Constructing High-Level-of-Detail 3D Urban Models Using UAV Data and Ground Scanning, A Case Study in Ha Long City, Quang Ninh Province, Vietnam

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ABSTRACT

High-level-of-detail 3D (LOD3) data plays a crucial role in smart city development, aiding decision-making in disaster prevention and climate change response. In this study, we present the results of constructing a LOD3 3D dataset for the urban area of Ha Long city, Quang Ninh province, covering approximately 1 km². Our approach combines UAV data from a Phantom 4 Pro device, ground photography technology, and ground laser scanning to create a comprehensive 3D model. Analyzing the results, we confirm that the constructed dataset fully complies with the requirements for 3D LOD3 geospatial data outlined in Circular No. 68/2015/TT-BTNMT. These findings provide essential input for coastal smart city planning, construction, and management.

Keywords: LoD (Level of Detail), TLS (Terrestrial Laser Scanning), UAV (Unmanned Aerial Vehicle).