

## POSTER

The utility of DMSP/OLS Night Light satellite imagery to track the evolution of urban dynamics in the Western Indian Ocean

B. NEVES<sup>1</sup>, L. CELLIERS<sup>2</sup>

<sup>1</sup> *Interdisciplinary Centre of Social Sciences (CICS.NOVA) Faculdade de Ciências Sociais e Humanas, Universidade Nova de Lisboa (FCSH-UNL), Lisboa, Portugal*

<sup>2</sup> *Council for Scientific and Industrial Research (CSIR), Natural Resources and Environment unit, Coastal Systems group, Durban and Stellenbosch, South Africa*

Email: [brunomaneves@fcsch.unl.pt](mailto:brunomaneves@fcsch.unl.pt)

Coastal areas are characterised by an abundance of natural resources that attract human interest and result in exploitation such resources. Coastal areas are also under intense anthropogenic pressure. Population densities on the coast are three times higher than the global average. Coasts are also popular destinations for tourism and recreational activities and priority location for commerce, strategic transport routes and industrialisation associated with port developments. In addition, climate change scenarios are predicting more frequent and intense extreme weather events; and an increase in sea-level rise rates which will exacerbate the impacts of these events on the coasts. In order to track the aforementioned anthropic pressures in Western Indian Ocean (WIO), this study is proposing the use of U.S Air Force Defence Meteorological Satellites Program/Operational Line scan System (DMSP/OLS) data to identify and track changes in coastal urban dynamics of the WIO over the last two decades. DMSP/OLS data are captured annually since 1992, a major advantage over less frequent land cover data. The results from the temporal and spatial analysis of the DMSP/OLS data have shown substantial increase in light emission in the coastal strip during the last two decades. Light emission in the case study area grew more than 4% in the last two decades, having in 2012 more than 16% of the area covered by night lights emission. The province of KwaZulu-Natal (South Africa) presents significant results, with more than 65% of the area covered in 2012. At the city level, Dar es Salaam, in Tanzania, more than doubled its light emission area in the two decades in analysis, presenting a growth rate of more than 156%. This study will present the methodology and ultimate utility of the DMSP/OLS data for coastal applications such as the spatial and temporal tracking of urbanisation.

Keywords: Coastal Management; Remote Sensing; Night Lights; Decision-making; Urban Dynamics; Western Indian Ocean