

# THE ABSENCE OF YARDANGS ON VENUS

(Letter to the Editor)

KENT D. TREGO

*Planetology Research Institute, Palo Alto, California U.S.A.*

(Received 28 March, 1990)

**Abstract.** Large yardang formations, found on Earth and Mars, have not been detected in Venera 15/16 imagery of Venus.

Pioneer Venus, Venera, and Arecibo radar imagery of Venus has revealed the surface of the planet has been shaped by tectonic and volcanic processes. Aeolian activity on Venus has apparently resulted in the erosion of impact crater rims and surrounding debris fields (Barsukov *et al.*, 1986). Other possible effects of aeolian erosion on the Venusian surface are not evident.

Aeolian erosion on Venus may largely result in the accumulation of unconsolidated material (Greeley *et al.*, 1987; Marshall *et al.*, 1988). Dunes on Venus may

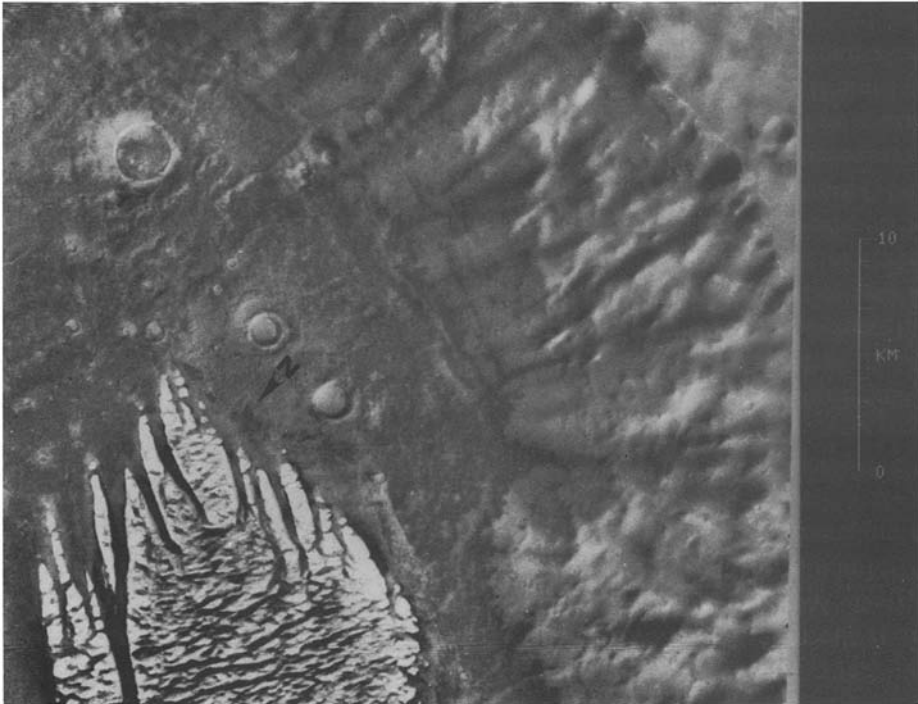


Fig. 1. The Martian yardang formation White Rock (Viking Frame 826A36).

be eliminated by periods of high winds (Greeley *et al.*, 1984). Dunes may not even be detectable in radar imagery (Blom and Elachi, 1987).

Yardangs are elongated geological bedrock structures result of aeolian activity. They occur commonly in large formations on the kilometer scale on Earth and Mars (Ward, 1979). They are evidence of strong recent wind erosion and should be detectable in the Venera 15/16 imagery of Venus which has a surface resolution of 2–4 km. A good example of what yardang formations on Venus should look like is the geological structure on Mars called White Rock (Figure 1) which is a yardang formation (Ward, 1979).

Yardang formations are not apparent in the Venera 15/16 imagery of Mars. They may exist on a smaller scale which as yet has been undetectable in the radar imagery of Venus. The Magellan mission to Venus should provide an imagery resolution at which subkilometer size yardangs and other aeolian features will be visible.

It is possible that winds and abrasive saltation and deflation may be at such levels that conditions for yardang formation on Venus are not favorable.

### Acknowledgements

The author would like to thank the National Space Science Data Centre for providing the Venera 15/16 imagery of Venus.

### References

- Barsukov, V. L., Basilevsky, A. T., Burba, G. A., Bobinna, N. N., Kryuchkov, V. P., Kuzmin, R. O., Nikolaeva, O. V., Pronin, A. A., Ronca, L. B., Chernaya, I. M., Shashkina, V. P., Garanin, A. V., Kushky, E. R., Markov, M. S., Sukhanov, A. L., Kotelnikov, V. A., Rzhiga, O. N., Petrov, G. M., Alexandrov, Yu. N., Sidorenko, A. I., Bogomolov, A. F., Skrypnik, G. I., Bergman, M. Yu., Kudrin, L. V., Bokshtein, I. M., Kronrod, M. A., Chochia, P. A., Tyufin, Yu. S., Kadnichansky, S. A., and Akim, E. L.: 1986, *J. Geophys. Res.* **91**, D378.
- Blom, R. and Elachi, C.: 1987, *J. Geophys. Res.* **92**, 7877.
- Greeley, R., Marshall, J. R., and Leach, R. N.: 1984, *Icarus* **60**, 152.
- Greeley, R., Marshall, J. R., and Pollack, J. B.: 1987, *Nature* **327**, 313.
- Marshall, J. R., Greeley, R., Tucker, D. W., and Pollack, J. B.: 1988, *Icarus* **74**, 495.
- Ward, A. W.: 1979, *J. Geophys. Res.* **84**, 8147.