



Interactive comment on “Automated classification of Persistent Scatterers Interferometry time-series” by M. Berti et al.

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Received and published: 17 May 2013

Thanks to the anonymous reviewer for the comment. Here is our reply.

Reviewer: “Lines 13-17: The authors say that “PSI time series, in fact, are somewhat noisy and difficult to interpret because of the detrimental effect of residual atmospheric errors and by problems related to phase aliasing. For these reasons a linear regression model is generally fitted to the data and the average displacement rate is used to describe the entire time series.” This is correct, without any a priori knowledge about deformation, a linear deformation mechanism is usually assumed, however to improve the success rate, various deformation models can be tested in a recursive scheme. For example, a linear model can be first evaluated and

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if the residues between the model and the unwrapped phase observations are small enough, the assumption is made that the ambiguities are estimated correctly. If not, an alternative deformation model can be tested, etc. The implications of evaluating different models is the computing time. For each evaluation, the integer least-squares minimization problem needs to be solved. Hence, a trade off should be made between computing time and success rate. I propose to complete the sentence (lines 13-17) in order to allow a better understanding of what is usually done or can be done in terms of using deformation models.

Reply: We agree with the reviewer's comment, but there has probably been a misunderstanding. When we say that "a linear regression model is generally used because of the detrimental effect of residual atmospheric error" (lines 13-17) we refer to the analysis of post-processed PS measurements, not to the processing of raw satellite data. The time-series analysis proposed in the paper applies to PS data which have been already corrected and harmonized by the manufacturer, using suitable deformation models. The important issues raised by the reviewer regarding PS data processing stay behind the scenes. In the revised version of the paper we will clarify this issue, and we will also point out that the knowledge of the processing techniques used to generate the PS data is however important in any post-processing analysis.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 1, 207, 2013.

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