



Applied Remote Sensing Training (ARSET) Program

SAR for Landcover Applications

Homework Questions

Question 1

The Sentinel-1 satellite from the European Space Agency contains a SAR sensor that operates at:

Answers: (bold correct)

- a. X-band
- b. L-band
- c. C-band**
- d. Ku-band

Question 2

An L-band wavelength has a length of approximately:

Answers: (bold correct)

- a. 5 cm
- b. 10 cm
- c. 24 cm**
- d. 90 cm

Question 3

Which band has greater penetration through a dense canopy?

Answers: (bold correct)

- a. X-band
- b. L-band**
- c. C-band
- d. K-band

Question 4

Radar is sensitive to:

Answers: (bold correct)

- a. The chemical properties of the surface
- b. The structure and chemical properties of of teh survey
- c. The structure and water content of the surface**
- d. The chemical and water content of the surface

Question 5

Open water is mainly characterized by:

Answers: (bold correct)

- a. Specular scattering**
- b. Double bounce
- c. Volume scattering
- d. All of the above

Question 6

Inundated vegetation is mainly characterized by:

Answers: (bold correct)

- a. Specular scattering
- b. Double bounce**
- c. Volume scattering
- d. All of the above

Question 7

Which polarization is best for detecting inundation under dense vegetation?

Answers: (bold correct)

- a. VV
- b. HV
- c. HH**
- d. VH

Question 8

Which polarization is best for detecting open water?

Answers: (bold correct)

- a. VV
- b. HV**
- c. HH
- d. All of the above

Question 9

What is a common source of confusion with flooded vegetation?

Answers: (bold correct)

- a. Urban areas**
- b. Agricultural areas
- c. Savannas
- d. Snow

Question 10

As surface soil roughness increase:

Answers: (bold correct)

- a. Backscatter will decrease
- b. Backscatter will increase**

- c. Backscatter will remain the same
- d. Backscatter will increase, then decrease

Question 11

As water in the target increases:

Answers: (bold correct)

- a. Backscatter will decrease
- b. Backscatter will increase**
- c. Backscatter will remain the same
- d. Backscatter will increase, then decrease.

Question 12

It is fine to use SAR if it was raining at the time of the acquisition:

Answers: (bold correct)

- a. True
- b. False**

Question 13

When the soil or vegetation is drier, the radar signal penetration:

Answers: (bold correct)

- a. Is greater**
- b. Is lesser
- c. Does not change
- d. None of the above

Question 14

Never use SAR to estimate soil moisture if the ground is frozen.

Answers: (bold correct)

- a. **True**
- b. False

Question 15

What is the best polarization for agriculture monitoring?

Answers: (bold correct)

- a. VV
- b. HH
- c. **HV**
- d. VH

Part 1 Exercise

Login to Google Earth Engine and go through the exercise to answer the questions below.

Question 16

What happens when you increase the smoothing radius of the speckle filter?

Answers: (bold correct)

- a. More detail is preserved in some areas and lost in other areas
- b. Nothing happens
- c. **Less detail is preserved**
- d. More detail is preserved

Question 17

What happens when the applied water threshold is increased?

Answers: (bold correct)

- a. Nothing happens
- b. More flooding is detected

c. **Less flooding is detected**

Question 18

The pixel values of your Sentinel-1 image are in sigma-naught (dB):

Answers: (bold correct)

- a. **True**
- b. False

Question 19

Which would be a typical pixel value in your image?

Answers: (bold correct)

- a. 290
- b. -386
- c. 10
- d. **-20**

Question 20

After performing the after-before image subtraction and applying a threshold, why is there flooding being detected in the ocean?

Answers: (bold correct)

- a. The ocean is always flooded
- b. The ocean surface was very calm in the before image and rough (due to wind) in the after image
- c. **The ocean surface was rough (due to wind) in the before image and calm in the after image**
- d. The ocean surface was rough (due to wind) in the before image and rough in the after image