



Fig. 12. (a) The throughgoing, north-northeast-oriented trough superposed on the degraded arcuate furrows of central Marius Regio. Note the right-lateral offsets of the southern part of the trough and the shifted orientations of the offset trough segments. North is up. (Voyager 2 image 20637.29, centered near 18°S, 162°W.) (b) Structural map of same area. Grooves or troughs are shown in fine lines, and ridges are shown in fine lines with heavy dots. The dark terrain trough is shown as a very heavy solid line. Arcuate and radial furrow orientations are shown respectively as heavy and fine lines, respectively, within circles. Crater rims are shown in hachured lines. Inferred strike-slip faults are shown in heavy dashed lines. Senses of offset and block rotations are shown by arrows. Occurrences of reticulate terrain are shown with crosshatching.

Small dark blocks along this latter fracture zone and surrounding the offset groove lane segments "A" and "B" have been deformed by the formation of reticulate terrain (shown in crosshatching). Reticulate terrain in fact occupies nearly all of the small dark polygons along the southern margin of area 1 (Figures 2b and 7b), and throughout the light grooved terrain between areas 1 and 3 there are "windows" where older reticulate terrain has been only very shallowly resurfaced [Murchie *et al.*, 1986]. The latter observations are evidence that before light material was emplaced reticulate terrain may have occupied much of the proposed zone of distributed shear between areas 1 and 3 where light grooved terrain presently occurs.

Central-southern Marius Regio boundary. Lineament III was suggested earlier to occur at a zone of minor right-lateral shear offsetting areas 3 and 4. Support for this hypothesis would include evidence for clockwise block rotations or pervasive deformation along the lineament. Such evidence may occur at the locale marked "C" in Figure 7b, shown in Figure 12, where

the unique dark terrain trough has been offset right-laterally across at least two narrow groove lanes. To the south of each offset the dark terrain trough becomes more northeast oriented, a pattern suggestive of clockwise block rotation which would be consistent with right-lateral shear. In addition, small dark blocks here have been deformed internally by formation of reticulate terrain and by formation of several very low northeast oriented ridges consistent in orientation with transpressional features (Figure 12). Exposed small dark blocks immediately to the south and west are also occupied by reticulate terrain (Figure 7b).

Deformation of reticulate terrain. The structural patterns observed in reticulate terrain in Figures 8 and 12 are strikingly similar to those observed within certain terrestrial zones of distributed shear. For example, in the Las Vegas Valley shear zone [Nelson and Jones, 1987] linear trends are deflected within a mosaic of small rotated blocks but not immediately outside the mosaic. In comparison, in Figures 8 and 12 reticulate terrain is