

Accepted Manuscript

Coupling terrestrial LiDAR and video imagery to perform 3D intertidal beach topography

Umberto Andriolo, Luis Pedro Almeida, Rafael Almar

PII: S0378-3839(18)30244-8

DOI: [10.1016/j.coastaleng.2018.07.009](https://doi.org/10.1016/j.coastaleng.2018.07.009)

Reference: CENG 3403

To appear in: *Coastal Engineering*

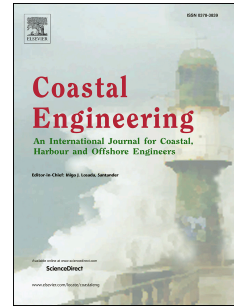
Received Date: 14 May 2018

Revised Date: 13 July 2018

Accepted Date: 18 July 2018

Please cite this article as: Andriolo, U., Almeida, L.P., Almar, R., Coupling terrestrial LiDAR and video imagery to perform 3D intertidal beach topography, *Coastal Engineering* (2018), doi: 10.1016/j.coastaleng.2018.07.009.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



1 COUPLING TERRESTRIAL LiDAR AND VIDEO IMAGERY TO 2 PERFORM 3D INTERTIDAL BEACH TOPOGRAPHY

3 Umberto Andriolo¹, Luis Pedro Almeida^{2,3}, Rafael Almar⁴

4 ¹Instituto Dom Luiz, Faculty of Science, University of Lisbon, Campo Grande, 1749-016 Lisbon,
5 Portugal, andriolo.umberto@libero.it

6 ²CNES-LEGOS, Toulouse, France. melolp@gmail.com

7 ³Universidade Federal do Rio Grande – FURG, Brazil.

8 ⁴IRD-LEGOS, (CNRS/CNES/IRD/Université de Toulouse), Toulouse, France, rafael.almar@ird.fr

9 10 11 ABSTRACT

12 This study investigates the possibility of combining two shore-based remote sensing
13 techniques, 2D LiDAR and video imagery, to measure 3D intertidal beach topography. The
14 shoreline elevation, measured on a single cross-shore section of the beach by a 2D LiDAR,
15 was combined with the video-derived shoreline contour to finally obtain intertidal beach
16 topography. Vertical root-mean-square error between differential GPS and remotely-
17 derived intertidal beach profiles had an average value of 0.12 m, with maximum disparities
18 of 0.14 m. Two 3D Digital Elevation Models (DEMs) of the beach produced over two tidal
19 cycles demonstrated the feasibility of shore-based LiDAR-video system of describing in
20 detail the short-term morphological evolution of the intertidal area. Results suggest that the
21 LiDAR-video system can improve the capability of remotely surveying intertidal beach
22 topography providing high quality measurements.

23
24 **Key-words:** shoreline, remote sensing, wave runup, coastal morphodynamics, swash zone

Download English Version:

<https://daneshyari.com/en/article/8059437>

Download Persian Version:

<https://daneshyari.com/article/8059437>

[Daneshyari.com](https://daneshyari.com)