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QUANTITATIVE ANALYSIS OF TERRAIN UNITS MAPPED IN THE NORTHERN QUARTER OF VENUS FROM VENERA 15/16 DATA

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The contacts between 34 geologic/geomorphic terrain units in the northern quarter of Venus mapped by Schaber and Kozak^{1,2} from Venera 15/16 data were digitized and converted to a Sinusoidal Equal-Area projection. The result was then registered with a merged Pioneer Venus/Venera 15/16 altimetric database, root mean square (rms) slope values ($C\text{-power}^{-1/2}$), and radar reflectivity (ρ) values (uncorrected for diffuse scatter) derived from Pioneer Venus^{3,4}. The resulting information, described by Schaber⁵, includes comparisons among individual terrain units and terrain groups to which they are assigned in regard to percentage of map area covered, elevation, rms slopes, reflectivity, and density and latitudinal and longitudinal distribution of suspected craters >10 km in diameter. Table 1 gives 10 physical characteristics of 12 terrain groups; each terrain group consists of 1 or more of the 34 individual map units (see Schaber⁵ and Schaber and Kozak¹). The area included in this study of the northern quarter of Venus is $111.4 \times 10^6 \text{ km}^2$.

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REFERENCES: ¹Schaber, G.G., and Kozak, R.C. (1990). U.S. Geol. Surv. Open-File Rept. 90-24, 1:15,000,000 scale, 2 sheets. ²Schaber, G.G., and Kozak, R.C. (1990). Repts. Planet. Geol./Geophys. Program-1989, NASA TM 4210, 6-7. ³Pettengill, G.H. and 5 others (1980). J. Geophys. Res., 85, 8261-8270. ⁴Pettengill, G.H., Gorf, P.G., and Chapman, B.D. (1988). J. Geophys. Res., 93, 14. ⁵Schaber, G.G. (1990). U.S. Geol. Surv. Open-File Rept. 90-468, 57 p.

Table 1 - PHYSICAL CHARACTERISTICS AND CRATER DATA FOR TERRAIN GROUPS
IN THE NORTHERN QUARTER OF VENUS MAPPED FROM VENERA 15/16 (AFTER SCHABER⁶)

Group	Symbol	% of map area	Area (10 ⁶ km ²)	Elevation (km)	SD in Elev. (km)	Mean rms slope (°)	SD in rms slope (°)	Mean refl.	SD in refl.	Number of impact crts.	Impact crts/10 ⁶ km ²
LP		52.58	58.57	6051.30	0.59	2.20	0.90	0.133	0.083	55	0.94
LFT		14.94	16.63	6051.36	0.82	2.14	1.15	0.144	0.089	26	1.56
T		9.64	10.72	6053.46	1.55	4.82	3.09	0.127	0.141	9	0.84
RT		9.05	10.07	6051.14	0.70	2.79	1.43	0.118	0.083	8	0.79
UP		4.79	5.33	6053.35	1.42	2.91	2.10	0.130	0.119	9	1.69
SPT		3.60	3.99	6052.50	1.26	2.22	0.95	0.135	0.080	3	0.75
DU		1.74	1.94	6052.49	1.12	3.05	1.80	0.114	0.079	2	1.94
CO		1.44	1.60	6051.88	0.62	3.33	2.32	0.134	0.106	0	0
LMB		1.17	1.30	6052.57	1.15	4.72	3.30	0.126	0.132	1	0.77
HMB		0.68	0.76	6056.57	2.28	7.45	4.19	0.275	0.227	3	3.96
HT		0.23	0.26	6052.74	0.82	3.35	1.58	0.127	0.078	0	0
CR>45 KM		0.18	0.20	6051.29	0.55	1.85	0.84	0.138	0.080	0	0

LP=LOWLAND PLAINS; LFT=LINEATED/FRACTURED PLAINS; T=TESSERA; RT=RIDGED TERRAIN
UP=UPLAND PLAINS; SPT=SHIELDS, PATERAE, THOLII; DU=DOMED UPLANDS; CO=CORONAE;
LMB=LOW MARGINAL BELTS; HMB=HIGH MARGINAL BELTS; HT=HILLY TERRAIN; CR>45 KM=IMPACT CRATERS >45 KM IN DIAMETER