GEOLOGY OF THE NW PART OF THE V-36 THETIS REGIO QUADRANGLE. A. T. Basilevsky[1,2] and J. W. Head[2], [1]Vernadsky Institute of Geochemistry and Analythical Chemistry, RAS, Moscow, Russia, atbas@geokhi.ru, [2]Department of Geological Sciences, Brown University, Providence RI 02912 USA.

Introduction: This work is a continuation of the photogeologic mapping of the V-36 quadrangle, that is part of the USGS 1:5M planetary mapping project [1]. Here we report on mapping of the NW quarter of this quadrangle..

Mapping Results: As a result of mapping, nine material stratigraphic units and three structural units have been identified and mapped. The geologic map, legend and correlation chart are shown in the second page of the abstract.

The material units include (from older to younger): tessera terrain material (tt), material of fractured and ridged plains (pfr), material of plains with wrinkle ridges (pwr), material of smooth plains of intermediate brightness (psi), material of radar-dark smooth plains (psd), material of lobate plains, material of craters having no radar-dark haloes (C1), and material of craters having clear rdark haloes (C2).

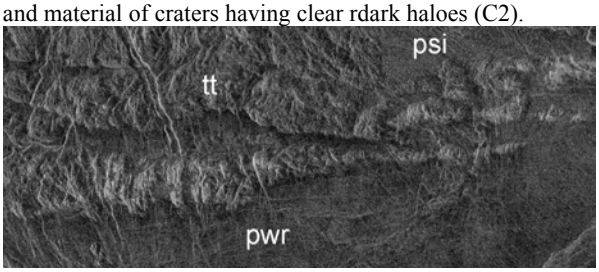


Figure 1. Tessera terrain embayed by materials of units ps and pwr.

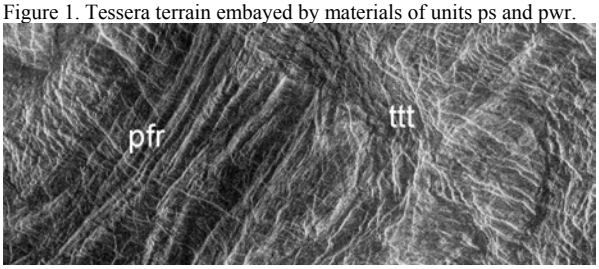


Figure 2. Ridged material of unit pfr and structural unit ttt.

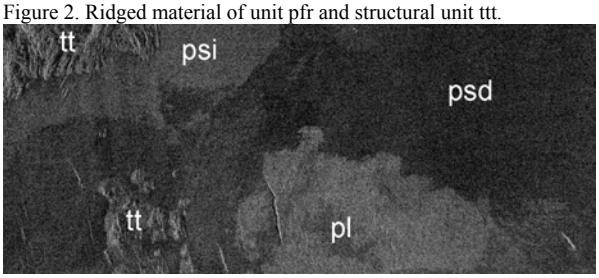


Figure 3. Materials of smooth (psd and psi) and lobate (pl) plains and tessera terrain (tt).

The morphologies and probably the nature of the material units in the study area are generally similar to those observed in other regions of Venus [2]. Tessera terrain (tt) is dissected by structures oriented in two or more directions. Structures are so densely packed (Figure 1) that the morphology (and thus nature) of the precursor terrain are not known. Fractured and ridged plains (pfr), which forms in other regions the so called ridge belts, are observed as isolated areas of clusters of ridged plains (Figure 2) surrounded by other units. Plains with wrinkle ridges (Figure 5), being morphologically similar to those observed in other regions, here occupy unusually small areas. Smooth plains are indeed smooth and lobate plains look less lobate than in other areas of the planet (Figure 3).

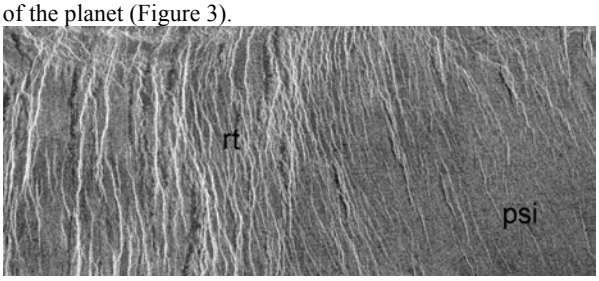


Figure 4. Rifted terrain (rt) and material of unit psi.

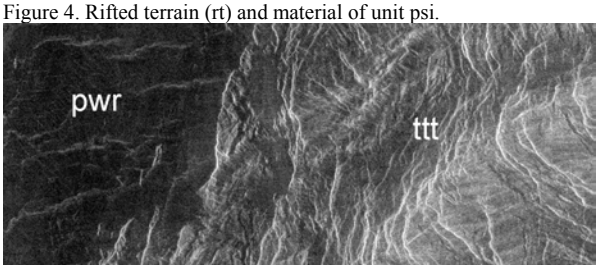
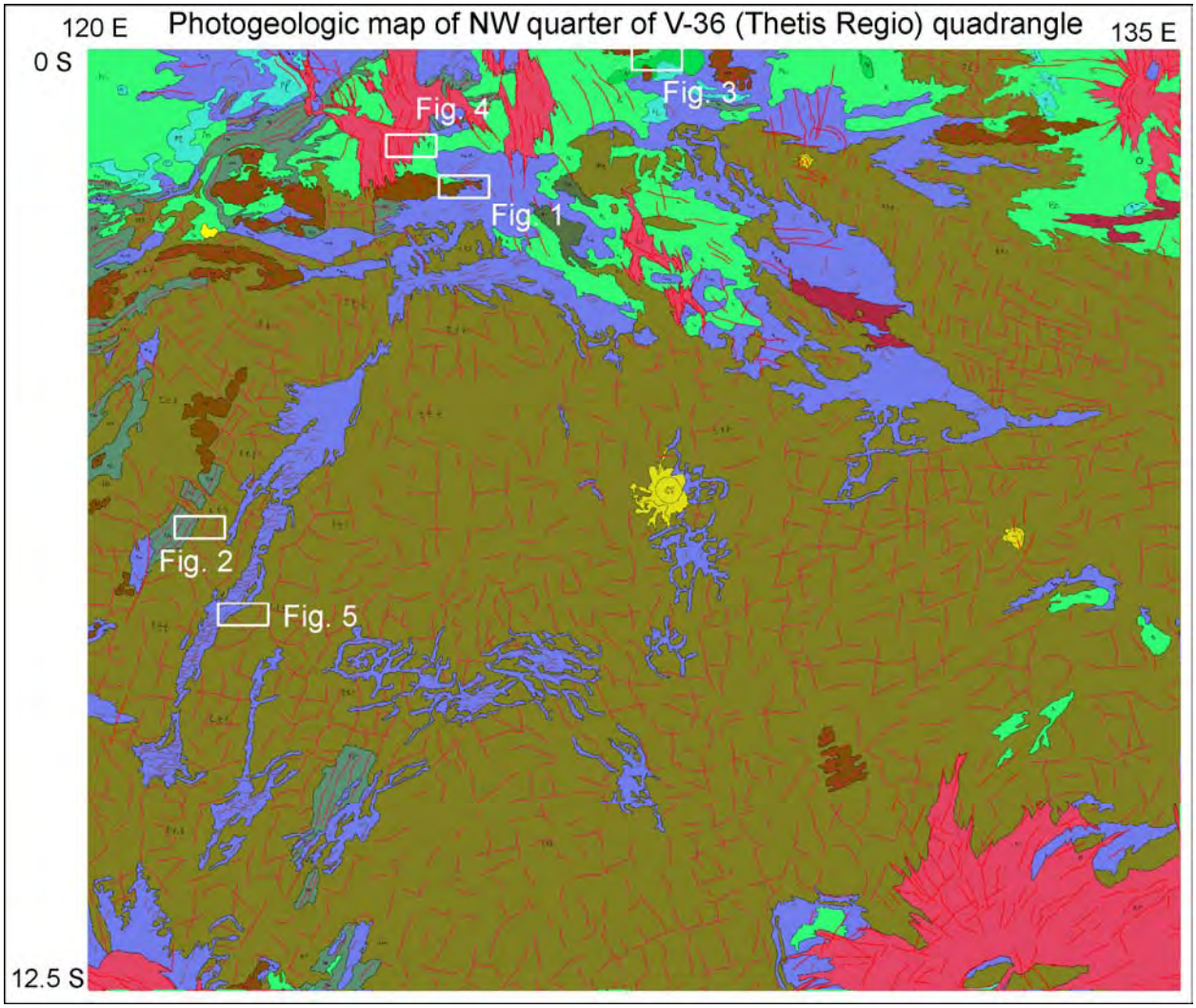


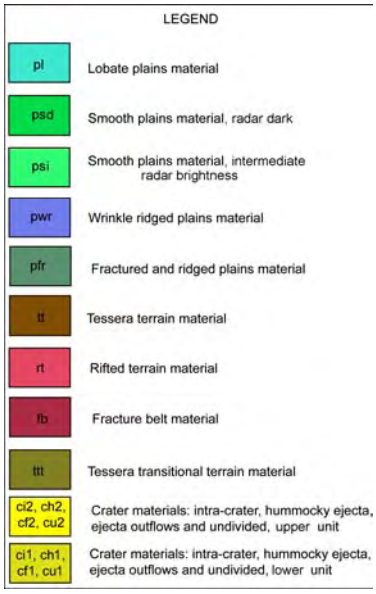
Figure 5. Structural unit ttt embayed by material of unit pwr.

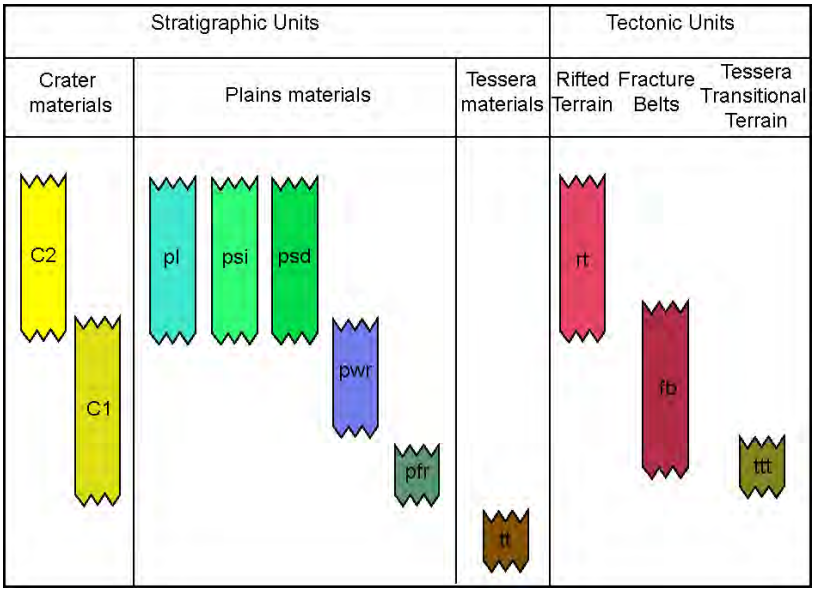
Structural units include rifted terrain (rt), fracture belts (fb), and tessera transitional terrain (ttt). Rifted terrain (rt), as in other regions of Venus, is so saturated with faults (Figure 4) that according to the recommendation of [1] it should be mapped as a structural unit. Fracture belts are probably ancient rift zones [3]. Tessera transitional terrain was first identified and mapped by [4] as areas of fractured and ridged plains (pfr) and densely fractured plains (pdf) deformed by transverse faults that made it formally resemble tessera terrain (tt). The obvious difference between units tt and ttt is the recognizable morphology of precursor terrain of unit tt (do you mean ttt here?) (Figures 2 and 5).

Conclusion: Our mapping analysis and results show that although the mapped units are generally similar to those observed in other regions of the planet, some of them have unusual areal abundances that imply unique aspects of the geologic history of this region. In particular, the unusually high abundance of tessera transitional terrain (ttt) has interesting implications and demands additional studies

References: [1] Tanaka K. K. (1994) *USGS Open File Report* 94-438. [2] Basilevsky A. T. & Head J. W. (2000) *Planet. Space Sci., 48,* 75-111. [3] Banerdt et al. (1997) in *Venues II*, U. Arizona Press, 901-930. [4] Ivanov M. A. & Head J. W. (2001) *JGR*, *106*, 17,515-17,556.


120 E
Photogeologic map of NW quarter of V-36 (Thetis Regio) quadrangle
135 E
0 S
12.5 S
Fig. 1
Fig. 2
Fig. 3
Fig. 4
Fig. 5


LEGEND
pl
Lobate plains material
psd
Smooth plains material, radar dark
psi
Smooth plains material, intermediate radar brightness
pwr
Wrinkle ridged plains material
pfr
Fractured and ridged plains material
tt
Tessera terrain material
rt
Rifted terrain material
fb
Fracture belt material
ttt
Tessera transitional terrain material
ci2, ch2, cf2, cu2
Crater materials: intra-crater, hummocky ejecta, ejecta outflows and undivided, upper unit
ci1, ch1, cf1, cu1
Crater materials: intra-crater, hummocky ejecta, ejecta outflows and undivided, lower unit


Stratigraphic Units
Tectonic Units
Crater materials
Plains materials
Tessera materials
Rifted Terrain
Fracture Belts
Tessera Transitional Terrain
C2
C1
pl
psi
psd
pwr
pfr
tt
rt
fb
ttt