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COMPARATIVE ANALYSIS OF LANDUSE LAND COVER BETWEEN OPTICAL AND FUSED IMAGE WITH SAR

Abstract

Image fusion is a technique that integrates complementary information from multiple remote sensing images such that the fused image is more suitable for processing task and information extraction. Passive sensors are capable of sensing the reflected electromagnetic energy in the visible and infrared region while active sensors provide additional information using microwave region. This broad spectrum provides more information of earth surface as compared to optical data alone. This study compares the land cover classification results of optical imagery (Landsat-8) and fused imagery (Landsat-8 and Sentinel-1 VV polarized data). The image fusion was then performed using wavelet transformation technique. The data were classified into four classes namely water bodies, built-up area, vegetation cover, and barren land. Google Earth and Landsat imagery were used as a reference image for accuracy assessment. The fused image showed higher accuracy than optical image i.e. Kappa coefficient increased from 0.78 to 0.9 and overall accuracy increased from 89.4

In this study, four land cover classes (water, built-up area, vegetation and barren land) were extracted using multiple remote sensing data.

The analysis reveals that the results of fused image classification were more accurate than Landsat 8 image classification. Because image fusion enhances the earth features that helps in better classification. The fusion based on wavelet transform is beneficial for extracting information by integrating multiple sensor data and improved land cover mapping for decision making and other applications.

Fused image shows higher accuracy than optical image with 3-4