



Estimation on rubber tree disturbance caused by typhoon Damery (200518) with Landsat and MODIS data in Hainan Island of China

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In 2005, Typhoon Damery (200518) caused severe damage to the rubber trees in Hainan Island with its destructive winds and rainfall. Selection of proper vegetation indices using multi-source remote sensing data is critical to the assessment of forest disturbance and damage loss for this event. In this study, we will compare the performance of seven vegetation indices derived from MODIS and Landsat TM imageries prior to and after typhoon Damery, in order to select an optimal index for identifying rubber tree disturbance. The indices to be compared are normalized difference vegetation index (NDVI), Normalized Difference Water Index (NDWI), Normalized Difference Infrared Index (NDII), Enhanced vegetation index (EVI), Leaf area index (LAI), forest z-score (IFZ), and Disturbance Index (DI). The ground truth data of rubber tree damage collected through field investigation was used to verify and compare the results. Our preliminary result for the area with ground-truth data shows that DI has the most significant performance for disturbance detection for this typhoon event. This index DI is then applied to all the areas in Hainan Island hit by Darnrey to evaluate the overall forest damage severity. At last, rubber tree damage severity is analyzed with other typhoon hazard factors such as wind, topography, soil and precipitation.