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Japanese GHRSST activities and the AMSR2 SST Validations

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The Japan Aerospace Exploration Agency (JAXA) developed the Ocean Color and Temperature Scanner (OCTS) as optical imagers to observe sea surface temperature (SST) onboard the Advanced Earth Observing Satellite (ADEOS) operated from 1996 to 1997, the Global Imager (GLI) onboard the Advanced Earth Observing Satellite-II (ADEOS-II) operated from 2002 to 2003, and is developing the Second generation Global Imager (SGLI), which will be carried by the first generation of the Global Change Observation Mission (GCOM) - Climate (GCOM-C1) scheduled to be launched in Japanese Fiscal Year (JFY) of 2016.

JAXA also developed a series of passive microwave imagers that has C-band (6.9-GHz/7.2GHz) channel; the Advanced Microwave Scanning Radiometer (AMSR) on board the ADEOS-II satellite; AMSR for EOS (AMSR-E) on board the NASA's EOS Aqua satellite; and the AMSR2 on board the first generation of the GCOM - Water (GCOM-W1) satellite. C-band channels on these instruments are indispensable for retrieving global SST and soil moisture through the clouds. All-weather and frequent measurements enables analyses of rapid changes of SST. The GCOM-W1 satellite was launched on May 18, 2012 (JST) and all AMSR2 standard products including SST have been released to public since May 2013.

The AMSR2 SST product is validated by comparing with various buoy SST observations reported through the Global Telecommunication System (GTS) operated by World Meteorological Organization (WMO). Each match-up data will include AMSR2 footprints around buoy stations within radius of 30 km and 2 hours. Root mean square error (RMSE) between the AMSR2 and Buoy SSTs from July 3, 2012 to March 31, 3013 is 0.56 °C and correlation coefficient is 0.998.

JAXA is operating the GHRSST server in Japan (http://suzaku.eorc.jaxa.jp/GHRSST/) to distribute SST products in GHRSST Data Specification (GDS) version 2.0 produced in JAXA. Currently, L2P and L3C SST products retrieved from AMSR2, AMSR-E, Windsat on board the Colioris satellite, and the Visible Infrared Scanning Radiometer on board the Tropical Rainfall Measuring Mission (TRMM) satellite are available from the JAXA GHRSST server. We are planning to add near-real-time process (a few hours after observation) of SST in the GDS format to the system soon.