COMPARISON OF THE INTERPOLATION METHODS FOR CREATING THE WATER SURFACE MODEL (WSM) AND UNDERWATER DIGITAL TERRAIN MODEL (UDTM) USING AIRBORNE LIDAR HYDROGRAPHY (ALH) DATA

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ABSTRACT:

Today, we deal with mapping technologies, which are the results of the geospatial research community's endeavors. This includes the development of remote sensing devices such as Light Detection And Ranging (LiDAR) for measuring topography changes, development of more precise Global Positioning Systems (GPS.s) and deployment of high-resolution satellites such as IKONOS and etc.. Since a number of useful parameters can be derived from Terrain Models (TM.s) along with their representation of the terrain surface; their significance is hence growing quickly. Additionally, TM.s are also being used in coastal areas to generate Instantaneous Shorelines (IS.s) by intersecting them with Water Surface Models (WSM.s). Moreover, the production of Underwater Digital Terrain Models (UDTM.s) from Airborne LiDAR Hydrography (ALH) data is becoming popular as ALH data are becoming more available and convenient for the interpolation method of choice. This paper compares the suitability of some interpolation methods for creating a WSM and UDTM from LiDAR data. The quality of WMS and UDTM created by various interpolation methods in representing the underwater terrain surface, has been tested by studying TM.s and WSM.s created from LiDAR data for a study area with different values of uncertainty. These values of uncertainty have been artificially introduced to the ALH data before creating the TM.s. and WSM.s. These WSM.s and UDTM.s have then been compared and analyzed along representative profiles.