

Effect of Water Property on Depth Measurements by Airborne LiDAR Bathymetry

Huei-Yi Cheng, Jen-Jer Jaw

Department of Civil Engineering, National Taiwan University

E-mail: r02521115@ntu.edu.tw, jejaw@ntu.edu.tw

KEY WORDS: Water property, Scattering, Absorption, Monte Carlo, Depth measurement

ABSTRACT: The returned waveform of airborne LiDAR bathymetry can be used to measure water depth and classify objects. When a laser beam travels into the water, the condition of the surface and the content of the water may cause scattering and absorption to change the route of the laser beam and deteriorate the laser energy, thus affecting the shape and the duration of the received waveform. To gain a deeper insight into how the waveform is affected geometrically as well as radiometrically by water property, this study, taking scattering and absorption effects into consideration, designed a simulator by employing Monte Carlo modeling technique to not only identify the influential factors but also quantify the amount of variation on the waveform. As a result of it, the emphasis on water depth measurement by airborne LiDAR bathymetry can be better placed.

Suggested topics: 4.New Generation Sensors and Applications/LiDAR

Proposed presenter: Huei-Yi Cheng

Presenter preference: poster