Natural Hazards
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Discussions

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Interactive comment on "Simultaneous state-parameter estimation of rainfall-induced landslide displacement using data assimilation" by Jing Wang et al.

Anonymous Referee #1

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General comments: Prediction of landslide movement is essential for early warning against landslide disaster. It should be simultaneous especially in the case of rapid landslides for practical use of the prediction. This paper developed the simultaneous prediction method for landslide movements for the practical early warning particle by adopting particle filter-based data assimilation. Developing this kind of simultaneous prediction can contribute to practical early warning. Precision of data assimilation was described while merits of the proposed method, quickness of estimation of model parameter, could not be fully described according to some aspects in the paper as below.

Specific comments: (1) page 1, lines31-32: Please show calculating time needed for

existing prediction method. These examples can support superiority of prosed method in this paper. (2) page 3, lines 16 – 25: Geology in study area should be described. This is basic information for the landslide. (3) page 6, line 18: Show "three slopes" in the landslide in Figure 2 or Figure 3 and explain why the slope in Figure 3 was selected for the study. (4) page 7, lines 7 – 10: Show the location in Figure 2 or 3 and distance from the rain gauge to the monitored site. (5) page 7, line 13: Explain "model method without SSPE" in chapter 2. I could not find the model and method for deciding model parameters in chapter 2. If not, readers cannot the content of the paper. (6) page 7, lines 15 – 16: Please explain how to decide time step for calculation. It is important information for understanding the calculation process. (7) page 7, lines 27-28: Trend of fluctuation is different between GPS03 and GPS04. For examples, Fluctuation from time step 40 to 50 and that from 70 to 76. More detailed explanation is necessary for them. (8) page 8, lines 9 to 21: If you can show the comparison of calculating time needed for proposed method to that for the model without SSPE, readers can understand the superiority of the proposed method better. You can show the proposed method can make prediction simultaneously.