Comment on tc-2021-56

Anonymous Referee #3

Referee comment on "Evaluating a prediction system for snow management" by Pirmin Philipp Ebner et al., The Cryosphere Discuss., https://doi.org/10.5194/tc-2021-56-RC3, 2021

In this paper, numerical snowpack model and satellite data were applied for ski resort management. Hanzer et al. (2020) already introduced this system, so the target of this paper is the validation of the system for snow covered area and snow depth distribution. This system had practical accuracy and provide good information as a reference for building similar systems in other regions. This paper has sufficient results for publication to the Cryosphere. I wrote several suggestions to add explanations as minor comments. Please refer them for the revised manuscript.

Minor comment

L153-155 Is there any reference to show the accuracy of GNSS? Also, does the GNSS has similar accuracy for wet snow?

L241-242 Can you point out where the biggest difference due to snow gliding or avalanche in Figure 3? Also, this discrepancy may be reduced by integrating avalanche dynamics model. Do you have a plan to integrate a snow redistribution model and avalanche dynamics model into this system? If there are any views for future implementation of them, description of it is desirable.

L250-254, Figure 4: I guess that the better accuracy in high altitude is due to the ratio of snow cover area is near 1 (it may be most of them are true positive). Including the figure of simulated or observed snow cover ratio for each elevation and slope direction helps the relation of this ratio with OA.

L255-256 Figure 5 shows the amount of MD and RMSD for snow depth. I think the

information snow depth is also necessary to check relative errors. Can you add the figure of snow depth data for simulation and observation?

L262-263 Although I haven't used and am not familiar with the grooming module, this error seems to be reduced if this module can turn on and off depending on the situation. This result can make suggestions to add them to improve the system.

L278-280 I think the averaging effects for RMSD can be avoided when 10m meshed GNSS (not averaged) and SRU averaged simulated data are compared. In this case, larger SRU size leads to larger RMSD. This comparison is not a requirement, but it is worth a try.

L355-362 I think it would be more informative if there is some mention of future plan, actuality to achieve, and level of importance for the improvement to resolve (1) - (5).