

Use of Geographical Information Systems in sustainable forestry

Questions and Answers for Video Lesson



Geography



Activity information

Level:	Junior secondary school Years 7 – 10
Duration:	1 lesson
Preparation:	Watch the video lesson titled “Use of Geographical Information Systems in sustainable forestry” and answer the following questions.
Summary:	Students will learn about Geographical Information Systems and how they can be used in forestry.

Questions

1. What does the abbreviation GIS stand for?
- _____
- _____
2. Describe what GIS are?
- _____
- _____
- _____
- _____
- _____
3. What is spatial data and what instrument is used to collect it?
- _____
- _____
4. What type of signals do satellites orbiting the Earth send to GPS receivers on Earth?
- _____
- _____
- _____
5. Name the three site measures determined using 3Dimensional positioning.
- _____
- _____

6. What can GIS be used to measure in forests?

7. Explain how LiDAR works to take measurements at the Earth's surface.

8. Describe how clearing rainforest in Brazil has resulted in a net loss of carbon stored in that country.

9. How is GIS useful for monitoring bushfires?

10. Why has it become important to track wood through the value-adding chain?

Class Challenge

Locate a GPS device and have a go at determining the latitude, longitude and altitude for your school.

You might like to generate a map of your school grounds taking regular GPS measurements that indicate important features such as the administration office, your science classroom, hall and sporting field.

ANSWERS to Questions

1. Geographical Information Systems.
2. They are computer based tools that generate colourful maps using data collected in the field from satellites, laser scanners and photographs; and are used to analyse events that happen at the earth's surface.
3. Spatial data refers to data points referenced to specific geographical locations on earth, and GPS or Global Positioning Systems are instruments used to collect it.
4. Radio frequency signals.
5. Latitude, longitude and altitude.
6. Forest cover percentage, canopy heights, tree location, tree growth rates including size and volume changes, carbon stored and lost, location of roads and waterways, insect damage, fire damage.
7. LiDAR or Light Detection And Ranging is a remote sensing technique that shoots laser pulses from aircraft to the forest canopy or floor, measuring how light is scattered when it hits a target and data is used to generate maps of an area. These maps are very useful when undertaking planning forest operations, such as logging, replanting and monitoring regeneration.
8. Large tracts of rainforest have been cleared for agriculture and mining in Brazil; where trees have been removed that normally store large volumes of carbon, and this carbon is then released back into the atmosphere adding to the greenhouse effect.
9. GIS can show changes to vegetation cover on the Earth's surface, particularly loss of grass and tree cover; it can show how fires are spreading so response teams can come to it to protect property against bushfires or indicate that owners need to leave; it can measure damage to infrastructure, ie buildings, bridges and fences.
10. In recent times it has become important to trace wood to sustainably managed forests that indicate they have been certified and managed to high standards, including environmental and social standards. This ensures the consumer that the wood product has not originated from protected rainforests or overharvested forests around the world.