review of TC-2017-093

General Comments

This is a somewhat novel idea and I applaud the authors for using a modeling approach with field data to assess the utility of snow farming. There are no major problems with this paper and with some clarification, it will make a good contribution.

The differences in ablation between the two sites is attributed to the "potential warming effect of the black paved road at Martell resulting in lateral advection of heat (page 21 line 1)." Can this be quantified at all? This is an important point.

The writing is good, with a few instances of paragraphs that seem to short. There are a few words uses that are somewhat subjective, such as "huge" on page 20 line 31. These can be distracting. The figures are good, but could be slightly improved, such as adding section letters (e.g., Figure 11, use a. depth of covering layer) and increase the font size on axes.

Specific Comments

- page 1, line 11: "a factor of 12" instead off "or"
- page 1, line 15: this sentence is confusing " switching of precipitation of completely would strongly increase melt"
- page 1, lines 17-21: another citation could be the pozo de nieve (snow wells) that were extensively used in Spain well into the 19th century
- p2, l 2-5: While it is an old citation, it is an interesting approach to reduce mass loss of small glaciers/snowfield due to sublimation - Slaughter (1970 US Army CRREL Special Report 130)
- p3, l 27: it may be intuitive to you, but add direction to the location, i.e., lat: 46.808°N, long: 9.868°E (I assume).
- p3, l 29-30: could you simulate how different natural snow in piles would be? "A large snow pile is formed by machine made snow produced during the winter months."
- p4, l 3-5 and 12-13: did you compare the met station on top of the building to the met station on top of the snow heap?
- p4, l 4-7: you use new symbols that do not seem common – air temperature (TA), relative humidity (RH), wind speed (VW), direction (DW), incoming shortwave radiation (ISWR), incoming longwave radiation (ILWR). Are this necessary, or can you use more common symbols?

p5, l 14: you "calculate snow volumes." What about mass?
p5, l 17: state the wavelength of the TLS "near-infrared spectral range"
p7, l 10: is the word "extremely" necessary?
p7, l 19: do you mean "crown" instead of "crone?"
p7, l 19: be specific about the type of "linear interpolation"
p7, l 31: the "grain size of 1mm" seems quite small
Table 2: is a spectral albedo of sawdust of 0.5% correct? This seems low, or explain what this is.
p8, l 13-14: data were "resampled to 30 min time steps" but the "modeling time step was set to 15 min." Please rectify or discuss this discrepancy
p8, l 18 and 21: should this read "Table 3-5", instead of Table 3.5?
p9, l 15: change "Lower temperatures and irradiation **is** mainly"

Figure 3c: maybe use two axes the same as Figure 3a and b, with net SWR in red on the left and net LWR in blue on the right.
Figures 3 and 4: use Oct rather than Okt. Think about putting these two sets of figure beside one another
p11, l 3-4: delete the first two sentences: “This section presents results obtained from the TLS surveys. The focus of the analysis is on the Flüela data set. Values for Martell are provided in brackets.”
p11, l 5 and beyond: use a period as the decimal place “8.99m” rather than a comma “8,99m”
Figure 5: consider changing the color ramp so that white is no change, blue is an addition and red is a less. At present it is confusing as blue can be a small gain or loss.
Figure 5: there is a scale bar. Think about adding dimensions (in x and y) to one of the figures instead so we know how big it is.
p13, l 12: perhaps show this “respective coordinate” on Figure 5a and 6a
Figure 7: do you mean “aspect” for “exposition?” The x-axis for Figures 7b and 7d are unclear
p16, l 4: what is meant by “in dependence of the different settings?” Also, add a number to “(Table)”
p16, l 4-6: I would delete these sentences. They are not necessary. What is meant by “The difference pictures densification?”
Figure 10d. I am surprised that precipitation does not appear to change the results at all
Table 5: how is the albedo of the snow heap modeled over time, as this influence net SWR.
Figure 11: would this be clearer is there were log scales (both positive and negative), as some of the bars are difficult to see.
p20, l 9-10: can you quantify “total mass balance can be rated as marginal?”
p20, l 31: is the word “huge’ necessary?
p20, l 31-31: “Possible explanations are different properties of the covering materials.” I assume that you did not model Martell? Can you do some simple calculations to describe the differences between saw dust and wood chips. While you subsequently say that it is likely not important, we don’t know this.
p21, l 1: can you try to quantify the “potential warming effect of the black paved road at Martell resulting in lateral advection of heat?”
p21, l 14: delete “such”
p22, l 28: I think you mean “proved” rather than “proofed.” I think that this word is too strong as you only modeled one point at the top of the pile.