LBA Regional Tree Cover from AVHRR, 1-km, 1992-1993 (DeFries et al.)

Description:

The data set consists of a LBA study area subset of the 1km Global Tree Cover Data Set developed at the Laboratory for Global Remote Sensing Studies (LGRSS) at the University of Maryland.

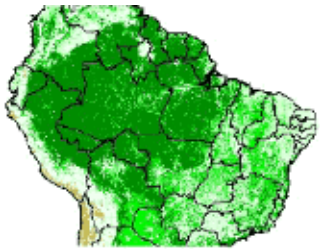
Characterization of terrestrial vegetation from the Advanced Very High Resolution Radiometer (AVHRR) on the global to regional scale has traditionally been accomplished using classification schemes with discrete numbers of vegetation classes. Representation of vegetation into a limited number of homogeneous classes does not account for the variability within land cover, nor does the portrayal recognize transition zones between adjacent cover types. An alternative paradigm to describing land cover as discrete classes is to represent land cover as continuous fields of vegetation characteristics using a linear mixture model approach. This prototype data set, created by researchers at the Laboratory for Global Remote Sensing Studies (LGRSS) at the University of Maryland, contains 1km cells estimating: 1) Percent tree cover; 2) Percentage cover for two layers representing leaf longevity (evergreen and deciduous); and 3) Percentage cover for two layers estimating leaf type (broadleaf and needleleaf).

Data acquired in 1992-93 from NOAA's AVHRR at a 1km spatial resolution and processed under the guidance of the International Geosphere Biosphere Programme (IGBP) were used to derive the tree cover, leaf type and leaf longevity maps. Each pixel in the layers has a value between 10 and 80 percent. These layers can be directly used as parameters in models or aggregated into more conventional land cover maps. For the latter, the product offers the flexibility to derive land cover maps based on user's requirements for a particular application. The product is intended for use in terrestrial carbon cycle models, in conjunction with other spatial data sets such as climate and soil type, to obtain more consistent and reliable estimates of carbon stocks.

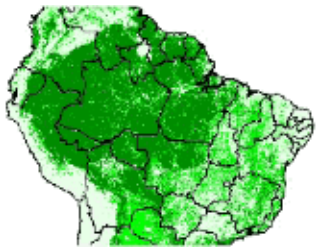
The LBA study area subset of the Global Land Cover Facility treecover data set consists of 5 files:

1. broadleaf.dat.gz --> percent coverage for leaf type, broadleaf
2. deciduous.dat.gz --> percent coverage for leaf longevity, deciduous
3. evergreen.dat.gz --> percent coverage for leaf longevity, evergreen
4. needleleaf.dat.gz --> percent coverage for leaf type, needleleaf (all values=0, file included for sake of completeness)
5. treecover.dat.gz --> percent tree cover

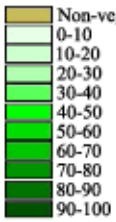
LBA Subset of the 1km Tree Cover Data Set



Percent Tree Cover



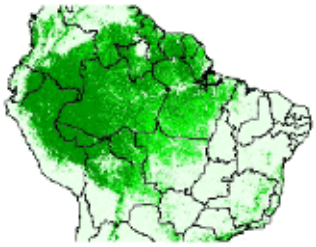
Percent Broadleaf Cover



%evergreen + %deciduous = %treecover

%broadleaf + %needleleaf = %treecover
(%needleleaf = 0 for LBA subset area)

Percent Deciduous Cover



Percent Evergreen Cover

This README file contains information regarding:
1. Data format
2. Procedure used to create the Amazon susbet
3. Legend and data source

DATA FORMAT

The downloadable files are UNIX compressed files.

The data files are in ASCII GRID format for ArcInfo. Each file contains a single ASCII array with integer values. Data values range from 0 to 255 for treecover.dat and from 0 to 80 for the remaining files. Coordinates listed below are in decimal degrees.

Rows 4200
Columns 6600
UpLeftX -0.850000E+02
UpLeftY 9.999999996725
LoRightX -0.300000E+02
LoRightY -0.250000E+02
cellsize 0.008333333333
Projection geographic

The ASCII file consists of header information containing a set of keywords, followed by cell values in row-major order. The file format is

<NCOLS xxx>
<NROWS xxx>
<XLLCORNER xxx>
<YLLCORNER xxx>
<CELLSIZE xxx>
{NODATA_VALUE xxx}
row 1
row 2
.
.
.
row n

where xxx is a number, and the keyword NODATA_VALUE is optional and defaults to -9999. Row 1 of the data is at the top of the grid, row 2 is just under row 1 and so on. The end of each row of data from the grid is terminated with a carriage return in the file.

Although the nodata_value is set to -9999 in the header portion of the data files that value does not actually occur in the data set. To import this file into ArcInfo use the following command at an ARC prompt:

ASCIIGRID <in_ascii_file> <out_grid> {INT | FLOAT}

Arguments
<in_ascii_file> - the ASCII file to be converted.
<out_grid> - the name of the grid to be created.
{INT | FLOAT} - the data type of the output grid.
INT - an integer grid will be created.
FLOAT - a floating-point grid will be created.

PROCEDURE USED TO CREATE THE AMAZON SUBSET

The data set was provided by the data originator as an ArcInfo GRID. Using GRID (a raster- or cell-based geoprocessing toolbox that is integrated with ArcInfo) the SETWINDOW command was used to define the subarea of interest. This subarea was defined by identifying the bounding coordinates as follows:

x_min -85 y_min -25 x_max -30 y_max 10

The "snap_grid" option of the SETWINDOW command was used. This snaps the lower-left corner of the specified window to the lower-left corner of the nearest cell in the snap_grid and snaps the upper-right corner of the specified window to the upper-right corner of the nearest cell in the snap_grid. In this case the snap_grid is the original data grid. The purpose of this is to ensure the proper registration of the newly set analysis window. The command format used is as follows:

SETWINDOW x_min y_min x_max y_max original_grid

Once the window was set, creating the new grid was simply a matter of setting the new subset grid equal to the original grid.

subset_grid = original_grid

An ASCII array was created from the new subset grid using the GRID command GRIDASCII.

file.dat = GRIDASCII(subset_grid)

LEGEND & ADDITIONAL SOURCES OF INFORMATION

The following legend is used in the original data set:

For treecover:
10 - 80 percent tree cover
254 non-vegetated
255 tree cover less than 10%

For evergreen, deciduous, broadleaf, and needleleaf

10 - 80 percent cover for indicated leaf longevity and type

(% evergreen + % deciduous = % tree cover; and
% broadleaf + % needleleaf = % tree cover)

Please note: the file containing the subset of needleleaf data contains values of zero only. It was included for the sake of completeness.

The original data and documentation can be obtained from the Global Land Cover Facility at the University of Maryland: http://glcf.umiacs.umd.edu