The author presents an interesting analysis on extreme climate indices using several simulations of a regional climate model (RegCM4). The simulations use two land schemes (BATS, CLM) and four different datasets for initial and boundary conditions, ERA-interim reanalysis, GFDL, HadGEM and ECHAM6. Overall the manuscript is well written and the results are well presented. Below I am including some minor comments about the current state of the manuscript. In my opinion a discussion about the two different land schemes should be added before acceptance.

Minor Comments

- 183-183 The minimum temperature estimation of BATS is significantly lower than CLM in all driving model experiments (Fig 2, or more pronounce at Sup 2). It would be very informative for future readers to discuss why this is happening. What is the main difference of BATS and CLM that drives this difference in minimum temperature?
- 203-204 Same as above, it's quite important to explain or at least suggest the probable mechanism that drives the precipitation differences between BATS and CLM? There is some discussion about the differences in wind and relative humidity of CLM and BATS simulations (397-398) but still an explanation in the physics/schemes/assumptions behind these two land surface models would be highly beneficial.

General Comments

- 86-88 reference is missing
- 88-89 The sentence belong to the 2.2 section
- 92-94 To be precise, most probably the exact horizontal resolution for this ECHAM6 resolution is 1.875x1.875
- 107-121 The experimental set up presentation can be improved by using a table.
- 125-128 CRU should be introduced in the Data section. The availability of the data that composed the CRU product should also be mentioned. For example the representation of the stations used for CRU over Sahara desert was quite sparse (Tsikerdekis et al., 2019).
- 225-227 This phrase should be moved or something similar can be indicated at the end of the Introduction.
- 309 "Importantly" may be replaced with "Notably"?
- 309-311 Not clear enough what the author means by "exactly in phase"
- After 1996 warm days obs display a sharp increase which all of the experiments are unable to simulate. Is this there something specific about this year?
- 435-436 Instead of downscaled I would suggest to use "used as initial and boundary conditions (ICBC)". Because in truth RegCM uses this GCMs data on the boundaries and the rest is guided by each own physics parameterizations.
- 439-440 A map showing the location of these 27 stations would highly help future readers to get a grasp of this ground station network spatial coverage.
- There is something odd with the references numbering (they are not in ascending order). I am not sure if this is the author's fault or may be a product of automated post-processing by the journal.

References

Tsikerdekis, A., Zanis, P., Georgoulias, A. K., Alexandri, G., Katragkou, E., Karacostas, T. and Solmon, F.: Direct and semi-direct radiative effect of North African dust in present and future regional climate simulations, Clim. Dyn., 53(7–8), 4311–4336, doi:10.1007/s00382-019-04788-z, 2019.