Integrating Time-Series and High-Spatial Remote Sensing Data Based on Multilevel Decision Fusion

Authors : Xudong Guan, Ainong Li, Gaohuan Liu, Chong Huang, Wei Zhao

Abstract : Due to the low spatial resolution of MODIS data, the accuracy of small-area plaque extraction with a high degree of landscape fragmentation is greatly limited. To this end, the study combines Landsat data with higher spatial resolution and MODIS data with higher temporal resolution for decision-level fusion. Considering the importance of the land heterogeneity factor in the fusion process, it is superimposed with the weighting factor, which is to linearly weight the Landsat classification result and the MOIDS classification result. Three levels were used to complete the process of data fusion, that is the pixel of MODIS data, the pixel of Landsat data, and objects level that connect between these two levels. The multilevel decision fusion scheme was tested in two sites of the lower Mekong basin. We put forth a comparison test, and it was proved that the classification accuracy was improved compared with the single data source classification results in terms of the overall accuracy. The method was also compared with the two-level combination results and a weighted sum decision rule-based approach. The decision fusion scheme is extensible to other multi-resolution data decision fusion applications.

Keywords : image classification, decision fusion, multi-temporal, remote sensing

Conference Title : ICRSIAGCR 2020 : International Conference on Remote Sensing, Image Analysis, Geometric Corrections and Registration

Conference Location : New York, United States

Conference Dates : April 23-24, 2020