Colette is currently a PhD student at UMR AMAP – IRD, Montpellier, France. Working on remote sensing of tropical vegetation she is interested in estimating the taxonomic diversity of tropical forests using imaging spectroscopy data.

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31 MARS 2023
14h – 17h

Amphithéâtre Jacques ALLIOT, CIRAD Montpellier, Campus de Lavalette Bâtiment 4

SOUTENANCE DE THESE

Estimating taxonomic diversity using spectral variance of imaging spectroscopy data collected over a tropical rainforest

presented by

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ABSTRACT

Management and monitoring of tropical forests are difficult and costly in terms of financial and human resources. Remote sensing data are a promising tool for the development of biodiversity monitoring systems. Spectral diversity, here considered as the variation in space of the spectral information, can be calculated as the total variance of the reflectance table. The structure of spectral variance itself and its relationship to the compositional structure of tropical forest communities has not been thoroughly studied yet, mainly due to lack of sufficient field data. However, in an operational framework of biodiversity estimation without prior identification of species, it is essential to address this issue in order to understand precisely what the spectral signal is able to measure of taxonomic diversity. Thus, our objective is to explore the relationship between taxonomic and spectral diversity derived from airborne hyperspectral imaging acquisitions. Specifically, we want to assess the strength and sensitivity of the relationship between taxonomic and alpha and beta spectral diversity at the plot scale of our study site: is it possible, on a highly diverse landscape, to measure subtle compositional differences using hyperspectral imagery? This thesis work confirms the potential of hyperspectral remote sensing for vegetation analysis, but also highlights the fact that the ability of these data to estimate biodiversity directly at a global scale should not be overestimated

KEY WORDS :

Hyperspectral,Tropical forest,Spectral Variation Hypothesis,Biodiversity

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