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ERS 186

LAB #1

The goal of this assignment is to explore the HyMap hyperspectral data from 2004 and 2006 and locate it within the Landsat TM multispectral data of California's Sacramento-San Joaquin Delta region using the tools learned in Lab 1.

1. Where are the hyperspectral flightlines located within the Landsat scene?

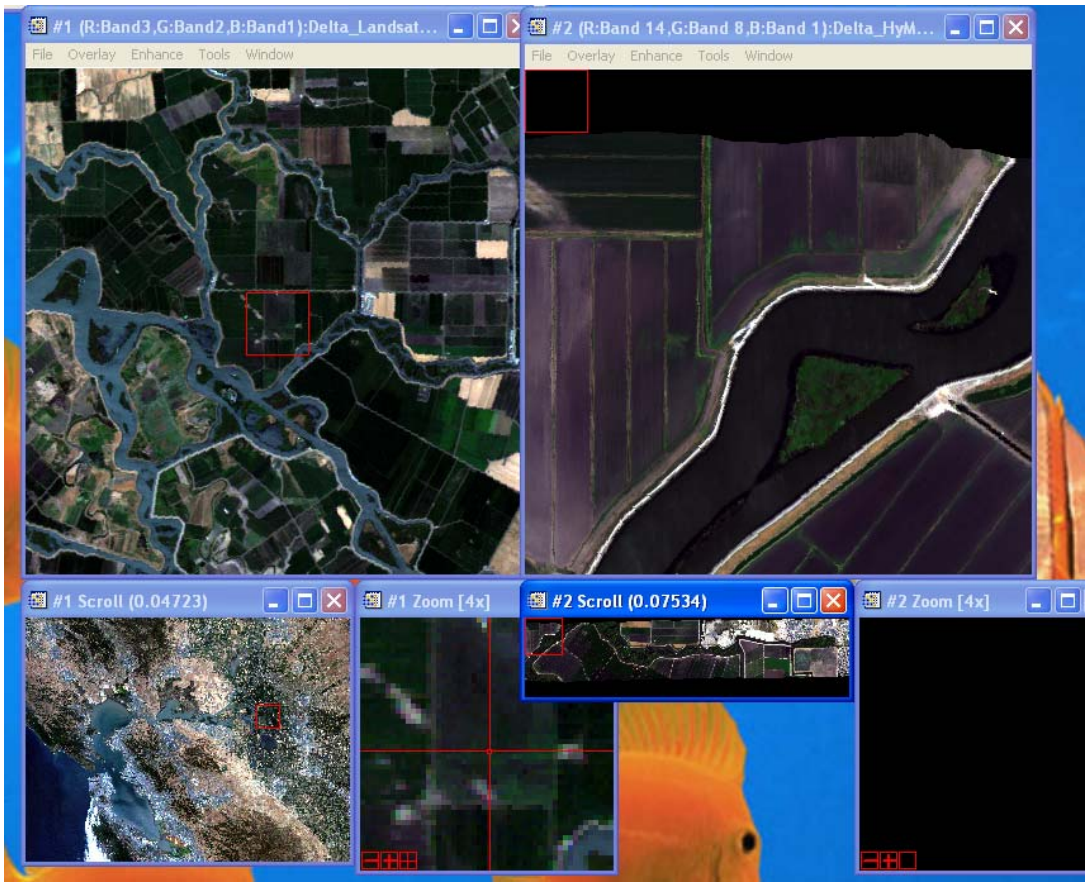

Image Right: Landsat
Image Left: 2006 HyMap
(the red boxes in the image and scroll window's are geographically linked)

a. What are the map coordinates of the upper left corner (UL) in the 2006 HyMap image?
Hint: Maximize the Map Info in the Available Bands list to learn more about your images.

UL Geo: 121°28'53.39''W, 38°3'.10'50''N
UL Map: 633228.313, 4212774.500

b. What is the projection of the 2006 Hymap image?

The projection is UTM, Zone 10.

c. What is the datum of the 2006 Hymap image?

The Datum is WGS-84.

d. What is the spatial resolution (pixel size) of the HyMap image?

The spatial resolution is 3 meters.

e. What are the corresponding sample and line coordinates of the Landsat image to the HyMap UL coordinates? To figure this out use the pixel locator in your Landsat TM image to locate the HyMap UL in the HyMap image. Enter the UL map coordinates into the pixel locator, and click "change projection" and change the datum to match the datum of the HyMap image. Click OK. Click Apply.

The corresponding spatial information in the Landsat image is:
Sample 6004, and Line 1574.

f. What is the spatial resolution of the Landsat data?

The spatial resolution is 28.5 meters.

g. What is the spectral range of the Landsat data? How many bands does it have?

The Landsat data has 6 bands.

Spectral Configuration: Landsat	
Blue	485 – 580 nm
Green	580 – 660 nm
Red	660 - 830 nm
NIR	830 – 1650 nm
Mid- Infrared	1650 – 2215 nm
Mid– Infrared	2215 – 2350 nm

h. What is the spectral range of the HyMap data? How many bands does it have?

The HyMAP data has 126 bands.

Spectral Configuration: HyMap	
VIS (R, G, B)	450 – 890 nm
NIR	890 – 1350 nm
SWIR1	1400 – 1800 nm
SWIR2	1950 – 2490 nm

2. Identify the bad (noisy) bands in the hyperspectral imagery using the animation tool to flip through all bands.
a. What are the band bands in the 2004 HyMap flightline? Include a screenshot of the display image of one bad band and one good band. Describe how they differ.
b. What are the bad bands in the 2006 HyMap flightline?
c. Use the Edit ENVI Header function to specify the bad bands (Turn them “off”) in both 2004 and 2006 HyMap images. The results of this will be evident in question #3 (below).