linear, parallel ridges and valleys. These features are oriented parallel to the strike of the mountain belt, and the units occur along the steep western slope and along the crest of the mountain range (Figure 2). Most workers have interpreted these ridges and valleys as compressional features based on a number of observations and arguments including: (1) the continuous nature and regular spacing of ridges [*Campbell et al.*, 1983; *Burke et al.*, 1984; *Solomon and Head*, 1984]; (2) evidence of fold closure of some ridges [*Burke et al.*, 1984]; and (3) the morphological similarity of ridges and valleys in Maxwell to those in the Akna and Freyja orogenic belts, which were interpreted as compressional on the basis of several characteristics including symmetry of the ridges and troughs, suggesting that these represent anticline-syncline pairs; broad, low arches similar to mare-ridge-type features seen on the Moon and interpreted to represent low-angle thrusting and buckling; and linear discontinuities that cut across the strike of the ridges and troughs and are interpreted to represent strike-slip movement [*Crumpler et al.*, 1986]. All of these observations and the overall similarity of ridges on Maxwell to those on Akna and Freyja lead us to interpret them as compressional anticlines and synclines. The strike of the majority of ridges in Maxwell as well as the strike of the mountain belt is approximately N20°W, implying a maximum principal stress axis oriented N70°E.

The "complex unit" (the "dissected terrain") occurs on the gentle eastern slope of Maxwell Montes (Figure 2). In this unit, very short ridge segments abruptly terminate or are intersected by other ridge segments. This unit has a high overall backscatter cross section, suggesting that rough materials occur pervasively. The NNW-SSE dominant trend of ridges in this unit, and their parallelism to the bands in the adjacent banded units is consistent with a compressional origin, with compression oriented along a ENE-WSW axis similar to that seen in the banded units. Although we interpret the ridges to be of a regional compressional origin, the dissected and intersecting nature of many of the ridges and the overall roughness suggests greater tectonic deformation than in the banded units, perhaps resulting from an additional episode not related to the ENE-WSW compression or due to a different mechanical response in eastern Maxwell. A similar type of terrain has been recognized in the Freyja Montes region of northern Ishtar Terra [*Head*, 1990]. Identified as the "ridged and domed unit," this terrain extends down the gentle backslope of Freyja Montes, out across a broad plateau, and is characterized by linear hills, swales, and equidimensional domelike features [*Head*, 1990]. As in Maxwell Montes, the predominant trend of the linear ridges in the ridged and domed unit parallels that of the ridges in the adjacent banded unit of Freyja Montes, all of which are interpreted to have a compressional origin [*Head*, 1990].

The "transitional units" occur on the steep northern and southern slopes of Maxwell, and contain intermediate-length ridge segments which are typically aligned with the NNW trending ridges of the banded units and the dissected terrain. These ridges are also interpreted to be of regional compressional origin, but they are not as continuous as those in the banded units and are commonly arcuate and occur in anastomosing or braided patterns. Occasionally, linear troughs and/or ridges disrupt the continuity of, and strike perpendicular to, the NNW trending ridges. As in the dissected unit, these units are distinguished by their relatively high radar backscatter cross section, suggesting the pervasiveness of rough materials. The relatively great roughness of these units may be attributed to the steep regional slopes which would favor downslope movement of talus throughout these units. More likely, the relatively great roughness is due to regional deformation associated with north and south bounding shear zones identified in previous studies [*Basilevsky et al.*, 1986; *Pronin et al.*, 1986; *Head*, 1986] and discussed below. Relative motion along these shear zones might result in some parallel faulting and additional deformation on Maxwell Montes, leading to increased roughness. Linear troughs oriented perpendicular to the NNW trending ridges on the northern and southern slopes of Maxwell (Figure 2*b*) may represent such faults. Alternatively, these linear troughs could be related to gravitational effects such as gravity sliding or large-scale relaxation.

The "smooth units" are all characterized by homogeneous texture and a lack of kilometer-scale structures. They have a lower backscatter cross section than the rest of Maxwell Montes, indicative of less small-scale roughness and lower reflectivity. Large smooth areas associated with the circular feature Cleopatra occur on a gentle slope, and appear to embay or bury ridges in the surrounding areas (Figure 2). These deposits do not appear to have been deformed by the same events that produced the surrounding ridges, suggesting that they were emplaced following the ridge-forming deformation. They have been interpreted as volcanic flows originating from Cleopatra Patera [*Schaber et al.*, 1987*a*], but they could also represent impact ejecta or impact melt from Cleopatra [*Ivanov et al.*, 1986]. The high backscatter cross section of these deposits relative to the rest of the planet is consistent with the interpretation that they represent impact ejecta since impact craters on Venus often have radar-bright ejecta blankets [*Basilevsky et al.*, 1987]. In addition, some of this "bright terrain" is presently observed upslope from Cleopatra to the west (Figure 2), an observation that also might tend to favor an impact origin. However, caution is also required in this interpretation since some uplift to the west of Cleopatra may have occurred after the emplacement of the bright terrain. The other smooth units (Figure 2*d*) occur in isolated patches across Maxwell Montes in local lows. These local lows occur close to the 6-km altitude contour, and since areas below 6 km near Maxwell Montes are generally radar-dark, then these isolated patches may be radar-dark because they also occur below the 6-km contour and are being affected by the same process that makes other sub-6-km areas radar dark. Alternatively, the low backscatter cross section of these patches indicates that they are relatively smooth materials, inconsistent with large accumulations of talus. This observation, when coupled with the apparent lack of large-scale erosion on Venus mentioned above [*Garvin et al.*, 1984; *Pettengill et al.*, 1982], suggests that these patches could represent accumulations of volcanic materials, rather than talus or soil deposits.

The identification of smooth units west and south of Maxwell Montes as volcanic flows has been well established based on their embayment relationships, their flatness, uniform radar backscatter, and their association with volcanic source vents [*Basilevsky et al.*, 1986; *Pronin et al.*, 1986; *Magee and Head*, 1988]. These flows embay some ridges off the southern slope of Maxwell, but in contrast to the smooth units there is some evidence that these volcanic plains have undergone some tectonic deformation. In particular, immediately west of Maxwell Montes is a unit we identify as "dark ridges" (Figure 2). The structure and strike of these ridges