A land-cover map for South and Southeast Asia derived from SPOT-VEGETATION data

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Abstract

Aim Our aim was to produce a uniform 'regional' land-cover map of South and Southeast Asia based on 'sub-regional' mapping results generated in the context of the Global Land Cover 2000 project.

Location The 'region' of tropical and sub-tropical South and Southeast Asia stretches from the Himalayas and the southern border of China in the north, to Sri Lanka and Indonesia in the south, and from Pakistan in the west to the islands of New Guinea in the far east.

Methods The regional land-cover map is based on sub-regional digital mapping results derived from SPOT-VEGETATION satellite data for the years 1998–2000. Image processing, digital classification and thematic mapping were performed separately for the three sub-regions of South Asia, continental Southeast Asia, and insular Southeast Asia. Landsat TM images, field data and existing national maps served as references. We used the FAO (Food and Agriculture Organization) Land Cover Classification System (LCCS) for coding the sub-regional land-cover classes and for aggregating the latter to a uniform regional legend. A validation was performed based on a systematic grid of sample points, referring to visual interpretation from high-resolution Landsat imagery. Regional land-cover area estimates were obtained and compared with FAO statistics for the categories 'forest' and 'cropland'.

Results The regional map displays 26 land-cover classes. The LCCS coding provided a standardized class description, independent from local class names; it also allowed us to maintain the link to the detailed sub-regional land-cover classes. The validation of the map displayed a mapping accuracy of 72% for the dominant classes of 'forest' and 'cropland'; regional area estimates for these classes correspond reasonably well to existing regional statistics.

Main conclusions The land-cover map of South and Southeast Asia provides a synoptic view of the distribution of land cover of tropical and sub-tropical Asia, and it delivers reasonable thematic detail and quantitative estimates of the main land-cover proportions. The map may therefore serve for regional stratification or modelling of vegetation cover, but could also support the implementation of forest policies, watershed management or conservation strategies at regional scales.

Keywords

Forest cover • land-cover classification • regional map • remote sensing • Southeast Asia • SPOT-VEGETATION sensor