

Nonlin. Processes Geophys. Discuss., author comment AC1
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Reply on RC1

Robert Polzin et al.

Author comment on "Direct Bayesian model reduction of smaller scale convective activity conditioned on large-scale dynamics" by Robert Polzin et al., Nonlin. Processes Geophys. Discuss., <https://doi.org/10.5194/npg-2021-26-AC1>, 2021

Thank you very much for the comment!

1) In DBMR, „Bayesian“ refers to the fact that the estimated model is a „Bayesian relation model“ (incorporating distributions of input, output, and their conditional probabilities) and not to the likelihood maximization in the computations. In this sense, the title for section 2.2 was ambiguous, and we thank the reviewer for pointing this out. We would change it to „Full Bayesian relation model“.

2) w (z-System) or ω (P-system) are standard for the vertical velocity. Eq. (12) will be rewritten.

3) We have changed the citation format.

4) Bias in vertical velocity

Indeed, vertical velocity is likely to be biased and uncertain in reanalyses. Here, we work with discretized vertical velocity and thus with a less precise variable. This makes the problem of uncertainty and bias less relevant but is definitively not a relief. In a stochastic model for the updraft which is to be developed, one can think of including an additional parameter as factor to the vertical velocity to allow for a tuning with respect to the effect generated by the modelled updraft.

5) Thanks for pointing out the typo.