zones or domains in which the troughs occur, but preliminary analysis of Venera 15/16 altimetry data (Figure 2*d*) suggests that they may be wider than the trough observed in the images. The two features (FZs and troughs/fractures) are comparable in their general parallelism and spacing, although detailed analyses of tessera terrain are required to establish the full range and variability of trough/fracture spacing on Venus. The two features are also comparable in their general morphology (Figures 1-3), with both having similar shapes and along-strike variations (changes in strike, basins).

4.3. *Abyssal hills and corrugated terrain.* Oceanic abyssal hills are similar to the ridges and valleys of the corrugated terrain in their distinct parallellism and their consistent occurrence and relatively constant widths over large areas (Figures 2, 3*a*, and 3*c*). They are also similar in terms of the fault-like boundaries of the valleys and ridges, in their spacing (Table 1), and in their relation to the troughs/fracture zones (predominantly terminating against them). More detailed analyses of the spacing of the elements of the corrugated terrain are needed to establish variability within and between domains and between different areas of tessera and to compare these to terrestrial data which show relations of spacing to spreading rates (R. A. Pockalny et al., submitted manuscript, 1989). Additional data (radarclinometry) are also needed to establish the heights and slopes of the elements of the corrugated terrain on Venus.

Significant differences exist between the environment and characteristics of the Earth's seafloor and the general environment of Venus and the trough-and-ridge tessera as seen in Laima Tessera.

4.4. *Differences in environment between Venus and Earth.* Venus is characterized by much higher surface temperatures than the Earth (450°C) and the lack of oceans. These factors have potentially important influences on seafloor spreading processes in terms of crustal formation processes, crustal modification processes, and hydrothermal cooling. Assessment of terrestrial spreading centers under Venus environmental conditions [*Sotin et al.*, 1988, 1989*a,b*] indicates that the major differences between Venus and the Earth would be the influence of the enhanced surface temperature on upper mantle temperatures on Venus and the resulting increase in crustal thickness and elevation of isostatically compensated topography. Crust on Venus produced at average spreading centers would be about 15 km thick, in contrast to the average crustal thickness on Earth of about 5 km. Along-strike variations in upper mantle temperatures at Venus spreading centers (e.g., Icelandic-like hot spots) could produce enhanced crustal thickness and increased isostatically compensated topography (e.g., Icelandic-like plateaus). Application of these concepts to Western Aphrodite Terra (Figure 1*a*), proposed as a site of crustal spreading on Venus [*Head and Crumpler*, 1987], showed that the topography and gravity data for Ovda Regio in Western Aphrodite were consistent with the hypothesis of crustal spreading [*Sotin et al.*, 1988, 1989*a,b*]. Specifically, much of the crust on the flanks of Western Aphrodite may be about 15 km average thickness and could be produced by crustal spreading. Ovda Regio, a central oval-like plateau along the Aphrodite rise, appears to be an area of enhanced crustal