

Interactive comment on “Potential of kite-borne photogrammetry for decimetric and kilometre square 3D mapping: an application for automatic gully detection” by Denis Feurer et al.

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This paper presents a review of modern techniques in kite aerial photography and photogrammetric/structure-from-motion methods for producing high-resolution topographic data of landscapes in a cost effective manner. As the paper describes, the techniques presented and discussed have been presented in past work in various forms, in applications within and outside of the geosciences. The paper discusses these methods in the context of erosion and gully monitoring in a semi-autonomous way, for which the techniques described are particularly well-suited. The paper does a good job of describing issues around equipment setup and considerations for the use of commonly available software for processing images from kites and other aerial

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platforms.

The paper discussed the outline of an automatic gully detection methodology based on high-resolution topographic data, which seems novel, but isn't explored in great depth. This is one area of the paper that could be elaborated on.

There are a number of other areas in which the discussion could be improved:

(1) Section 1: Structure from motion (lines 27-30): This is incorrect. The study described in Bryson et al., 2013 used a single line kite to collect images, not a UAV.

(2) Section 1: KAP (lines 5-15): Beyond the desirable qualities discussed in Nex and Remondino, the authors should also discuss the limitations of kites, with respect to UAVs. For example, kites have minimum wind-speeds for operation and are difficult to position over terrain that is difficult or inaccessible on foot, two situations in which UAVs excel.

(3) Section 4: DEM quality: Another work in which externally validated elevation points have been used to assess accuracy for KAP/structure-from-motion is:

M. Bryson, S. Duce, D. Harris, J.M. Webster, A. Thompson, A. Vila-Concejo and S.B. Williams, "Geomorphic changes of a coral shingle cay measured using Kite Aerial Photography", *Geomorphology*, vol. 270, pp. 1-8, DOI:10.1016/j.geomorph.2016.06.018, 2016.

There are a number of grammatical and spelling mistakes that should be addressed (see for example section 1, line 5 "hazard", section 2.3, line 27 "however" etc.

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