

A COMPARISON OF FLUIDIZED EJECTA IMPACT CRATER MORPHOLOGY BETWEEN THE NORTHERN LOWLANDS AND SOUTHERN HIGHLANDS OF MARS. J.F. Ramstad, Dept. of Geology, Northern Arizona University, Flagstaff, AZ 86011, jdr24@dana.ucc.nau.edu

The northern plains and southern highlands of Mars appear strikingly different at the surface. An important question is whether or not differences of the same magnitude exist in the substrate of the two provinces. One way to address this issue is to examine the morphology of fluidized ejecta impact craters and ejecta blankets in selected critical areas.

Unlike previous studies which have looked at certain areas of the lowlands and highlands at moderate to low resolution [1,2], this study uses high resolution imagery as a base for digitization of impact craters and their ejecta blankets. The parameters measured include latitude, longitude, crater diameter, rim perimeter, maximum radial extent of the ejecta, and ejecta perimeter. These values are examined independently and are also used to calculate ejecta mobility and lobateness [3]. In addition, the minimum crater size exhibiting fluidized ejecta in an area is measured, and crater and ejecta types are qualitatively classified using categories established by Mouginis-Mark [4] and Barlow and Bradley [5]. Finally, the three stratigraphic units identified by Parker et al. [6,7] have been added to the

digital database: the ancient cratered uplands; a middle-aged unit ("lowland unit A," the intermediate plains unit) just plainwards of the boundary; and a younger unit ("lowland unit B," the interior plains unit) which occurs the farthest plainwards.

Ongoing studies will determine whether or not there appear to be trends in the collected data, including correlations between the measured crater parameters and the three stratigraphic units. MOLA data will also be incorporated into the analysis to provide a more detailed topographic base than has been available to previous researchers.

References: [1] Costard, F. M. (1988) *LPS XIX*, 211-212. [2] Cave, J. A. (1993) *JGR*, 98, 11,079-11,097. [3] Kargel, J. S. (1986) *LPS XVII*, 410-411. [4] Mouginis-Mark, P. (1979) *JGR*, 84, 8011-8022. [5] Barlow, N. G. and Bradley, T. L. (1990) *Icarus*, 87, 156-179. [6] Parker, T. J. et al. (1989) *Icarus*, 82, 111-145. [7] Parker, T. J. et al. (1993) *JGR*, 98, 11,061-11,078.