

PRELIMINARY DATA ON THE AGE OF THE MONS RUMKER VOLCANIC PROVINCE. A. A. Dmitrovsky, M. A. Zacharova and E. N. Slyuta, *Vernadsky Institute of Geochemistry and Analytical Chemistry of the Russian Academy of Sciences, Moscow, Kosygina str., 19 (sandr200@gmail.com).*

Introduction: Mons Rumker are known as volcanic dome midst the Oceanus Procellarum (Fig.1). It is exceptionally attractive place because of spatial superposition of unexplored volcanic features and marine materials of wide spectrum of ages (from Lower Imbrian Series to Copernican System) in the nearest neighborhood around it [1]. That is why this region is supposed for being primary target for russian heavy rover “Lunar Robot-Geologist” [2, 3]. In order to prepare for the mission, the study of morphology, history and matter of the volcanic province has been begun.

The dome’s relative elevation is about 1 km and about 70 km in diameter [4]. It has asymmetric slopes, the eastern is gentler. The rise consists of at least ten individual volcanoes, as they are understood. Some of them have calderas at the top.

Methology: The whole research is based upon the LRO WAC images mosaic with mean resolution 100 m/pixel. The crater counting was performed using CraterTools for ArcGIS. The crater statistics was performed using Craterstats. Only craters with diameter more than 300 meters were taken into account.

According to morphologic (Fig.2) and albedo characteristics volcanic province was distinguished. Mean ages was obtained from craters size-frequency distribution [5, 6].

Craters density was calculated with ArcGIS instrument (Fig.3).

Results:

The mean age for the whole volcanic province is seemed to be 3.79 Ga (Fig. 4) corresponding to Lower Imbrian Series [1].

Craters density (Fig.3) gradually rises from west to east that lets us suppose that volcanics in the east are older.

Discussion:

The resulting mean age of the volcanic province about 120 Ma older than the oldest age obtained by [7] (3.67 Ga). Volcanic province is seemed to overlaying the Eratosthenian marine lavas and to be covered by Copernican materials [1]. We suggest that volcanic province was formed as Lower Imbrian focus of marine volcanism on its earliest stages. But only the following exploration could give the exact answer. In order to receive it, we have to provide geomorphologic and geologic mapping in details with obtaining ages for different parts of surrounding plain and volcanic province including mapping on the basis of a high resolution mosaic images and DEMs [4, 8].

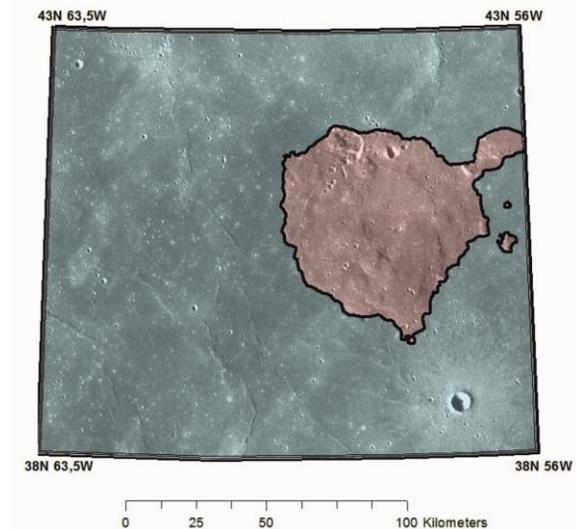


Fig.1 LRO WAC mosaic of Mons Rumker region. Our research based on it. Red area – distinguished volcanic province.

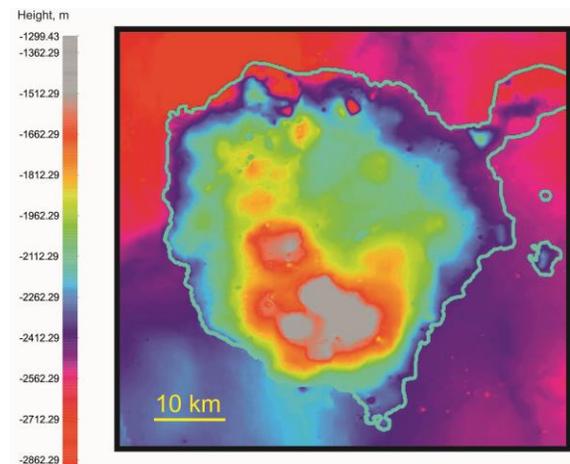


Fig.2 Digital elevation model of volcanic domes of the study area.

References:

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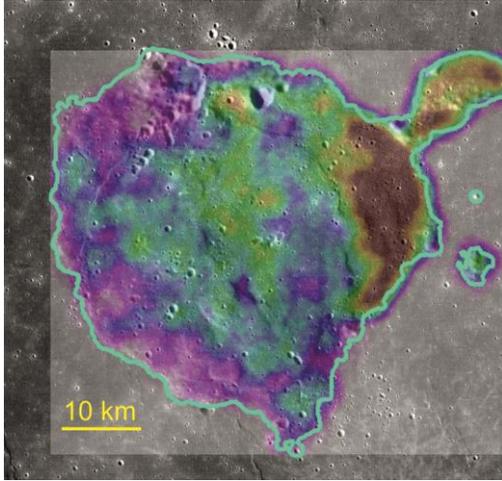


Fig.3 Density of craters which were distinguished by themselves in the study area. Density calculated with sliding window method (circle window with radius = 3000 m).

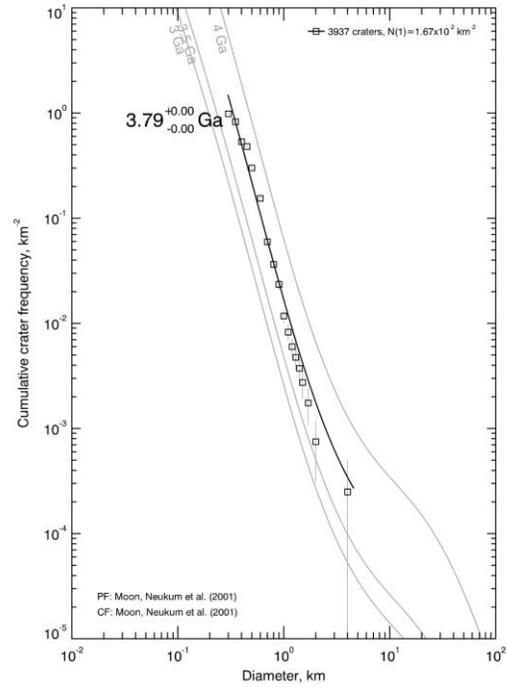


Fig.4 Cumulative crater density in the volcanic province and an age of the region which was revealed by CraterStats.