Anonymous Referee #2

GENERAL COMMENTS

Data analysis appears convincing, as all reported evidences of moving PS or stable SBAS pixels can be related to the presence of cavities. The discussion, just hinted in the conclusions, about the efficiency of DInSAR techniques in detecting subsidence areas, is indeed interesting and still open. It is also considered in the conclusions in Galve et al. (2015). So, devoting some more space to this issue would be interesting in my opinion. In particular, it would be interesting to know how much of the railway network present within the investigated area presented useful PS or SBAS-stable pixels to be analyzed for subsidence. Reasons for the low efficiency generally reported in literature (critical role of orbital angles, resolution, etc.) are correctly cited in the discussion, so it would be interesting to compare the figures found here. A closely related aspect is the occurrence of false alarms: did the data analysis evidence points with apparent subsidence, but which revealed no movement to a more accurate (in situ) survey? For example, the few points showing subsidence rates beyond the thresholds in the profiles in Fig. 3, and not spatially related to the known sinkholes (say, the points at about 2900 m and 3600 m in profile 2). Can they be ruled out as false alarms?

We have focused the analysis on InSAR subsidence data recorded within known active sinkholes because the interpretation of false negatives or false positives is an intricate issue in the studied case. Most of the sinkholes classified as inactive are those without any recognizable sign of activity, but this does not rule out the possibility of being active. In fact, InSAR data has allowed us to identify active sinkholes initially considered as inactive according to our field surveys (Galve et al., 2015). Our sinkhole inventory has significant limitations because it is difficult to identify and accurately map these landforms in urban and peri-urban environments and, therefore, we cannot rule out that some InSAR deformation points might lead to “false alarms”. These points serve as evidence of possible active sinkholes for further detailed site investigations.

Other points which could deserve a better explanation:

- how were the two profiles in Figs. 1 ad 3 obtained? In Galve et al. (2015) profiles are shown as hollow rectangles, rather than 1-D lines, so it can be inferred that all points falling within the rectangles were considered. Is the same methodology used here? If this is the case, how wide were the rectangles?

The width of the profiles is indicated in the new Table 01.

- it is not sufficiently clear, in my opinion, why only ALOS data were available over profile 1, while only ENVISAT data were available on profile 2. From the data description, both sensor time series are acquired in ascending geometry, so orbital configuration seem comparable in the two cases. Is it a matter of spatial coverage? Or, could it be related to different incident angle in the two time series?

See answer to the comment 9 of the Referee #1

(By the way, incident angles are not mentioned in the text). Or wavelength?

This information is provided en the Table 01

Specific comments:

Page 3973, line 20: "For ENVISAT data, despite the strong backscattering of the railway, motion may not be recorded using PS method due to the multiple scattering of the different surfaces."... the meaning of this sentence is not clear, can you rephrase?

Done.

"*For ENVISAT data, despite the strong backscattering of the railway, motion was not detected using PS method probably due to the noise caused by the scattering mechanism of instable land surfaces.*"