DELINEATING THE LITTORAL ZONE USING TOPOGRAPHIC AND BATHYMETRIC LIDAR

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Abstract

The littoral zone – the region that nominally falls between the limits of high tide and low tide – is of growing importance for a variety of reasons. Environmentally, increasing levels of human activity in this zone threaten to adversely impact on the delicate ecological balance that exists. Economically, the littoral zone represents a valuable piece of "real estate" where commercial, industrial, private and recreational interests compete for rights of access, use and exploitation of natural resources. It is in light of such considerations that the need has been recognised for a consistent, accurate and up-to-date technique to delineate the boundaries of the littoral zone. An automated technique which computes the line of intersection between a coastal DEM and tide model satisfies all three requirements for improving the delineation of the littoral zone.

This paper presents the issues and advantages of using both topographic and bathymetric LIDAR data to define the terrain in the littoral zone. In a case study, the LIDAR data is combined with a tide model to provide a solution for realising the littoral zone's boundaries. The boundary uncertainty associated with this process is presented in the case study, which is located in Port Phillip Bay, Victoria, Australia.