

Response to Reviewer 1:

This paper describes the identification of precursory movements from the study of the wrapped phase of the interferograms. In particular, the authors suggest the use of coherence for the identification of gravitational structures that could be used to identify deformation processes and detect zones of weakness in extensive areas.

The paper is well structured and complete. The topic is very interesting, and covers a theme that is not yet fully exploited by the current InSAR applications state of the art.

The authors demonstrate a deep understanding of the processes involved in the case study, as well as in the technical aspects, i.e., remote sensing application. The methodology implemented is well described and the results are robust and validated.

We thank anonymous reviewer 1 for the positive comments.

Thus, my opinion is the acceptance of the paper with just some following technicality revisions:

- Please adjust the reference to the figures as they are not correctly cited throughout the paper (e.g. line 333, 599)

Done.

- line 598. It is unclear what the authors aim to convey with the three inverse velocity plots. Is it that phase 4, which indeed led to failure, shows a different asymptoticity with respect to other accelerations? Please discuss this point further, as it is interesting.

We thank the reviewer for the helpful comment. The inverse-velocity plots are not intended to predict failure time but rather to illustrate the changing kinematic behaviour across acceleration phases. While all three show similar asymptotic forms, they start from progressively lower $1/v$ values, indicating higher baseline velocities and reduced recovery between acceleration events. This supports the interpretation of progressive internal weakening rather than isolated motion phases. We have clarified this point in the revised discussion L.622-647.

- line 681: Please add a dot at the end of the sentence.

Done.