

Landsat's high resolution, multiwavelength imaging system has mapped nearly all of Earth's surface, returning huge amounts of data on regions of the globe that are remote and inaccessible for ground study. By using calibrated thematic spectra of known substances, the composition of inaccessible regions can be classified.

The five basic spectra to the left represent a small number of the hundreds of common surface materials that have been 'fingerprinted'. In the problems below, graph the pixel spectra in standard form over the band domain [1,7] and data range [0,255]. Use the five basic spectra and surface types to identify the composition of the 30mx30m area covered by each image pixel.

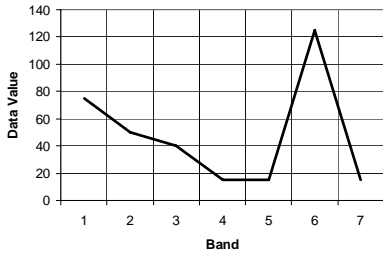
Problem 1 – This pixel is in the middle of downtown Oakland. What surface in your catalog is most similar to it?
(75,50,40,15,15,125,15)

Problem 2 – This pixel is located in San Francisco Bay. What surface in your catalog is most similar to it?
(175,150,155,110,140,120,120)

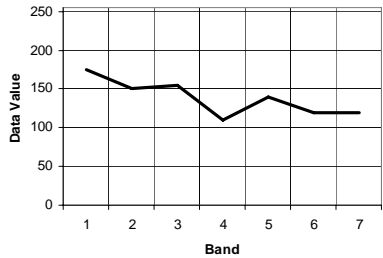
Problem 3 – This pixel is in the middle of the city of San Francisco. What surface in your catalog is most similar to it?
(70,60,50,80,80,140,40)

Problem 4 – This pixel is in the middle of Walnut Creek. What surface in your catalog is most similar to it?
(120,100,120,50,100,140,70)

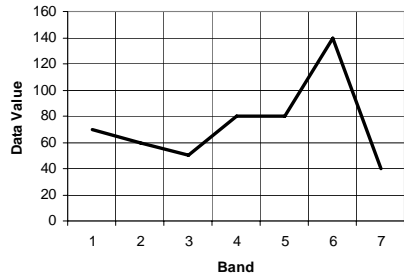
Problem 1 – This pixel is in the middle of downtown Oakland. What is it?
 (75,50,40,15,15,125,15) **This spectrum resembles the 'Water' calibration**



Problem 2 – This pixel is located in San Francisco Bay. What is it?
 (175,150,155,110,140,120,120) **This spectrum resembles the 'Rock' calibration**



Problem 3 – This pixel is in the middle of the city of San Francisco. What is it?
 (70,60,50,80,80,140,40) **This spectrum resembles the 'Trees' calibration**



Problem 4 – This pixel is in the middle of Walnut Creek. What is it?
 (120,100,120,50,100,140,70) **This spectrum resembles the 'Building' calibration**

