

Improvement of the extraction method of lunar secondary crater using the Voronoi tessellation

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One of the estimation methods of formation age of planet surface is the crater chronology. Generally, craters are increasingly formed on the planet surface at random over time. From this perspective, the crater chronology utilizes the crater number density to estimate the formation age of planet surface. When we utilize the crater chronology, we should exclude secondary craters. Secondary craters are formed by ejecta thrown out from primary crater produced by the impact object from interplanetary space. The characteristic of secondary craters shape is clustered or chained with herringbone patterns. Thus, if we could not discriminate between primary and secondary craters, it causes an error of the estimation formation age. Although Kinoshita (2014) extracted lunar secondary craters based on the Voronoi tessellation of craters, some secondary craters were not extracted. Therefore, I tried to further develop the algorithm based on Kinoshita (2014) to extract such secondary craters and decrease the error between the result of my improvement method and the result of visual inspection. As a result of my improvement, the error between the result of my improvement method and the result of visual inspection is decreased by 15% compared with the method based on Kinoshita (2014).

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