Crater size-frequency distributions for Apollo and Luna landing sites using LISM/SELENE (Kaguya)

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The crater size-frequency distribution (CSFD) has been used for several age determinations of the surfaces of the Moon, planets, and its satellites. The CSFD as a function between the crater diameter and its crater number density is described by an inverse power-law distribution. Assuming that the completing erase of crater morphology, the magnitude of CSFD reveals the age of measured area.

To derive meaningful age constraints, we should consider attentively a detection of small craters. We should pay a careful attention to the observation condition, such as sun-elevation (or incident angle). The articulation of detection of small features on the planetary surface is prospected to increase with decrease of sun-elevation, except for the terminator area between day and night (sun-elevation; 0 degree) which tends to be hidden by shadows of topographic undulation. If the effect of illumination condition to the detection of craters or the CSFD is not negligible, we could compare with each CSFD obtained from images taken at same lighted condition for the age determination.

High compression-ratio images of TC (Terrain Camera)/LISM/SELENE at mid-low (under 60 degree) latitude has been taken for measured area determination of SP (Spectral Profiler) for about one month, however, the sun elevation is under mostly 10 degree. Therefore, the TC images of this period are suitable for age determination, even though these low quality. We will show the results of evaluation of CSFD at Apollo and Luna landing sites using the data of LISM/SELENE.