

COMBINING OPTICAL AND RADAR SATELLITE IMAGE TIME SERIES FOR TROPICAL FOREST MONITORING

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Earth Observation system application

ABSTRACT

Reviewing satellite-based optical and Synthetic Aperture Radar (SAR) efforts for tropical forest monitoring revealed that operationalized optical-based approaches exist, but frequent cloud cover limits their applicability in the tropics. SAR remote sensing has also demonstrated its capability, not greatly affected by cloudy climate of tropical regions and the observed frequency of SAR imagery and appropriate time series methods are advantageous.

In this study, the authors build a model using contemporary Sentinel-1 and Landsat-8 imageries for tropical forest monitoring.

Analyzing VH back scattering computed from SAR time-series combined with Normalized Difference Vegetation Index (NDVI) and Modification of Normalized Difference Water Index (MNDWI) computed from Landsat 8 products, the results are near real-time maps of deforestation. This shows that compared to using each kind of data individually, using both SAR time-series and optical images have much higher efficiency in the detection of deforestation.

BUILDING WEB GIS APPLICATIONS USING OPEN SOURCE SOFTWARE FOR WATER QUALITY MONITORING

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ABSTRACT

In the reality that environmental pollution is getting worse, climate change and extreme weather are major challenges in water quality monitoring serving human life, especially aquaculture. Besides, Internet and Geographic Information Systems (GIS) are well developing, especially open source technologies. Therefore, a water quality monitoring system should be developed to rapidly provide water quality information that assists users in making decision to respond, as well as limit damage caused by environmental pollution and climate change.

This study is about building the water quality monitoring system using open-source WebGIS in order to supply, display, manage water information and assist users in decision making in aquaculture.