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Dear Editor,

First of all, thank you for the explaination about the major revision for the previous review, it makes sense now.

In this new version, we included the comments of reviewer#2 and added informations about the geological and geotechnical data that exist about the airport platform as asked by reviewer #3. We decided to insert this new paragraph at the beginning of the the modelling section as it justifies the choices we made for our modelling. We thus divided the Creep Modelling section into two subsections : "Geological, Hydrogeological and Geomechanical Context" and "Modelling of Long-Term Slow Creep Processes"

All corrections are in bold font.

Yours sincerely,

O. Cavalié, F. Cappa, and B. Pinel-Puysségur

Reply to the reviewer #2

1. *line 47 of the manuscript, the year of the citation and reference "Park and Hong" is lost.*

   Done

2. *line 53, I suggest writing "Xiong et al. (2022)'s study" or other expressions instead of "(Xiong et al., 2022)".*

   Done

3. *line 63, "Var delta" or "Var river delta"? Please check the whole manuscript.*

   Done

4. *line 71-73, it is better to delete this sentence or rewrite it. During the review period, there have been at least three papers published with a longer period of InSAR observations. (https://doi.org/10.3390/rs15030725, https://doi.org/10.1016/j.rse.2022.113446, https://doi.org/10.1016/j.jhydrol.2022.128764.) These are shown to the authors not for suggesting citation. "the longest time series" or not is not an innovative point in my opinion, therefore, deleting it is not bad for the manuscript. As time goes by, there must be longer time series.*

   We deleted the reference to the longest time series.

5. *line 72, if "Chaussard" is needed, please add the year of the citation and the reference.*

   We deleted this reference with the reference to the longest time series

6. *line 159, I am not sure whether "drops" is the best expression. In my opinion, if the values are positive, and then they become near zero, "drops" are good. But, for the subsidence, the values are actually negative. The authors can try to find a better word. By the way, in Figure 3d, in most other papers, the y-axis usually is: 0 on the top with negative values "-300" in the bottom. The authors can decide whether they will change the figure.*

   We understand the point of view of the reviewer. But as we describe a subsidence, it seems clear that the values are positive when the amplitude of the subsidence increases. However, we added "downward" to "vertical displacement" to make it clear that positive values indicate an increase of the subsidence. The advantage of representing that way the vertical motion is that it can be compared easily with the classical graph showing the creep evolution with time (Fig 5a).

7. *line 251, coast – coastal?*

   Done

8. *The resolution of Figures 1 and 3 is not as high as Figures 2 and 4.*

   We have better resolution figures that we can uploaded for the final version.

Reply to the reviewer #3

The authors presented an interesting research on the ongoing subsidence process in the area of Nice, France.

The article, altough does not present any relevant novelty, just relying on the long-lasting availability of InSAR data, which is pretty common and diffuse nowadays, and on a creep

modeling, shows an interesting case study which, in my honest opinion, deserves to be more analyzed.

In particular, since subsidence is one of the most diffuse and typical geological process, the article completely miss the geological characterization of the site, just shortly mentioned during the modeling stage. The availability of geological and groundwater data, along with information about the evolution of the building loading, would enhance the research.

Here are listed some main points:

- *I would not stress too much the aspect of the long-lasting dataset available, since it is a very common task and do not represent a real novelty or improvement in the current state of the art. There are several works showing long-lasting time series of deformation using InSAR, such as Dong et al., 2023 (Tri-decadal evolution of land subsidence in the Beijing Plain revealed by multi-epoch satellite InSAR observations), or Pirard et al., 2023 (Post Mining Ground Deformations Transition Related to Coal Mines Closure in the Campine Coal Basin, Belgium, Evidenced by Three Decades of MT-InSAR Data). Some other paper can be found in a recent review by Raspini et al., 2022 (Review of satellite radar interferometry for subsidence analysis). Besides, in your result there is a gap of 3 years which forbid the chance to have a complete analysis.*

  We deleted the reference to the longest time series.

- *The paper miss of a geological and geomorphological characterization of the site under analysis. An overview of this would help the reader. Moreover, the availability of geological, groundwater, and geotechnical data (if available) would enhance the modeling section (in my opinion the most interesting) and the interpretation provided in the paper.*

  We added a paragraph at the beginning of the modelling section in order to help the reader to understand the specific geological features of the NCA aiport underground. In this new paragraph, we also added new recent references about data acquisitions on the airport platform.

- *The algorithm used to project from LOS to vertical displacement should be provided in the paper for better clarity.*

  We only projected the LOS displacement into the vertical axis based on the local incidence angle :

$$D_{\text{vert}} = \frac{D_{LOS}}{\cos \alpha_{local}}$$

  where D_{vert} is the vertical displacement, D_{LOS} the Line of sight displacement, and

α_{local} the local incidence angle.

This is a very classic operation.

- *Figure 3 should be changed. Conventionally, InSAR information are represented in a color bar oscillating from green to red when it comes to ranges from stability to instability. Moreover, subsidence is a negative displacement, so it would be better to use negative signs in the maps and time series, to avoid any misinterpretation. I would prefer to have the same range of displacement for the three maps, so to correctly compare them and highlight the different behavior in the three time spans.*

  I respectfully disagree. The most used colorbar in InSAR displays a variation of colors as followed : red/orange/yellow/green/blue. This is what I used here. First, scientists used InSAR to measure large displacements and made this succession of colors cyclic. Actually, it is very useful to both represent high and small deformation gradients since it does not saturate. Having many colors in the colormap (at least 5), allows to display more accurately small variations in the displacement map (that can be due to noisy patches for example). When results display high frequency noises, a trick is to use saturated colormap (for example from blue to red (with white in between for close to zero values), this allows to highlight the large scale deformation and to mask the local oscillations due to noise.

  I have been using the red/orange/yellow/green/blue colorbar in multiple articles for centrimetric displacement/velocity map as it shows well the deformation without hidding less resolved areas with more noise.

  Moreover, in the article, we justify the choice of adapting the range of the colorbar to better compare the pattern of deformation between the three different periods. The amplitude of the deformation can be seen in the time series of the displacement (Fig 3.d)