World Academy of Science, Engineering and Technology
International Journal of Geological and Environmental Engineering
Vol:13, No:11, 2019

Analyzing of the Urban Landscape Configurations and Expansion of Dire Dawa City, Ethiopia Using Satellite Data and Landscape Metrics Approaches

Authors : Berhanu Keno Terfa

Abstract : To realize the consequences of urbanization, accurate, and up-to-date representation of the urban landscape patterns is critical for urban planners and policymakers. Thus, the study quantitatively characterized the spatiotemporal composition and configuration of the urban landscape and urban expansion process in Dire Dawa City, Ethiopia, form the year 2006 to 2018. The integrated approaches of various sensors satellite data, Spot (2006) and Sentinel 2 (2018) combined with landscape metrics analysis was employed to explore the pattern, process, and overall growth status in the city. The result showed that the built-up area had increased by 62% between 2006 and 2018, at an average annual increment of 3.6%, while the other land covers were lost significantly due to urban expansion. The highest urban expansion has occurred in the northwest direction, whereas the most fragmented landscape pattern was recorded in the west direction. Overall, the analysis showed that Dire Dawa City experienced accelerated urban expansion with a fragmented and complicated spatiotemporal urban landscape patterns, suggesting a strong tendency towards sprawl over the past 12 years. The findings in the study could help planners and policy developers to insight the historical dynamics of the urban region for sustainable development.

Keywords : zonal metrics, multi-temporal, multi-resolution, urban growth, remote sensing data
Conference Title : ICRSG 2019 : International Conference on Remote Sensing and Geomorphology
Conference Location : Singapore, Singapore
Conference Dates : November 18-19, 2019