

Asymmetric Space Weathering on Lunar Crater Walls with an Updated Crater List

Kilho Baek¹, Sungsoo S. Kim¹, Chae Kyung Sim²

¹ *Kyung Hee University*

² *Korea Astronomy and Space Science Institute*

The lunar surface progressively becomes darker in reflectance, redder in color, and smaller in particle size as a result of sputtering from solar wind particles and micrometeoroid bombardments. The degree of space weathering is a measure of how long the lunar regolith has been exposed to the surface and the exposure time provides crucial information on the evolution history of the lunar regolith. To understand the degree of space weathering on the Moon, we utilized wall-quadrants of 26,802 craters with an updated lunar crater list and studied the relative degree of space weathering between the opposing walls. By analyzing differences in optical properties between the north and south wall, we find a latitudinal asymmetry between the northern and southern hemispheres in the degree of space weathering. Then, it is analyzed more specifically by subdividing the latitudinal results into diameter, slope, and depth-to-diameter.