



Beach monitoring using Unmanned Aerial Vehicles: results of a multi-temporal study

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The application of Unmanned Aerial Vehicles and photogrammetry techniques in earth sciences is flourishing. In this study, we show how we applied small Unmanned Aerial Vehicles to the study of topographic changes of a beach in Italy, NW Mediterranean Sea. We surveyed the same stretch of coastline three times in 5 months, obtaining orthophotos and digital elevation models of the beach using a structure from motion approach. We then calculated the difference in beach topography between each time step, and we related topography changes to both human and natural modifications of the beach morphology that can be inferred from aerial photos or wave data. We conclude that small drones have the potential to open new possibilities for beach monitoring studies, and can be successfully employed for multi-temporal monitoring studies at relatively low cost.