

2018-2019 global environment observation by GCOM-C “SHIKISAI”

*Hiroshi Murakami¹, Masahiro Hori¹, Kazuhisa Tanada¹, Toshiyuki Kobayashi¹, Megumi Okata¹, Kazunori Ogata¹, Rigen Shimada¹, Yukio Kurihara¹

1. Earth Observation Research Center, Japan Aerospace Exploration Agency

Two-years earth environmental change captured by 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 continued global observation since 1 January 2018. The key characteristics of the SGLI are (1) 250-m spatial resolution with 1150-1400 km swath, and (2) nineteen bands in 0.38-12 μm including two polarimetry bands (at 672 nm and 866 nm) with +/- 45 degree along-track tilt.

Because the polarimetry is sensitive to the small particle aerosols, SGLI could clearly capture heavy aerosols from volcanos and fires, the Hawaii volcano in May-Jul. 2018, California in Aug. and Nov. 2018, Thai in Mar.-Apr. 2019, Alaska in Jul. 2019, Siberia in Jul.-Aug. 2019, Amazon in Jul.-Aug. 2019, Indonesia in Sep. 2019, and the east Australia in Nov. 2019-Jan. 2020 (see Fig. 1).

Even in the two years, SGLI observed year-to-year difference of the earth environment changes. In the northeast Asia, spring leafing in 2019 seemed slower than one in 2018 by about 1-2 weeks, that seems to correspond to decrease of the snow cover in the early spring. Many Noctiluca red tides appeared in the coastal areas around Japan in 2018 but did not in 2019. The GCOM-C will continue the global observation and the accumulating the data products are expected to be used in both the environmental change researches and monitoring.

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Figure 1
 Monthly mean aerosol optical thickness at 500nm from Mar. 2018 to Dec. 2019 estimated by GCOM-C/SGLI polarimetry.

