INTEGRATED FRAMEWORK OF UTILIZING AMSR2 PRODUCTS

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ABSTRACT: Data assimilation system under GCOM mission has not yet been defined, however, JAXA/EORC established a research group on water cycle (W-RG) as one of the cross-cutting research groups over several satellite oriented missions under EORC, and the W-RG has started developing offline simulation system on water cycles over global land, which will be a basis for real-time data assimilation in the future. The pilot system simulates energy and water balances over global domain using a land surface model called MATSIRO (Minimal Advanced Treatments of Surface Interaction and Runoff), driven by atmospheric forcing from satellite observations and assimilated data products. In addition to water balance components such as evapotranspiration, runoff, and soil moisture, river discharge is calculated using Total Runoff Integrating Pathways (TRIP). Currently, the system is just an offline simulation, using forecast data from the Japan Meteorological Agency (JMA) and satellite data as external forcing. The pilot system is based on the "Today's Earth" from IIS, The Univ. of Tokyo, and the system is under improvement at EORC by combined uses of satellite and Gridded Point Value (GPV) data, which includes objective analysis and forecasts by JMA's operational Global-Scale Model. For the improvement of the system at EORC, possible utilization of satellite-based product and other data sources as forcing data has been examined. Global Satellite Mapping for Precipitation (GSMaP) for rainfall, and downward surface short wave radiation product by MODIS and SeaWiFS data are used as alternative input data, and the error reductions in the estimates of snow water equivalent, and soil moisture have been evaluated. As next step, we plan to replace downward surface shortwave radiation to satellite-based product. Other plans to replace fixed database such as NDVI, and assimilation of forecast parameters such as soil moisture or snow depth are also discussed to improve the system.