

Development of the Advanced Microwave Scanning Radiometer 3 (AMSR) onboard the GOSAT-GW satellite

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JAXA's Advanced Microwave Scanning Radiometer (AMSR) series provides global, long-term, high-resolution and high-frequent passive microwave observation. Currently, AMSR2 on board the Global Climate Observation Mission – Water (GCOM-W) satellite continues observation in the afternoon orbit succeeding AMSR-E onboard the Aqua satellite. To continue and improve AMSR2's observation capability for water cycle/climate monitoring, JAXA is developing the third generation of AMSR series, called AMSR3, to be installed on the Global Observation SATellite for Greenhouse-gases and Water cycle (GOSAT-GW) satellite. Target launch of the GOSAT-GW satellite is Japanese Fiscal Year (JFY) 2023 and designed mission life of the satellite system is 7-year.

Major targets of the AMSR3 mission are to produce long-term continuous data record of AMSR series in order to contribute scientific studies on global/regional water cycle and climate variations, and to enhance operational utilization of near-real-time data for weather forecast including hurricane analysis, fishery in coastal area, and navigational assistance on arctic shipping route along with new geophysical parameter products, including snowfall. There are some changes in sensor specification from AMSR2 to AMSR3 to achieve above targets; 1) addition of new G-band (165.5, 183.31+-7, 183.31+-3 GHz) channels for snowfall retrievals and water vapor analysis in the numerical weather prediction; 2) addition of new 10.25 GHz channels with better NEDT for robust SST retrievals; and 3) reduction of bandwidth of 36 GHz channels by considering future possible risks of radio frequency interferences caused by the 5th Generation Mobile Communication System (5G). AMSR3 product (NetCDF4 compatible to HDF5) will be released to the public about one year after the launch but may be released earlier to the PIs and partner agencies during CAL/VAL phase.