Free Hyperspectral Analysis

All the powerful hyperspectral analysis capabilities of TNTmips V6.00 are also available in the free TNTlite version. Now students and professionals can use free sample hyperspectral images and the free TNTlite software to learn techniques for processing and analyzing hyperspectral data.

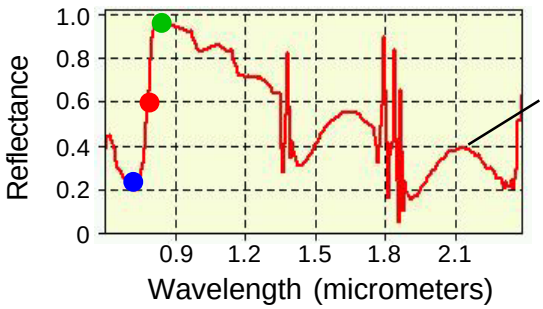
Standard scenes from all current hyperspectral imagers fit within TNTlite's raster size limits (the product of 614 x 512 raster cells), and there is no limit to the number of bands that can be analyzed simultaneously. The Hyperspectral Analysis process includes many essential functions:

- scene-based reflectance calibration
- extract and view image spectra
- save spectra in user libraries
- includes USGS Spectral Library
- spectral mapping (Spectral Angle Mapper, Matched Filtering, Linear Unmixing)
- search library for matching spectra

New Hyperspectral Analysis features for V6.00 include:

- Hyperspectral Explorer tool for scanning RGB band combinations
- built-in Principal Components analysis
- n-Dimensional Visualizer
- set range of bands for analysis
- built-in Self-Organizing Map classifier

RGB image using three bands of a reflectance-calibrated AVIRIS scene acquired over southern Maryland. Red = 0.714 µm, Green = 0.800 µm, and Blue = 0.675 µm (shown by the colored circles in the vegetation spectral plot below). This band combination was selected using the new Hyperspectral Explorer to emphasize green vegetation (forest and mature crops), which is depicted in green. Bare soil appears in pink and lavendar hues.



Class image (256 classes) for part of an AVIRIS scene of Cuprite, Nevada, produced by the Self Organizing Map classifier in the Hyperspectral Analysis process. This procedure uses neural network techniques to perform an empirical (unsupervised) classification of the hyperspectral image, without requiring you to identify spectral end members. You can use the classifier to group cells that are spectrally similar, a strategy that can be particularly useful when you have little or no ground truth information for the scene. In this scene, areas with distinctive alteration minerals are assigned to different classes (dark green and dark blue colors). Class colors for this display were derived using the Auto Color-Map procedure from the RGB combination of the second, third, and fourth principal components of the hyperspectral image. Spectrally similar classes are thus rendered in similar colors.

TNTlite includes all of the functionality of the professional TNTmips package except data export. Its limits on the size of the geospatial objects are generous enough to accomodate hyperspectral images and allow students and professionals to complete stimulating training and research projects.

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