**Suggested topics:**

Remote Sensing Applications - Soil

**Paper title:**

Downscaling Advanced Microwave Scanning Radiometer 2 (AMSR2) surface soil moisture using normalized multi-band drought index (NMDI) and leaf area index (LAI)

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**Presenters Preference between oral and poster presentation**

Oral presentation

**ABSTRACT:** Soil moisture is one of the most significant variables for various applications in meteorology, climatology, hydrology, and ecology. To monitor surface soil moisture for large scale, Advanced Microwave Scanning Radiometer 2 (AMSR2) provides surface soil moisture data at a spatial resolution of 10 km and 25 km. Previous studies’ experiment results have revealed that surface soil moisture can be estimated using the normalized multi-band drought index (NMDI) and leaf area index (LAI). Since NMDI and LAI can be acquired from the Moderate Resolution Imaging Spectroradiometer (MODIS) data, with resolutions of 0.5 km and1 km respectively, a downscaling method by incorporating AMSR-2 and MODIS data is therefore expected to generate surface soil moisture data with a finer resolution of 1 km. The main objective of this study is to formulate relationships between AMSR2 surface soil moisture and MODIS-derived NMDI and LAI. The study area is located in Central America, and we mainly focus on the dry season, which extends from January to April. The period of acquisition for image data of AMSR2 and MODIS is from January to April, 2014. The study was conducted by first generating a transformation function based on the observations from January and February, 2014. Then, the function acquired was validated with the data of March to April, 2014. The results confirmed the validity of the method for AMSR2 soil surface moisture downscaling. Furthermore, the method is expected to develop the analysis for the rainy season in order to finalize the method, and is also expected to be transferable to other regions to obtain the soil moisture data in finer scale.

**KEY WORDS:** NMDI, LAI, Soil moisture, AMSR2, MODIS.