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Authoring Organization: Del Mar College

Written by: Nate Jennings

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Quiz 2 - Key

1. What kind of energy is recorded on remote sensors?

Electromagnetic radiation or Electromagnetic energy

2. What is the typical unit of measure for the different wavelengths recorded by remote sensors?

Microns or nanometers

3. What is the wavelength ranges for the following wavelengths that are typically collected by remote sensors? List these in both micrometers and nanometers.
 - a. Blue – **0.4 to 0.5 microns (or 400-500 nanometers)**
 - b. Green – **0.5 to 0.6 microns (or 500-600 nanometers)**
 - c. Red – **0.6 to 0.7 microns (or 600-700 nanometers)**
 - d. Near Infrared – **0.7 to 0.9 microns (or 700-900 nanometers)**
 - e. Short wave Infrared – **1.6 to 1.8 and 2.1 to 2.4 microns (or 1600 to 1800 and 2100 to 2400 nanometers)**
 - f. Microwave (use centimeters or meters) – **1 cm to 1 m**
 - g. Thermal – **8 to 14 microns (or 8000 to 14000 nanometers)**

4. Why cannot all wavelengths of the electromagnetic spectrum be collected by remote sensors?

The Earth's atmosphere absorbs some of the energy coming from the Sun. In addition, some of the objects on the ground also absorb some or all of the energy for some wavelengths.

5. In your own words define the following with respect to remote sensing:

- a. Transmission

The energy from the Sun that passes through objects or the atmosphere

- b. Absorption

Energy from the Sun that is absorbed by the object and transformed into another type of energy such as heat or chemical energy.

- c. Reflection



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Energy from the sun or the sensor that hits an object and returns through the atmosphere to the sensor. Most sensors collect and record reflected energy from geographic objects.

6. Which of the following materials reflect higher for the given wavelength?

a. Healthy Green Vegetation

i. Green

ii. **Near Infrared**

b. Water

i. Near Infrared

ii. **Blue**

7. Which reflects higher in the near infrared portion of the electromagnetic spectrum?

a. **Healthy Green Vegetation**

b. Rocks

8. Why are infrared wavelengths important for vegetation analysis?

Vegetation tends to reflect higher in the infrared portion of the electromagnetic spectrum much more so than in the true color portion and hence has the capability to discriminate between different types of vegetation that may look the same in the true color part of the spectrum.

9. What is the difference between passive and active sensors?

Passive sensors collect and record energy from objects reflecting energy from the Sun. Active sensors are those that provide their own energy source and the energy responses are recorded on the sensor. Examples of these are RADAR and LiDAR.



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