Dimension Reduction of Hyperspectral Images for Classification Applications*

Pai-Hui Hsu[1], Yi-Hsing Tseng[1] and Peng Gong[2]

[1]Department of Surveying Engineering, National Cheng Kung University, No.1, University Road, Tainan 701, TAIWAN
[2]Department of Environmental Science, Policy and Management, University Of California, 151 Hilgard Hall, Berkeley, CA 94720-3110

Abstract
Hyperspectral images contain rich and fine spectral information, an improvement of land use/cover classification accuracy is expected from the use of such images. However, due to the high dimensionality of data and high correlation between adjacent spectral bands, the classification process may involve a large amount of training samples, result in low efficiency and been hard to improve classification accuracy. In this paper, we tested some feature extraction methods based on wavelet transform to reduce the high dimensionality with losing much discriminating power in the new feature space. An AVIRIS data set with 220 bands and an EO-1 data set with 193 bands were tested to illustrate the performance of the wavelet based methods and be compared with the existing methods of feature extraction.