VALIDATION OF LOW-SPATIAL-RESOLUTION AUTOMATED VICARIOUS CALIBRATION RESULTS

USING HIGH-SPATIAL-RESOLUTION DATA

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CURRENT WORK

- The reflectance-based approach is continued to be used successfully at Railroad Valley, Nevada. (N38.497°, W115.690°)
- Automated RadCaTS data are being used to supplement the data collected using on-site personnel.
- This study uses high-spatial-resolution (60 cm) QuickBird panchromatic-band data to quantify the uncertainty in surface BRF retrieval due to the position of the automated ground-viewing radiometers on the 1-km² site at Railroad Valley.
- The position and number of ground-viewing radiometers on the large-footprint site at Railroad Valley is being evaluated.
- Random sampling of the 1-km² site is used to determine how well the four radiometers represent the entire site.
- The pattern that one carries the portable spectroradiometer across the large-footprint site is evaluated to determine if it adequately samples the entire 1-km² site.

Spatial Uniformity of 1-km² Site

- Average QuickBird value was 1059.5 DN
- Approximately 50% of radiometric dynamic range
- These results are used as baseline for other results

Portable Spectroradiometer Results

- Path walked by spectroradiometer operator was analyzed using QuickBird image
- Approximately 4.7 km total distance

CONCLUSIONS and FUTURE WORK

- Analysis of present four radiometers
  - Average value of four radiometers is 1053.9 DN (versus 1059.5 DN for total site)
  - Approximately 4.7 km total distance
  - Result: average value is 1053.9 DN (versus 1059.5 DN for total site)
- Random sampling of the large-footprint site with portable spectroradiometers does provide an average value that represents the entire site.

Panchromatic QuickBird data show that the large-GIFOV site at Railroad Valley is spatially uniform to approximately 0.5% of the average value.

Future work: Analyze the large-footprint site at Railroad Valley using multispectral data to determine surface BRF uniformity as a function of wavelength. This will assist in the design of new radiometers for the site.

- The present path used to spatially sample the large-footprint site with portable spectroradiometers does provide an average value that represents the entire site.
- Randomly placing four ground-viewing radiometers allows the surface BRF to be measured to within ±2% of the average value of the site.
- The number of automated ground-viewing radiometers presently at Railroad Valley is sufficient to obtain an average BRF value that represents the entire site.
- The four radiometers currently on the large-footprint site have a slightly higher percent difference than the random sampling.

Future work: Assess the present location of the ground-viewing radiometers and determine possible new locations.