

***Interactive comment on* “Brief communication:
Rapid mapping of event landslides: the
3 December 2013 Montescaglioso landslide (Italy)”
by A. Manconi et al.**

Anonymous Referee #2

Received and published: 26 March 2014

Dear editor,

Thank you for the opportunity to revise the paper titled "Brief communication: Rapid mapping of event landslides: the 3 December 2013 Montescaglioso landslide (Italy)".

The main contribution of this work is the application of the pixel offset technique (PO) to measure 3D surface deformation of a large rapid moving landslide in an emergency situation (Montescaglioso, 3rd December 2013). The PO technique was used to exploit ascending and descending SAR image datasets captured by the COSMO-SkyMed. The 3-D ground deformation measurements confirmed the deformation mechanisms

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recognized and mapped through geomorphological and field mapping.

This reviewer recognises the scientific value provided by this work and recommends its publication. Below you will find some minor comments aiming to improve the quality of the manuscript.

Minor comments:

Abstract: please consider to include retrieved results in terms of magnitude and direction of displacement measured with the proposed techniques/ approach. Note that measured displacements, up to 20 m, clearly overpass the detection thresholds of DInSAR techniques.

Lines 10-12 page 1457: the authors comment about DInSAR limitations to measure rapid deformations but no references nor values are provided. I suggest quantifying DInSAR detection thresholds, which could be useful to compare them with the detection capacity of the PO technique. One way of doing this is to include some literature examples illustrating DInSAR detection limits for landslides (Wasowski et al.2014. Investigating landslides and unstable slopes with satellite Multi Temporal Interferometry: current issues and future perspectives. Engineering Geology; Strozzi et al.2013. Interpretation of aerial photographs and satellite SAR interferometry for the inventory of landslides." Remote Sensing). Note that standard DInSAR processing of ALOS PALSAR image has permitted to detect over to 1 m/yr in certain case studies (see García et al. 2013. DInSAR analysis of ALOS PALSAR images for the assessment of very slow landslides: the Tena Valley case study.Landslides.)

Lines 21-24 page 1471: overall a larger explanation on how the PO and the 3D methods were applied would be useful. Information relevant to the PO technique and generation of the 3D surface deformation map is included in the captions of Figures 2 and 3 and not in the text. Please consider to extend the explanation on the manuscript of both the PO technique and the 3D approach.

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Line 25 page 1470: being a technique claimed to improve landslide event emergency management, I suggest to include the duration (days or hours) of the 3-D surface deformation technique from image acquisition to "real" or "potential" delivery to civil protection.

Figure 1. Explain what D and E represent

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 2, 1465, 2014.