

Referee #02 Response

“Sources of Concentric Gravity Waves Generated by a Moving Mesoscale Convective System in Southern Brazil” by Nyassor et al.

The authors thank the reviewers for their insightful and constructive comments, corrections and suggestions. We implemented the comments, corrections and suggestions into a revised version of the manuscript. Please find our answers to the questions of the reviewers below, accompanied by the [blue](#) marked-up texts in the manuscript version.

Comment on acp-2022-267

Anonymous Referee #02

Referee comment on ”Sources of Concentric Gravity Waves Generated by a Moving Mesoscale Convective System in Southern Brazil” by Prosper Kwamla Nyassor et al., Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2022-267-RC1>, 2022

The changes made to the paper now give a better motivation for the work. This is a very thorough and comprehensive study and should be published as it is. I have three technical corrections to be implemented for publication.

Author response: We thank Referee #02 for the revision of the manuscript and constructive suggestions. We addressed the individual comments below.

Comment #1: Caption F1: ... show the ray-paths of zero and model winds ...

Response: “ray-paths” has been inserted as suggested by the referee. The modified caption in the main text with the suggestion included is given below.

A 3D diagram showing a multi-step process of concentric gravity waves from the generation in the troposphere to the observation in the mesosphere. The red and blue lines show the ray paths of zero and model winds respectively. Black circular patches represent overshooting tops.

Comments #2: Line 121 My question was more trivial: mathematical definition would be counter-clockwise from due-west, most-common geographical clockwise from due North. Just provide in the bracket which one it is, e.g. (ϕ ; clockwise from X)

Response: “ ϕ ; clockwise from North” has been inserted as suggested by the referee. The modified version in the main text with the suggestion included is given below.

Response: The spatial (horizontal) and temporal parameters of the wave: wavelength (λ_H), observed period (τ), phase speed (c_H), and propagation direction (ϕ ; clockwise from North) of the observed CGWs in the air-glow images, were extracted using a two-dimensional spectral analysis technique (Garcia et al., 1997; Wrasse et al., 2007)

Comments #3: Line 318 tempus change: ... this part of the discussion is ... Afterwards, ... was examined ... I encourage the use of more presence except for parts of the text which are definitely in the past, e.g. something was measured..

Response: Based on the suggestion of the referee, the entire section has been modified and written as:

This section discusses the positions and the corresponding times of the OTs. The general result of the temporal variation of the heights of OTs is presented. Afterwards, the spatial variation of the OTs per longitude and latitude at each 10 min of the CTBT maps was examined. Also, the comparison between each respective OT in space and time relative to the ray traced source location is discussed.

We would like to bring to the notice of the Editor that slight modifications have been of the subtitle of Sections 3.4.2, 3.4.3, and 3.4.4.

“Tracking Wave #01 in Space” has been changed to “Tracking Wave #01 in Space and Time”

“Tracking Wave #02 in Space” has been changed to “Tracking Wave #01 in Space and Time”

“Tracking Wave #03 in Space” has been changed to “Tracking Wave #01 in Space and Time”

These modifications are due to the fact that the spatial and temporal variations of the OTs for each wave were discussed in the same section.