Forest types of India

Overview

Vegetation classification is a prerequisite for understanding carbon stocks, biodiversity, sustainable use of natural resources and global change. This study has classified forest types of India based on multi-season Resourcesat-2 Advanced Wide Field Sensor (AWiFS) data of 2013. Hybrid classification approach has been used for the classification of forest types. The classification of vegetation has been carried out based on the ecological principles followed by Champion and Seth (1968) scheme of forest types in India. The predominant forest types of India are tropical dry deciduous and tropical moist deciduous. The forest type classes identified in the study will facilitate linking with different global and national classification systems. Uniqueness of the present study lies in use of national vegetation legend and utilization of 56m spatial resolution multi-season satellite data of Resourcesat-2 AWiFS.

Forest types of India

1. Wet Evergreen forest
2. Semi Evergreen forest
3. Moist Deciduous forest
4. Dry Deciduous forest
5. Littoral and Swamp forest / Mangrove forest
6. Dry Evergreen forest
7. Thorn forest
8. Sub tropical broad leaved forest
9. Subtropical Pine forest
10. Subtropical Dry Evergreen forest
11. Montane Wet Temperate forest
12. Montane Moist Temperate forest
13. Montane Dry Temperate forest
14. Sub Alpine forest

Scope of the study

The study has brought out a comprehensive forest type maps based on inputs critical in defining the various categories of forest types. This spatially explicit database will be highly useful for the studies related to changes in various forest types, carbon stocks, climate-vegetation modeling and biogeochemical cycles.

Methodology

The different steps followed for vegetation type mapping for the present study are selection of multi-season Resourcesat-2 AWiFS data, radiometric correction, geometric rectification, registration of

temporal data, digital enhancement, reconnaissance survey, image interpretation, image smoothing, accuracy assessment and area assessment. Satellite data was acquired and pre-processed, followed by image extraction, noise removal and geometric correction. In addition to digital classification methods, conjunctive use of visual interpretation technique was used in view of field information to be incorporated in terms of context, association and texture to delineate different forest type classes. In the classification of natural forest vegetation, four criteria have been used: (1) life form (predominance of tree cover), (2) forest cover (>10% canopy cover), (3) leaf type (broad leaved or needle leaved) and (4) leaf longevity/phenology (evergreen or deciduous). The forest class is subdivided into climatically driven forest ecosystems following Champion and Seth's classification (1968) scheme. The further levels of classification under forest class is based on phenology and then biogeography, elevation and field data which includes 14 forest types, i.e. tropical wet evergreen forest, tropical dry evergreen forest, subtropical broad leaved hill forest, subtropical dry evergreen forest, montane wet temperate forest, tropical semi evergreen forest, tropical moist deciduous forest, tropical dry deciduous forest, tropical thorn forest, subtropical pine forest, Himalayan moist temperate forest, Himalayan dry temperate forest, subalpine forest and littoral and swamp forest (Mangroves).

Publications from the study

1. Reddy, C.S., Jha, C.S., Diwakar, P.G. & Dadhwal, V.K. 2015. Nationwide classification of forest types of India using remote sensing and GIS. *Environmental Monitoring and Assessment* DOI: 10.1007/s10661-015-4990-8.

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