Authors' responses to Editor on paper EGUSPHERE-2024-1227

Reconstruction and forecasting of slow-moving landslide displacement using a Kalman Filter approach

by Mohit Mishra, Gildas Besançon, Guillaume Chambon, and Laurent Baillet

We would like to hereby thank the editor for the careful reading, and final comment about possible additional technical corrections as:

"*Specifically, at lines 65-80 you have added some points regarding the novelty of your work. These points seem written as something regarding the conclusions of your study. Hence perhaps you could re-frame them as research gaps that needed to be filled and that you have filled with your work.*"

As an answer, let us confirm that the text being mentioned does indeed emphasize the contributions of the paper in terms of novelties, which has been included on that purpose, in response to comments received by two of the readers in that direction: at this point, we feel that it would not be very constructive to now remove them. Instead, we consider of better relevance to emphasize a bit more the research gaps that are addressed, just before listing those contributions, in the spirit of the editor's comment.

This has been done by completing lines 61 to 65 as follows (modifications in red):

"The present paper proposes to investigate further the use of a Kalman approach combined to a mechanical model for landslide monitoring, focusing on the problem of reconstruction of displacement patterns jointly with unknown parameters. As in our previous studies, a simple sliding block model with a limited number of parameters is considered for the sake of illustration. Notice that as a counterpart of the tuning possibilities offered by the Kalman approach, selecting appropriate tuning coefficient may actually prove difficult. In addition, it is known that Kalman approach can be hindered in the presence of nonlinearities in the model, which is a priori the case for the model considered here. Finally, one may have to face unexpected issues when moving from a methodological approach to its actual implementation with real data. In this context, the main contributions of this work are the following: (1) Regarding the model... (2) Regarding the tuning... (3) Finally, regarding implementation, it should be emphasized..."

In that way, we hope that it becomes clearer that in short 3 types of issues are addressed, while keeping explicit the novelties brought by the paper accordingly.