VALIDATION OF OBJECT-BASED CLASSIFICATION OF REMOTELY SENSED IMAGERY

Tim Whiteside and Waqar Ahmad

Abstract

The emergence of robust object-based analysis and classification of remotely sensed data necessitates a review of the methods of validating classifications. Conventional methods used for the accuracy assessment of pixel-based classifications of remotely sensed imagery (such as confusion matrices) only consider the thematic accuracy of a classification at a particular point or pixel. Consequently, the relevance of these methods to object-based analysis is limited. Object-based classification produces results that have both thematic and geometric properties. Therefore, accuracy measures that take into account both the thematic and geometric properties of object classification also need to be considered. A number of methods of assessing the accuracy of object-based classifications proposed in the literature are discussed.

In this paper, object-based approaches are applied to classifying land-cover within tropical savanna in northern Australia using multi-spectral remotely sensed data. Segmentation algorithms were applied to the datasets and objects were classified using spectral and contextual information available. The results of these classifications are then assessed using the proposed measures of accuracy. The findings of the validations undertaken using the accuracy measures provide a greater degree of information covering both the thematic and geometric properties.