

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

M. Berti et al.

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Dear Francesca,

thanks for your comments. Here is our reply.

1. We apologize that we missed your recent paper “Semi-automated extraction of Deviation Indexes (DI) from satellite Persistent Scatterers time series: tests on sedimentary volcanism and tectonically-induced motions” published in 2012 in *Nonlinear Processes in Geophysics*. In the revised version of the Introduction we will add a reference to your paper, pointing out the novelty of your semi-automated method for PSI time series analysis. As you noted, however, your method is based on a preliminary, visual analysis of the time series (the evaluation of the “breaking time” t_b) which is needed

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to compute the Deviation Indexes. This approach is well-suited for local-scale investigations (as the examples you provided in the paper) but is not suitable for a general analysis of very large datasets (as in our case). The main goal of our work is to provide an automatic procedure for the classification of PSI time series based on a sequence of statistical tests. The development of a rigorous, objective method is mandatory in our approach. Therefore, we are not going to make any comparison between the outcome of PS-Time and your DI indexes.

2. In the revised manuscript, the reference to the types of time series used by Cigna et al. 2011 will be moved from the caption of Fig. 2 to the end of section 2.1. We will also add a reference to the patterns mentioned in your 2012 paper. The fact that the six “target trends” that we recognized by a visual examination of 1000 PS time series (Fig.2) closely agree with the ones you found, surely deserves to be highlighted.

3. We apologize for the incorrect reference in the Introduction, lines 20-22 (slope instability instead of tectonic activity). It will be corrected in the revised manuscript.

4. We are well aware that an expert, visual analysis of the time series is of paramount importance to obtain meaning results. This is why we: i) first identified several recurrent “target trends” by a visual analysis of a large number of PS time series (sect 2.1); ii) developed automatic classification algorithms (sect. 2.2); iii) apply a statistical technique to calibrate the statistical thresholds in order to obtain the best fit between the visual and automatic classifications (sect. 2.3 and 3.2). We did not develop a blind automatic procedure for time series classification. This should be rather clear throughout the paper (see for example the ROC curve analysis reported in Fig.7, and the comments in section 4.1) and we do not think that needs to be further emphasized.

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