Improving the Apollo 12 landing site mapping with Chandrayaan M3 data
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Abstract

The Apollo 12 landing site was visited on 20 November 1969. In this paper, we present the results of a study that was done by the Chandrayaan M3 instrument onboard the Chandrayaan-2 spacecraft. We used the data to improve the mapping of the Apollo 12 landing site. The main results are: the detection of FeO concentrations, which is a key component of the lunar regolith, and the estimation of the depth of the ejecta blanket. The depth of the ejecta blanket is estimated to be about 5 m. This is in agreement with previous studies.

M^3 derived FeO from standard equations

The wt%FeO equations have a large range of results and do not provide the final FeO concentration. The wt%FeO equation from [12] is giving an appropriate rate of change, however, the local values are too large compared to the wt%FeO equation from [10].

M^3 Signal at Apollo 12 landing site

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Clementine data

Clementine data was downloaded from PDS at http://pds-mapping.jpl.nasa.gov. The MODIS dataset was downloaded from NASA. The USGS digital spectral library splib06a was used to create the Clementine spectrum sets. The photochemical model was used to create the Clementine spectrum sets.

Figure 1: Subset of Clementine FeO using [7].

Figure 9: Attempt at Maria Depth mapping

Figure 10 b): Object-oriented classification

Conclusions

Some attempts at many M^3 data are used. Apollo 12 landing site properties have been used in the creation of many maps at many stages of the study. The authors acknowledge that the maps are not perfect, but they are the best available. The authors also acknowledge that the maps are not perfect, but they are the best available.