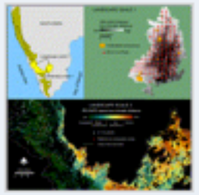
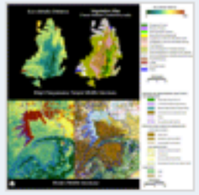
ScienceDirect.com - Remote Sensing of Environment - Quantifying and mapping biodiversity...ecosystem services: Utility of a multi-season NDVI based Mahalanobis distance surrogate
http://www.sciencedirect.com/science/article/pii/S0034425708003696
Reader
Google
go.uk ColMex Research Gscholar GIS monUB LinkedIn Dropbox WR urbdic wiki ebay barcUK barcIT barcES CatCx sidereel tv-links 1ch
ecosystem services - Google Scholar
ScienceDirect.com - Remote Sens...
Integrating Ecology and Economi...
vanderbilt university - Google Search
Export citation
Purchase
More options...
Search ScienceDirect
Search





Read-Only
Non-printable

Abstract

There is an urgent need for techniques to rapidly and periodically measure biodiversity and ecosystem services over large landscapes. Conventional vegetation classification and mapping approaches are based on discrete arbitrary classes which do not capture gradual changes in forest type (and corresponding biodiversity and ecosystem services values) from site to site. We developed a simple multi-date NDVI based Mahalanobis distance measure (called eco-climatic distance) that quantifies forest type variability across a moisture gradient for complex tropical forested landscapes on a single ecologically interpretable, continuous scale. This Mahalanobis distance, unlike other distance measures takes into account the variability in the reference class and shared information amongst bands as it is based on the covariance matrix, and therefore is most useful to summarize ecological distance of a pixel to a reference class in multi-band remotely sensed space In this study we successfully apply this measure as a surrogate for tree biodiversity and ecosystem services at two nested scales for the Western Ghats Bio-diversity hotspot. Data from over 500 tree-plots and forest type maps was used to test the ability of this remotely sensed distance to be a surrogate for abundance based tree-species compositional turn-over and as a continuous measure of forest type and ecosystem services. Our results suggest a strong but scale dependant relationship between the remotely-sensed distance measure and floristic distance between plots. The multi-date NDVI distance measure emerges as very good quantitative surrogate for forest type and is a useful complement to existing forest classification systems. This surrogate quantifies forest type variability on a single, continuous quantitative scale and has important applications in conservation planning and mapping and monitoring of hydrologic and carbon storage and sequestration services.

Keywords

Mapping biodiversity and ecosystem services; Biodiversity surrogate; Tropical forest; Remote sensing

Bibliographic information
Citing and related articles
Related articles
Commentary on Krishnaswamy et al. - ...
2009, Remote Sensing of Environment
Show more information
Cited by in Scopus (20)
Related reference work articles
No articles found.
Reagent Proteins is the Protein Source
Go to the Source. Experience the cost-effective & rapid delivery of the 5,000 proteins available
Materials Today | Polymers
Read Comments and Opinions in the polymer blog
Materials Today | Blog
Applications and tools