GCOM-C “Shikisai” FIRST YEAR OBSERVATIONS

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One-year observation results of Global Change Observation Mission-Climate (GCOM-C) called “SHIKISAI” are introduced.

JAXA polar-orbit satellite, GCOM-C, which carries Second-generation Global Imager (SGLI), has been launched on 23 Dec. 2017, and operated in orbit during 2018. The key characteristics of the SGLI are (1) 250-m spatial resolution with 1150 km or 1400 km swath, and (2) nineteen bands in 0.38-12 um including two polarimetry bands (at 672 nm and 866 nm) with +/- 45 degree along-track tilt.

The SGLI radiometric gain was evaluated by the on-board calibration functions (solar, lamp, lunar, and electric calibrations) and vicarious calibration over the land, ocean and ice sheet. The radiometric gain was stable during the first year except for slight degradation (<2 %/year) in 380-565 nm bands. The geometric correction accuracy was evaluated by the Ground Control Point (GCP) matching. The deviation from the GCPs was stable and kept less than about 0.3 pixels.

The SGLI 250-m bands could capture seasonal change of the vegetation and the snow cover, the large-scale red tide, and the fine structures of land-surface temperature and coastal sea-surface temperature. Especially, unique functions of SGLI, the 380-nm band and polarimetry revealed the fine-mode aerosol distribution around wild fires (e.g., California, Africa, and Siberia) and Asian city areas (e.g., North India, and East China). The polarimetry seemed to improve estimation of the aerosols emitted densely from the fires. Difference of the 250-m land-surface temperature between the day and nighttime may give us information about the heat budget in the various land covers including city and crop areas. The GCOM-C standard products have been evaluated and open to public freely through JAXA data portal, G-portal, since Dec. 2018. The re-process of the 2018 data will be completed in the early summer 2019. The accumulating GCOM-C data products are expected to be used in the wide areas of the earth environment researches.

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