

THE STATISTICS OF CIRCULAR FEATURES ON THE PLAINS OF VENUS. O.V. Nikolaeva (1), L.B. Ronca (2), A.T. Basilevsky (1), (1) Vernadsky Institute, U.S.S.R. Academy of Sciences. (2) Wayne State University.

Circular features on the plains can be seen in large numbers on the radar images of Venus obtained by Veneras 15 and 16. Some display clear impact morphologies, others have origin not so easily determined. On the basis of their morphology, they were classified into several categories: 87 obvious impacts, 52 narrow-rim depressions, 19 albedo features, 9 no-rim depressions, 45 arachnoids, 27 coronae.

Two basic approaches were used. One measured the size distributions and statistically determined similarities and differences between each category. The second determined the areal distributions and compared them with theoretical Poisson distributions. It was concluded that not all circular features are due to impacts. Coronae and arachnoids (1) differ from impacts in both size distribution shape and by not following an areal Poisson distribution and, therefore, are probable endogenes. Other categories have different probabilities of being due to impact.

Figure 1 shows several histograms of size distributions. Curve 5 represents the distribution of all the craters of the ancient lunar highlands. Curve 4 follows the distribution of the mare basins. These curves can thus be thought to represent an age of about  $4.5 \times 10^9$  y B.P. Curve 6 shows the size distribution of the impact craters on a typical mare surface thus representing an age of approximately  $3.0$  to  $3.8 \times 10^9$  y B.P. Curve 1 is the distribution of the obvious impact craters on the Venusian plains. It is evident that Curve 1 produces an age considerably younger than that of the lunar maria. Curve 2 represents the distribution of all the features of Curve 1 plus the circular features which are probable impacts. This brings the age nearer to that of the lunar maria. Curve 3 represents the data of Curves 1 and 2 plus the circular features which are not probable endogenes. This produces an age larger than that of the lunar maria and less of equal that of the lunar highlands. Curve 7 represents the distribution of large Martian basins.

The geological implications of these results are numerous and probably involve the whole geological make-up of Venus. They will be presented later.

#### REFERENCES

(1) V.L. Barsekov et. al. in press, Proceedings of the 16th Lunar and Planetary Conference.

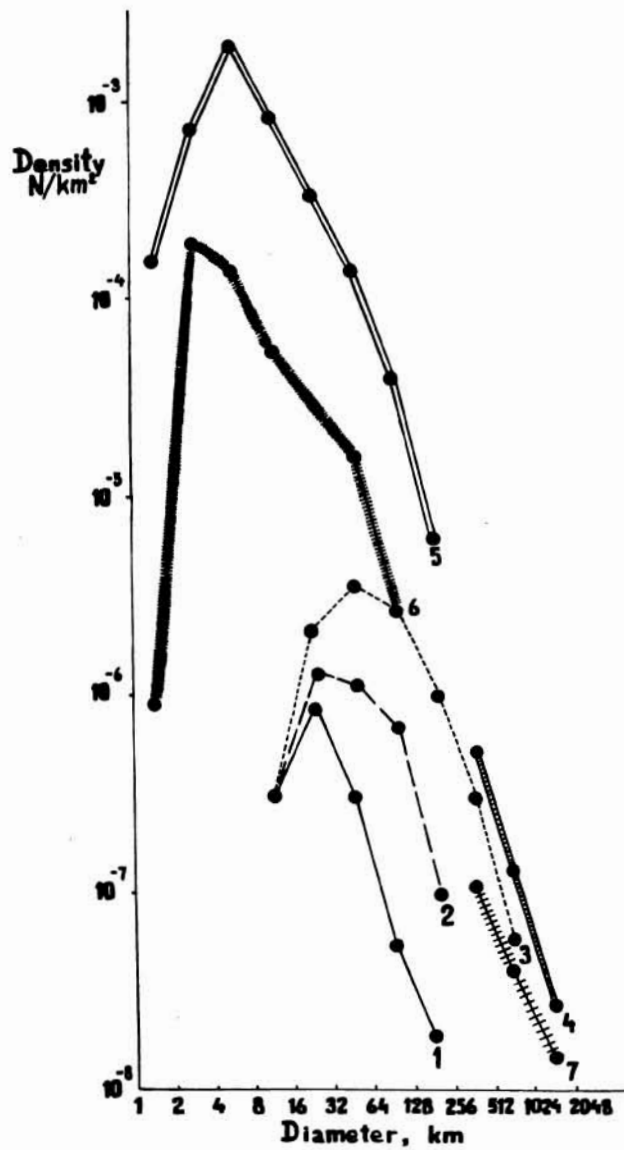


Fig. 1. Histograms of the size distribution described in the text.