

The study of geological background of Aristarchus crater based on spectral data by SELENE

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The Aristarchus crater (312.5°E, 23.7°N, diameter ~ 40 km) is a conspicuous and important Copernican crater on the Moon. Mainly based on terrestrial telescopic observations, the region around Aristarchus crater is known to be composed of various minerals. The crater was formed at the boundary between elevated block of lunar crust and Procellarum basalts. The crust block is called Aristarchus Plateau, which is thought to be the lunar crust lifted up by Imbrium impact event. The Aristarchus Plateau is related to volcanism, based on presence of assemblage sinuous rills and of mantle deposit enriched in olivine. In addition, the Moon Mineralogy Mapper (M³) data indicated that the region contain abundant water. Because the Aristarchus crater penetrates the Aristarchus Plateau and Procellarum mare, it presents an important information about volcanic activities and water distribution on the Moon. Although some researches are conducted for geology of the Aristarchus crater including analysis of the M³ data, detailed variety of composition and distribution of minerals on the crater are not well understood.

We investigate the geological background of the Aristarchus crater using spectral data obtained by SELENE (SELENE: SELENE: SELENE). The Multiband Imager (MI) and Spectral Profiler (SP) onboard SELENE measured visible to near-infrared spectral data on the Moon. The MI is a multiband camera, which captured high spatial resolution images with nine bands covering visible and near-infrared wavelengths. The SP is a line-profiling spectrometer, which obtained the high wavelength resolution spectral data covering 500–2600 nm. Combination of these spectral data enables the understanding of detailed geological background on the Moon.

We will present results of the analyses of the spectral data obtained by the MI and SP and will discuss the geological background of the Aristarchus crater.

Keywords: Moon, Crater, Geology