EVIDENCES FOR LATE STAGE VOLCANIC ACTIVITY FROM THE OHM CRATER ON THE FARSIDE OF THE MOON. P. M. Thesniya[1], V. J. Rajesh[1], I. S. Juda Benhur[2], [1]Department of Earth and Space Sciences, Indian Institute of Space Science and Technology, Valiamala, Thiruvananthapuram 695 547, India, [2]Center for Remote Sensing, Bharathidasan University, Tiruchirappalli 620 023, India (thesniyathesni91@gmail.com).

Introduction: Studying Copernican craters provides insight into the youngest geological activities on the Moon [1]. Ohm crater (18ºN, 113ºW) is a complex Copernican impact crater located on the farside of the Moon (Figure 1). The present study investigates distinct morphological features in the Ohm crater in order to understand the cratering processes as well as subsequent evolutionary history of the crater [2].

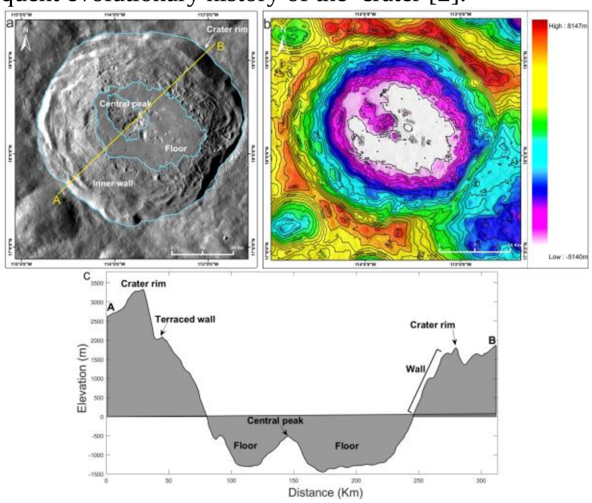

Figure 1 (a) LROC-WAC mosaic of the Ohm crater. Major morphological units have been labeled in the image. (b) Colour coded elevation map of the Ohm crater. (c) Topographic profile across the crater from A-B in the figure 1a.

Data and Methods: High resolution panchromatic images from Chandrayaan-1 TMC (Terrain Mapping Camera), LROC-WAC (Lunar Reconnaissance Orbiter Camera-Wide Angle Camera), NAC (Narrow Angle Camera) and LRO-LOLA (Lunar Reconnaissance Orbiter-Lunar Orbiter Laser Altimeter) have been utilized for investigating the various morphologies in the crater. Morphological mapping of the crater was performed in ArcGIS software.

Results: Extensive impact melting has occurred in the crater. Various morphological units in the Ohm crater have been mapped in finer detail (Figure 2). The crater exhibits a central peak elongated in an NW-SE direction of the crater which appear to have been draped by impact melt deposits. Channelized lava flows, lava ponds (Figure 7) as well as melt fronts have been identified along the sloping walls of the crater.

Crater Floor: Crater floor exhibits numerous dome like features in association with cooling cracks. Some domes exhibit central pit at the summit (Figure 4 &5).

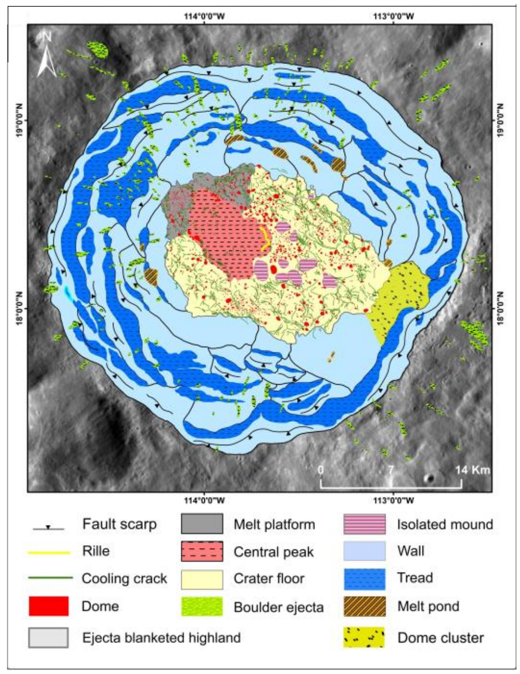

Figure 2 Morphological map of the Ohm crater.

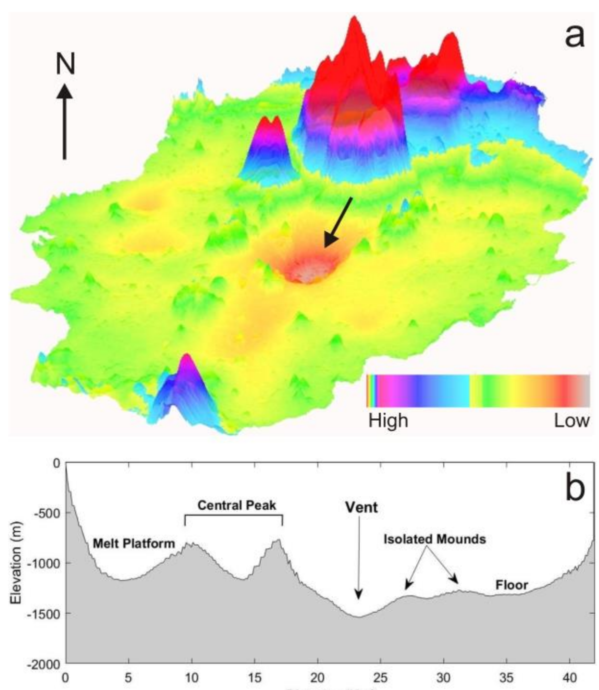

Figure 3 (a) 3D view of the floor of the Ohm crater. The black arrow points towards a probable volcanic vent. (b) Topographic profile across NE-SW section of the crater floor.

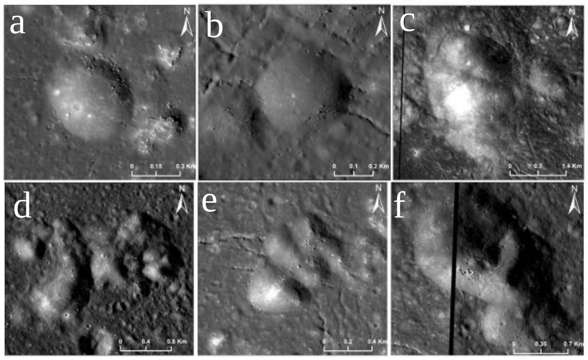

Figure 4 (a-f) LROC-NAC images of the domes identified from the crater floor.

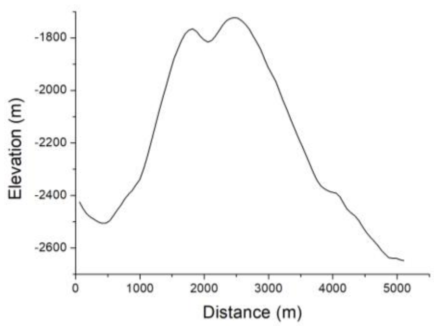

Figure 5 Topographic profile across the dome feature shown in the figure 4f. Central pit at the dome summit is visible.

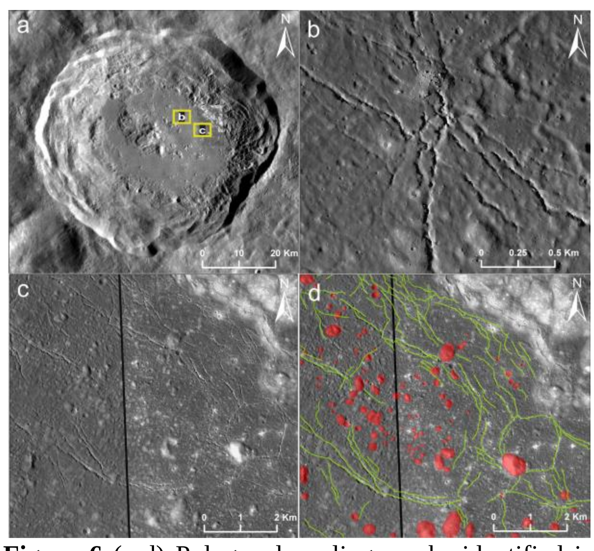

Figure 6 (a-d) Polygonal cooling cracks identified in association with dome like features on the crater floor. (a) Rectangles represent the locations of cooling cracks. Base image is WAC mosaic of the crater. (d) Polygonal cracks and associated domes mapped on the NAC image.

Isolated mounds have also been observed on the crater floor which is thought to be a subdued part of the central peak (Figure 3). A topographic depression which is quite regular in nature has been found on the floor (Arrow pointed in figure 3). Basaltic dome like features are abundant on the sloping inner flanks of this feature. The distinct morphology of this topographic depression indicate an endogenic origin [3]. This would have been formed by collapse of a volcanic vent. Further studies are required to understand the processes involved in its formation as well as subsequent modifications during the evolution of the Ohm crater.

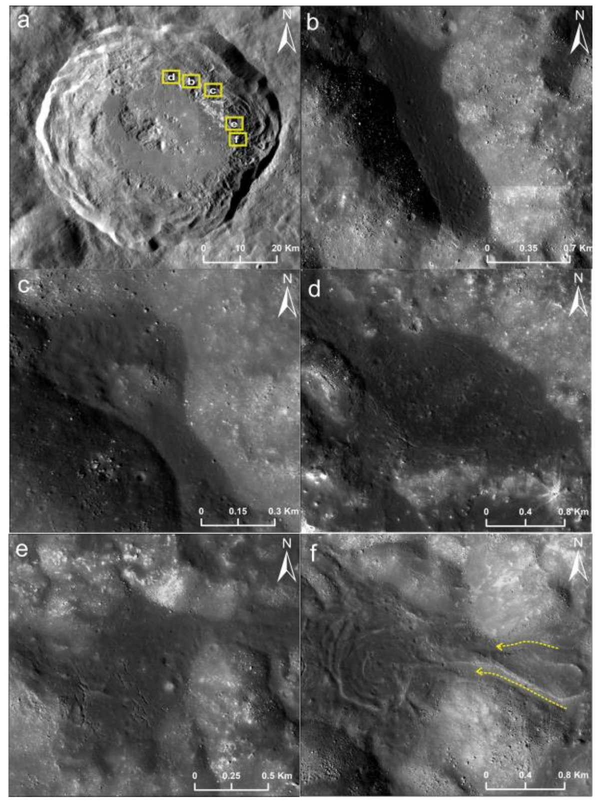

Figure 7 (a-e) NAC images of the lava ponds identified on the crater wall. (a) WAC showing the lava pond locations, marked as rectangles. (f) Lava pool in a spiral form due to the falling of clasts into the pooled lava.

References: [1] Ostrach, L.R et al. (1997) *LPSC XLVII*, Abstract #2099. [2] Dhingra, D. et al. (2015) *Icarus.*, 283, 268-281. [3] Lawrence, S.J. et al. (2013) *JGR*, 118, 615-634.

Acknowledgments

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