Tropentag, September 17-19, 2018, Ghent

"Global food security and food safety:
The role of universities"

The Impacts of Forest Landscape Changes on Ecosystem Provisioning Services in the North Central Mountainous Areas, Vietnam

Hung Nguyen Trong, Martin Kappas

Georg-August-Universität Göttingen, Cartography, GIS and Remote Sensing Section, Germany

Abstract

The research focuses on assessing the impact of forest landscape changes on other land use types, and on evaluating forest ecosystem provisioning services in the northern central mountainous area of Vietnam. We selected three different forest types (e.g. rich, medium, poor) to carry out the forest inventory in A Luoi District. A series of sample plots with the size of 1000 m^2 were randomized in each forest type. The forest inventory parameters consist of trees with diameter at breast height (DBH) $\geq$ 10 cm, regeneration trees with DBH of 1.3-9.9 cm, counting of all saplings $\leq$ 1.3 cm DBH, and non-timber forest products (NTFPs). The forest inventory variables (i.e. DBH, height, species, quality, slopes, elevations, aspects) are based on the national forest inventory and FAO's forest inventory manual. The demands of local peoples on the forest provisioning services were surveyed for different targeted groups living near the forest landscapes. We evaluated if the changes of land use patterns and forest landscape impacts on the demand of provisioning services (i.e. timber products, wild foods including NTFPs) to the local people. A time-series of different remote sensing images (Landsat, SPOT and Sentinel 2) are used to classify forest landscapes and land use types such as non-forest land, agricultural land, crop land, water area, grass land. Multiple regression analysis of variables of sample plots against the vegetation indices and demands of forest provisioning services at target groups were analyzed in R-Studio 3.4.1 and Statistica 13.3. The result shows that the change in the forest landscape leads to changes of ecosystem services demands.

Keywords: Ecosystem provisioning services, forest landscape, forest types, land use change

Contact Address: Hung Nguyen Trong, Georg-August-Universität Göttingen, Cartography, GIS and Remote Sensing Sect., Goldschmidtstr. 5, 37077 Göttingen, Germany, e-mail: tronghung2128@gmail.com