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| A comparison of very-high resolution imagery products for assessments of urban green and open space: A case study of two urbanizing African cities |
| **Introduction/Aim:** Urban green and open space (UGOS) plays a critical role in the mitigation of adverse urbanization effects and provision of social and ecosystem services. Global sustainable development initiatives and local management efforts seek to evaluate the status of UGOS to understand broader relationships between UGOS and urbanization, inform the distribution of anticipated UGOS developments, and maintain or improve the accessibility and quality of existing UGOS. UGOS can be effectively monitored over large spatial and temporal extents using very-high resolution (VHR) Earth Observation data (<=10m), image processing, and spatial analysis. While a variety of VHR satellite imagery options exist, the spatial coverage and resolution of the data can vary, and access to higher resolution imagery may be constrained by monetary costs or access restrictions. Comparing the capabilities of differing VHR imagery for mapping UGOS related land cover may inform more accurate assessments of UGOS.**Objective and Methods:** We contrast spatial evaluations of UGOS in two urbanizing cities, Mekelle, Ethiopia and Polokwane, South Africa, utilizing land cover maps produced from VHR satellite imagery of varying accessibility, coverage, and spatial resolution. The imagery we classified and evaluated included 10-meter Sentinel-2 imagery, 3-meter Planet imagery, 2-m Maxar imagery, and pansharpened 0.5-m Maxar imagery. Following land cover classifications, we examined composition of undeveloped versus developed land, detection of tall vegetation, and access to public open space according to Sustainable Development Goal Indicator 11.7.1.**Results:** Our examination of developed versus undeveloped land across the VHR products revealed negligible differences in Mekelle, but significant differences in Polokwane, likely due to variations in land cover heterogeneity. According to landscape metrics, tall vegetation was better detected under higher resolution imagery across both cities but displayed different patterns in each city. Our assessments of public open space access were influenced by the differing input imagery and has implications for future spatial assessments of SDG 11.7.1.**Conclusion:**Overall, our work highlights the potential limitations of accessible, coarser VHR imagery in UGOS land cover analyses but further illustrates its value in work that will promote global sustainable development and improve urban vitality in resource limited regions. |