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VALIDATION OF AGGREGATION/DISAGGREGATION ALGORITHM TO SMAP RADAR AND RADIOMETER OVER A TROPICAL FOREST

Abstract

Biogeochemical Cycles are related to several physical parameters such as soil moisture (SM) and vegetation water content (VWC). These are being studied by scientific communities to know their change over the years. However, the technological advances give us many tools such as remote sensing to estimate soil moisture through 1) radar images and 2) radiometer images. Due to the radiometer is more sensitive to soil moisture change than radar but it has not high spatial resolution as radar, we apply the algorithm to take advantage of two sensors equipped in SMAP satellite.

Brightness temperature is obtained by radiometer at 36 kilometers of spatial resolution while backscattering coefficient is calculated by radar at 3 kilometers, these last variables and physical parameters such as surface roughness, vegetation canopy structure and water content have a linear behavior between themselves and they let us calculate a medium spatial resolution. Some works mention an acceptable error range to bare soil or low vegetation cover. The main goal is to validate the algorithm over a tropical forest with high vegetation cover. Therefore, the Calakmul Biosphere Reserve is suitable to keep the goal. In this work, we acquired data from measurement campaigns to period around January 2015 to July 2015 and we will handle them to yield a medium resolution at 9 kilometers. As a result we will get certain error values of a tropical forest that not even exist into scientist literature