

SAMPLE

Geography
Teach Yourself Series

Topic 4: Global Distribution of Land Cover

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SAMPLE

Global Distribution of Land Cover

An Introduction to Land Cover

As it appears in Unit 3

Land cover has been defined by the United Nations Food and Agriculture Organization as ‘the observed biophysical cover on the Earth’s surface.’ This cover includes natural features (rocks, vegetation, water, etc.) as well as human activity such as urban landscapes and agriculture.

Some academics define land cover to include only human features. This is because they believe natural features such as rocks or ice *are* the land, rather than *land cover*.

Review Questions

1. Describe the difference between land use and land cover. Are there any overlaps?

Figure 1: Global distribution of land cover (Global Land Cover Network, FAO, 2014)

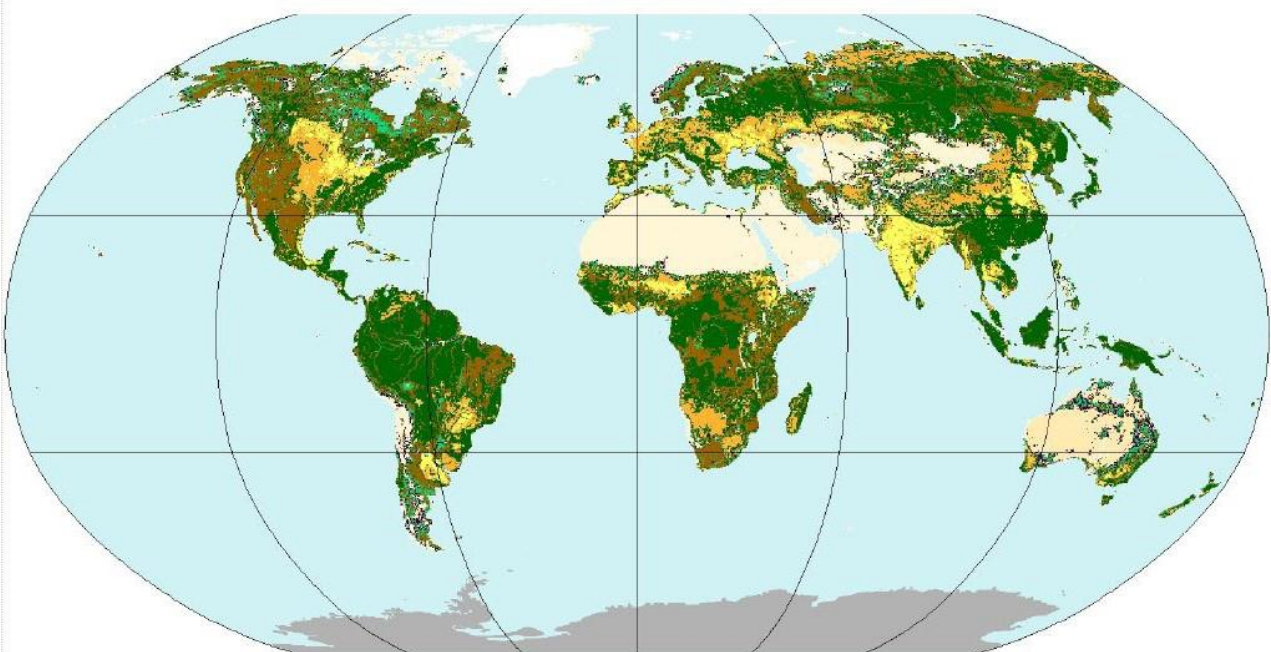


Figure 3 – Distribution of dominant GLC-SHARE Land Cover Database.

01 Artificial Surfaces	04 Tree Covered Area	07 Mangroves	10 Snow and Glaciers + Antarctica
02 Cropland	05 Shrubs Covered Area	08 Sparse Vegetation	11 Water bodies
03 Grassland	06 Herbaceous Vegetation	09 Baresoil	Antarctica

Categories of Land Cover

As it appears in Unit 3

Cultivated and Managed	Land cover is categorised as cultivated and managed when the natural vegetation has been removed and replaced by another type of vegetation. This land cover is sustained by human activity and can include land uses such as plantations or wheat farms.
Natural and Semi-Natural Vegetation	The interrelationship between climate, soil, landforms, and plant and animal life develops natural vegetation. Semi-natural vegetation is vegetation influenced by human activity, such as grazing on natural grassland. Inclusive of this category is vegetation that has grown back after the clearing of the original vegetation.
Cultivated Aquatic & Regularly Flooded Areas	This land cover category is predominately aquatic crops, purposely planted, cultivated, and harvested. Areas which have been developed for irrigation and, in their growth period require continuous watering, are included in this category. Some areas may be regularly flooded and others may have none of the natural vegetation remaining.
Natural & Semi-Natural Aquatic Land Cover or Regularly Flooded Vegetated Areas	The land cover in this category includes vegetation that has adapted to the water that is either on the surface or close to the surface of the land. It also includes wetlands that are regularly or permanently inundated with fresh water. This land cover provides an important habitat for plants and other life forms.
Artificial Surfaces and Associated Areas	Natural land cover which has been replaced with an assortment of constructed surfaces falls into this category. Included in these surfaces are urban constructions such as buildings, roads, railways, airports, waste dumps, factories, and mines.
Bare Areas	The United Nations Food and Agriculture Organization considers bare land cover to be areas with less than 4% vegetation. Bare land cover can include deserts, salt pans, coastlines of bare rock, and sand.
Artificial Water Bodies, Snow, and Ice	Artificial bodies of water like dams on rivers or lakes are a key part of this category. While this land cover seems insignificant on a global scale, it is very important in local scale landscapes. Canals with water, and wherever snow or ice is manufactured for snowfields, also form a part of this category.
Natural Water Bodies, Snow, and Ice	Natural water bodies are formed where large volumes of water have accumulated. The land cover in this category has developed in response to the Earth's natural environment. This category can include lakes, oceans, snow, glaciers, ice caps, and ice sheets.

Review Questions

2.

- a. Identify the types of land cover that are visible in Australia (Fig. 1). Which continent's land cover is most similar to that of Australia? In what ways are they similar and different?

- b. Write the category that each of the following belong to:

i. Mangroves _____

ii. Wet rice cultivation _____

iii. Caspian Sea _____

iv. Sahara Desert _____

Solutions to Review Questions

1. *Land cover is what exists on land surfaces, while land use is how people change or maintain the land. Overlaps include grassland and lakes which are land cover, but could also be land use if used for cattle grazing or irrigation respectively.*

2.
 - a. *Types of land cover seen in Australia include: sparse vegetation, tree covered areas, herbaceous vegetation, cropland, and mangroves. Australia's land cover is similar to Africa's with the bare soil/sparse vegetation and tree covered area distribution. Grassland and shrub covered areas are visible in Africa but not in Australia.*
 - b.
 - i. *Mangroves: natural and semi-natural aquatic land cover or regularly flooded areas*
 - ii. *Wet rice cultivation: cultivated aquatic or regularly flooded areas*
 - iii. *Caspian sea: natural water bodies, snow, and ice*
 - iv. *Sahara desert: bare areas*

3. *Multiple answers possible. The following are examples of a suitable response:*
 - a. *Climate Change* *Cause: Human activities such as deforestation producing greenhouse gas emissions*
Impact: Rising sea levels affecting coastal habitats (erosion, flooding, contamination of agricultural soils, loss of animal habitat, etc)
 - b. *Geophysical Changes* *Cause: Earthquakes occur as a result of the collisions between tectonic plates (the broken up crust and upper mantle of the Earth)*
Impact: The distribution of the Earth's landmasses can change because of the plate movements and resulting earthquakes
 - c. *Plant Succession* *Cause: Succession is caused by changes in the soil (either natural or caused by humans)*
Impact: Changes in plant species can influence changes in the animal species that consume these plants
 - d. *Fires* *Cause: Natural fires are generally started by lightning, human fires can be started, for example, by the burning of debris*
Impact: Fire can threaten plant and animal species, and cause the relocation of animal populations
 - e. *Pests* *Cause: Climate change is driving the movement of pests and will cause changes in the distribution of species across the world*
Impact: Expansion of pest populations into new territories increases the risk that the organisms will escape control.

4. *Multiple answers possible. The following are examples of a suitable response:*
- a. Population Dynamics *Before: Natural and semi-natural vegetation
After: Artificial Surfaces and Associated Areas*
 - b. Technology *Before: Natural Water Bodies, Snow, and Ice
After: Artificial Water Bodies, Snow, and Ice*
 - c. Politics *Before: Natural and semi-natural vegetation
After: Cultivated and managed*
5. *Spatial association can be defined as the degree to which things are similarly arranged in space. Where the distribution patterns of the two phenomena are similar, then the spatial association is strong. The spatial association between Figures 2.1 and 2.2 is not strong. There is only around 50% similarity between the two images of forest distribution.*
6. *Multiple answers possible. The following is an example of a suitable response: The disappearance of lowland forests would cause a major threat to the 100 species of figs they are home to, and to the already endangered animal species, such as tigers, Asian elephants, Malaysian tapirs, orangutans, and Sumatran rhinos.*
- 7.
- a. Mangroves *small trees or shrubs which grow in tidal, chiefly tropical, coastal swamps, in coastal saline or brackish water. Mangroves have tangled roots which grow above the ground and form dense thickets.*
 - b. Mono-culture plantations *monoculture is the cultivation of a single crop within a given area such as a farm. These plantations often produce bulk products for the export market.*
 - c. Transmigration programs *these programs transported people from Java and other densely populated islands to largely forested outer islands. They have provided little relief to the density problem.*
- 8.
- a. *Pulpwood concessions and oil palm monoculture plantations.*
 - b. *Multiple answers possible. The following is an example of a suitable response: The 'other' category could include urban development, which falls into the category of 'artificial surfaces and associated areas'. Possible structures could be buildings, roads, and waste dumps.*
 - c. *If Sumatra's natural forests were to grow back, the land cover would be semi-natural. This is because the vegetation had been previously cleared for pulpwood concessions and oil palm monoculture plantations.*