

# **A determination of surface ages of small geologic units on the terrestrial planets and satellites**

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We propose the suitable method of determination of surface age of the planets and satellites using smaller craters than 300 m in diameter which reveal the equilibrium saturation. To determine these surface ages using the crater size-frequency distribution (CSFD) which has been useful method in the past planetary missions recently comes up against some kind of problems. These include not only primary or secondary crater problems but also statistical problems.

We aimed at the fact that the depth of regolith layer was growing up with time by a number of impact craterings. Since the scaling laws within the impact cratering on the sufficiently thinner regolith layer compared with the cross sectional depth of craters at the area are probably the strength regime, the magnitude of the CSFD in the equilibrium saturation on the thinner regolith layer could be smaller than that on the thick regolith. Otherwise, the modification speed of the crater morphology on the thicker regolith layer is fast. Consequently, the magnitude of the CSFD could become small (Schultz et al., 1977). We evaluate these effects which are against each other using the images of same area taken at the different sun elevations. In the future lunar mission (SELENE), we will be able to estimate the mostly absolute surface age if the accurate relationship between the CSFD and the structure under the lunar surface will become apparent.