Comparison between pixel- and object-based image classification of a tropical landscape using Système Pour l'Observation de la Terre-5 imagery.

ABSTRACT

Based on the Système Pour l'Observation de la Terre-5 imagery, two main techniques of classifying land-use categories in a tropical landscape are compared using two supervised algorithms: maximum likelihood classifier (MLC) and K-nearest neighbor object-based classifier. Nine combinations of scale level (SL10, SL30, and SL50) and the nearest neighbor (NN3, NN5, and NN7) are investigated in the object-based classification. Accuracy assessment is performed using two main disagreement components, i.e., quantity disagreement and allocation disagreement. The MLC results in a higher total disagreement in total landscape as compared with object-based image classification. The SL30-NN5 object-based classifier reduces allocation error by 250% as compared with the MLC. Therefore, this classifier shows a higher performance in land-use classification of the Langat basin.