

Detection of seasonal inundated area by using ALOS/PALSAR in Brazilian Amazon

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KEY WORDS: PALSAR, MODIS, inundation, backscatter

ABSTRACT:

Amazon River has huge watershed area and its water level fluctuates in rainy season and dry season. Since water cover in forest influences distribution of vegetation, carbon emission and geomorphology, detection of water coverage is important for ecosystem studies. However, it is very difficult to observe Amazon region by optical sensors because clouds cover there most of days during rainy season. ALOS-PALSAR is a microwave sensor which enables to monitor ground surface without little affect of clouds even in rainy season. Therefore, it has an advantage in monitoring Amazon through a year. Meanwhile, MODIS, an optical sensor which is carried on Terra and Aqua satellites, has advantage in observing large area with high temporal resolution. This study aims to develop a way to use PALSAR data for evaluating the water regions derived from MODIS image. The polarized data HH and HV of PALSAR was used to detect water logged area and the flooding process of Amazon River was observed. PALSAR shows dark backscatter at water body and very bright at the water logged area under forests. As for the MODIS data, NIR (near infra red) and SWIR (short wave infrared) were used to detect flooded area. Comparison between MODIS and high spatial resolution PALSAR shows clearly how the ratio of water coverage affects MODIS data.