

Optimizing of the photometric function by using statistical processing of Clementine UV-VIS images

Seiji Kawabe[1]; Kazuto Saiki[1]

[1] Earth and Space Sci., Osaka Univ.

The surface brightness on the Moon depends on viewing geometry which is specified by the position of the Sun, the Moon, and a spacecraft. The Clementine UV-VIS images are normalized to the reflectance expected at an incident angle and phase angle of 30 degrees and an emission angle of 0 degrees. However, in some lithologically homogeneous regions, the reflectance changes with phase angle and it means that Clementine's photometric correction parameters are not perfect.

Using Clementine UV-VIS images data, we classified the lunar surface according to abundance of FeO and obtained variation of the mode of reflectance as the phase angle varies from 0 to 70 degrees in every class. We found that the mode of reflectance in the low-FeO region on the near side of the Moon increases with phase angle. And by optimizing parameters to reduce phase angle dependence of the mode of reflectance, we can reduce the reflectance inconsistency of Clementine UV-VIS images of different tracks.