Subsidence activity maps derived from DInSAR data: Orihuela case study

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First at all we would like to thank referee # 3 for their useful comments and suggestions. We very much appreciate all the comments as they all have helped us to improve the paper. The paper has been reorganized in order to improve presentation and to make it more readable. The new version of the paper can be found as a supplementary file. In this document referee's comments are in italic bold font whereas authors' answers are in blue font.

Comment 1 - Chapter 2 could be combined with chapters 4 and 6 to clarify the presentation. Short summary of the steps could be added to end of the Introduction.

Answer 1 – As suggested by the referee, the content of these sections have been substantially reorganized. Section 2 from the new version includes a brief description of the study area (geology, geotechnics, etc.). Additionally, the methodological content from old sections 2 to 7 has been included in the new section 3 (Methodology).

Comment 2 - page 5369 line 8: Differential settlements and angular distortions should be further explained and equations added to the text.

Answer 2 –According to the reviewer's comment, the description and expressions of differential settlements and angular distortions concepts have been included in the methodology section (eqs. (2) to (6) and Figure 3).

Comment 3 - Fig 1a anb 4. Colors of the background map could be more distinguishable (carbonatic rock:: : vs. sand: : :)

Answer 3 – Done. Fig. 4 has been changed. Different colours have been selected to improve the clearness of the figure.

Comment 4 - Fig 1b. Piezometric level evolution should be more explained in the text.

Answer 4 – A description of the piezometric level fluctuation has been introduced in the description of the study area (section 2).

Comment 5 - Page 5371 line 1: The parameters used in the interferogram generation and SPN processing should be mentioned as well as the reference for deformation.

Answer 5 – A new table (Table 2) specifying the main characteristic of the processed data stacks has been added.

Comment 6 - Page 5371 line 6: The number of SAR images should be mentioned and a list (table) of images added to the paper.

Answer 6 – A new table (Table 2) specifying the main characteristic of the processed data stacks has been added. Regarding the second comment, we have included a supplementary table including the list of used images as appendix B.

Comment -7- Chapter 7. Table of numerical results for each historical building should be added.

Answer 7 –According to the reviewer's comment, a new table has been included in the new version of the paper (Table 5). This table shows the numerical results of the SLS for each of the 27 historical building. It also includes a damage description and the main architectural characteristics of the buildings.

Comment -8- Discussion: More discussion on the applicability of the proposed method. What auxiliary information is needed in addition to the PSI results to apply this technique? Pros and cons, sources of error of the method should also be clearly discussed.

Answer 8 – In the new version of the paper, discussion and conclusions have been divided into different sections. According to the reviewer's comments, the pros and cons and the source of error of the methodology are described in sections 5.1 and 5.2 and also have been summarized in section 6 (Conclusions). To apply this method the conditioning subsidence factors should be analyzed, as it is explained in the methodology section. Also, a damaged inventory is necessary to evaluate the local subsidence activity maps as has been reflected in section 5.2.

Technical corrections:

Page 5373 Line 13: please revise "krigging"

Done.

Fig 4. Density unit is missing.

The density function is dimensionless (it is a probability).

Fig 6 and 7. Please revise "hystoric"

Done.

Font size in figure legends should be slightly increased.

All the figure has been revised and the font size of the legends has been increased as much as possible.