Topographic Model Analysis as a Tool for Sustainable Land Inventory and Management

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Key words: GNSS/GPS; Land management; Spatial planning; Land use and land Cover, Topographic Modelling, Terrain Analysis and Sustainable Development

SUMMARY

Achieving Sustainable development in Sub-Saharan Africa depends largely on the efficient land use/land cover utilization of planning amongst other factors. Topographic modelling/algorithm is an important process which can be used to minimize the adverse effect on environment caused either by anthropogenic (human) activities or nature itself. Land, which is one of the most valuable resources is shrinking on daily basis due to unending demand for different uses which includes, industrialization, haphazard infrastructural development, caused, uncontrolled population increase. This paper is an attempt at analyzing topographic/surface model tool for sustainable development of our fragile environment. The focus of study is Old Aba Metropolis in Abia State, Nigeria. The datasets used includes Sentinel-2 imagery (10m resolution), STRM (Resolution 30m arcseconds), Tarsus GNSS Receiver (For field completion exercise) etc. . The surfer 11.0 & ArcGIS software were used for feature(data) extraction and further analysis which were later developed into digital terrain models, Aspect/ slope contour, 3D surface models, land use/landcover extraction, road network map of the study area. These digital datasets are vital for good understanding of the Terrain of the Old Aba Metropolis for efficient land use planning and development and decision-making . The results showed that Old Aba Metropolis is on a flat plane/surface making it possible to have a good gradient for water drainage (network) planning and development. This report would help the authorities undertake good planning and sustainable development for overall good of the populace in Aba, Abia State, Nigeria.

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FIG Working Week 2023
Protecting Our World, Conquering New Frontiers
Orlando, Florida, USA, 28 May–1 June 2023