

The Cryosphere Discuss., referee comment RC2
<https://doi.org/10.5194/tc-2022-87-RC2>, 2022
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Comment on tc-2022-87

Anonymous Referee #2

Referee comment on "Impacts of snow assimilation on seasonal snow and meteorological forecasts for the Tibetan Plateau" by Wei Li et al., The Cryosphere Discuss.,
<https://doi.org/10.5194/tc-2022-87-RC2>, 2022

The omission of snow cover assimilation over the Tibetan Plateau in the ECMWF forecast system gives the authors a compelling experiment (had ECMWF really not already done that experiment in making the decision not to assimilate snow cover above 1500 m elevation?). There are few surprises in the results once we have learnt that the assimilation decreases spring snow cover, but it is still worth seeing the results.

Corrections:

line 15

It would be more informative to say that IMS snow data are assimilated, but only below 1500 m elevation.

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"while underestimating"

57

A statement of why IMS is not assimilated in IFS and hence SEAS5 is required. I think that this is not clear either here or in de Rosnay et al. (2012).

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State the resolution in terms that will be comprehensible to general readers.

95

Why is “zonal statistics” stated here? It is not just zonal averaging that is required to go from 4 km to 0.5 degree resolution.

Section 4.1

Because only the TP is shown in Figure 2, “of the TP” does not need to be stated so many times.

169

“(the DA reforecasts minus the control reforecasts)” has already appeared in this sentence.

179

I don’t think that snow albedo depends directly on density in IFS. The differences in albedo are clearly dominated by differences in SCF.

204

CCs used here but not explained until line 266.

275

The supplementary figures should either be in the main paper (which will result in there being a lot of figures) or the discussion of them should be in the supplement.

299

“for the two reforecasts”

A lot of the Discussion section simply restates results that will be stated again in the Conclusions

440

de Rosnay et al. (2012) reference appears twice. de Rosnay et al. (2014) is missing.

Figure 1 shows elevation; DEM is just how elevation is specified. And even common acronyms should be explained.

The Figure 2 caption should state that the difference between reforecasts is with – without.

The description of columns in Figures 3, 8 and 13 is actually rows.