

Attribute information in a shapefile of GLCNMO training data

Attribute	Explanation
FID:	Automatically given by the software, ARC GIS version 9.1. integer starting from zero.
Shape:	Automatically given by the software, ARC GIS version 9.1. "Polygon"
PLACE:	Name of a country or a place of the ground truth site.
LATITUDE:	Approximate latitude of the ground truth site. Degree, minute and second.
LONGITUDE:	Approximate longitude of the ground truth site. Degree, minute and second.
SITE_CODE:	a unique code of a training polygon to relate a training site's shapefile, its Landsat image, and its NDVI pattern graph This is a combined name of "Name of Shapefile" in "##_Training Data" and polygon No. (not used)
IN_LC_TYPE:	Initially decided land cover sub-class name (not used)
G_LC_CODE:	A land cover code of the ground truth site used for the classification of GLCNMO of the Global Mapping project. The detail definition of the land cover code is described in the next page.
G_LC_TYPE:	A land cover type's name of the ground truth site used for the classification of GLCNMO of the Global Mapping project.
U_LC_CODE:	A land cover code defined by a user. Blank initially.
U_LC_TYPE:	A land cover type's name defined by a user. Blank initially.
INF_SOURCE:	Information source such as a satellite image, a thematic map, or other geospatial document used to interpret land cover of the ground truth site.
ANALYST:	Person's name who interpreted land cover of the ground truth site.
DETAILS:	Any other detail description of the ground truth site

The most important attribute is "**G_LC_CODE**"

4. Legend

Land cover legend for GLCNMO is shown in Table 4.1. The detail definition of land cover class by Land Cover Classification System version 2 (LCCS2) developed by FAO is shown in Table 4.2.

Table 4.1 Land cover legend for GLCNMO

GLCNMO code	Land cover
1	Broadleaf evergreen forest
2	Broadleaf deciduous forest
3	Needleleaf evergreen forest
4	Needleleaf deciduous forest
5	Mixed forest
6	Tree open
7	Shrub
8	Herbaceous
9	Herbaceous with sparse tree / shrub
10	Sparse vegetation
11	Cropland
12	Paddy field
13	Cropland / other vegetation mosaic
14	Mangrove
15	Wetland
16	Bare area, consolidated (gravel, rock)
17	Bare area, unconsolidated (sand)
18	Urban
19	Snow / ice
20	Water bodies

Table 4.2 Definition of GLCNMO land cover class by LCCS2 (continuing)

LCC code and LCC formula is the land cover definition by Land Cover Classification System version 2 (LCCS2) developed by FAO (<http://www.glcnlccs.org/>). “/” in LCC code and LCC formula means “and”. “//” in LCC code and LCC formula means “or”.

GLC NMO code	Definition of land cover class
1	<p>Broadleaf Evergreen Forest LCC Code: 21496-121340 LCC Formula: A3A20B2XXD1E1-A21 LCC Label: Broadleaved Evergreen Closed to Open (100-40)% Trees (No differentiation has been made between Cultivated-managed and/or Natural and Semi-natural Vegetation) The main layer consists of broadleaved evergreen closed to open trees. The crown cover is between 100 and 40%. The height is in the range of >30 - 3m. Tree type plantation or orchard of broadleaved evergreen tree is included in this class.</p>
2	<p>Broadleaf Deciduous Forest LCC Code: 21497-121340 LCC Formula: A3A20B2XXD1E2-A21 LCC Label: Broadleaved Deciduous Closed to Open (100-40)% Trees (No differentiation has been made between Cultivated-managed and/or Natural and Semi-natural Vegetation) The main layer consists of broadleaved deciduous closed to open trees. The crown cover is between 100 and 40%. The height is in the range of >30 - 3m. Tree type plantation or orchard of broadleaved deciduous tree is included in this class.</p>
3	<p>Needleleaf Evergreen Forest LCC Code: 21499-121340 LCC Formula: A3A20B2XXD2E1-A21 LCC Label: Needleleaved Evergreen Closed to Open (100-40)% Trees (No differentiation has been made between Cultivated-managed and/or Natural and Semi-natural Vegetation) The main layer consists of needleleaved evergreen closed to open trees. The crown cover is between 100 and 40%. The height is in the range of >30 - 3m. Tree type plantation or orchard of needleleaved evergreen tree is included in this class.</p>
4	<p>Needleleaf Deciduous Forest LCC Code: 21500-121340 LCC Formula: A3A20B2XXD2E2-A21 LCC Label: Needleleaved Deciduous Closed to Open (100-40)% Trees (No differentiation has been made between Cultivated-managed and/or Natural and Semi-natural Vegetation) The main layer consists of needleleaved deciduous closed to open trees. The crown cover is between 100 and 40%. The height is in the range of >30 - 3m. Tree type plantation or orchard of needleleaved deciduous tree is included in this class.</p>
5	<p>Mixed Forest LCC Code: 21495 / 21498 LCC Formula: A3A20B2XXD1 / A3A20B2XXD2 LCC Label: Broadleaved Closed to Open Trees /Needleleaved Closed to Open Trees (No differentiation has been made between Cultivated-managed and/or Natural and Semi-natural Vegetation) The main layer consists of broadleaved closed to open trees. The crown cover is between 100 and 40%. The height is in the range of >30 - 3m. / The main layer consists of needleleaved closed to open trees. The crown cover is between 100 and 40%. The height is in the range of >30 - 3m. Tree type plantation or orchard of mixed trees is included in this class.</p>

Table 4.2 Definition of GLCNMO land cover class by LCCS2 (continued)

6	<p>Tree Open LCC Code: 20014-3012 LCC Formula: A3A11B2-A13 LCC Label: Open (40 - (20-10)%) Trees (Woodland) The main layer consists of open trees. The crown cover is between 40 and (20-10)%. The height is in the range of >30 - 3m.</p>
7	<p>Shrub LCC Code: 21450 LCC Formula: A4A20B3 LCC Label: Closed to Open Shrubland (Thicket) The main layer consists of closed to open shrubland. The crown cover is between 100 and 15%. The height is in the range of 5 - 0.3m. Shrub type plantation or orchard is included in this class.</p>
8	<p>Herbaceous LCC Code: 21639 LCC Formula: A2A20B4XXXXXXF1 LCC Label: Closed to Open Herbaceous Vegetation, Single Layer (No differentiation has been made between Cultivated-managed and/or Natural and Semi-natural Vegetation) The main layer consists of closed to open herbaceous vegetation. The crown cover is between 100 and 15%. The height is in the range of 3 - 0.03m. The vegetation consists of one single layer. Pasture is included in this class.</p>
9	<p>Herbaceous with Sparse Tree / Shrub LCC Code: 21642 LCC Formula: A2A20B4XXXXXXF2F5F10G2F2F6F10G3 LCC Label: Closed to Open Herbaceous Vegetation with Trees and Shrubs The main layer consists of closed to open herbaceous vegetation. The crown cover is between 100 and 15%. The height is in the range of 3 - 0.03m. The second layer consists of sparse trees. The third layer consists of sparse shrubs.</p>
10	<p>Sparse Vegetation LCC Code: 20059 // 20050 LCC Formula: A2A14B4 // A1A14B1 LCC Label: Sparse Herbaceous Vegetation // Sparse Woody Vegetation The main layer consists of sparse herbaceous vegetation. The crown cover is between (20-10) and 1%. The height is in the range of 3 - 0.03m but may be further defined into a smaller range. // The main layer consists of sparse woody vegetation. The crown cover is between (20-10) and 1%. The height is in the range of 7 - 2m.</p>
11	<p>Cropland LCC Code: 10025 LCC Formula: A3 LCC Label: Herbaceous Crop(s) A defined area is covered by herbaceous crops. This class excludes paddy field and pasture.</p>
12	<p>Paddy field LCC Code: 3001 // 3013 LCC Formula: A1 // A2 LCC Label: Graminoid Crops // Non-Graminoid Crops A defined area is covered with graminoid crops. // A defined area is covered with non-graminoid crops. The main cover type is rice paddy influenced by the presence of water. This class includes water hyacinth as fodder, lotus root as food crop, and so on.</p>

Table 4.2 Definition of GLCNMO land cover class by LCCS2 (continued)

13	<p>Cropland /Other Vegetation Mosaic LCC Code: 0003 / 0004 // 0006 / 0004 LCC Formula: A11 / A12 // A23 / A12 LCC Label: Cultivated and Managed Terrestrial Area(s) /Natural And Semi-Natural Primarily Terrestrial Vegetation //Cultivated Aquatic or Regularly Flooded Area(s) /Natural And Semi-Natural Primarily Terrestrial Vegetation</p> <p>Primarily vegetated areas containing more than four percent vegetation during at least two months a year. The environment is influenced by the edaphic substratum. Some part of the vegetative cover is characterised by the removal of the (semi)natural vegetation and replacement with a vegetative cover resulting from human activities. This cover is artificial and requires maintenance. It is grown with the intention to be managed and/or (partly) harvested at the end of the growing season. Before or after harvest there may be a period without vegetative cover. The other part of the vegetative cover is characterised by the presence of (semi)natural vegetation which species composition, its environmental and ecological processes are indistinguishable from, or in a process of achieving, its undisturbed state. The vegetative cover is not artificial and does not need to be managed nor maintained.</p> <p>The mosaicked surface of cropland and tree plantation is included in this class. Also the mosaicked surface of cropland and other vegetation influenced by the presence of water is included in this class.</p>
14	<p>Mangrove LCC Code: 41520-R3 LCC Formula : A1A20B1-R3 LCC Label: Closed to Open Woody Vegetation Water Quality: Saline Water</p> <p>The main layer consists of closed to open woody vegetation. The crown cover is between 100 and 15%. The height is in the range of 7 - 2m.</p> <p><i>Water Quality: Saline. Depending on the level of Total Dissolved Solids (TDS) expressed in parts per million (ppm), three classes are distinguished: fresh, brackish and saline water (Cowardin et al., 1979).</i></p> <p>1) <i>Fresh Water: Less than 1 000 ppm TDS.</i> 2) <i>Brackish Water: Between 1 000 and 10 000 ppm TDS.</i> 3) <i>Saline Water: More than 10 000 ppm TDS.</i></p>
15	<p>Wetland LCC code: 41520-R1 // 41520-R2 // 42156 LCC formula: A1A20B1-R1 // A1A20B1-R2 // A2A20B4 LCC Label: Closed to Open Woody Vegetation Water Quality: Fresh Water // Closed to Open Woody Vegetation Water Quality: Brackish Water // Closed to Open Herbaceous Vegetation</p> <p>The main layer consists of closed to open woody vegetation. The crown cover is between 100 and 15%. The height is in the range of 7 - 2m. // The main layer consists of closed to open woody vegetation. The crown cover is between 100 and 15%. The height is in the range of 7 - 2m. // The main layer consists of closed to open herbaceous vegetation. The crown cover is between 100 and 15%. The height is in the range of 3 - 0.03m.</p> <p><i>Water Quality: Fresh Water or Brackish Water. Depending on the level of Total Dissolved Solids (TDS) expressed in parts per million (ppm), three classes are distinguished: fresh, brackish and saline water (Cowardin et al., 1979).</i></p> <p>1) <i>Fresh Water: Less than 1 000 ppm TDS.</i> 2) <i>Brackish Water: Between 1 000 and 10 000 ppm TDS.</i> 3) <i>Saline Water: More than 10 000 ppm TDS.</i></p>
16	<p>Bare area, consolidated (gravel, rock) LCC code: 6001 LCC formula: A1 LCC Label: Consolidated Material(s) The land cover consists of consolidated material(s).</p>
17	<p>Bare area, unconsolidated (sand) LCC code: 6004 LCC formula: A2 LCC Label: Unconsolidated Material(s) The land cover consists of unconsolidated material(s).</p>

Table 4.2 Definition of GLCNMO land cover class by LCCS2 (last part)

18	<p>Urban LCC code: 0010 LCC formula: B15 LCC Label: Artificial Surfaces and Associated Area(s) The environment is influenced by the edaphic substratum. The cover is artificial and a result of human activities. Vegetated urban is included in this class.</p>
19	<p>Snow / Ice LCC code: 8006 // 8009 LCC formula: A2B1 // A3B1 LCC Label: Perennial Snow // Perennial Ice The land cover consists of perennial snow. // The land cover consists of perennial ice. <i>Perennial: The snow / ice covers the surface for more than 9 months each year in all years.</i></p>
20	<p>Water Bodies LCC code: 7001 // 8001 LCC formula: A1 // A1 LCC Label: Artificial Waterbodies // Natural Waterbodies The land cover consists of artificial water bodies. A further specification can be made in flowing or standing water. // The land cover consists of natural water bodies.</p>
255	<p>no data</p>