

APPRICATIONS OF KAGUYA'S TERRAIN CAMERA IMAGES TO PROMOTION OF SCIENTIFIC EDUCATION AND GEOLOGICAL RESEARCHES

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Introduction: On 14 September 2007, the Japanese Moon explorer KAGUYA (SELENE) was successfully launched [1,2]. The Terrain Camera (TC) of KAGUYA is a push-broom stereoscopic imager with forward-looking and aft-looking optical heads with slant angles of +/- 15 degrees from the nadir vector [1, 2]. The spatial resolution of TC is 10m/pixel from the KAGUYA nominal altitude of 100km. The TC will provide (1) global/local high-contrast mosaic maps and (2) digital terrain models (DTMs) for the Moon's entirety with relative height resolution of a few tens of meters or better and ultimately a DEM with absolute height information.

Results and Discussion: The nominal swath of the TC is 35km, and the interval between KAGUYA's adjacent orbits is 33km at an altitude of 100km. Consequently, the TC adjacent strip images will have extended overlaps with the same solar angle conditions, which will facilitate the production of large 3D mosaic images. These images are enable us to observe any point of lunar surface at a preferable altitude, direction, and magnification. Fig.1 shows an example of 3D bird-view images of the Apollo 17 landing site. A similar image of Hadley rill and the Apennine Mountains, which was not possible to see from the Apollo 15 mission, has been constructed by the same routine. We also produced a video-movie by stacking successive 3D images of a slight different viewpoint for the crater Tycho along the crater walls, and the Alpine Valley.

These TC 3D images and video-movies, together with KAGUYA's High-definition TV images [3], expected to be utilized for education of planetary geology, to find geologically interesting sites for lunar researchers, as well as public outreach.

References: [1] Haruyama J. et al, 2008. *Earth Planets Space*, 60, No.4, 242-255. [2] Haruyama J. et al, 2008. Abstract #1308. 39th Lunar & Planetary Science Conference. [3] Honda R. et al. 2008. Abstract #1876. 39th Lunar and planetary Science Conference.

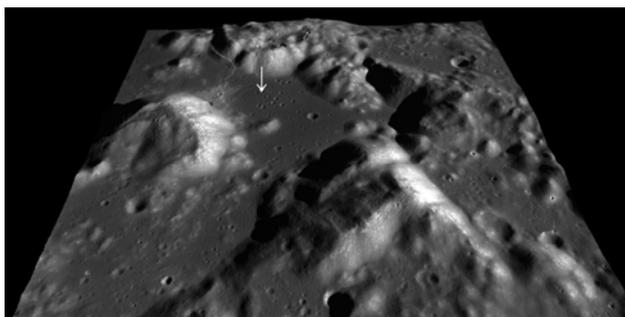


Fig.1 3D image of Apollo 17 landing site (arrow) in the valley of Taurus-Littrow, produced by KAGUYA's TC images. View from South. Image width is 35km.