

## Analysis of the Accuracy of Earth Movement with Drone Surveys

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**Abstract :** New technologies for the capture of point clouds have experienced a great advance in recent years. In this way, its use has been extended in geomatics, providing measurement solutions that have been popularized without there being, many times, a detailed study of its accuracy. This research focuses on the study of the viability of topographic works with drones incorporating different sensors sensitive to the visible spectrum. The fundamentals have been applied to a road, located in Cantabria (Spain), where a platform extension and the reform of a riprap were being constructed. A total of six flights were made during two months, all of them with GPS as part of the photogrammetric process, and the results were contrasted with those measured with total station. The obtained results show that the choice of the camera and the planning of the flight have an important impact on the accuracy. In fact, the representations with a level of detail corresponding to 1/1000 scale are admissible, depending on the existing vegetation, and obtaining better results in the area of the riprap. This set of techniques is, therefore, suitable for the control of earthworks in road works but with certain limitations which are exposed in this paper.

**Keywords :** drone, earth movement control, global position system, surveying technology.

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