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Detecting and Monitoring Forest Degradation

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ABSTRACT:

Forest degradation can be defined as the loss of forest volume, biomass and/or forest productivity caused by natural or human influences. Achieving Reducing Emissions from Deforestation and Forest Degradation (REDD) requires that deforestation and degradation can be efficiently, reliably and cost-effectively detected and quantified, often where ground and aerial surveying is problematic. Therefore, remote sensing approaches, coupled with field and/or aerial data, offer cost-effective solutions. While synoptic coverage using high-resolution data such as Landsat can provide estimates of deforestation and degradation, very-high resolution satellite data can be used to calibrate and validate these estimates in a multi-stage sampling approach. This research coupled Landsat and very-high resolution satellite optical data to determine whether Landsat could quantify deforestation and degradation in montane and lowland forests of Cambodia. Results indicate that Landsat can detect deforestation, and also the "halo" effect of degradation from high-grading in areas adjacent to deforested areas. Issues include that the high-resolution data have different spatial, temporal and radiometric characteristics, and were not necessarily acquired at the same time as the Landsat data. The ability to detect deforestation and degradation is also a function of when an event is imaged, and the level and type of disturbance/degradation, and the type and age of the forest.

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