

Global Change Observation Mission (GCOM)

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ABSTRACT: In order to meet the requirements of Global Earth Observation System of Systems (GEOSS) as well as to continue the ADEOS and ADEOS2 missions, JAXA is now planning the GCOM mission which is composed of a series of satellites. There are two series of satellites, and they are now called GCOM-W and GCOM-C satellites. Both series are composed of 3 satellites with 5 years lifetime. Hence, 13 years of continuous observation can be assured with 1 year overlaps. The first satellite of GCOM-W was launched on 18, May 2012 while the first one of GCOM-C will be launched in fiscal 2016.

GCOM-W1 carries AMSR2 (AMSR F/O). AMSR2 is very similar to AMSR on ADEOS2 and AMSR-E on EOS-Aqua with some modifications. The aperture of AMSR2 is 2m, and AMSR2 will have more accurate hot load than AMSR. Two kinds of modification are introduced. One is to use an actively controlled thermal reflector over the hot load. This reflector is called a temperature controlled plate (TCP). Another modification is to shield the ambient emissions.

GCOM-C1 will carry GLI F/O (called the second generation GLI : SGLI). The SGLI will be rather different from GLI on ADEOS2. In order to measure aerosols over both ocean and land, it will have a near ultra violet channel, as well as polarization and bi-directional observation capability. The instrument will be composed of several components. They are VNR (visible and near infrared)-non polarization, VNR-polarization (POL), and IRS (short wave to long wave infrared (SWI & TMI)). The VNR and POL will adopt push broom scanners, while IRS will use a conventional whisk broom scanner. VNR is an 11 channel scanner. POL will have two spectral channels, while each spectral channel is composed of 3 polarizations. SWI will have 4 channels. TMI will have 2 split window channels. For, coastal zone and land observation, the IFOV of SGLI for these targets will be around 250m. All channels of VNR except 763 nm and 1.64 μm channel of SWI have 250m IFOV. TMI channels have 250m IFOV and all the other channels have 1000m IFOV.

JAXA has now started the study of GCOM-W2. GCOM-W2 will have AMSR3, which is an improved version of AMSR2. We are now discussing to add high frequency channels mainly for solid precipitation measurements. Also JAXA is now discussing with NASA and ISRO for the provision of microwave scatterometer on board GCOM-W2.