

Lunar topography: statistical analysis at 10-1 kilometer scale roughness

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Lunar topography reflects the impact history of the terrain. We will report a comparison of statistic values about lunar topographic roughness, such as the fractal dimension at 10-1 kilometer-scale, among several regions in lunar highlands.

Though one popular method to estimate absolute age of the lunar terrain is the crater counting method, it is difficult to estimate absolute ages of highlands, since lunar highlands have been saturated for small craters. On the other hand, relative ages of each region in highlands have been estimated from stratigraphic study (Wilhelms, 1987). We will investigate a relation between relative ages and quantitative roughness parameters of the terrains.

Two kinds of topographic data will be used for this study: (A) Digital Terrain Model (DTM) produced from stereo photographs of the Apollo mapping camera, (B) Digitized data of analog topographic maps that are distributed by NASA or USGS. We will prepare the former data by using a DTM software, and practicability of our method will be checked by the latter data for some selected area.