

Atmos. Chem. Phys. Discuss., community comment CC1
<https://doi.org/10.5194/acp-2022-389-CC1>, 2022
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Comment on acp-2022-389

Petr Šácha

Community comment on "Intermittency of gravity wave potential energies and absolute momentum fluxes derived from infrared limb sounding satellite observations" by Manfred Ern et al., Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2022-389-CC1>, 2022

Dear authors,

Thank you very much for a detailed observational study of the intermittency of gravity waves that will be used frequently as a reference by our research group studying the gravity wave parametrizations.

Given that your introduction mentions mainly the lack of intermittency in the non-orographic gravity wave parameterization schemes, I would like to draw your attention to the study Kuchar et al. (2020). In this paper we have shown that the momentum fluxes in the orographic gravity wave parameterization scheme are highly intermittent compared to the non-orographic GW parameterization (see Fig. 7). Moreover, we have studied the intermittency of the resulting drag (not easily derivable from observations), finding it also highly intermittent (e.g. our Fig. 6). Consequently, in the recent study (Šácha et al., 2021) we have found that the intermittency has large implications for the influence of orographic gravity wave parameterization on the model dynamics and transport, which also underlines the importance of your current study.

Thank you very much for considering these findings in your manuscript.

Best regards,

Petr Šácha.

Reference:

Kuchar, A., Sacha, P., Eichinger, R., Jacobi, C., Pisoft, P., and Rieder, H. E.: On the intermittency of orographic gravity wave hotspots and its importance for middle

atmosphere dynamics, *Weather Clim. Dynam.*, 1, 481–495,
<https://doi.org/10.5194/wcd-1-481-2020>, 2020.

Sacha, P., Kuchar, A., Eichinger, R., Pisoft, P., Jacobi, C., & Rieder, H. E. (2021). Diverse dynamical response to orographic gravity wave drag hotspots—a zonal mean perspective. *Geophysical Research Letters*, 48, e2021GL093305.
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