

Supplementary Materials: Advanced Three-Dimensional Finite Element Modeling of a Slow Landslide through the Exploitation of DInSAR Measurements and in Situ Surveys

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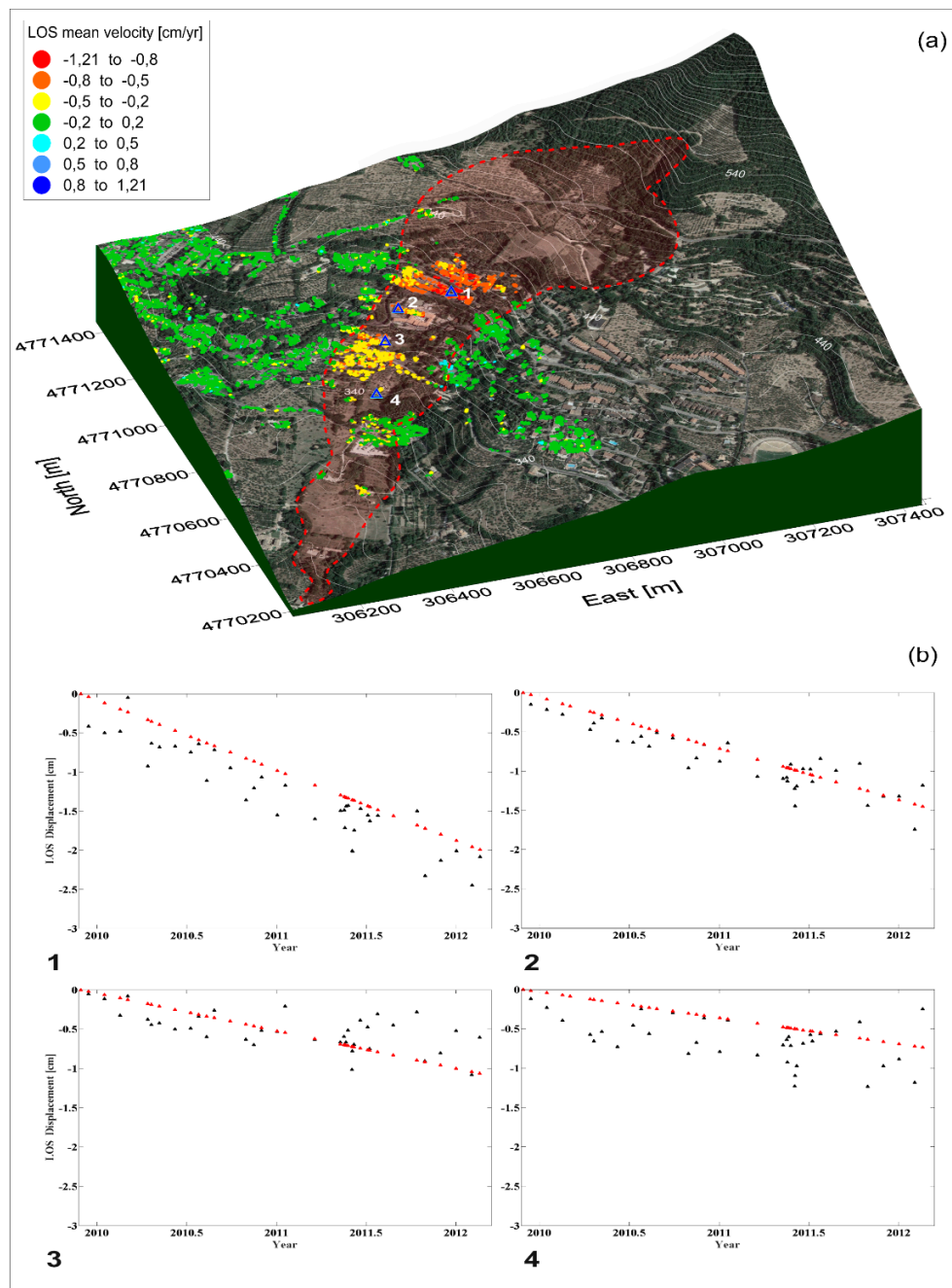


Figure S1. (a) CSK mean LOS velocity map superimposed on the 3D view of Satellite optical image with the DEM contour lines (grey lines). The shade of red shows the zone involved by the recent instability phenomenon. The blue triangles indicate the four SAR pixels of the CSK DInSAR measurements; (b) The plots allow comparing the time series of four SAR pixels (from upstream to downstream) and the fluid dynamic model projected in LOS.

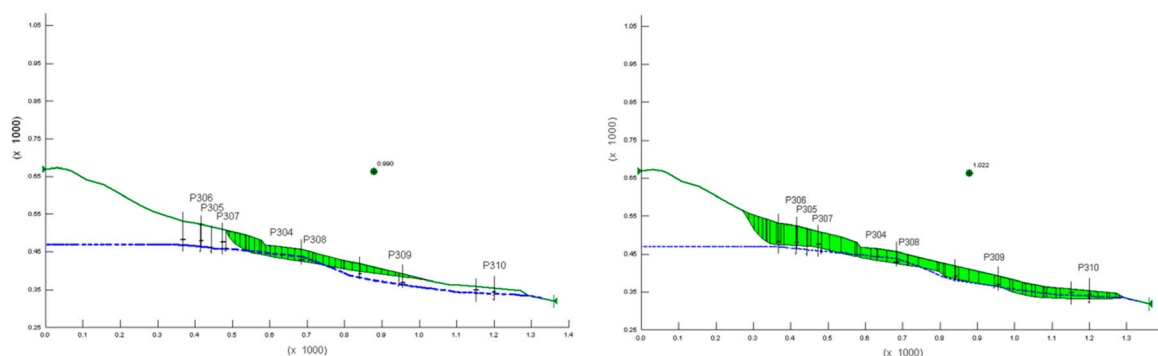


Figure S2. Limit Equilibrium (LE) analyses carried out in order to assess the stability conditions of the slope, based on the available geological, geomorphological and geotechnical dataset. In particular, a pore pressure distribution defined according to a finite element seepage analysis in agreement with the available piezometer measurements has been assigned in the LE calculation. According to the results of direct shear tests performed on samples taken at the depth of the sliding surface, a cohesion intercept equal to $c' = 0$ and a friction angle of $\phi' = 15^\circ$ have been considered as operative values of the shear strength parameters along the shear band and have been used for the LE analysis. The calculation results indicate that the stability factor of a landslide body corresponding to the central portion of the examined landslide, i.e. the most active zone of the landslide area, is $FS = 0.99$, whereas FS is equal to 1.02 for the whole landslide body. This confirms that the whole landslide body is at LE conditions.

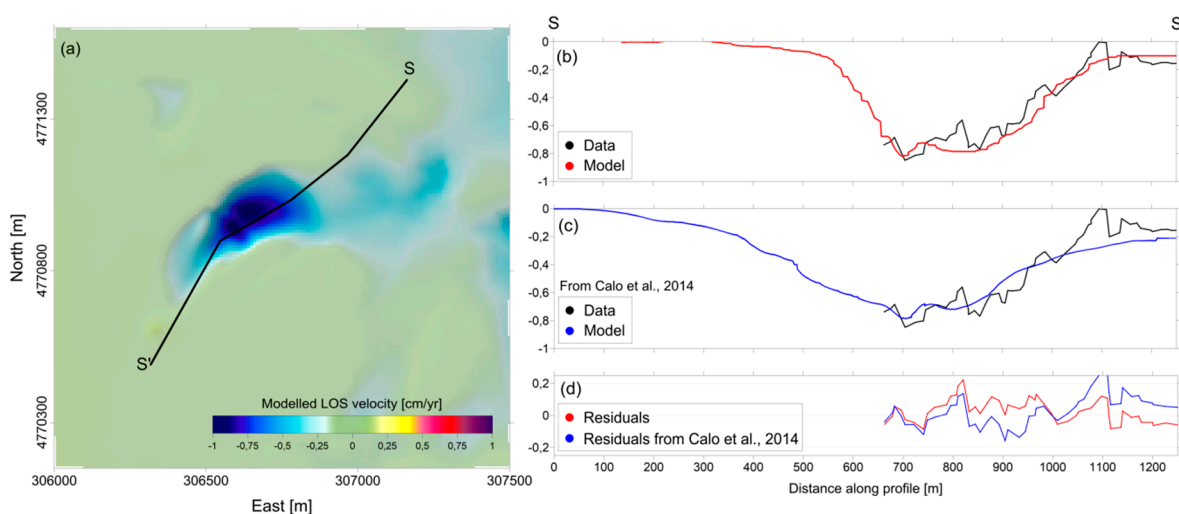


Figure S3. (a) Modelled LOS velocity map. The black line shows the SS' trace, already presented in [1]; (b) Extrapolated profile along SS' from 3D model vs. DInSAR measurements; (c) model and DInSAR measurements from [1]; (d) residuals comparison.

References

1. Calò, F.; Ardizzone, F.; Castaldo, R.; Lollino, P.; Tizzani, P.; Guzzetti, F.M. Enhanced landslide investigations through advanced DInSAR techniques: The Ivancich case study, Assisi, Italy. *Remote Sens. Environ.* **2014**, *142*, 69–82.

