SECONDARY CRATERS AROUND ORIENTALE BASIN AS OBSERVED FROM CHANDRAYAAN-2

The very first image acquired recently from India's Chandrayaan-2 mission has captured the SE portion of the far side of the Moon, showing highly cratered highland region with two dark mare patches belonging to Orientale and Apollo basins. In the upper portion of the image, the lower half of Orientale basin, one of the largest (~930 km diameter) and youngest (~3.8 Ga) impact basin on the Moon could be observed. Apollo crater is another prominent feature as observed towards the eastern side of the image as characterized by double-ringed structure. Many degraded small and big impact craters and a few fresh craters are also present. Besides these, the region is showing population of small craters distributed radially from the Orientale basin in form of continuous trails formed by secondary impact cratering process

Secondary crater are formed from the impact of ejecta from the primary crater that excavate the surrounding surface. Orientale basin being the youngest impact basin is least degraded impact basin and these secondary craters have formed as a result of its impact. The diameter of these secondary craters decreases with increasing distance from the main crater and could be traced for about 500-600 km from the Orientale basin. As Orientale basin was formed from an oblique impact event the distribution of secondary craters is concentrated more towards its NW and SW. Secondary craters can be self secondaries (produced on the top of ejecta), near field secondaries (occurs in chains and clusters near the parent crater), distant field secondaries (continuous secondaries far from parent crater) and background secondaries (distant, isolated and discontinuous) on the basis of the type of occurrence and distance from parent crater. These secondary craters are important in understanding the primary crater event and also provide information regarding nature and distribution of primary crater ejecta.

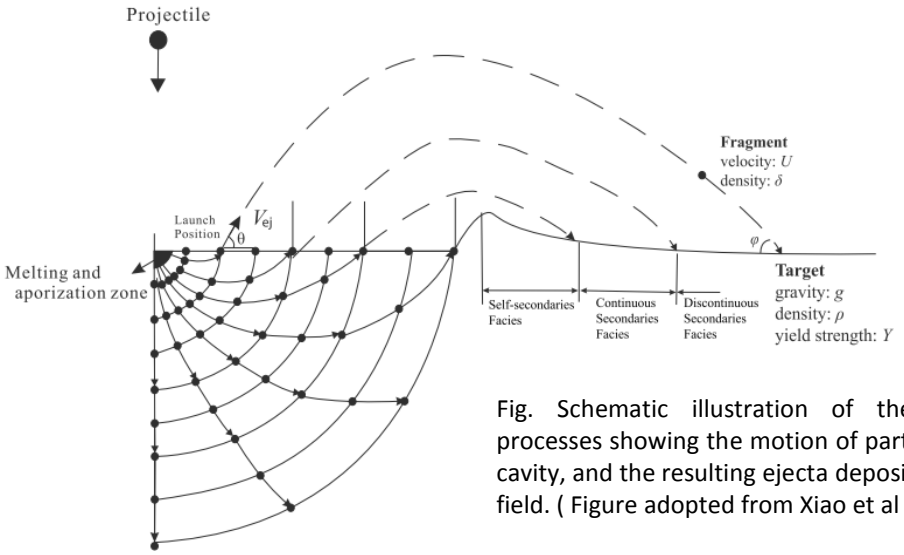
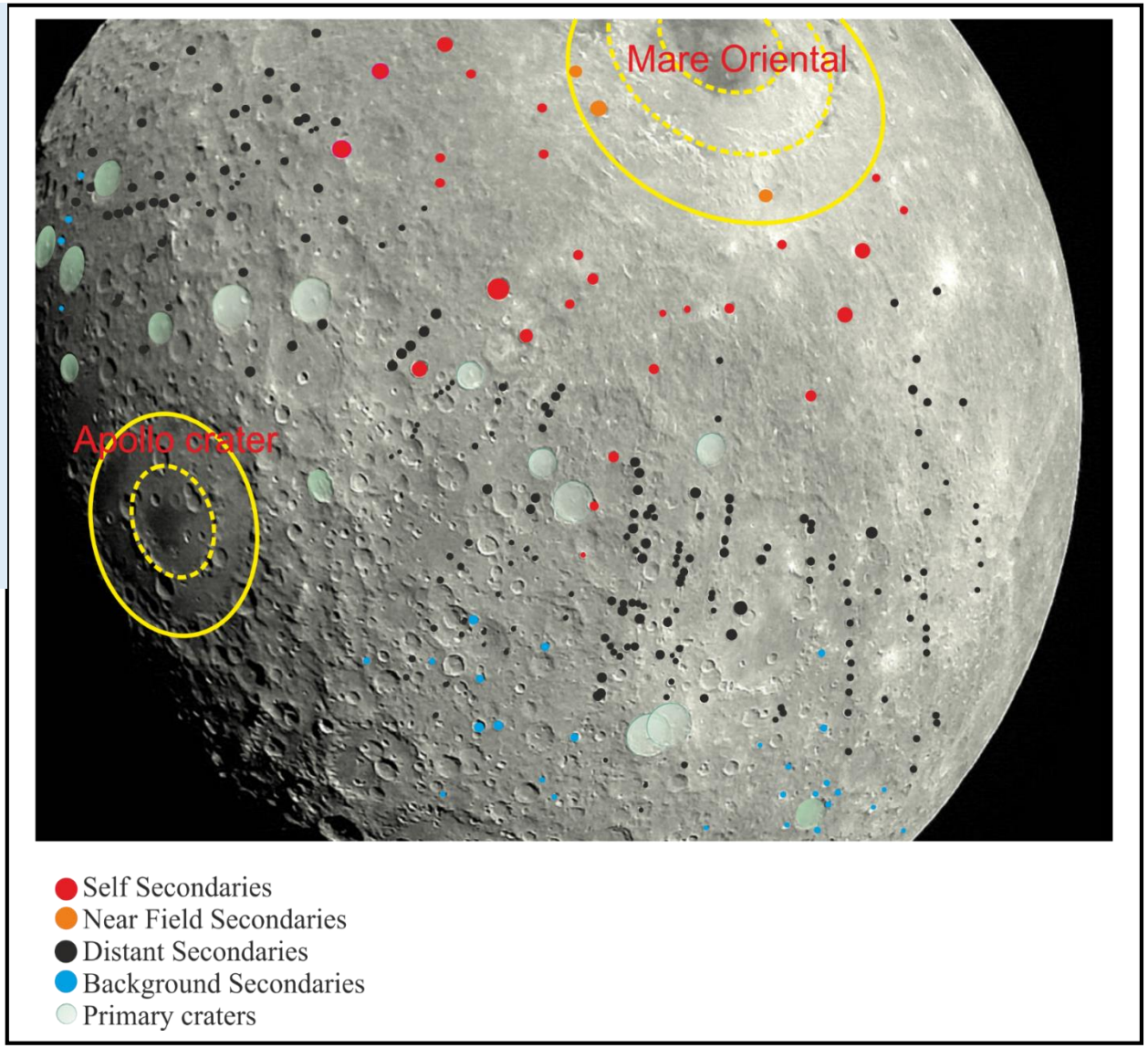


Fig. Schematic illustration of the impact excavation processes showing the motion of particles in the excavation cavity, and the resulting ejecta deposit and secondary crater field. (Figure adopted from Xiao et al 2014)



For more details Refer: Guo, et al., 2018, JGR, Planets, 123, 1344–1367. https://doi.org/10.1029/ 2017JE005446