

**RE: NHESS-2021-35**

**We thank Deodato Tapete and two anonymous reviewers for their invaluable comments that have helped improve our manuscript. Our responses to the comments are highlighted in bold. Please refer to the tracked-change version for the line numbers addressed in this letter.**

RC2 (Anonymous Referee #2)

Land subsidence is one of most common geohazards. It is significant for monitoring the characteristics for city. This paper uses the time series interferometry technology to obtain the spatial and temporal subsidence characteristics in Wuhan city (China). The results indicate that the overall subsidence over Wuhan region is significantly correlated with the distribution of engineering geological regions. The results sound good. I recommend a minor revision. The detailed comments are as follows.

(1) In section 4.2, the InSAR measurements are compared with leveling measurements. Fig. 4a and 4b indicate a bit lower correlation value. Please make a detailed analysis for the reasons. The authors can present some detailed InSAR results for some typical leveling points.

**Sorry for the confusion. We updated Figure 5(a) and (b). The leveling points are mainly distributed in the Wavy hillocky EGZ with low displacement rates. The agreement between InSAR and levelling is well as shown by the statistical metrics in Fig.5.**

(2) For the regions with larger deformation, the authors can add some field survey pictures (such as buildings with crack, road with cracks).

**We add two filed survey pictures in Houhu area and Qingshan area in Figure S1.**

(3) In section 2.2, the authors should present a flowchart for the used time series InSAR method.

**The flowchart is given in Figure 2.**

(4) In section 5.2, I think it is not necessary to compare the subsidence with river water level. According to the Fig. 13, I think the daily rainfall is more correlated with the nonlinear subsidence of points HH1 and QL1.

**Thanks for pointing this out. The impact factor of QL1 is rainfall. We rearranged section 5.2 (Line 300-314).**

**There are several impact factors of karst collapse including rainfall, water level variations and anthropogenic activities. Although HH1 located in karst distributed areas, the displacement of HH1 is more correlated with**

anthropogenic activities. Deep foundation pit dewatering induced groundwater variations induced the accelerations. As we can infer from Fig. 7(c) and (d) and Fig. S4, many land conversions occurred during 2015 and 2019.

QL1 was almost stable before summer of 2016. We find the trigger factor of QL1 might be the extreme rainfall in 2016 as reminded by the reviewer. The rainfall might played a more important role. At the meantime, we also notice the river water level is correlated with concentrated rainfall during rainy seasons in Wuhan. We cannot rule out the impact of water level. Thus, we kept the river level in our figure and revised the discussion part accordingly.