

Remote Sensing Application Challenges in the Mekong Region

Jeffrey Himel¹

Abstract

Forest degradation is not just one of the cornerstones of “REDD+”, it is a critical element for Lao PDR and other countries where the primary driver of forest carbon loss is selective logging and small-scale conversion of forest for agriculture rather than deforestation. Unless we can reliably and accurately quantify the area of degradation using remote sensing technology, REDD+ will not be viable. This is complicated by the need to separate degradation from other changes within forests that have effects similar to degradation, such as seasonal change in deciduous trees (e.g., dropping leaves).

Lao PDR has developed a good quality data and experience base through the efforts of the Forest Inventory and Planning Division (FIPD) with the support of a range of coordinated donors. FIPD has acquired and processed wall-to-wall satellite imagery covering Lao PDR for 1995 and 2000 using LandsAT, 2005 using SPOT 5 and 2010 using RapidEye. FIPD analysts are finalizing the Benchmark and Historical Forest Cover Maps for these time periods. Lessons learned through this work highlight the importance of *first principles*: image pre-processing, image analysis, and accuracy assessment.

Investment in careful and quality pre-processing of 5 to 10m-resolution satellite imagery like RapidEye provides the best “bang for the buck”. This pre-processing includes ortho-rectification to 1:25,000 scale, and proper haze removal. Object-based image processing provides an excellent starting point for analysis, from which we can work backwards and train staff to become more consistent and progressively improve the accuracy of their work. Full annual or semi-annual country coverage at 5m is now feasible technically and cost-wise and so should be a top priority for donors. Wall-to-wall RapidEye coverage of Lao PDR for 2010 cost a total of US\$225,000.

¹Aruna Technology Ltd, 417 Sisowath Blvd., Sangkat Chaktomuk, Phnom Penh, Cambodia

Corresponding author: jeffrey.himel@arunatechnology.com