Evaluation of classification techniques in Very-High-Resolution (VHR) imagery: A case study of the identification of deadwood in the Chilean Central-Patagonian Forests

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Abstract

During the past three decades, various methods have been developed to improve the classification accuracy in very high resolution (< 2 m) satellite data. This study's main goal was to evaluate and select the most suitable classification approach for detecting deadwood potentially useful for energy projects that would satisfy part of the demand for heating in the area. We compare five classification approaches using a WorldView-2 (Digital Global, Ins) standard, an orthorectified image of the Aysén region of the Chilean Patagonia. The five classifiers were evaluated and selecting the best one was carried out through a confusion matrix and Kappa coefficient. The results showed that the two non-parametric classifiers used (neural net and support vector machine) offered the best performance (98%) and the best Kappa coefficient (0.97). We conclude that it is essential to promote the development of innovative projects in native forests by local owners can contribute, to the formulation of public policies that directly benefit the Aysén region's inhabitants. © 2022 Elsevier B.V.