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Interactive comment on “GB-InSAR monitoring and observational method for landslide emergency management: the Montaguto earthflow (AV, Italy)” by F. Ferrigno et al.

Anonymous Referee #2

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The article deals with monitoring works on an earthflow in southern Italy, performed through Ground Based Interferometric Synthetic Aperture Radar techniques. There are several things that I think should be better addressed in the article; in the following paragraphs, I will try to explain them, whilst several specific comments and corrections are in the attached file.

The Montaguto landslide is never properly described in the paper. Starting from the introduction, it seems that the reader should know where it is, what it is, as well as the setting where the landslide developed. This does not allow the reader unfamiliar with Italian landslides and geology to understand what is stated in the manuscript.

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Therefore, I strongly invite the Authors to introduce a specific section where: i) briefly describe the landslide, indicating its typology; ii) put the landslide in the overall context of the area, even by quoting previous works (are earthflows the only type of landslide there? Are all of this size? Are they typical only of this part of Italy? What are the main triggers? Etc.); iii) indicate the main morphometric features, as well as volume, area, and depth of the landslide. I believe this section is necessary to the reader, while in the present manuscript Authors seem to take for granted that anybody knows where the Montaguto landslide is, and what type of slope movement is. As for previous works on the issue, a quick research came out with the following list of papers (but I am sure there will be many others):

Calò F., Calcaterra D., Iodice A., Parise M. & Ramondini M., 2012, Assessing the activity of a large landslide in southern Italy by ground-monitoring and SAR interferometric techniques. *International Journal of Remote Sensing*, vol. 33 (11), p.3512-3530. Manconi A., Casu F., Ardizzone F., Bonano M., Cardinali M., De Luca C., Gueguen E., Marchesini I., Parise M., Vennari C., Lanari R. & Guzzetti F., 2014, Rapid mapping of event landslides: the 3 December 2013 Montescaglioso landslide (Italy). *Natural Hazards and Earth System Sciences*, vol. 14, p. 1835-1841. Parise M., Federico A. & Palladino G., 2012, Historical evolution of multi-source mudslides. In: Eberhardt E., Froese C., Turner A.K. & Lerouil S. (Eds.), *Landslides and Engineered Slopes. Protecting Society through Improved Understanding. Proceedings 11th Int. Symp. Landslides, Banff (Canada), 3-8 June 2012*, vol. 1, p. 401-407. Pellegrino, A., Picarelli, L. & Urciuoli, G. 2003. Experiences of mudslides in Italy. In L. Picarelli (ed.), *Proc. Int. Workshop "Occurrence and mechanisms of flow-like landslides in natural slopes and earthfills"*: 191–206. Patron, Bologna. Hervás J., Barredo J.I., Rosin P.L., Pasuto A., Mantovani F. & Silvano S., 2003. Monitoring landslides from optical remotely sensed imagery: the case history of Tessina landslide, Italy. *Geomorphology*, vol. 54, 63-75.

Road SS 90: I am not sure what that means, but I believe it is a state road. If that is correct, I would indicate throughout the article "state road 90", rather than "road SS

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90”.

The monitoring data should be presented in greater details, and the figures included in the paper should deserve much greater focus of what they have in the present form of the manuscript. In addition, comparison with the same, or similar, methodologies and techniques in other landslides could deserve at least some lines of comment.

The different sectors identified through monitoring should be described within the framework of the main kinematical zones of the landslide, as I guess these features should have also been identified in the field. At this regard, Authors could refer to works on similar landslides (starting from the very famous Slumgullion earthflow, see Parise et al., 2003; Coe et al., 2003). But, in addition, an effort should be done to compare these subdivision to what reported in previous works about Montaguto landslide. Guerriero et al., 2013, and Lollino et al., 2014, are included in the reference list, but in the manuscript they were never properly quoted in order to compare the outcomes from the different methodologies. This should be done, and should become an important part of the discussion/conclusion sections. Further, another more recent work (Guerriero et al., 2014) has not been considered at all. It should be discussed, too, or at least quoted.

For all the reasons above, I recommend major revision of the paper.

Further suggested references: Coe, J. A., Ellis, W. L., Godt, J. W., Savage, W. Z., Savage, J. E., Michael, J. A., Kibler, K. D., Powers, P. S., Lidke, D. J., and Debray, S., 2003. Seasonal movement of the Slumgullion landslide determined from Global Positioning System surveys and field instrumentation, July 1998 – March 2002. *Engineering Geology*, 68, 67–101. Corominas, J., 1995. Evidence of basal erosion and shearing as mechanism contributing to the development of lateral ridges in mud-slides, flow-slides, and other flow-like gravitational movements. *Engineering Geology*, 39, 45–70. Guerriero L., Coe J.A., Revellino P., Grelle G., Pinto F. & Guadagno F.M., 2014. Influence of slip-surface geometry on earth-flow deformation, Montaguto earth

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flow, southern Italy. *Geomorphology*, vol. 219, 285-305 Parise M., Coe J.A., Savage W.Z. & Varnes D.J., 2003, The Slumgullion landslide (southwestern Colorado, USA): investigation and monitoring. In: Picarelli L. (ed.), *Proc. International Workshop "Occurrence and mechanisms of flow-like landslides in natural slopes and earthfills"*, May 14-16, 2003, Sorrento, p. 253-263.

Please also note the supplement to this comment:

<http://www.nat-hazards-earth-syst-sci-discuss.net/3/C3169/2016/nhessd-3-C3169-2016-supplement.pdf>

Interactive comment on *Nat. Hazards Earth Syst. Sci. Discuss.*, 3, 7247, 2015.

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