LCLUC Abstract

Characterizing Land Cover Heterogeneity and Land Cover Change from Multisensor Satellite Data

Ruth DeFries

The proposed research addresses the need to develop improved regional and global land cover products that incorporate spatial and temporal heterogeneity of vegetation. The applications for these products are primarily regional and global biosphere-atmosphere models. The proposed research focuses on both conventional land cover classification products and alternative approaches to depict land cover heterogeneity and land cover changes over large areas. We propose to:

1. develop global land cover products at 8 km spatial resolution indicating temporal variability for the years over the length of record for the AVHRR Land Pathfinder data (1982-94)
2. develop global data planes indicating the proportional cover of vegetation displaying different growth forms (woody vegetation, herbaceous vegetation, or bare ground), leaf longevity (evergreen or deciduous), and leaf type (broadleaf or needleleaf) using 8 km and 1 km AVHRR data as well as MODIS data when available
3. apply the methods for estimating proportional cover to the multiyear 8 km data set to identify land cover change.

We will test these results with deforestation estimates from the Landsat Pathfinder Humid Tropics Deforestation project. To enhance the current IGBP effort to produce a global 1 km land cover classification product, we also propose to produce a global land cover data set describing the geographic distributions of major biomes using the global 1 km AVHRR data set. We will make available our global data set of training and validation sites developed by analysis of over 160 Landsat MSS scenes. Finally, we propose to assess the significance of land cover heterogeneity for several global biosphere-atmosphere models using the 1 km and 8 km products developed in the project.

Links to Related Sites:

- University of Maryland Land Cover and Remote Sensing Research Web Site
  <http://www.geog.umd.edu/landcover/>
- One Degree Land Cover Map Derived From AVHRR Data
  <http://www.geog.umd.edu/landcover/1d-map.html>
- Grand Challenge for Land Cover Dynamics
  <http://www.umiacs.umd.edu/research/GC/>
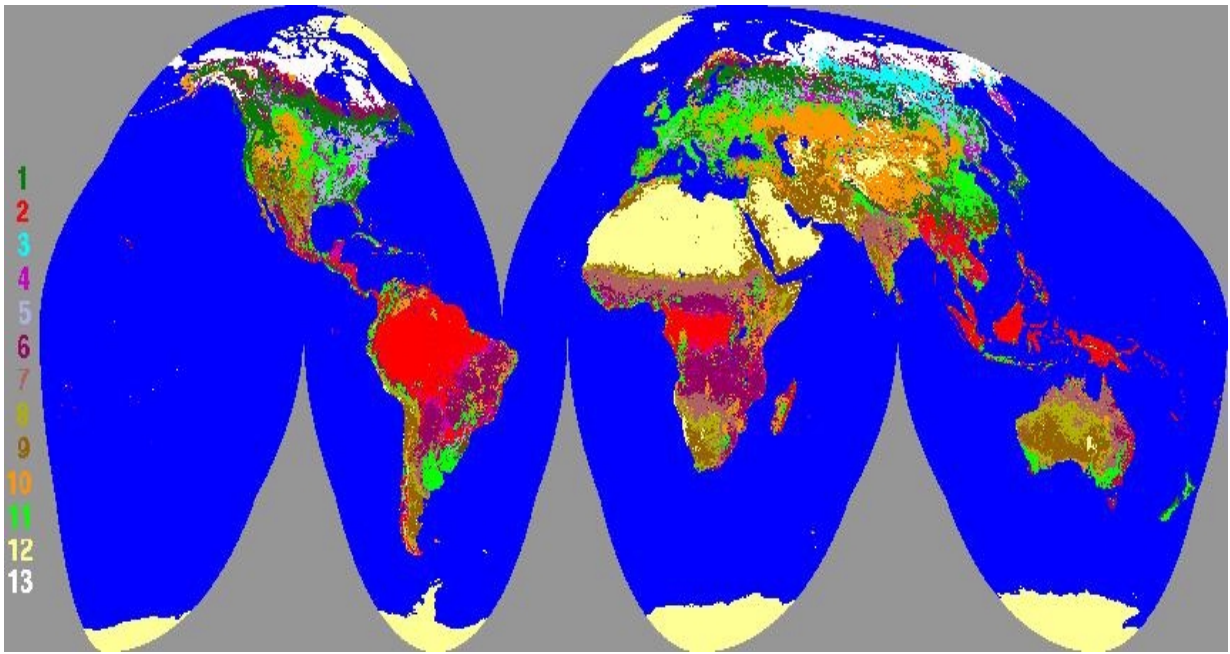
A Key to the Related Map:
1. Evergreen needleleaf forest
2. Evergreen broadleaf forest
3. Deciduous needleleaf forest
4. Deciduous broadleaf forest
5. Mixed forest
6. Woodlands
7. Wooded grasslands/shrublands
8. Closed bushlands or shrublands
9. Open shrublands
10. Grasses
11. Croplands
12. Bare
13. Mosses and lichens