

## **A novel spectral index to automatically extract road networks from WorldView-2 satellite imagery**

### **ABSTRACT**

This research develops a spectral index to automatically extract asphalt road networks named road extraction index (REI). This index uses WorldView-2 (WV-2) imagery, which has high spatial resolution and is multispectral. To determine the best bands for WV-2, field spectral data using a field spectroradiometer were collected. These data were then analyzed statistically. The bands were selected through the methodology of stepwise discriminant analysis. The appropriate WV-2 bands were distinguished from one another as per significant wavelengths. The proposed index is based on this classification. By applying REI to WV-2 imagery, we can extract asphalt roads accurately. Results demonstrate that REI is automated, transferable, and efficient in asphalt road extraction from high-resolution satellite imagery.

**Keywords:** Remote sensing; Spectroradiometer; Band selection; Asphalt road extraction; WorldView-2; Spectral index