

Response to Reviewer 4

Abbreviations:

AR Author Response (Johannes Horak)

RC Reviewer Comment

RC: I have not been able to complete a proper review of this manuscript due to other more pressing time commitments. In lieu of a full review, I have a few minor comments that can be easily addressed by the authors:

AR:

We thank the reviewer for the comments on the manuscript. We went through them and adapted the manuscript accordingly.

Correction to the manuscript independent of the RCs:

P5L8: We found that the list of fields contained in the forcing file was incomplete. We added the two missing fields, the sentence now reads:

“The assembled ICAR forcing file contains ERAI zonal and meridional winds U and V, potential temperature Θ , pressure p, specific humidity q_v , **cloud liquid water mixing ratio q_c , cloud ice water mixing ratio q_i** and surface pressure p_0 at each 6 h forcing time step and every grid point within the domain.”

P32L14: The list of employed open-source libraries was incomplete. We added the missing library. The sentence now reads:

“numpy (van der Walt et al., 2011), pandas (McKinney et al., 2010), xarray (Hoyer and Hamman, 2017), matplotlib (Hunter, 2007), cartopy (Met Office, 2010) **and salem (Maussion et al., 2019).**”

Specific Comments

RC: 1. The VCS gridded data set is a thin-plate spline based gridded observation set using a mean rain surface as a covariate. This surface is derived using "expert judgement" from observations and elevation, not from "physics-based regional climate modelling" as stated on line 3 page 7.

AR: We rephrased the corresponding sentence accordingly, it now reads:

“While the VCSR does not necessarily represent the actual distribution of precipitation (Tait et al., 2012), and may miss precipitation events (Tait and Turner, 2005), it serves as an approximation to an observational gridded dataset and is based on observations and **expert judgement.**”

RC: 2. For the NCD database, a link <https://cliflo.niwa.co.nz> could be included.

AR: We included a link to the NCD database. The sentence at P7L12 now reads: “At coastal weather stations, records from the New Zealand National Climate Database (NCD, <https://cliflo.niwa.co.nz>) were employed. “

RC: 3. The caption for Figure 4 has the elevation of Albert Burn as 120m it should be 1280m.

AR: We corrected the caption of Figure 4.