Secondary craters that contaminated impact basins' floors on Ceres.

*Kosei Toyokawa[1,2], Junichi Haruyama[1,2], Hiromu Watanabe[3], Takahiro Iwata[1,2], Wataru Miyake[3]

1. The Graduate University for Advanced Studies, 2. Institute of Space and Astronautical Sciences, 3. Department of Aeronautics and Astronautics, Tokai University

The size distribution of projectiles onto Ceres is likely to be similar to that onto the lunar surface. The kilometer-scaled Crater Size Frequency Distributions (CSFDs) for floors of 18 impact basins on Ceres have been studied to examine their similarity. For 10 out of the 18 impact basins' floors, the CSFDs are consistent with a crater production function (PF) that was modeled based on the lunar cratering record. For 8 floors, however, the CSFDs do not appear to be consistent with the PF model. We hypothesize that those floors are contaminated by secondary craters. We extracted secondary craters for the 8 floors and then investigated the direction of their distribution to identify the parent craters of their sources. In addition, we again plotted the CSFDs for the 8 basins' floors after disregarding areas dominantly occupied by secondary craters. As a result, we identified the parent craters for the contaminating secondary craters. Furthermore, the deviations from the PF model got smaller for the replotted CSFDs than for the original CSFDs. In conclusion, the impact basins' floors whose CSFDs deviate from the PF model are likely to be contaminated by secondary craters.

Keywords: Ceres, Crater

