PPS23-06 :201A :5 23 10:15-10:30

Development of evaluating method of Spatial distribution of craters on Lunar Surface for detection of secondary craters

Tatsuo Kinoshita[1*], Chikatoshi Honda[1], Naru Hirata[1], Tomokatsu Morota[2]

[1]CAIST Arc-Space, Universty of Aizu, [2]Graduate School of Environmental Studies, Nagoya University

Secondary craters are impact craters formed by ejecta blocks that were thrown out of a primary crater formation. The secondary craters give a biased spatial distribution of craters. For a crater chronology, researchers extract the secondary craters from the surface including primary and secondary craters based on his or her subjective views.

The purpose of this research is to develop an algorithm for evaluating spatial distribution of craters on lunar and planetary images. In our algorithm, clustering analysis (S-LINK, Group average etc.) applies to ideal spatial distribution of craters and observed spatial distribution of craters, and evaluates whether a non-random portion in obtained image by comparing clustering analysis results of ideal and observed craters. We demonstrated for two regions in Mare Crisium and some Apollo landing sites. As a result, most of clustered secondary craters are detected quantitatively by our algorithm.

Keywords: Moon, Secondary crater, Cluster analysis