Community based tropical forest monitoring using emerging technologies

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Abstract:

The unprecedented destruction of tropical forest cover has serious negative consequences on the regulation of the world's climate cycle, biodiversity and other environmental variables. With rising global temperatures, improved forest monitoring, especially at the landscape scale has become increasingly important. Because forest changes manifest at a variety of spatial and temporal scales, effective monitoring will likely require an integrated approach, where detailed community-based in-situ observations are combined with remote sensing satellites. With these considerations in mind, this study describes an integrated community based tropical forest monitoring system which combines emerging technologies, remote sensing and community-based observation in support of REDD+ monitoring, reporting and verification (MRV) implementation. The development of this research is driven by three specific research questions: 1) how can information and communication technologies (ICT) support the automation of the community data collection process for monitoring forest change activities using modern handheld devices? 2) what is the accuracy and compatibility of community collected data compared to other data (e.g. optical remote sensing and expert field measurements) for quantifying forest changes? and 3) what is a suitable design for an interactive remote sensing and community-based near real-time forest change monitoring system and how can such a system be operationalized? The system is developed using open source technologies and has been implemented together with local communities in Vietnam, Ethiopia and Peru. The result shows that the system has been able to empower local community, public institutions and civil society with the information which lead to better manage and conserve forest landscapes. The methods presented in this research are applicable to a broader geographic scope. Hence, this study emphasizes that the policies and incentives should be implemented to empower communities and to create institutional frameworks for community-based forest monitoring in the tropics.

References

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