SAFARI 2000 Vegetation and Soils, 1-Deg (Wilson and Henderson-Sellers)

Summary:

This data set contains a subset for southern Africa of Wilson and Henderson-Sellers' Global Vegetation & Soils 1-degree data. The data are available in both ASCII GRID and binary image files formats.

The Wilson, Henderson-Sellers' Global Vegetation and Soils data set is an archive of soil type and land cover data derived for use in general circulation models (GCMs). The data were collated from natural vegetation, forestry, agriculture, land use, and soil maps. The data are archived at 1 degree latitude x 1 degree longitude resolution and include data for soil, soil reliability, primary vegetation, secondary vegetation, and land cover reliability. There are approximately fifty land cover classifications which include categories for agricultural and urban uses. The inclusion of secondary vegetation type is particularly useful is areas with cover types which may have a fragmented distribution, such as urban development. The soil type data are classified using climatically important properties for CGMs and provide color (light, medium, or dark), texture, and drainage quality of the soil. The land cover data are compatible with the soils data forming a coherent and consistent data set. Reliability data rank the land cover data on a 1 to 5 scale from high to low reliability. The soil reliability is ranked as one of the following: high, good, moderate, fair, or poor.

Recommendations for the use of these data as well as more detailed information can be found in: Wilson, M.F. and A. Henderson-Sellers, 1985. A Global Archive of Land Cover and Soils Data for Use in General Circulation Climate Models. Journal of Climatology, Vol.5, 119-143.

Thumbnail images of Southern Africa Subset of Wilson, Henderson-Sellers' Global Vegetation & Soils, 1-Degr

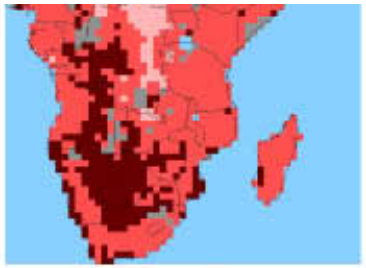
Primary Vegetation Data

Secondary Vegetation Data

- Open water
- Inland water
- Bog or marsh
- Paddy rice
- Mangrove
- Evergreen broadleaf woodland
- Evergreen broadleaf shrub
- Open tropical woodland
- Woodland & shrub
- Dense drought deciduous forest
- Open drought deciduous forest
- Deciduous shrub
- Thorn shrub
- Tropical grassland & shrub
- Tropical pasture
- Rough grazing & shrub
- Semi arid rough grazng
- Tropical savanna
- Arable cropland
- Cane sugar
- Cotton
- Vineyard
- Tea
- Equatorial rain forest
- Equatorial tree crop
- Sand desert & barren land
- Scrub desert & semi desert

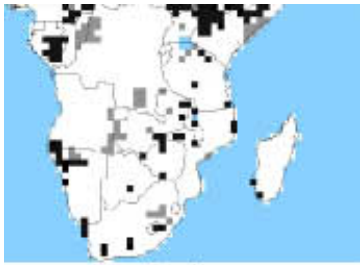
Soil Color

Light Medium Dark



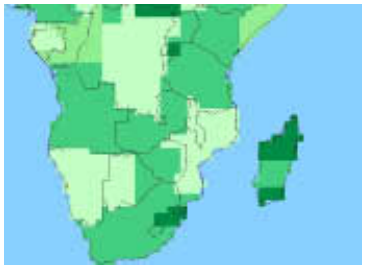
Soil Texture

Fine Intermediate Coarse



Soil Drainage

Free Impeded ---



Soil Reliability

Soil Reliability	Land Cover Reliability
High	High reliability
Good	
Moderate	
Fair	
Poor	Low reliability

Land Cover Reliability

Data Set Information:

This README file contains information regarding:

1. Data format

2. Procedure used to create the south African subset

3. Legend and data source

DATA FORMAT

The downloadable file, wilhend_safari dat.gz, is a UNIX compressed tar file. Once the file is untarred there are 5 separate files:

1 landrel_safari.dat -land cover reliability data

2 soil_safari.dat - soil data

3 soilrel_safari.dat - soil reliability data

4 vegpri_safari.dat - primary vegetation data

5 vegsec_safari.dat - secondary vegetation data

The data file is in ASCII Grid format for ArcInfo. Each file contains a single ASCII array with integer values. Coordinates listed below are in decimal degrees.

Rows 40

Columns 55

UpLeftX 5

UpLeftY 5

LoRightX 60

LoRightY -35

cellsize 1.0

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 files have also been converted into binary image files that can be viewed in any standard image viewing package. The files are single-byte images, no header, 55 columns by 40 rows. Missing data (ASCII -9999) have been converted to the maximum value of 255.

PROCEDURE USED TO CREATE THE SOUTHERN AFRICA 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)

LEGEND & ADDITIONAL SOURCES OF INFORMATION

Land cover classes (vegpri_safari.dat, vegsec_safari.dat)

Code Land Cover Description

0 Open Water
1 Inland water
2 Bog or marsh
3 Ice
4 Paddy rice
5 Mangrove (tree swamp)
10 Dense needleleaf evergreen forest
11 Open needleleaf evergreen woodland

12 Dense mixed needleleaf & broadleaf, evergreen & deciduous forest
13 Open mixed needleleaf & broadleaf, evergreen & deciduous woodland
14 Evergreen broadleaf woodland
15 Evergreen broadleaf cropland
16 Evergreen broadleaf shrub
17 Open deciduous needleleaf woodland
18 Dense deciduous needleleaf forest
19 Dense evergreen broadleaf forest
20 Dense Deciduous broadleaf forest
21 Open deciduous broadleaf woodland
22 Deciduous tree crops (temperate)
23 Open tropical Woodland
24 Woodland + shrub
25 Dense drought deciduous forest
26 Open Drought deciduous woodland
27 Deciduous shrub
28 Thorn shrub
30 Temperate meadow and permanent pasture
31 Temperate rough grazing
32 Tropical grassland + shrub
33 Tropical pasture
34 Rough grazing + shrub
35 Pasture + tree
36 Semi arid rough grazing
37 Tropical savanna (grassland + tree)
39 Pasture + shrub
40 Arable cropland

41 Dry farm arable
42 Nursery and market gardening
43 Cane sugar
44 Maize
45 Cotton
46 Coffee
47 Vineyard
48 Irrigated cropland
49 Tea
50 Equatorial rain forest
51 Equatorial tree crop
52 Tropical broadleaf forest (slight seasonality)
61 Tundra
62 Dwarf shrub (tundra transition and high altitude wasteland)
70 Sand desert and barren land
71 Scrub desert and semi desert
73 Semi desert + scattered trees
80 Urban

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Code and properties of soil classes (soil_safari.dat)

Code Color Texture Drainage

11 light coarse free
12 light intermediate free
13 light fine free
14 light coarse impeded

15 light intermediate impeded
16 light fine impeded
17 medium coarse free
18 medium intermediate free
19 medium fine free
20 medium coarse impeded
21 medium intermediate impeded
22 medium fine impeded
23 dark coarse free
24 dark intermediate free
25 dark fine free
26 dark coarse impeded
27 dark intermediate impeded
28 dark fine impeded
29 light -- poor
30 medium -- poor
31 dark -- poor
34 ice

Land Cover Reliability Scores (landrel_safari.dat)

1 - high reliability
2 -
3 -
4 -
5 - low reliability

Soils Reliability Scores (soilrel_safari.dat)

1 - high
2 - good
3 - moderate
4 - fair
5 - poor

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 National Center for Atmospheric Research (NCAR) Scientific Computing Division (SCD) Research Data Archives: http://www.scd.ucar.edu

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ORIGINAL DATA SET CITATION

Wilson, M.F. and A. Henderson-Sellers, 1985. A Global Archive of Land Cover and Soils Data for Use in General Circulation Climate Models. ds767.0 Data Support Section, Scientific Computing Division, The National Center for Atmospheric Research, Boulder, Colorado, U.S.A. Also available on-line at http://www.scd.ucar.edu/dss/datasets/ds767.0.html