



Side Event 04

Kite Aerial Photography system: a low cost and high resolution solution for beach monitoring (2D map and 3D topography)

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Abstract

Coastal West African countries are subjected to frequent events of erosion and flooding, with all the consequences there to loss of socio-economic infrastructures, impact on habitats (marine and coastal wildlife), farmlands etc. Thus, efficient and low cost tools allowing standardized measurements and easy to deploy are required. In this work we present first trial of high-resolution mapping using a kite lead along the coast of West Africa and then in France. Kite is used as an instrumented platform to lift a consumer-grade digital camera over the terrain to be studied. Horizontal displacement and overlapping images allow 2D mosaic and 3D reconstitution of the terrain. Mosaic and 3D model can be georeferenced with control points visible on pictures and positioned by different systems (GPS, DGPS, Theodolyte...). Spatial analyses in GIS software can be perform for geomorphology studies *e.g.* coastline, terrain profile, surface or volume calculation. Such methodology allows standardized and repeated high resolution topographic measurements. The system allows to monitor hundreds meters to a kilometrer of coast with monthly or yearly period. It also allows fast deployment before and after an extreme event (*e.g.* storm, flooding events etc). Due to these properties, this low cost and easy to implement system is interesting for punctual coast studies at different time scale. We present the technical specificity of the material, the advantages to deploy it in the field, as the drawback.

Keywords: Kite, high-resolution mapping, topographic measurements, West Africa.



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