

Crater Chronology of the Moon

S Vijayan

Planetary Science Division, Physical Research Laboratory, Ahmedabad.

Impact craters are one of the most prominent geological features used to determine the surface age of the planetary bodies. The crater chronology of planetary bodies originated from the Moon. The Apollo sample returned rocks dated in the laboratory to infer the age, whereas, for the same locations, the crater size-frequency distribution (CSFD) was also estimated. Thus, the integration of CSFD to the different Apollo sample locations acted as a base for deriving the crater chronology of the Moon. The empirical measurement of the CSFD of craters produced on the Moon is known as the production function and the construction of a chronology curve that relates Lunar returned sample ages to crater spatial densities with a diameter of crater >1 km. The distribution of craters over the same geological unit is one of the primary criteria in deriving the surface age of the Moon. Lunar crater chronology anchors the cratering chronology of all other inner Solar System bodies and is used to derive crater count model ages for geological units at their surface. Thus, the role of crater chronology derived age on planetary bodies is inevitable and they are one of the primary criteria in determining the landing site on planetary bodies like Moon/Mars. Our recent study on the Chandrayaan-2 landing site estimated the age as ~ 3.7 Ga. The crater chronology derived age for the adjoining craters suggests much older age. Thus, the chronological analysis revealed that the Chandrayaan-2 landing site located on the intercrater plains, where diverse materials are deposits by different aged craters.