

## ***Interactive comment on “A Mathematical Framework for the Description of Convection in Meso-scale Synoptic System” by N. Zhao and M. Takahashi***

**Anonymous Referee #1**

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I writing to give you my impression about this paper and reasons why I am declining to provide any further comments nor a detailed report as suggested for this work.

I think the paper is poorly written and most of its statements are wrongly and poorly motivated. While the title and the core abstract suggest that this work is about meso- and synoptic-scale convection, there is nothing in its content that speaks about this subject. I don't see how someone can claim on studying atmospheric convection without involving moisture and precipitation or even some kind of thermal forcing such as radiation and/or surface heat and/or moisture fluxes. At best this work is about stratified turbulence and/or nonlinear interactions between gravity waves and slowly evolving vortical flows. These two subjects have been extensively studied during the last few decades

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and the present work is far from making any new contribution of some kind. The mathematical study which is based on asymptotic expansions and looks at possible resonant interactions between gravity waves and the vortical motion; this is standard in this business and the authors have nothing new to offer. Moreover, I have serious doubts that the present work is of any use. The equation they use to built their theory, I quote, “is not closed”. I don't see how someone can claim growing or decaying and balanced or imbalanced solutions for a non closed equation. Furthermore, the paper is poorly written and full of typos. For all these reasons, it must be rejected and I am reluctant to waste my time to write a detailed report to send to the authors or post online because it will counterproductive.

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