



Applied Remote Sensing Training (ARSET) Program

Spectral Indices for Land and Aquatic Applications

Homework Questions

Question 1

What is a spectral index?

Answers: (bold correct)

- a. A mathematical equation that is applied on the various spectral bands of an image per pixel
- b. Simple band ratios that highlight a specific process or property on the land surface
- c. Utilized to reduce effects of atmosphere, instrument noise, sun angle, etc., and allows for consistent spatial and temporal comparisons
- d. All of the above**
- e. None of the above

Question 2

The Normalized Difference Vegetation Index (NDVI) is based on the relationship between _____ and _____ wavelengths.

Answers: (bold correct)

- a. Chlorophyll and red
- b. Green and red
- c. Red and near-infrared**
- d. Shortwave infrared and red

Question 3

Water absorbs strongly in the red, near-infrared, and shortwave infrared wavelengths.

Answers: (bold correct)

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

Question 4

What are some examples of water quality indicators satellites can observe?

Answers: (bold correct)

- a. Sea surface temperature (SST)
- b. Chlorophyll-a (phytoplankton)
- c. Salinity
- d. Total suspended solids (TSS)
- e. **All of the above**

Question 5

Select all that apply: The Normalized Difference Aquatic Vegetation Index (NDAVI) uses a ratio of the following bands:

Answers: (bold correct)

- a. Shortwave infrared
- b. **Near-infrared**
- c. **Blue**
- d. Red
- e. Green

Question 6

Which of the following is the formula for a Normalized Burn Ratio (NBR)?

Answers: (bold correct)

- a. $NBR = (NIR - RED) / (NIR + RED)$

- b. **NBR = (NIR - SWIR) / (NIR + SWIR)**
- c. NBR = (RED - SWIR) / (RED + SWIR)
- d. NBR = (BLUE - SWIR) / (BLUE + SWIR)

Question 7

Select all that apply: You can obtain Normalized Difference Vegetation Index (NDVI) and Enhanced Vegetation Index (EVI) products from the following:

Answers: (bold correct)

- a. **Landsat**
- b. ICESat-2
- c. **Sentinel-2**
- d. **MODIS**
- e. **VIIRS**

Question 8

There are spectral similarities between Landsat 8/9 OLI and Sentinel-2 (S2) MS which led to the Harmonized Landsat Sentinel (HLS) initiative.

Answers: (bold correct)

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

Question 9

Tell us more about your area of interest, which indices would be the most useful and why?

Short answer:

Question 10

Optional: Adjust the existing code from any part of the training for your area of interest. Take a screenshot of the results and upload the image to the [Google Drive folder](#) using the file name: YourLastName_Spectral_Indices.