SAFARI 2000 Carbon in Live Vegetation, 0.5-Deg (Olson)

Summary:

This data set is a subset of Olson's Major World Ecosystem for southern Africa.

Olson's Major World Ecosystem Complexes Ranked by Carbon in Live Vegetation is a computerized database, used to generate a global vegetation map of 44 different land ecosystem complexes (mosaics of vegetation or landscapes) comprising seven broad groups. The map is derived from patterns of preagricultural vegetation, modern areal surveys, and intensive biomass data from research sites. Work on the database was begun in 1960 and completed in 1980.

Ecosystem complexes are defined for each 0.5-degree grid cell, reflecting the major climatic, topographic, and land-use patterns. Numeric codes are assigned to each vegetation type. Classifications include natural as well as human managed/modified complexes such as mainly cropped, residential, commercial, and park. The complexes are ranked by estimated organic carbon in the mass of live plants given in units of kilograms of carbon per square meter. Counting the cells of each type and adding their areas give total area estimates for the ecosystem complexes. Multiplying by carbon estimates gives corresponding estimates of global carbon by ecosystem complex. The results help define the role of the terrestrial biosphere in the global carbon cycle.

The olson_safari.dat.gz file contains a subset of Olson's Major World Ecosystem Complexes Ranked by Carbon in Live Vegetation: A Database. The subset is for southern Africa and is available as an ASCII data file and a binary image file.

Southern Africa Subset of Olson's Ecosystem Data
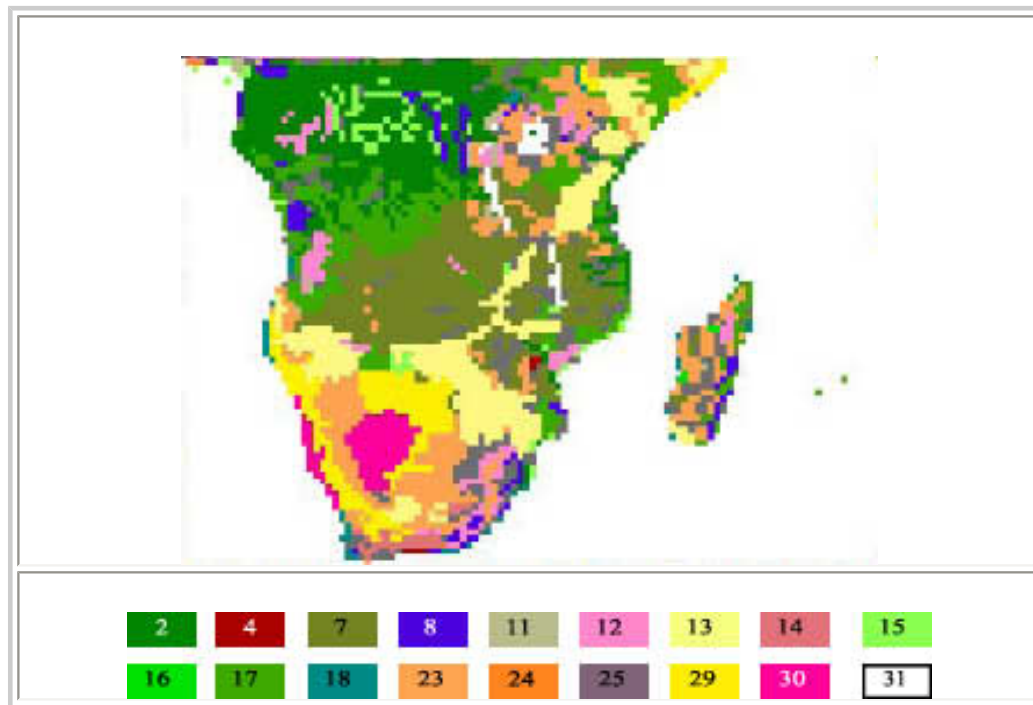
Color-Id	Ecosystem Complexes	Median C Estimate (Kg C/m2)	Actual C Estimate (Kg C/m2)	Minimum C Estimate (Kg C/m2)	Maximum C Estimate (Kg C/m2)	Ecosystem Codes
2	Tropical/Subtropical Broad-leaved Humid Forest	15.00	12.00	4.0	25.0	29,33,73
4	Mid-Latitude Mixed Woods (Deciduous/Evergreen/Conifer)	10.00	7.00	6.0	14.0	23,24
7	Tropical/Subtropical Dry Forest and Woodland	7.00	6.00	5.0	9.0	32
8	Second Growth Forest/Fields (Tropical/Subtropical Humid, Temperate/Boreal Forests)	5.00	4.00	4.0	8.0	56,57
11	Tropical Montane Complexes	5.00	5.00	1.0	15.0	28
12	Second Growth Field/Woods (Tropical/Temperate Woods, Fields/Grass/Scrub)	4.00	3.00	2.0	5.0	55,58

13	Succulent and Thorn Woods and Scrub	4.00	3.00	2.0	6.0	59
14	Mediterranean Types & Dry, Highland Woods	4.00	3.00	2.0	8.0	46,47
15	Warm or Hot Wetlands	3.00	2.00	1.0	6.0	45,72
16	Paddyland	3.00	3.00	2.0	4.0	36
17	Tropical Savanna and Woodland (Interrupted Woods)	3.00	3.00	2.0	5.0	43
18	Shore and Hinterland Complexes	3.00	3.00	0.0	10.0	65,66,67,68
23	Warm or Hot Shrub and Grassland (Marginal Lands)	1.30	0.90	0.5	3.0	41
24	Cool or Cold Farms, Towns	1.00	0.70	0.4	2.0	30
25	Warm/Hot Farms, Towns, Cool Grass/Scrub	1.00	0.80	0.6	2.0	31,40
29	Non-Polar Desert and Semidesert, Sparse Vegetation	0.40	0.30	0.2	1.0	51,71,49
30	Non-Polar Sand Desert	0.05	0.05	0.0	0.2	50
31	Water Bodies	0.00	0.00	0.0	0.0	0

Data Set Information:

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, olson_safari 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. Coordinates listed below are in decimal degrees.

Rows 80
Columns 110
UpLeftX 5
UpLeftY 5
LoRightX 60
LoRightY -35
cellsize 0.5
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 that value does not actually occur in the data. 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 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, 110 columns by 80 rows. Missing data (ASCII -9999) have been converted to the maximum value of 255.

LEGEND & ADDITIONAL SOURCES OF INFORMATION

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

The original data and documentation can be obtained through the Carbon Dioxide Information Analysis Center (CDIAC) at Oak Ridge National Laboratory (ORNL) World Wide Web site: http://cdiac.esd.ornl.gov/

PROCEDURE USED TO CREATE THE SOUTH AFRICAN SUBSET

The original data were converted to an ArcInfo grid using the ASCIIGRID command.   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 was 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)

ORIGINAL DATA SET CITATION

Olson, J.S., J.A. Watts, and L.J. Allison, 1985. Major World Ecosystem Complexes Ranked by Carbon in Live Vegetation. NDP017, Carbon Dioxide Information Center, Oak Ridge National Laboratory, Oak Ridge, Tennessee. Data available online at http://cdiac.esd.ornl.gov/ndps/ndp017.html