Terrain Camera - Lunar Global High-resolution Stereoscopic Imager on SELENE

J. Haruyama (1), T. Matsunaga (2), M. Ohtake (1), T. Morota (1), Y. Yokota (1), C. Honda (1), A. Yoshizawa (1), N. Hirata (3), H. Demura (4), A. Iwasaki (5), R. Nakamura (6), S. Kodama (6), and LISM Working Group

(1) Japan Aerospace Exploration Agency, Japan, (2) National Institute for Environmental Studies, Japan, (3) Kobe University, Japan, (4) The University of Aizu, Japan, (5) The University of Tokyo, Japan, (6) National Institute of Advanced Industrial Science and Technology, Japan. (Contact E-mail: Haruyama.Junichi@jaxa.jp)

Providing lunar topographic data is one of the most important objectives of lunar explorations. The Japanese lunar explorer SELENE will be launched in 2007 and will acquire lunar global data of higher resolution and quality than previously obtained. One of the most powerful instruments on SELENE is the Terrain Camera (TC), which will provide the morphological data. The TC has two slant telescopes for forward and backward viewing to achieve along-track stereoscopy. The spatial resolution of the TC is 10-meter at SELENE's nominal altitude of 100km. Global monoscopic and stereoscopic observation of the lunar surface are planned in SELENE's one-year mission. The TC has been fabricated and is now in the final test phase of installation on SELENE. TC data products from these systems will be available to the public via the Level 2 database (L2DB) system in the SELENE Operation and Analysis Center in the Institute of Space and Astronautical Science. Here, we briefly introduce the main TC products. The "TC_w/s_Level2A" product is TC time-referenced raw image data acquired in TC stereoscopic/monoscopic operation. It is depacketed from CCSDS packet form, decompressed from onboard compression, supplemented with ancillary information, and re-compressed in 12-bit JPEG format (using the same Q-table as that on board SELENE). Neither geometric correction nor radiometric calibration is performed. The "TC_Morning/Evening_MAP" is a TC map-projected mosaic product of the appropriate TC_w/s_Level2A data taken in east/west solar azimuth condition. Each pixel has a reflectance value for incidence, emission, and phase angles of 30ž, 0ž, and 30ž. Though the source data of this product are registered to L2DB in Simple Cylindrical, users can choose from several map projection types using the functions of L2DB. The "DTM_TCOrtho" product contains scene data files of the Digital Terrain Model (DTM), TC ortho, and qualification flag, created from TC_w_Level2A data with geometric correction and radiometric calibration. The map projection type of DTM and TC ortho is Simple Cylindrical for latitudes < 60ž and Polar Stereo for latitudes > 60ž. Radiance is planned for each pixel of this product."TCOrtho/DTM_MAP" is a map-projected mosaic product of the appropriate TC ortho / Digital Terrain Model (DTM) data in multiple DTM TCOrtho products.