

Flood monitoring of the Inner Niger Delta using high resolution radar and optical imagery

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Abstract This paper describes the monitoring of flooding in the Inner Niger Delta (Mali) from September 2008 to April 2010 using high resolution radar (C-band quad-polarization from Radarsat-2) and optical imagery (SPOT 4 and 5). Treatments, based on statistical parameters calculated using co-occurrence matrices, supervised classifications and three field surveys, were used to classify the images in three categories: open water, flooded vegetation and unflooded land. The overall accuracy evaluated by confusion matrices varies from 81% to 96%. The flooded areas, ranging from 3% to 65% of the surface studied, confirm the significant impact of annual flooding in the region. Radar images can identify soil properties even when remotely-sensed objects are characterized by dense, herbaceous vegetation and are also effective when cloud cover is thick.

Key words Radarsat-2; SPOT; Inner Niger Delta; flood monitoring; Mali