Response to the reviewer:

We truly appreciate the comments and suggestions made by the reviewer.

Review of the revised manuscript "Orographic and convective gravity waves above the Alps and Andes mountains during GPS radio occultation events – a case study" by Hierro et al.

The authors did a great job in addressing my major comments - congratulations!
The following revisions were made:
(I) The amplitude attenuation factor has been considered for the case studies discussed.
(II) It has been considered that WRF simulations will not always be sufficient to describe the waves seen in RO soundings.
(III) ERA Interim data were analyzed for the case in which WRF simulations were not sufficient to explain the RO soundings. For matching the RO soundings now also temperature fluctuations are considered, in addition to fluctuations of vertical wind
(IV) Discussion of wavelength biases was moved into an appendix.

Overall, the manuscript is much improved now and can be recommended for publication in AMT after addressing a couple of remaining minor, but important comments.

My main comments are:
* it is difficult to generally rule out the co-existence of jet-generated GWs in the subtropics, even for selected cases
* the text should be screened for consistency and some additional information added, some points are listed in my Minor Comments

In the following, line numbers refer to the manuscript version with changes NOT highlighted.

Minor comments:

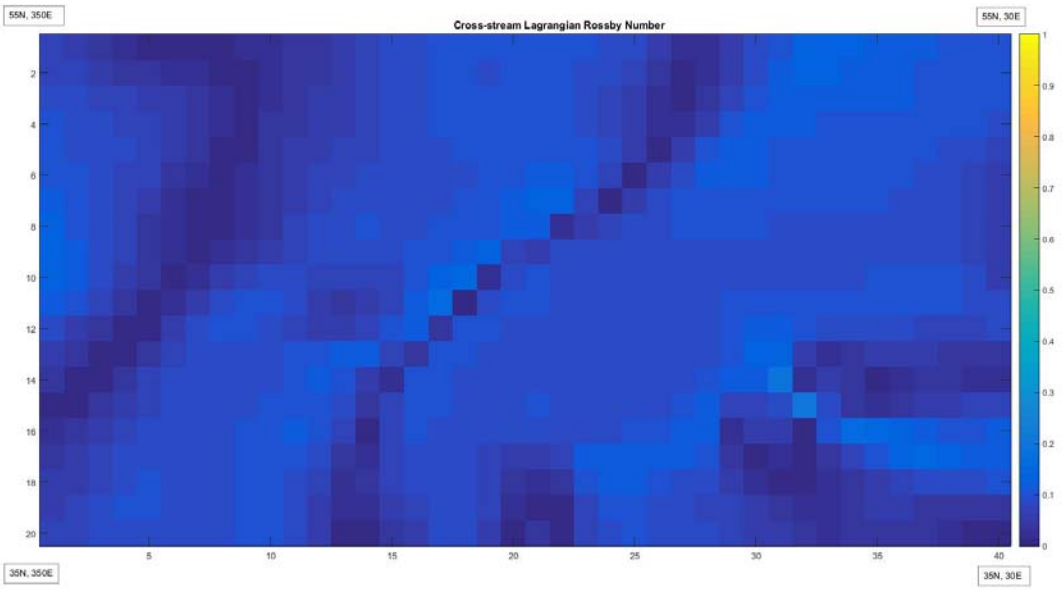
(1) The existence of jet-generated GWs cannot be generally ruled out because your work focuses on the subtropics, and there the subtropical jets are more or less omnipresent. This is confirmed for your Alps and Andes cases in Figs. 5 and 9 where wind speeds of well above 20m/s are evidently seen in the troposphere.

Therefore my questions, concerning l.193, but also elsewhere:
What is the criterion you are using to make sure that GWs generated by jets or fronts are absent?

Are you sure that this criterion will always work?
The wave seen in ERA Interim (Fig.7) that could not be simulated by WRF could be a jet-generated GW.

All changes made in the text of the revised manuscript are highlighted in yellow.

An additional paragraph and 3 references were included at lines 194-204 and a sentence in the Conclusions (lines 463-465). The systematic negative results regarding the existence of a possible unbalance of the flow were not included, only mentioned. For example, the cross-stream component of the Lagrangian Rossby number at 250 hPa in the Alps region, expected to be greater than 0.5 for unbalanced conditions, looks as follows:



(2) l.318:
The MW should be considerably attenuated below AND ABOVE the tropopause, and therefore be invisible for RO soundings.
This is also what you discuss in Sect. 3.1.3.

This comment was included at line 331.

(3) l.329:
It should be mentioned that ERA Interim will give some information about longer horizontal wavelength GWs, but has a relatively coarse resolution and will strongly underestimate wave amplitudes. Accordingly, amplitudes in Fig. 7 are quite low. If this wave is seen in RO soundings, it would have a much larger amplitude.
Of course, higher resolution ECMWF data would have been better suited, however, they are probably difficult to obtain. Therefore I really appreciate the authors' efforts based on ERA Interim.

A paragraph was included at lines 141-143.

(4) After l.339: caption of Table 1
Please mention that line 1 in the table refers to the wave seen in ERA-Interim, while lines 2-4 in this table refer to the WRF simulations.

This point was included at lines 358-359.

(5) l.391-395: I guess, erroneously a wrong word was used in l.391!
Mountain waves cannot produce circular wave patterns! MWs usually have wave fronts that are aligned parallel to the mountain range, or, in case of isolated mountains, MWs can display ship-wave patterns.
Circular wave patterns are usually found above convective GW sources.

Suggestion: just change "orographic" in l.391 to "non-orographic"

We agree with this statement, and it is commented at lines 402 and 404.

(6) l.442: It should be mentioned that attenuation factors close to 1 have to be taken with some caution because "ideal" wave patterns are assumed for this calculation.

This comment was included at lines 450-451.

(7) l.499: below the tropopause -> below and above the tropopause

Done.

(8) l.500: delete "in the troposphere" and refer to the GWs simulated with WRF
suggestion:

attenuation factor in the troposphere confirms that the GW
->
attenuation factor confirms that these GW

Done.

(9) l.505: same problem as in l.391-395
orographic -> non-orographic

Done.

Other comments:

(1) l.28 In this last case -> In the Andes case

Done.

(2) l.43 less than -> better than

Done.

(3) l.90 determined -> showed

Done.

(4) l.104 intrinsic period -> intrinsic frequency

Done.

(5) l.110 anomay -> anomaly

Done.

(6) l.114/115
to Alps and Andes ranges.
->
to the Alps and Andes mountain ranges.

Done.

(7) l.185 inner one. -> inner ones.

Done.

(8) Fig.5: color scales for dw and dT are missing
In the figure caption it should be better clarified that in (a) dw is shown, while in (b) and (c) dT is shown. The wording "...dw and dT..." with dw and dT so close together is somehow misleading.

Done.

(9) l.323:
presence of GW with scale long enough is not able to be
->
presence of large scale GWs that are not able to be

Done.

(10) l.325: are observed. -> are analyzed.

Done.

(11) l.325: a defined -> a well defined

Done.

(12) l.327: in 0.90. -> to 0.90 (first line in Table 1).

Done.

(13) l.371 respectedly, -> respectively,

Done.

(14) l.376: "The TP altitudes." not a complete sentence!

It was removed.

(15) Caption of Fig.9, same problem with dw and dT as for Fig.5

Done.

(16) Text after l.415: These sentences are somehow twisted, please rewrite!
Suggestion:

Next, the wavelike structure of the RO T profile, retrieved at the Andes region. This profile is shown in the central panels of Fig 3b. Its horizontally projected LTP is seen in Fig. 8, is analyzed.
->
Next, the wavelike structure of the RO T profile retrieved at the Andes region is analyzed. This profile is shown in the central panels of Fig 3b, and its horizontally projected LTP is seen in Fig. 8.

Done.

(17) After l.420 in the revised manuscript, there is a dashed line. Possibly, a file conversion error. Please check!

Done.

(18) After l.450 in the revised manuscript:
Please check! It looks like an equation should have been deleted, but wasn't.

Done.

(19) l.475: orographic forcing and -> orographically forced or

Done.

(20) l.512: decreasing Lz. -> at the same time Lz decreases.

Done.

(21) l.518
A partial attenuation reveals
->
An evaluation of the partial attenuation coefficient reveals

Done.

(22) l.533:
Apendix -> Appendix

Done.
(23) l.542: This sentence is somehow twisted, suggestion:
It is defined the distortion as the ratio:

->
We define the distortion as the ratio:

Done.

(24) l.586: wasinitiated -> was initiated

Done.

(25) l.589: wassupported -> was supported

Done.