Comment on gmd-2021-254
Anonymous Referee #2

Referee comment on "Modelling the small-scale deposition of snow onto structured Arctic sea ice during a MOSAiC storm using snowBedFoam 1.0." by Océane Hames et al., Geosci. Model Dev. Discuss., https://doi.org/10.5194/gmd-2021-254-RC2, 2022

The authors present a blowing snow model based on OpenFoam and some newly developed snow transport-related works, which is important for the snow process research area. The manuscript is well structured and easy to read, and all the figures are well presented. However, there are several issues that need to be fixed before being accepted:

1. The finest vertical grid is 0.1m, while the saltation layer of blowing snow is almost the same order of magnitude. It means almost all the interactions between snow particles and airflow are in the first of the vertical grid, which indicates that the wind velocity estimation on particle location is important. Could the authors add more detail about the wind velocity approach where the snow particles located.

2. What are the time steps for airflow and particle, respectively? Since this model considers the splash process, the time step for the particle should be very limited to a small value.

3. The period of time is a week, which is really long for blowing snow evaluation. The authors may also need to discuss the effects of other snow processes on snow distribution, such as the thermal processes.