Manuscript: An Overview of the Western United States Dynamically Downscaled Dataset (WUS-D3)

The paper presents a comprehensive study introducing downscaling work to a 9 km resolution for 16 CMIP6 GCM experiments using the WRF model. The manuscript well describes the methodology and the WUS-D3 dataset. I recommend publishing the paper after some minor revisions as follows.

Comments:

1. GCM selection: the authors outlined 6 processes considered in the evaluation and selection of GCMs. While they refer to the ranking methodology in a technical note (Krantz et al. 2021) and a paper currently under revision (Goldenson et al. 2023, in revisions), I recommend providing more information on two key aspects. Firstly, elaborate on the process selection – explain why these 6 processes were chosen; why extreme precipitation across California is included among the selected processes, given the coarse resolution of GCMs and the fact that this diagnostic variable might not play a role in the ICBC of the downscaling framework. Secondly, provide more details on the ranking methodology: clarify how these 6 processes are considered in the final ranking; are they equally weighted? How do temporal and spatial patterns contribute to the selection process?
2. L330: The authors stated that "Interestingly, downscaling generally reduces warming (leftward pointing arrows)" and hypothetically attributed it to the reduced snow albedo feedback with downscaling. I recommend that the authors prove this hypothesis by comparing the snow outputs of both WRF and GCMs.
3. The authors conducted a more in-depth analysis of the changes in rx1day and tmax99. However, there is no explanation as to why only these two indices, among many possible extreme indices, were selected. Furthermore, why did the authors opt for the absolute index (rx1day) when analyzing rainfall, while choosing the percentile index for temperature.

Minor comments:

1. L210, 215 should refer to Table 1's last column. The caption of Table 1 should also provide an explanation of the last column (SST mode)
2. Please add the names of locations mentioned in the text to Figure 1, such as California's Central Valley, Sierra Nevada, and state names, …