

terrain. The importance of this classification is that it suggests certain topographic levels have related radar properties which are likely to be dependent on their larger-scale geologic character. It will be important to analyze the high-resolution radar images from Arecibo and Veneras 15 and 16 in light of the PV radar property units defined in Figure 6.

CONCLUSIONS

The results of our statistical analysis of the PV reflectivity data for Venus in a geological context have shown the following:

1. Venus is apparently not dominated by a globally continuous regolith like the moon and is better characterized as having extensive bedrock exposures covered with variable amounts of soil. The Venera panoramas illustrate terrain representative of the predominant ρ character of the Venusian surface.

2. Soil-dominated regions comprise only 15% of the Venusian surface and are not distributed preferentially with respect to elevation.

3. High dielectric regions comprise 15% of the surface of Venus and are usually located either in or on the flanks of major mountains. Such materials may represent basalts enriched in titanium and iron compounds such as ilmenite, rutile, or magnetite.

4. The global distribution of ρ is essentially Gaussian with a mean and standard deviation of 0.13 and 0.057, respectively.

5. The correlation of mean ρ with elevation is weak, and only the intermediate highlands (3.5–5 km) display a strong positive correlation. The high plains (0.9–2.0 km) display a negative correlation with both elevation and roughness. This decrease in ρ is apparently real and indicates an increased abundance of high-porosity materials possibly caused by enhanced chemical weathering at such elevations. In general, it appears that ρ is not controlled by regional slopes or elevation and may reflect more local scale differences in the surface due to porosity structure, density, and composition.

6. Statistically defined radar property surface "units" on Venus are distinguished on the basis of a combination of reflectivity, roughness, and regional slope parameters; subunits within the plains and mountains are largely related to the character of the correlations between the ρ , α , and regional slope data sets and elevation. Some of these subunits appear to be related to larger-scale features visible in the high-resolution radar images of Venus [e.g., Campbell et al., 1984b].

7. Reflectivity appears to be a property that is sensitive to the geologic effects of different weathering regimes, styles of volcanism, and surface ages.

Acknowledgments. We gratefully acknowledge helpful discussions with Peter Ford, Don Campbell, Buck Sharpton, and Alan Peterfreund. Programming support from Ed Robinson, Jeff Tingle, and APL language is appreciated. Inspiration from U2 is recognized. M. E. Murphy helped prepare the manuscript. The drafting assistance of A. Hilliard and L. Key along with the photographic support of C. Carver is much appreciated. This research was sponsored by NASA grant NGR-40-002-088 to J.W.H.

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