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# Processing and utilization of LiDAR data as a support for a good management of DDBR

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Abstract

Danube Delta Biosphere Reserve (DDBR) has 5,800 km2 as surface and it is situated in the South-East of Europe, in the East of Romania. The paper is taking into account the data related to the elevation surfaces of the DDBR (Digital Terrain Model DTM and Digital Surface Model DSM). To produce such kind of models of elevation for the entire area of DDBR it was used the most modern method that utilizes the Light Detection And Ranging (LiDAR). The raw LiDAR data (x, y, z) for each point were transformed into grid formats for DTM and DSM. Based on these data multiple GIS analyses can be done for management purposes : hydraulic modeling 1D2D scenarios, flooding regime and protection, biomass volume estimation, GIS biodiversity processing. These analyses are very useful in the management planning process. The hydraulic modeling 1D2D scenarios are used by the administrative authority to predict the sense of the fluvial water flow and also to predict the places where the flooding could occur. Also it can be predicted the surface of the terrain that will be occupied by the water from floods. Flooding regime gives information about the frequency of the floods and also the intensity of these. In the same time it could be predicted the time of water remanence period. The protection face of the flooding regime is in direct relation with the socio-cultural communities and all their annexes those that are in risk of being flooded. This raises the problem of building dykes and other flooding protection systems. The biomass volume contains information derived from the LiDAR cloud points that describes only the vegetation. The volume of biomass is an important item in the management of a Biosphere Reserve. Also the LiDAR cloud points that refer to vegetation could help in identifying the groups of vegetal association. All these information corroborated with other information build good premises for a good management.

Keywords: Danube Delta Biosphere Reserve, LiDAR data, DTM, DSM, flooding, management