# GEOLOGIC MAPPING IN THE MIDDLE MOUNTAINS, YUMA COUNTY, ARIZONA, WITH SEBASS HYPERSPECTRAL TIR IMAGES

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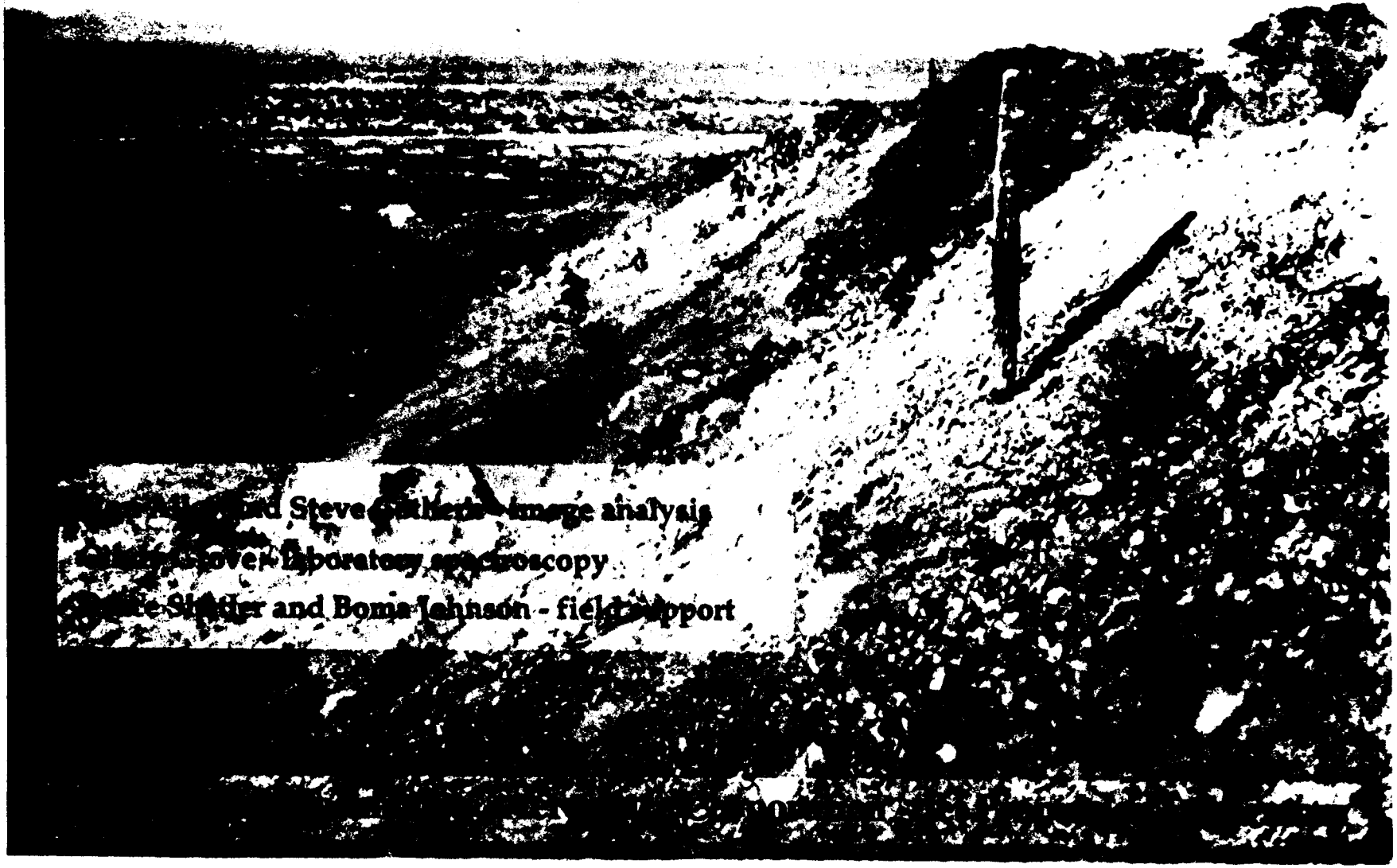

# Methodology

Data acquisition

Calibration
- radiometric
- wavelength

In-scene atmospheric correction
- MODTRAN 3 based
- tweak surface temperature, humidity

"Draping" Planck function to find T/E

Iterative correction for reflected sky irradiance

Field inspection and sample collection

Laboratory emissivity spectra

Foreground/background analysis (FBA) using:

- image spectra for training areas defined in the field

- image spectra for training areas defined in the image through enhancement (e.g., of bands showing the 11.3-μm carbonate emissivity feature)

- laboratory emissivity spectra

Compilation of classified (thresholded) foreground images to make geologic map

Verify map by field checking

# KP Mine Site
## SEBASS 12,26,70=BGR

8.3 ~~8.5~~ 11.0
9.1

Frame 000-999

Frame 1000-1999

# Hyperspectral TIR / Middle Mountains

## Conclusions

- Hyperspectral TIR imaging may allow recovery of emissivity spectra
- Geologic mapping and rock-type identification
- Keys are:
  - Good NE$\Delta$T
  - Sufficient $\Delta\lambda$ to resolve emissivity features (e.g., <0.5 $\mu$m)
  - In-scene atmospheric corrections (pixel-by-pixel)
  - Lack of requirement for registration to DTH