Nonlinear Processes in Geophysics Discussions

Nonlin. Processes Geophys. Discuss., author comment AC1
https://doi.org/10.5194/npg-2021-2-AC1, 2021

Reply on RC1

Bo Christiansen

Author comment on "The blessing of dimensionality for the analysis of climate data" by Bo Christiansen, Nonlin. Processes Geophys. Discuss., https://doi.org/10.5194/npg-2021-2-AC1, 2021

Thanks for the positive review and the constructive comments. I will consider them all in a revised version.

More specifically:

I will make the connection to 'large deviation theory' near Eqs. 3 and 4 and include a few relevant references.

I agree that it is a good idea to mention the ensemble size and dimension in the description of the different data-sets in section 4. I will do that and perhaps include this information also in Table 2.

I will now mention the sample mean and why it is special already in the description of the unit cube (l70).

Regarding the deviation from waist concentration in CMIP5, I believe the negative skewness is due to dependence amongst models. But the width of the bulk of the distribution is probably due to the effective dimension. The width corresponds roughly to an effective dimension around 50 (compare Fig. 1, left). This is also near the effective dimension found in near-surface temperature as mentioned in section 3 (l151). I will try to expand on these arguments in the revised version.