

# Verification of *Screen Effect by the Earth* by Counting Craters of the Moon

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## Abstract

The Moon is constantly facing the same side towards Earth. The closest surface towards Earth has more craters than the far side. Based on these facts, we created the hypothesis that “the closest surface towards Earth has fewer craters because the Earth interrupts meteorites to collide with the side”. We called this hypothesis *Screen Effect by the Earth*.

When meteorites collide with the Moon and craters are formed, crashed stones and rocks are piled as regolith layers. Based on data from Lunar Reconnaissance Orbiter (LRO), we compared the diameter between simple craters and flat-bottomed craters within highlands, oceans, near, and far sides from the Moon. As a result, we found that (1) areas covered with thin regolith layer have fewer large simple craters and more narrow flat-bottomed craters, whereas (2) areas covered with thick regolith layer have more large simple craters and fewer narrow flat-bottomed craters.

These findings not only prove the initial *Screen Effect by the Earth* hypothesis but further suggest a new hypothesis that in Lunar crater chronology, there is a need to use different crater production functions to calculate the near and far sides from the Moon, and comparison of craters' shapes and diameter can help indicate underground structure of area.

Keywords: Moon, Crater, Chronology

