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50 years of Earth observation: The contribution to sustainable development goals and plans for the future
(6)

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CONTRIBUTION OF SATELLITE IMAGERY TOWARDS SUSTAINABLE URBANIZATION AND
HUMAN SETTLEMENT PLANNING AND MANAGEMENT - SOUTH AFRICA- CASE STUDY

Abstract

The success of Sustainable Development Goals is highly dependent on effective monitoring of set targets and indicators, and also on the quality of data and information used to formulate solutions that respond to economic, social and environmental challenges. Earth observation plays an important role in understanding and monitoring of land cover and land use change which is critical in achieving SDG 11 (Make cities and human settlements inclusive, safe, resilient and sustainable) and related goals. In this study, we assessed the ratio of land consumption rate to population growth rate (LCRPGR) of selected cities in South Africa using Landsat and SPOT 2 and 5 satellite images and census data collected in 1996, 2001 and 2011. The assessment shows that the major cities recorded a decline in the ratio of LCRPGR between 2001 and 2011 compared to 1996-2001, while secondary cities recorded an increase in the ratio of LCRPGR between the same period. The results show that the rate of land consumption remained relatively lower than the population growth rate throughout the 1996 – 2011 period. The primary cities experienced a decrease in their rates of urban sprawl between the periods 1996 - 2001 and 2001 – 2011 period, while the secondary cities recorded increasing urban sprawl between the periods. In addition to ratio of LCRPGR, we also assessed the land consumption per capita of the cities, which is measured as the amount of built up area per person. The assessment of land consumption per capita shows that South African cities experienced a decrease in land consumption per capita. The decrease in the land consumption per capita in these cities indicate that cities are both sprawling and densifying. The information derived in this study can be used to monitor progress made towards achieving SDG 11, compute SDG indicator 11.3.1 and to inform future spatial decisions aimed at promoting sustainable development.