



EGUsphere, referee comment RC2
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Comment on egusphere-2022-523

Tamas Bodai (Referee)

Referee comment on "On the interaction of stochastic forcing and regime dynamics" by
Joshua Dorrington and Tim Palmer, EGU sphere,
<https://doi.org/10.5194/egusphere-2022-523-RC2>, 2022

The authors of the paper study a simplified version of a barotropic model of atmospheric circulation and find that increasing the intensity of additive noise (upto a point) makes the persistence of regimes stronger, especially that of the blocked state, aligning with the same observation by Kwasniok (2014) and others. They then develop a more generic argument and derivation, arriving at a formula for the expected trajectory life time (in a regime) as a function of noise intensity. In the weak noise limit, they find a quadratic enhancement effect.

Unfortunately, this is all known and derived long ago, including the quadratic formula. A good starting point is Sec. 4.1.2 "Enhancement of Transient Lifetime by Noise" of the book 'Transient chaos' by Lai and Tel (2011):

<https://link.springer.com/book/10.1007/978-1-4419-6987-3>

I attach the manuscript pdf with my annotations added to it. I hope the authors will find it useful in some way.

The article is nicely written and developed. In the light of the above, it is a must to "repackage" it though. I wouldn't say at all that this paper does not merit publication. (It's already published anyways, here on EGU sphere. I'm actually in favour of post-publication peer-review, and i don't think that practicing scientists should be editors.)

Note: I never make recommendations to editors for or against publishing a paper. I selected 'minor revisions' only to be able to submit my review. Please consider it void.

Tamas Bodai

Please also note the supplement to this comment:

<https://egusphere.copernicus.org/preprints/2022/egusphere-2022-523/egusphere-2022-523-RC2-supplement.pdf>