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Author name (s): Erika Mari R. Macapagal and Gay Jane P. Perez
Proposed presenter (s): Erika Mari R. Macapagal
Mailing address: Institute of Environmental Science and Meteorology, University of the Philippines, Diliman, Quezon City, Philippines
Phone, fax, and e-mail for all authors and presenters:
63 02 9818500 loc. 3945 and 639056619299
macapagal.erika@gmail.com and gay.perez@gmail.com
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EVALUATION OF ADVANCED MICROWAVE SCANNING RADIOMETER 2 (AMSR2) SOIL MOISTURE RETRIEVAL IN THE PHILIPPINES

Erika Mari R. Macapagal* and Gay Jane P. Perez
Institute of Environmental Science and Meteorology
University of the Philippines, Diliman, Quezon City, 1101
Corresponding authors: macapagal.erika@gmail.com* and gay.perez@gmail.com

ABSTRACT

Advancements in satellite data retrievals of soil moisture immensely alleviated the challenges of acquiring soil moisture measurements at high spatial and temporal resolution. However, usefulness of these datasets is subject to validation before utilization in operational and research applications. Also, to substantiate the validity of a prior study on soil moisture from AMSR-E that paved way to understanding the trends, variability, and dynamics of soil moisture across the country from 2002 to 2011, an elaborate assessment on this product is vital.

The Advanced Microwave Scanning Radiometer 2 or AMSR2 was launched on May 18, 2012 as the follow-up mission of AMSR-E, the first passive sensor to include surface soil moisture in its standard products. This study validated AMSR2 soil moisture estimates over agricultural sites in Northern Philippines by comparing in situ soil moisture obtained using the gravimetric technique. Validation was done for fourteen months over seven study sites. Also, through time-series analysis, correlation and regression studies, its potential in monitoring surface soil moisture variations due to precipitation events and temperature fluctuations was evaluated. Results demonstrated the capability of AMSR2 to provide reliable soil moisture data (R^2=0.80) and its sensitivity to precipitation and heating events. This study aims to provide an efficient and sustainable means of obtaining accurate soil moisture record of the country for data continuity.

Keywords: AMSR2/AMSR-E, soil moisture, gravimetric technique, Philippines