

Interactive comment on “Numerical modeling of lower stratospheric Doppler ducted gravity waves over Jicamarca, Peru” by Z. Li et al.

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The authors of this paper are very concerned that neither reviewer mentioned Figure 3 (i.e., the 3-figure plot showing a zoom in of the phase structure and spectral analysis) and also requested for material that was already included in the revised paper accepted in ACPD (e.g., discussion of the thermal structure, use of vertical winds, etc.). Reviewer 1 specifically requested to see this exact information again. Was the old manuscript version, i.e., the original version initially submitted to ACPD, sent to the reviewers for review accidentally, instead of the revised version after the ACPD review?

In addition, both reviewers requested very similar pieces of information, specifically the desire to see m^2 vertical profiles, in an effort to see the potential for monochromatic gravity wave ducting (which we have now included in the revised manuscript). As we

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attempted to indicate in Figure 3 and the discussion of such, we do not think we are actually seeing a Doppler ducted gravity wave, as the structure of the “wave-fronts” are very unusual.

Assuming that the reviewers did indeed use the revised manuscript, and refer to Figure 3, we can only conclude that our poor writing has caused both reviewers to not understand the intent of the paper. As such, we have gone back and greatly reworded a number paragraphs in the revised manuscript in an effort to better explain our observations and indicate that we think what we are seeing doesn't appear to be a simple ducted feature.

(Reviewer comments are in italics)

Reviewer # 2

This is a short review because I believe the authors need to a much better job describing what they are really seeing. While this is an interesting paper it is written in a way that makes it difficult for all, except for a few specialists, to understand what they have done.

One of the main problems is not defining terms. The foremost problem is that the paper is about ducting but the terms duct and Doppler-duct are never defined. There is a relevant definition for the term duct.

For detailed explanations of terms, the cited publications do a better job. Therefore, we haven't repeated the definition of terms here.

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For example if there are regions of evanescence (m^2 less than 0 where m is the vertical wavenumber) above and below a region where $m^2 > 0$ then presumably a duct exists. I see no plot in the paper nor equations that discuss this or indicate the waves they are seeing are ducted. How is the reader to judge whether a duct is present merely by saying some of the plots resemble those in another paper. Furthermore, the authors are themselves unsure about the reality of the duct.

Such profiles, with additional commentary, are now included in the revised paper.

In the Discussion they say maybe they are not seeing gravity waves (which are being ducted???) but rather convective rolls. What are convective rolls - no definition and no reference to this term. I am left fairly confused at the end of this work whether the authors have really presented any useful data. I believe they have but this paper does not reflect their effort.

Convective rolls are a well-known feature of atmospheric motion - description can be found in the references cited.

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 19011, 2011.

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