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### Urban sprawl: metrics, dynamics and modelling using GIS

H.S. Sudhira <sup>a</sup> ... K.S. Jagadish <sup>b</sup>

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#### Abstract

Urban sprawl refers to the extent of urbanisation, which is a global phenomenon mainly driven by population growth and large scale migration. In developing countries like India, where the population is over one billion, one-sixth of the world's population, urban sprawl is taking its toll on the natural resources at an alarming pace. Urban planners require information related to the rate of growth, pattern and extent of sprawl to provide basic amenities such as water, sanitation, electricity, etc. In the absence of such information, most of the sprawl areas lack basic infrastructure facilities. Pattern and extent of sprawl could be modelled with the help of spatial and temporal data. GIS and remote sensing data along with collateral data help in analysing the growth, pattern and extent of sprawl. With the spatial and temporal analyses along with modelling it was possible to identify the pattern of sprawl and subsequently predict the nature of future sprawl. This paper brings out the extent of sprawl taking place over a period of nearly three decades using GIS and Remote Sensing. The study also attempts to describe

some of the landscape metrics required for quantifying sprawl. For understanding and modelling this dynamic phenomenon, prominent causative factors are considered.



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## Keywords

Urban sprawl; Urbanisation; GIS; Remote sensing; Urban dynamics; Spatial and temporal analyses; Modelling

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