

# **Satellite Imagery of the Smoke Plume from Burning Tires: Technical Description of Data Processing Sequence**

July 21, 2005

## **MODIS imagery**

The July 19 Aqua MODIS image was acquired by the UW SSEC EOS Direct Broadcast Reception Facility and processed to Level 1B standards. The data were then harvested by the ERSC automated MODIS processor. The data were projected into the Wisconsin Transverse Mercator (WTM 83/91) coordinate system.

A “browse” image product was created by using MODIS band 1 to “sharpen” the resolution of bands 3 and 4, resulting in a true-color image with synthetically generated 250-meter spatial resolution. This image was converted to a GeoTiff and posted on the ERSC MODIS ImageServer website.

Principal Components Analysis (PCA) was used to enhance the detectability of the smoke plume. MODIS bands 1-5 and 8 were extracted and analyzed with PCA. Of the resulting 6 component bands, numbers 3 and 4 showed the clearest representation of the smoke plume.

MODIS spectral bands used in this analysis:

<b>Band #</b>	<b>Spectral Region</b>	<b>Wavelength (nm)</b>
1	Red	620-670
2	Near infrared	841-876
3	Blue	459-479
4	Green	545-565
5	Near infrared	1230-1250
...	...	...
8	Blue	405-420

## **Landsat imagery**

Landsat-5 passed over the site on July 19. The resulting image (Path 24, Row 30) is being ordered from USGS, and will be posted on this site once it is available. In the meantime, a copy of the browse image is available.