Land Cover Classification Using Sentinel-2 Image Data and Random Forest Algorithm

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Abstract : The currently launched Sentinel 2 (S2) satellite (June, 2015) bring a great potential and opportunities for land use/cover map applications, due to its fine spatial resolution multispectral as well as high temporal resolutions. So far, there are handful studies using S2 real data for land cover classification. Especially in northern Vietnam, to our best knowledge, there exist no studies using S2 data for land cover map application. The aim of this study is to provide the preliminary result of land cover classification using Sentinel -2 data with a rising state – of – art classifier, Random Forest. A case study with heterogeneous land use/cover in the eastern of Hanoi Capital – Vietnam was chosen for this study. All 10 spectral bands of 10 and 20 m pixel size of S2 images were used, the 10 m bands were resampled to 20 m. Among several classified algorithms, supervised Random Forest classifier (RF) was applied because it was reported as one of the most accuracy methods of satellite image classification. The results showed that the red-edge and shortwave infrared (SWIR) bands play an important role in land cover classified results. A very high overall accuracy above 90% of classification results was achieved.

Keywords : classify algorithm, classification, land cover, random forest, sentinel 2, Vietnam
Conference Title : ICGRS 2017 : International Conference on Geoscience and Remote Sensing
Conference Location : Rome, Italy
Conference Dates : September 18-19, 2017