



Fig. 16. Mercator map of the anti-Jovian hemisphere, showing the distributions of smooth to hummocky dark materials that bury system I furrows, and of complex grooved terrain. Fine dotted lines are light terrain-dark terrain contacts. The star is the center of symmetry of furrow system II. Note that a small circle 75° - 80° in radius circumscribes the majority of the dark smooth materials.

model 4, dynamic uplift; model 5, large-scale negative diapirism; and model 8, volcanic and tectonic reactivation of a multiringed impact structure.

The dynamic uplift and negative diapirism models predict types of structures and a distribution of resurfacing material that are not observed. Compressional features predicted by the negative diapirism model (model 5) have not been recognized. Although global tensional stress at the time of furrow formation could account for this, the occurrence of long subradial furrows is still unexplained. Formation of system I by dynamic uplift (model 4) does not explain the abundance of subradial furrows, and predicts a concentration of dark terrain resurfacing material at the center of the system. Smooth, younger materials are concentrated significantly to the east of

the center of the system, and in fact are concentrated within 3000-3500 km of the center of the youngest furrow system, system II (Figure 16).

The spatial organization of the furrows and the presence of the possible giant palimpsest at the center of the system support the hypothesis of reactivation of an impact-generated, multiringed structure (model 8) by volcanism and endogenic global extension. If the palimpsest is indeed a remnant of the impact that created fractures utilized by the furrows, then it must be at least as old as the oldest system I furrows. However, the palimpsest is located in an area where resurfacing has partially to completely buried older arcuate furrows, so its albedo contrast with surrounding terrain must have survived an episode of thin resurfacing. Helfenstein [1986] documented