

Research Briefing Note

Measuring rangeland vegetation with high resolution airborne videography in the blue-near infrared spectral region
Pickup, G., Bastin, G.N. & Chewings, V.H. (2000) *International Journal of Remote Sensing* 21: 339-351.

BACKGROUND

Vegetation cover and composition in the arid rangelands is highly variable in space. This means that it is often not possible to measure the vegetation with sufficient accuracy across large areas using ground-based methods. Yet this is a high priority where the requirement is to verify the analyses of satellite data. Airborne videography should be able to provide useful information at a scale intermediate between ground-based data and that supplied by remote-sensing satellites.

AIM

By acquiring digital video data above a range of arid landscape types, to determine what vegetation properties can be detected by combining data from the blue part of the wavelength spectrum with the green, red and near-infrared range, thereby utilising information contained in the first channel of Landsat Thematic Mapper data. To then determine how well the results of classified video data compared with ground-based measurement and whether similar classified imagery could be used to verify satellite data acquired at the same time.

RESULTS

- Information from the blue end of the spectrum did not assist in discriminating between green vegetation and dry vegetation or green vegetation and bare soil. The blue band can help separate soil from dry vegetation when combined with the sum of brightness values in the red and green bands in a perpendicular distance index.
- Different spectral indices and transforms were used in a sequential classification procedure to classify video images into different soil surface states and components of vegetation cover.
- There was close agreement between classified components and the same categories measured on the ground.
- Vegetation cover derived from classifying video data correlated well with vegetation indices computed from contemporary and co-registered TM data. The video data can be used to calibrate the satellite vegetation index to a measure of absolute cover.

IMPLICATIONS

Videography can potentially replace conventional ground-survey techniques in verifying satellite data when these data are simplified to an index of vegetation cover. Video data at higher resolution segmented with a similar structured classification procedure agrees with measurements obtained using ground-based methods. Videography can significantly increase the aerial extent of such measures and reduce the time taken to acquire them.

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