

SAFARI 2000 Selected Soil Characteristics, 10-km Grid (IGBP-DIS)

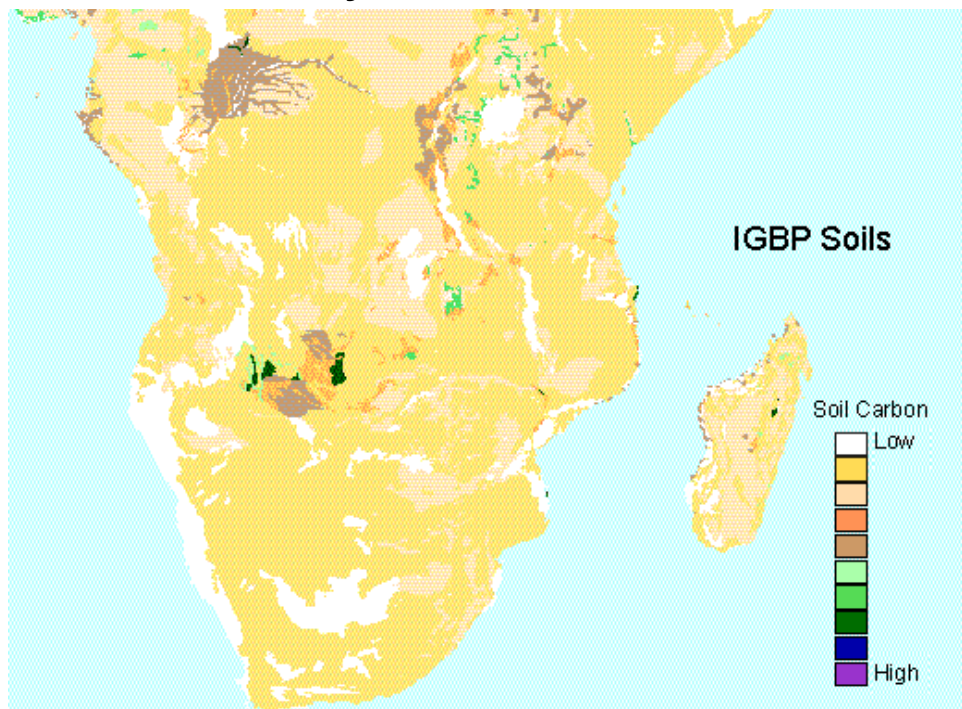
This southern African subset was taken from the global data set :

Global Soil Data Task. 2000. Global Gridded Surfaces of Selected Soil Characteristics (IGBP-DIS). International Geosphere-Biosphere Programme - Data and Information Services. Available on-line [<http://www.daac.ornl.gov/>] from Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, U.S.A.

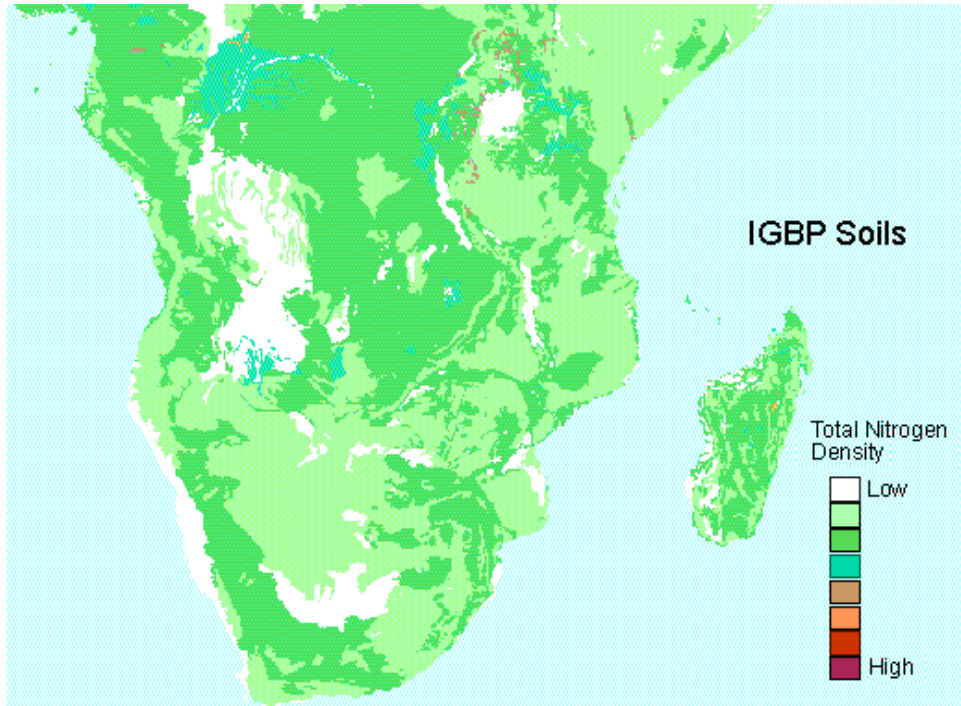
The Gridded Surfaces of Selected Soil Characteristics (IGBP-DIS) data set contains 7 data surfaces: soil-carbon density, total nitrogen density, field capacity, wilting point, profile available water capacity, thermal capacity, and bulk density.

Thumbnails of 10-km gridded surfaces of the 7 data types for the southern African subset.

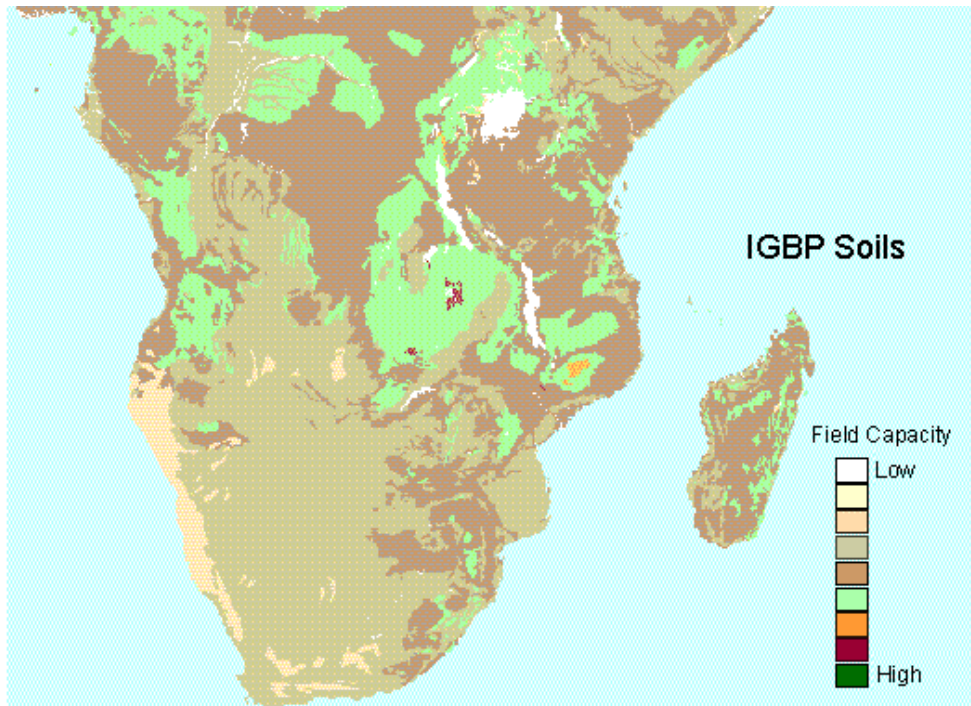
Soil-Carbon Density



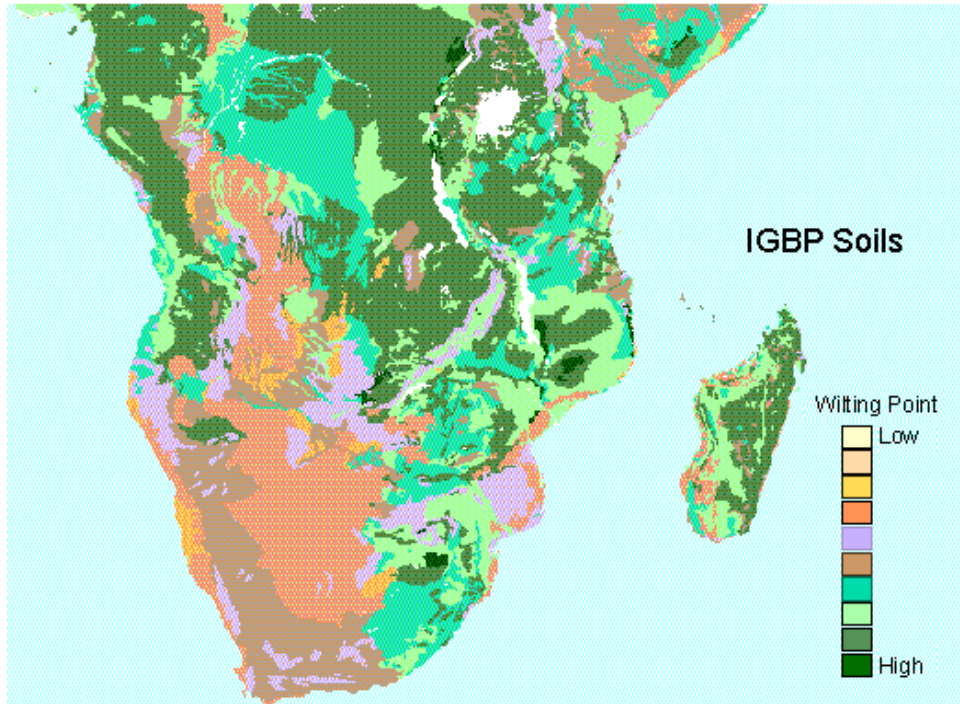
Total Nitrogen Density



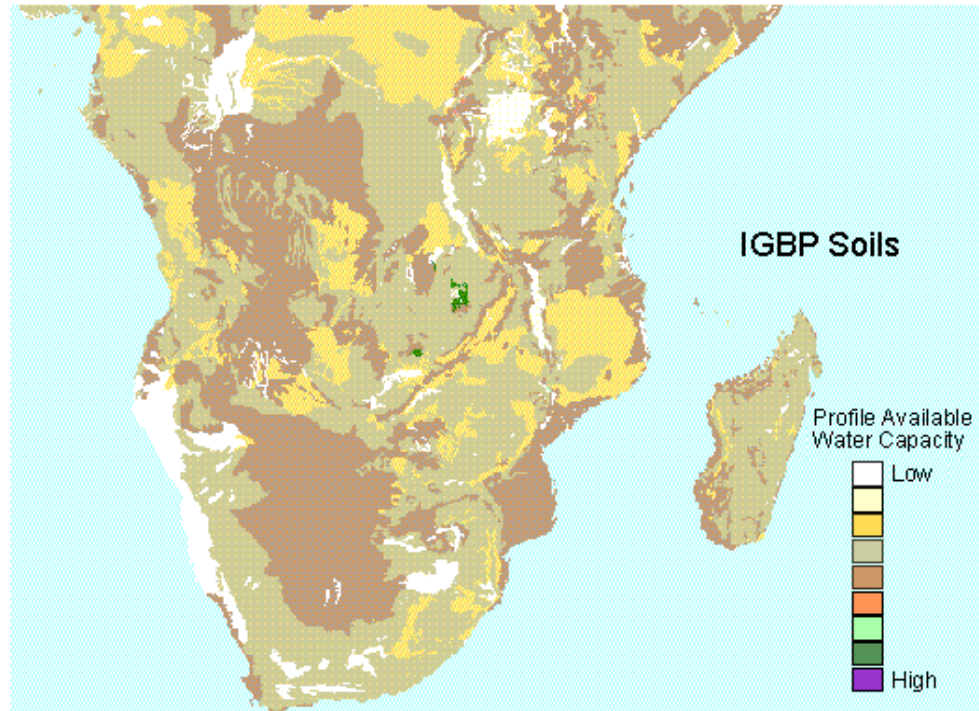
Field Capacity



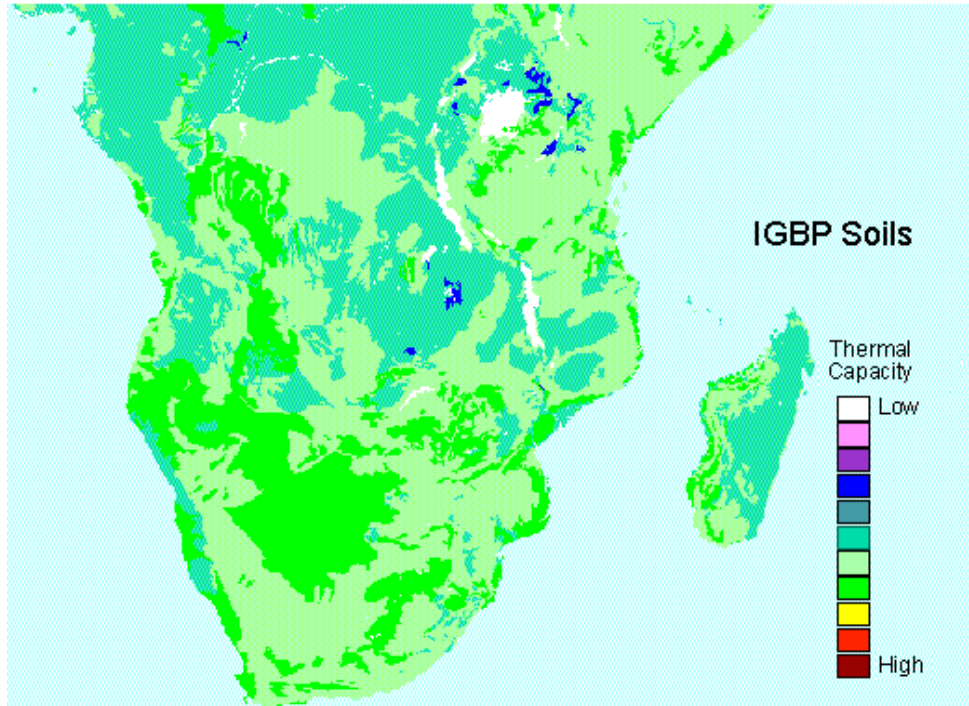
Wilting Point



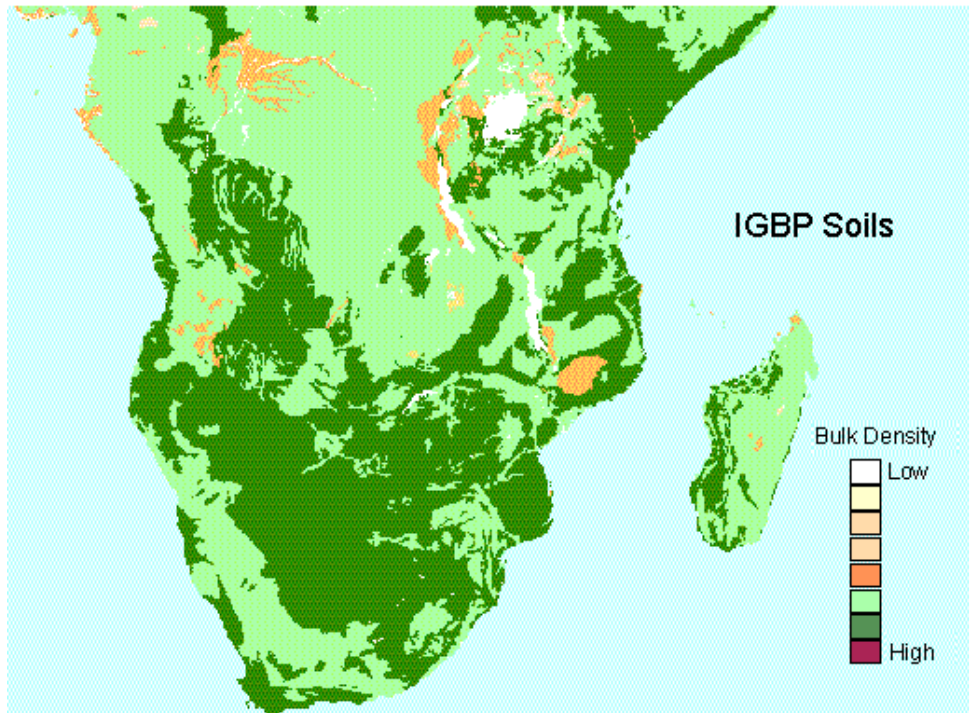
Profile Available Water Capacity



Available Thermal Capacity



Bulk Density



Original data processing:

All the surfaces were generated by SoilData, at a resolution of 5arc minutes by 5arc minutes, and a soil depth interval of 100 cm. These data surfaces were generated by the SoilData System, which was developed by the Global Soil Data Task of the International Geosphere-Biosphere Programme (IGBP) Data and Information Services (DIS). The SoilData System generates soil information and maps for geographic regions at soil depths and resolutions selected by the user. Derived surfaces of selected soil characteristics are suitable for modeling and inventory purposes. The data surfaces are also distributed as part of the Global Soil Data Products CD-ROM.

The SoilData System uses a statistical bootstrapping approach to link the pedon records in the Global Pedon Database to the FAO/UNESCO Digital Soil Map of the World. It can generate maps and output data sets for a range of original and derived soil parameters, such as carbon and nitrogen density, thermal conductivity, and water-holding capacity, for any part of the world at user-selected depth ranges. The digital output can be at any resolution (in increments of 5').

Creating the subset:

The original (global) data were downloaded from the Oak Ridge National Laboratory (ORNL) Distributed Active Archive Center (DAAC). <http://daac.ornl.gov>

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 = GRIDASCII(subset_grid)
```

Data File Format:

Data files are provided in ASCII GRID format for ARC INFO. Each file contains a single ASCII array in a geographic (lat/long) projection. The ascii files consist of header information containing a set of keywords, followed by cell values in row-major order.

The first six lines of the ascii files (header) should read:

```
ncols 660  
nrows 480  
xllcorner 4.999926  
yllcorner -35.0000086  
cellsize 0.0833333  
NODATA_value -9999
```

To import the *.dat files into ARC INFO as GRIDS use one of the following commands:

At the ARC prompt:

```
Arc: ASCIIGRID <in_ascii_file> <out_grid> FLOAT
```

OR

At the GRID prompt:

```
Grid: (*) = ASCIIGRID (<in_ascii_file>, FLOAT)
```

Data File Names:

There are seven data files included in this data set: (0 - 100cm depth)

1. bkldens.dat - Bulk Density (g/cm³)
2. fieldcap.dat - Field Capacity (mm) (PsiFC = -10 kPa)
3. pawc.dat - Profile Available Water Capacity (mm) (PsiFC = -10 kPa)
(PsiWP = -1500 kPa)
4. soilcarb.dat - Soil Carbon Density (kg/m²)

5. thermcap.dat - Thermal Capacity (J/m³/k) (Theta = 0.00 %v/v)

6. totnitro.dat - Total Nitrogen Density (g/m²)

7. wiltpt.dat - Wilting-Point (mm) (PsiWP = -1500 kPa)

Note: SoilData's default settings were used in the generation of these surfaces. (i.e. - bootstrap sample size = 500; Field Capacity water potential = -10 kPa; and Wilting Point water potential = 1500 kPa. Missing soil unit data was patched from the default data set.)