GEOLOGIC MAP OF THE V-1 SNEGUROCHKA PLANITIA QUADRANGLE: PROGRESS REPORT. D. M. Hurwitz, J. W. Head, Department of Geological Sciences, Brown University, Providence RI 02912, debra_hurwitz@brown.edu.

Introduction: Geologic mapping of Snegurochka Planitia (V-1) reveals a complex stratigraphy of tectonic and volcanic features that can provide insight into the geologic history of Venus and Archean Earth [1,2] including 1) crustal thickening environments and processes, 2) the nature of diapirism, 3) the nature and origin of deformation belts, and 4) the origin and context of regional plains-forming volcanism. This abstract presents our progress in mapping the spatial and stratigraphic relationships of these features in the region surrounding the north pole of Venus.

Mapping Results: We have used full-resolution (75 m/pixel) images to produce a detailed map and stratigraphic column (Figures 1-3) in conjunction with the USGS mapping effort [3]. Eleven material units and two structural units have been identified and mapped similar to those identified in previous studies [e.g., 4-5]. The material units include (from older to younger) tessera material (t), densely lineated plains material (pld), deformed and ridged plains material, both radar dark and radar bright (pdd, pbd), shield plains material (ps), plains material with dense concentrations of wrinkle ridges (rp), smooth radar dark plains material (pds), smooth radar bright plains material (pbs), lobate plains material (lop), edifice features (ed), and craters material (c). The structural units identified are wrinkle ridges (wr) and extensional lineaments (ext) that deform the mapped units.

Material and Structural Units: The tessera terrain is consistently the oldest material in the region and is characterized by high elevation, extensively deformed radar bright material that is embayed by younger plains units. The fractures that define this unit are generally hard to trace in detail, as many different fracture orientations are evident. In contrast, densely lineated plains material, while also generally characterized by high elevation and a rough surface texture, have a single primary orientation of fractures. These deformed plains are also typically embayed by surrounding plains units.

The next suite of material units identified includes the regional plains material units. The oldest plains units include radar dark and radar bright deformed plains, material that is characterized by dense, small scale fractures and ridges. These units are commonly embayed by shield plains, material with a high concentration of small volcanic shields that range in size from 1-20 km in diameter. In turn, the shield plains are embayed by the radar dark and radar bright smooth plains units, deposits that have generally not been deformed by tectonic processes. Smooth radar bright plains are commonly spatially related to small shield clusters, though there are examples of smooth bright plains that lack evidence of nearby shield volcanism.

The youngest material units in Snegurochka Planitia are lobate plains and edifices. These deposits, mostly surrounding Renpet Mons (+76^o 235E) and near the Itzpapalotl Tessera-Snegurochka Planitia boundary near +76^o 10E are characterized by flows surrounding local edifice-like structures.

Gash-like fractures are mapped separately and are superposed on several units between +75^o and +87^o near 90-115E. While wrinkle ridges have been identified in other areas of this quadrangle, the ridged plains unit tends to have a much higher concentration of wrinkle ridges.

Future Work: The spatial and temporal relationships of units identified in Snegurochka Planitia are being further investigated in order to understand better the tectonic and volcanic history of Venus. The transition between regional volcanism and localized volcanism and the transition between tessera and planitia deposits both represent key questions in the geologic history of Venus, and mapping these units in detail can help determine the processes responsible for shaping the surface of Venus [1,2]. We have completed about 40% of the mapped area and are now checking the consistency and utility of the units and their sequence.

References: [1] J. Head et al., *EPSC* (abs.) 2008; [2] J. Head et al., this volume; [3] K. Tanaka, *USGS Open File Report 94-438*, 1994; [4] A. Basilevsky & J. Head, *Planet. Space Sci*., 48, 75, 2000; [5] M. Ivanov & Head, J. W., *JGR*, 106, 17,515, 2001.

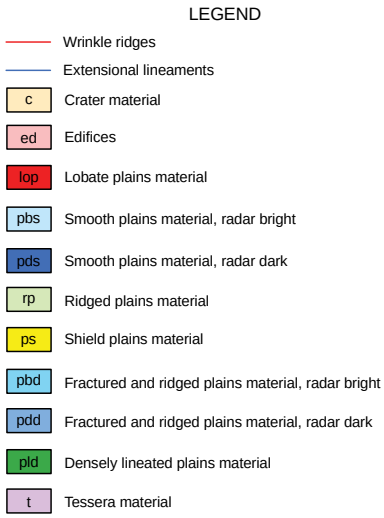

Figure 1. Legend for V-1 Snegurochka Planitia.

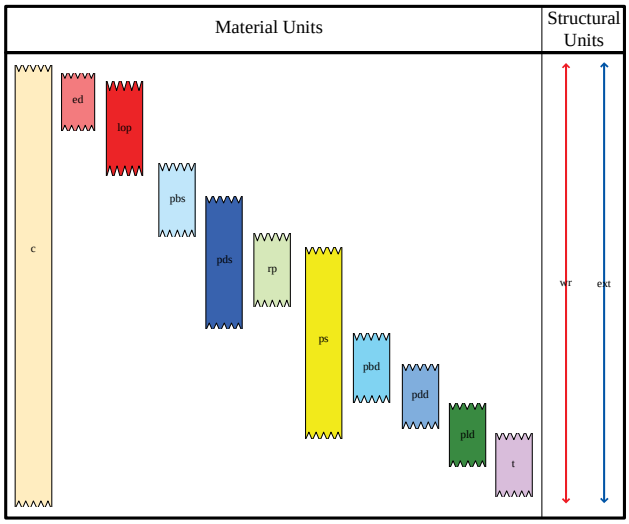

Figure 2. Stratigraphic column for V-1 Snegurochka Planitia.

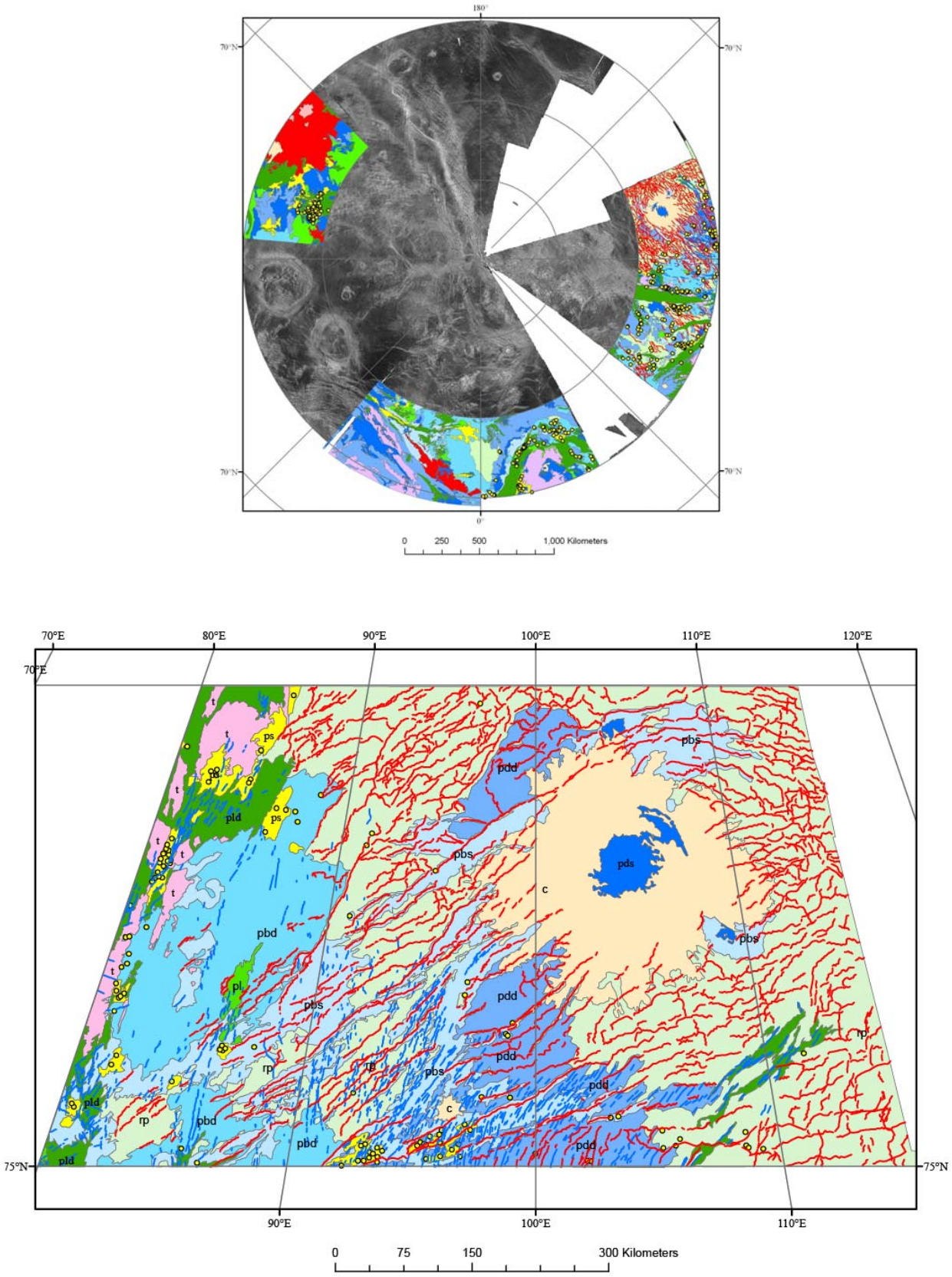

Figure 3: Geologic maps of the V-1 Snegurochka Planitia quadrangle. Status on June 9, 2008.