



## **Preliminary gully assessment using photo-reconstruction from own-manufactured UAV images**

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Unmanned Aerial Vehicles (UAV) are becoming increasingly useful in several professional and research fields, among other, in geomorphology applications. UAV helicopters (with one or more rotors) present some advantages compared to fixed wing drones such as the possibility of stationary fly. On the other hand, 3D-photoreconstruction has been successfully applied for gully assessment at the reach scale. The combination of both approaches can result in a substantial reduction of time requirements at the gully network scale.

The purpose of this communication is to describe the construction of an UAV with carbon-fiber frame and its fitting for capturing air images. Routes controlled by GPS were programmed in advance using Google Earth. Although an improved design with 8 rotors is in progress, currently the design is equipped with 4 rotors. This new design will allow the use of heavier and more precise cameras. In addition, the isolation of the inner electronic equipment will increase the possibility of use in bad weather. The images obtained by the UAV were processed using 3D-photoreconstruction to derive a digital elevation model of a several-hundred meters gully.

### References

Castillo, C., R. Perez, M.R. James, J.N. Quinton, E.V. Taguas, J.A. Gómez. 2012. Comparing the Accuracy of Several Field Methods for Measuring Gully Erosion. *Soil Science Society of America Journal* 76: 1319–1332.