HIGH RESOLUTION MAGELLAN TOPOGRAPHY; Peter G. Ford, Fang Liu, and Gordon H. Pettengill, Center for Space Research, Massachusetts Institute of Technology.

The along–track resolution of the Magellan altimeter is set by its 1.1 millisecond sampling interval and corresponds to a footprint size that varies from 1.9 km at periapsis (10°N) to 20 km at 85°N and 65°S latitude. Over the same latitude range, the across-track resolution, which is determined by the modulation bandwidth, varies from 13 km to 30 km. In practice, the along-track resolution is intentionally degraded during ground processing to no smaller than 8 km in order to increase the signal-to-noise ratio.

In spite of the greater speckle noise and confusion from multi–peaked echoes, it has proven useful to reprocess specific orbits at maximum along-track resolution in order to derive altimetry profiles for low-latitude surface features of particular interest that are known, from Magellan SAR images, to present a favorable aspect to the elongated altimeter footprints, *viz.*

(a) Impact craters,
(b) Coronae and "pancake" domes,
(c) Flow boundaries,
(d) E–W lineaments, faults, graben, etc.

Preliminary analysis shows that many of these features possess surprisingly steep slopes, some of which may surpass the altimeter's resolution limit of about 45°, suggesting that they have suffered very little erosion.

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