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Long-term water and climate data set by AMSR-E and GCOM-W

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Japan Aerospace Exploration Agency (JAXA) has developed and provided the Advanced Microwave Scanning Radiometer for EOS (AMSR-E) to U.S. Aqua satellite, which was launched in 2002 and is operating, and AMSR-E data is being archived almost nine years. Furthermore, the Advanced Microwave Scanning Radiometer 2 (AMSR2), which is a successor instrument to AMSR-E, will be carried by the first satellite of Global Change Observing Mission (GCOM) - Water (GCOM-W1), which is scheduled to be launched in the Japanese Fiscal Year of 2011 to be placed in front of the Aqua satellite on the A-train orbit. GCOM-W1 is not a name of single satellite mission. It is a part of global and long-term observation program with two complementary medium-sized satellites and three generations (10-15 years) for stable data records. Therefore, period of data set, which is produced by multi-generation GCOM-W and AMSR-E, will be more than twenty years.

AMSR2 is developing based on AMSR-E currently operational, and its basic performance and observation frequencies will be similar to that of AMSR-E based on the minimum requirement of data continuity of AMSR-E, with several enhancements. Standard product of AMSR2 will be the same to current seven geophysical parameters derived by AMSR-E; they are precipitable water, cloud liquid water, precipitation, sea surface temperature, sea surface wind speed, sea ice concentration, snow depth, and soil moisture. Currently, Earth Observation Research Center (EORC) produces some research products from AMSR-E, such as subset database for tropical cyclones, and all-weather sea surface wind speeds. All-weather sea surface wind speeds product estimates wind speeds over strong wind and/or heavy rainfall regions around tropical cyclones, where standard algorithm usually cannot calculate wind speeds. Improvements of such products and introduction of new research products are planned toward GCOM-W1 era. Reprocessing of AMSR-E data with new algorithms, which are developed for AMSR2 standard products, also enable us to produce long-term and homogeneous water and climate data set.

AMSR-E standard products are available from JAXA's online system called the Earth Observation Data and Information System (<https://www.eoc.jaxa.jp/iss/jsp/indexEn.html>). Images and data of research products are also distributed by EORC AMSR/AMSR-E Web Site (<http://sharaku.eorc.jaxa.jp/AMSR/index.html>). Construction of new online data distribution system for AMSR2 standard products is currently underway to reflect requirements from users. AMSR-E products will be also available via this system. EORC is also preparing GCOM web site (<http://suzaku.eorc.jaxa.jp/GCOM/index.html>) for both AMSR-E and AMSR2 research products.

Keywords: satellite observation, microwave radiometer, global water cycle, climate, long-term data