

SAFARI 2000 Land Cover from AVHRR, 1-km, 1994 (Hansen et al.)

This companion file contains examples of data set coverages and information about the data format, legends for categorical fields, and the procedure used to create the southern African subset.

Summary:

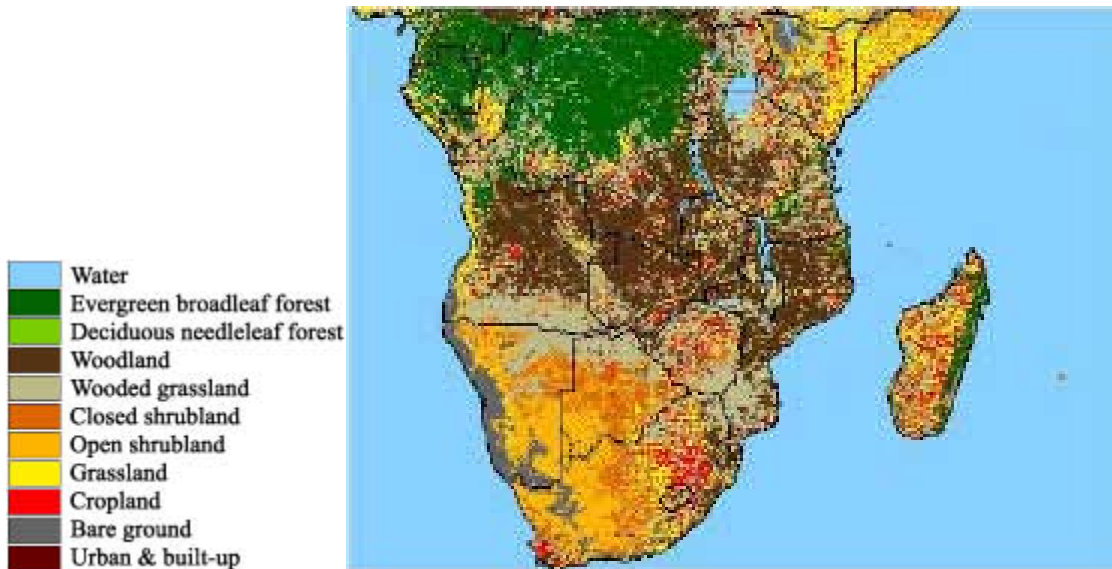
The data set consists of a southern Africa subset of the 1-km Global Land Cover Data Set Derived from AVHRR developed at the Laboratory for Global Remote Sensing Studies (LGRSS) at the University of Maryland.

Over the past several years, researchers have increasingly turned to remotely sensed data to improve the accuracy of data sets that describe the geographic distribution of land cover at regional and global scales. To develop improved methodologies for global land cover classifications as well as to provide global land cover products for immediate use in global change research, researchers at the Laboratory for Global Remote Sensing Studies (LGRSS) at the University of Maryland, have employed the NASA/NOAA Pathfinder Land (PAL) data set with a spatial resolution of 1km. This data set has a record length of 14 years (1981-1994), providing the ability to test the stability of classification algorithms.

Furthermore, this data set includes red, infrared, and thermal bands in addition to the Normalized Difference Vegetation Index (NDVI). Inclusion of these additional bands improves discrimination between cover types. The project aim is to develop and validate global land cover data sets and to develop advanced methodologies for more realistically describing the vegetative land surface based on satellite data.

The 1-km global land cover product was created from 1992-93 LAC AVHRR data. Forty-one (41) metrics were developed to describe global vegetation phenology and these data were used to make the 1km land cover map. The final product contains 13 land cover classes.

Thumbnail of 1-km land cover image:



Data Set Information:

The glcf1km.dat.gz file contains a subset of the 1km Global Land Cover data set derived from AVHRR, available from the Global Land Cover Facility at the University of Maryland. The subset is for southern Africa.

This README file contains information regarding:

1. Data format
2. Procedure used to create the southern Africa subset
3. Legend and data source

DATA FORMAT

The downloadable file, glcf1km.dat.gz, is a UNIX compressed file

The data file is in ASCII Grid format for ArcInfo. The file contains a single ASCII array with integer values. Data values range from 0 to 13. Coordinates listed below are in decimal degrees.

Rows 4800
 Columns 6600
 UpLeftX 5
 UpLeftY -35
 LoRightX 60

LoRightY 5
cellsize 0.0083333
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 glcf1km.dat file, 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.

Binary File Information

The downloadable file, glcf1km.img.gz, is a UNIX compressed file

The ASCII data file has also been converted into a binary image file that

can be viewed in any standard image viewing package. The file is a single-byte image, no header, 6600 columns by 4800 rows. Missing data (ASCII -9999) have been converted to the maximum value of 255. For more information on viewing raw binary images, see the Image Viewing Tutorial.

PROCEDURE USED TO CREATE THE SOUTHERN AFRICAN 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 5   y_min -35   x_max 60   y_max 5
```

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:

- 0 Water (and Goode's interrupted space)
- 1 Evergreen needleleaf forest
- 2 Evergreen broadleaf forest
- 3 Deciduous needleleaf forest

- 4 Deciduous broadleaf forest
- 5 Mixed forest
- 6 Woodland
- 7 Wooded grassland
- 8 Closed shrubland
- 9 Open shrubland
- 10 Grassland
- 11 Cropland
- 12 Bare ground
- 13 Urban and built-up

Although not all of these categories may be represented in the subset of the data, the original legend has been retained.

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

ORIGINAL DATA SET CITATION

Hansen, M.C., DeFries, R.S., Townshend, J.R.G., and Sohlberg, R. 1999. 1km Global Land Cover Data Set Derived from AVHRR. Global Land Cover Facility, University of Maryland Institute for Advanced Computer Studies, College Park, Maryland, U.S.A. Available on-line at <http://glcf.umiacs.umd.edu>.