Africa Land Cover Characteristics Data Base Version 2.0

PLEASE NOTE: This is the Version 2.0 release of the Africa land cover characteristics data base. The land cover information has been updated from Version 1.2. Please read section 5.0 for information about the revision process and what changes have been made to the data.

Table of Contents

1.0 Data Description

- The Africa land cover data base is one portion of a global land cover characteristics data base that was developed on a continent-by-continent basis. All continents in the global data base share the same map projections (Interrupted Goode Homolosine and Lambert Azimuthal Equal Area), have 1-km nominal spatial resolution, and are based on 1-km AVHRR data spanning April 1992 through March 1993 (Loveland and others, 1999). Each continental data base has unique elements that are based on the salient geographic aspects of the specific continent. In addition,

a core set of derived thematic maps produced through the aggregation of seasonal land cover regions are included in each continental data base. These are:

- Global Ecosystems (Olson, 1994a, 1994b)
- IGBP Land Cover Classification (Belward, 1996)
- U.S. Geological Survey Land Use/Land Cover System (Anderson and others, 1976)
- Simple Biosphere Model (Sellers and others, 1986)
- Simple Biosphere 2 Model (Sellers and others, 1996)
- Biosphere-Atmosphere Transfer Scheme (Dickinson and others, 1986)
- Vegetation Lifeforms (Running and others, 1994)

The legends for each of these derived data sets can be found in Section 3.2 - 3.8.

The Africa land cover characteristics data are in a flat, headerless raster format. The pixel values correspond to class numbers defined in the appropriate land cover classification scheme legend. Data are distributed as compressed and uncompressed single-band images.

1.1 Downloading from the Web

From the Africa Land Cover page, select either data in Interrupted Goode Homolosine projection or data in Lambert Azimuthal Equal Area projection. The selection will link to a page that contains links to all documentation files and the image files (both compressed and uncompressed). NOTE: World Wide Web browsers can vary in how the files will be downloaded. On PCs, some browsers will allow a user to interactively select the location where the file will be saved and to edit the file name. However, on certain browsers files may be automatically downloaded to a default storage location on the local system.

1. Select either button, compressed or uncompressed, for the file of interest.
2. A pop-up screen may appear, showing information on the download procedure. At this point, choose the directory in which to save the file.
3. For compressed files, the .gz extension must be added to the filename before downloading. However, if the browser will not accept adding an extension, continue with the download, and then rename the file with the .gz extension when the download is complete.
4. For uncompressed files, leave the .gz extension off. If a pop-up screen shows the filename with a .gz extension either edit the filename, or proceed with the download and rename the file without the extension after the procedure is complete.

2.0 Geometric Characteristics

The Africa data base is available in two different map projections: the Interrupted Goode Homolosine and the Lambert Azimuthal Equal Area (see Steinwand, 1994 , and Steinwand and others, 1995, for a complete description of these projections).

2.1 Interrupted Goode Homolosine Projection Parameters

The data dimensions of the Interrupted Goode Homolosine projection for the Africa land cover characteristics data set are 8,676 lines (rows) and 8,350 samples (columns) resulting in a data set size of approximately 72 megabytes for 8-bit (byte) images. The following is a summary of the map projection parameters used for this projection:

Projection Type: Interrupted Goode Homolosine

- Units of measure: meters
- Pixel Size: 1000 meters
- Radius of sphere: 6370997 m
- XY corner coordinates (center of pixel) in projection units (meters)
    - Lower left: (-1998000, -4146000)
    - Upper left: (-1998000, 4529000)
    - Upper right: (6351000, 4529000)
    - Lower right: (6351000, -4146000)

2.2 Lambert Azimuthal Equal Area Projection Parameters

The data dimensions of the Lambert Azimuthal Equal Area projection for the Africa land cover characteristics data set are 9,276 lines (rows) and 8,350 samples (columns) resulting in a data set size of approximately 77 megabytes for 8-bit (byte) images. The following is a summary of the map projection parameters used for this projection:

Projection Type: Lambert Azimuthal Equal Area

- Units of Measure: meters
- Pixel Size: 1000 meters
- Radius of sphere: 6370997 m
- Longitude of origin: 20 00 00 E
- Latitude of origin: 5 00 00 N
- False easting: 0.0
- False northing: 0.0
- XY corner coordinates (center of pixel) in projection units (meters)
    - Lower left: (-4458000, -4795000)
    - Upper left: (-4458000, 4480000)
    - Upper right: (3891000, 4480000)
    - Lower right: (3891000, -4795000)

3.0 Derived Data Sets

3.1 Africa Seasonal Land Cover Regions Legend
Africa, v. 2.0

Value	Description
1	Fir/Cedar Forest
2	Atlantic Coast Dry Forest
3	Secondary Semi-deciduous Forest/Woodland
4	Tropical Plantations
5	Tropical Rainforest
6	Tropical Rainforest

7	Secondary Tropical Lowland Forest with Mangroves
8	Open And Fragmented Forest
9	Tropical Rainforest with Savanna
10	Tropical Rainforest
11	Sclerophyllous Forest (Deciduous and Evergreen Oak)
12	Tropical Rainforest with Savanna
13	Tropical Rainforest
14	Tropical Plantations (Rubber, Coffee, Tea)
15	Miombo Woodland and Shrubland
16	Montane Evergreen Forests
17	Evergreen Broadleaf Forest
18	Miombo Woodland
19	Montane Evergreen Forest
20	Tropical Rainforest
21	Miombo Woodland
22	Low Open Forest/Woodland
23	Miombo Woodland/Forest
24	Tropical Forest
25	Tropical Rainforest
26	Secondary Tropical Forest
27	Tropical Rainforest
28	Humid Tropical Forest
29	Tropical Forest with Semi-Deciduous Element
30	Tropical Forest/Miombo Woodland
31	Tropical Broadleaf Evergreen Rainforest
32	Tropical Broadleaf Evergreen Rainforest
33	Montane Broadleaf Evergreen Forest
34	Broadleaf Semideciduous Forest
35	Montane Broadleaf Evergreen Woodland
36	Dense Tropical Rainforest
37	Tropical Forest with Semi-Deciduous Element
38	Dry Deciduous Forest with Grassland
39	Conifer And Bamboo
40	Open Montane Forests Mixed With Bamboo

41	Subtropical Forest, Forest Plantation
42	Sclerophyllous Scrub with Cereal Crops
43	Acacia Bushland/Thicket
44	Acacia Bushland/Thicket
45	Sclerophyllous Scrub/Woodland
46	Acacia Bushland/Thicket
47	Bushland and Thicket
48	Sclerophyllous Scrub with Cereal Crops
49	Bush Woodland
50	Acacia Bushland Thicket
51	Schlerophyllous Scrub/Woodlands
52	Acacia Bushland/Thicket
53	Cropland/Degraded Forest Savanna
54	Desert Shrubland/Grassland
55	Desert Shrubland/Grassland
56	Desert Shrubland/Grassland
57	Desert Shrubland/Grassland
58	Bush/Shrubland
59	Annual Grass and Sahel Shrub
60	Acacia Shrubland/Grassland
61	Desert with Succulent Shrubs
62	Acacia Bush/Thornland Thicket
63	Desert/Hammadas/Shrubland
64	Semi-Desert Shrubland with Grassland
65	Shrubland with Grassland
66	Acacia Bushland/Thickets
67	Shrubland with Grassland
68	Semi-Desert Shrubland with Grassland
69	Acacia Shrubland/Bushland
70	Bushland and Thicket
71	Dry Deciduous Forest/Grassland Mosaic
72	Bamboo, Plantations
73	Sudanian Woodland with Crops
74	Atlantic Evergreen Broadleaf, Lowland Dry Woodland

75	Transitional Forest/Sudanian Woodland
76	Sudanian Dry Woodland
77	Grassland/Woodland Mosaic
78	Tree Savanna
79	Tree Savanna
80	Degraded Forest/Savanna with Cropland
81	Miombo Woodland And Woody Plantations
82	Evergreen Broadleaf Woodland
83	Savanna/Miombo Woodland
84	Woody Savanna
85	Sudanian Woodland
86	Dense Sudanian Woodland with Grassland
87	Miombo Woodland
88	Sudanian Woodland
89	Sudanian Woodland
90	Woody Savanna Degraded From Dry Forest
91	Woodland, Woody Savanna
92	Woodland, Woody Savanna
93	Grassland/Sudanian Woodland
94	Sudanian Woodland/Savanna
95	Sudanian Woodland/Savanna
96	Deciduous Thicket/Grassland Mosaic
97	Scrub Woodland Or Tree Savanna
98	Sudanian Woodland with Crops
99	Savanna
100	Shrub Savanna
101	Woodland/Grass/Shrub Mosaic
102	Montane Dry Sparse Forest/Grassland
103	Savanna
104	Savanna
105	Savanna
106	Savanna
107	Low Shrub - Bushland Savanna with Cropland
108	Savanna with Cropland

109	Woodland/Acacia/Grassland Mosaic
110	Woodland/Grassland Savanna
111	Savanna
112	Savanna with Cropland
113	Scrub Woodland Or Tree Savanna
114	Low Shrub - Bushland Savanna (Degraded from Miombo Woodland with Fire Burns)
115	Open Miombo Woodland With Improved Grassland
116	Sudanian Woodland/Savanna
117	Deforested Savanna with Crops
118	Savanna
119	Low Shrub Bushland with Cropland
120	Semi-Desert Grassland with Shrubland
121	Grassland/Shrubland
122	Grassland/Shrubland
123	Grassland/Shrubland
124	Grassland with Acacia Bushland
125	Grassland with Woodland
126	Grassland/Acacia Shrubland with Cropland
127	Grassland with Shrubland
128	Grassland, Herbaceous Wetland
129	Grassland/Shrubland
130	Grassland With Cropland
131	Shrubland/Grassland with Cropland
132	Grassland/Shrubland
133	Grassland with Cropland,Wetland
134	Mangroves/Swamps, Tropical Forest
135	Mangroves/Swamps, Tropical Forest
136	Mangroves
137	Deforested Coastal, Mangrove
138	Herbaceous Wetlands (Sud)
139	Herbaceous With Woody Wetlands (Okavanga Swamp)
140	Cropland with Shrubland
141	Cropland (Peanuts) with Baobab/Acacia
142	Cropland (Rice)

143	Cropland (Rice, Peanuts)
144	Cropland with Wetland
145	Cropland (Corn, Grains)
146	Pasture/Cropland
147	Nonirrigated Cropland
148	Pasture/Cropland
149	Cropland (Cereals, Pasture)
150	Cropland,Vineyards,Orchards
151	Cropland (Sugar Cane And Other Crops)
152	Shifting Agriculture, Tea, Tobacco
153	Nonirrigated Cropland (Cereals, Pasture)
154	Cropland
155	Cropland with Grassland Savanna
156	Cropland
157	Cropland with Grass
158	Cropland with Woody Plantations
159	Pasture/Cropland with Orchards
160	Cropland
161	Cropland with Sclerophyllous Forest
162	Agriculture Plantations
163	Irrigated Agriculture
164	Cropland with Tropical Forest
165	Cropland
166	Agriculture Plantations
167	Cropland (Tea/Coffee Plantations)
168	Cropland
169	Grassland/Cropland
170	Sudanian Woodland/Agriculture Mosaic
171	Shrubland/Irrigated Crops/Tree Crops
172	Cropland/Savanna/Bushland Mosaic
173	Degraded Tropical Forest/Cropland
174	Grassland/Cropland (Wheat,Small Grains)
175	Tropical Forest/Cropland Mosaic
176	Cropland/Plantations/Savanna Mosaic

177	Cropland/Woodland Savanna
178	Cropland (Plantations)/Woodland
179	Cropland/Savanna Mosaic
180	Secondary Tropical Forest/Cropland
181	Secondary Tropical Forest/Cropland
182	Cropland/Shrubland
183	Cropland/Miombo Woodland
184	Savanna/Cultivated Crops
185	Cropland/Savanna Mosaic
186	Woodland/Cropland
187	Secondary Forest/Cropland
188	Cropland/Fruit/Vineyards/Secondary Forest
189	Fragmented Dry Forest, Fallow, Cultivation
190	Cropland/Tropical Forest
191	Barren Or Sparsely Vegetated
192	Sahara/Sahel Sparsely Vegetated
193	Barren Or Sparsely Vegetated
194	Sahara/N. Sahel Sparsely Vegetated
195	Sparse Sahel Shrubs/Sahara Hammadas
196	Inland Water
197	Ocean

3.2 Global Ecosystems Legend

Value	Description
1	Urban
2	Low Sparse Grassland
3	Coniferous Forest
4	Deciduous Conifer Forest
5	Deciduous Broadleaf Forest
6	Evergreen Broadleaf Forests
7	Tall Grasses and Shrubs
8	Bare Desert

9	Upland Tundra
10	Irrigated Grassland
11	Semi Desert
12	Glacier Ice
13	Wooded Wet Swamp
14	Inland Water
15	Sea Water
16	Shrub Evergreen
17	Shrub Deciduous
18	Mixed Forest and Field
19	Evergreen Forest and Fields
20	Cool Rain Forest
21	Conifer Boreal Forest
22	Cool Conifer Forest
23	Cool Mixed Forest
24	Mixed Forest
25	Cool Broadleaf Forest
26	Deciduous Broadleaf Forest
27	Conifer Forest
28	Montane Tropical Forests
29	Seasonal Tropical Forest
30	Cool Crops and Towns
31	Crops and Town
32	Dry Tropical Woods
33	Tropical Rainforest
34	Tropical Degraded Forest
35	Corn and Beans Cropland
36	Rice Paddy and Field
37	Hot Irrigated Cropland
38	Cool Irrigated Cropland
39	Cold Irrigated Cropland
40	Cool Grasses and Shrubs
41	Hot and Mild Grasses and Shrubs
42	Cold Grassland

43	Savanna (Woods)
44	Mire, Bog, Fen
45	Marsh Wetland
46	Mediterranean Scrub
47	Dry Woody Scrub
48	Dry Evergreen Woods
49	Volcanic Rock
50	Sand Desert
51	Semi Desert Shrubs
52	Semi Desert Sage
53	Barren Tundra
54	Cool Southern Hemisphere Mixed Forests
55	Cool Fields and Woods
56	Forest and Field
57	Cool Forest and Field
58	Fields and Woody Savanna
59	Succulent and Thorn Scrub
60	Small Leaf Mixed Woods
61	Deciduous and Mixed Boreal Forest
62	Narrow Conifers
63	Wooded Tundra
64	Heath Scrub
65	Coastal Wetland, NW
66	Coastal Wetland, NE
67	Coastal Wetland, SE
68	Coastal Wetland, SW
69	Polar and Alpine Desert
70	Glacier Rock
71	Salt Playas
72	Mangrove
73	Water and Island Fringe
74	Land, Water, and Shore
75	Land and Water, Rivers
76	Crop and Water Mixtures

77	Southern Hemisphere Conifers
78	Southern Hemisphere Mixed Forest
79	Wet Sclerophylic Forest
80	Coastline Fringe
81	Beaches and Dunes
82	Sparse Dunes and Ridges
83	Bare Coastal Dunes
84	Residual Dunes and Beaches
85	Compound Coastlines
86	Rocky Cliffs and Slopes
87	Sandy Grassland and Shrubs
88	Bamboo
89	Moist Eucalyptus
90	Rain Green Tropical Forest
91	Woody Savanna
92	Broadleaf Crops
93	Grass Crops
94	Crops, Grass, Shrubs
95	Evergreen Tree Crop
96	Deciduous Tree Crop

3.3 IGBP Land Cover Legend

Value	Description
1	Evergreen Needleleaf Forest
2	Evergreen Broadleaf Forest
3	Deciduous Needleleaf Forest
4	Deciduous Broadleaf Forest
5	Mixed Forest
6	Closed Shrublands
7	Open Shrublands
8	Woody Savannas
9	Savannas

10	Grasslands
11	Permanent Wetlands
12	Croplands
13	Urban and Built-Up
14	Cropland/Natural Vegetation Mosaic
15	Snow and Ice
16	Barren or Sparsely Vegetated
17	Water Bodies

3.4 USGS Land Use/Land Cover System Legend (Modified Level 2)

Value	Code	Description
1	100	Urban and Built-Up Land
2	211	Dryland Cropland and Pasture
3	212	Irrigated Cropland and Pasture
4	213	Mixed Dryland/Irrigated Cropland and Pasture
5	280	Cropland/Grassland Mosaic
6	290	Cropland/Woodland Mosaic
7	311	Grassland
8	321	Shrubland
9	330	Mixed Shrubland/Grassland
10	332	Savanna
11	411	Deciduous Broadleaf Forest
12	412	Deciduous Needleleaf Forest
13	421	Evergreen Broadleaf Forest
14	422	Evergreen Needleleaf Forest
15	430	Mixed Forest
16	500	Water Bodies
17	620	Herbaceous Wetland
18	610	Wooded Wetland
19	770	Barren or Sparsely Vegetated
20	820	Herbaceous Tundra
21	810	Wooded Tundra

22	850	Mixed Tundra
23	830	Bare Ground Tundra
24	900	Snow or Ice

3.5 Simple Biosphere Model Legend

Value	Description
1	Evergreen Broadleaf Trees
2	Broadleaf Deciduous Trees
3	Deciduous and Evergreen Trees
4	Evergreen Needleleaf Trees
5	Deciduous Needleleaf Trees
6	Ground Cover with Trees and Shrubs
7	Groundcover Only
8	Broadleaf Shrubs with Perennial Ground Cover
9	Broadleaf Shrubs with Bare Soil
10	Groundcover with Dwarf Trees and Shrubs
11	Bare Soil
12	Agriculture or C3 Grassland
17	Persistent Wetland
18	Dry Coastal Complexes
19	Water
20	Ice Cap and Glacier

3.6 Simple Biosphere 2 Model Legend

Value	Description
1	Broadleaf Evergreen Trees
2	Broadleaf Deciduous Trees
3	Broadleaf and Needleleaf Trees
4	Needleleaf Evergreen Trees
5	Needleleaf Deciduous Trees

6	Short Vegetation/C4 Grassland
7	Shrubs with Bare Soil
8	Dwarf Trees and Shrubs
9	Agriculture or C3 Grassland
10	Water, Wetlands
11	Ice/Snow

3.7 Biosphere-Atmosphere Transfer Scheme Legend

Value	Description
1	Crops, Mixed Farming
2	Short Grass
3	Evergreen Needleleaf Trees
4	Deciduous Needleleaf Tree
5	Deciduous Broadleaf Trees
6	Evergreen Broadleaf Trees
7	Tall Grass
8	Desert
9	Tundra
10	Irrigated Crops
11	Semidesert
12	Ice Caps and Glaciers
13	Bogs and Marshes
14	Inland Water
15	Ocean
16	Evergreen Shrubs
17	Deciduous Shrubs
18	Mixed Forest
19	Forest/Field Mosaic
20	Water and Land Mixtures

3.8 Running Vegetation Lifeforms Legend

Value	Description
1	Evergreen Needleleaf Vegetation
2	Evergreen Broadleaf Vegetation
3	Deciduous Needleleaf Vegetation
4	Deciduous Broadleaf Vegetation
5	Annual Broadleaf Vegetation
6	Annual Grass Vegetation
7	Non-vegetated Land
8	Water Bodies

4.0 Information on Version 2.0

The first version of the global land cover database was completed and released to the public in November, 1997. We applied the feedback we received from the users of this database (Brown and others, 1999) and broad lessons learned from the validation exercise of the IGBP DISCover land cover data (Scepan, 1999; Muchoney and others, 1999) to the development of this revised version of the database. Version 2.0 of the Africa land cover database contains updated land cover classes and revised labels. Users can identify the revised images and documentation by observing "2.0" or "2_0" in file names (for example, afigbp2_0g.img). Links to the previous version (1.2) of the land cover database are found on glcc_version1.php.

We have provided the specific changes to the Africa land cover database in the following ascii text file, aflcdbtab2_0.txt . The file contains 42 fields (columns) and the data are of variable width with tabs as field delimiters. The first record (row) of the file corresponds to the field titles. The following records in the file are indexed by the second field to the Africa Seasonal Land Cover Regions (Version 2.0). The field entitled "Update" contains information specific to the action taken in order to revise the particular Seasonal Land Cover Region (for example, the class was split, merged with another region, or relabeled).

5.0 References

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