Review of „Advanced hodograph-based analysis technique to derive gravity waves parameters from Lidar observations" by Strelnikova et al.

The structure and readability of the paper was improved in the latest Version of the Manuscript. The content and the way it is presented are suitable for publication in AMT. However, the scaling part of the analysis still needs revision in my opinion before begin published. See major comment I.

Major:

I)   Scaling: In your response you stated that your parameter in the scaling function is determined for every individual profile. However, it's stated on page five that it is 2.15. On P8, you say that you get rid of the exponential growth using scaling. Eq. 6 comes without exp(z/(2H) and you refer to your scaling which is exp(z/(2.15*H)). This does not seem to work out (or I am getting it wrong). If you don't have strong reasons for doing the scaling the way you currently do it, you should simply use exp(z/(2H)) and refer to Wright et al. as you do later in the text. This topic needs to be revised in the Discussion section as well.

Minor:

I) Before being published, the author's should carefully revise language, sentence structure and typos at several locations in the manuscript (e.g., "Although, any and also vertically propagating waves might appear in the nature in the form of wave packets rather than continuous wave of quasi-infinite length."; "Tides periods that are integer fractions of a solar day.",…)

P3, L1: order of the outline (section 3 before 4,5…)

P4,L22: Define/describe F?

P5,L12: Name here the other characteristics that are determined.

P5,L19-L24: I would not call it bias, rather differences between the different approaches for determination of the background.

P6,L4: change order of the Figures (start with current Fig. 2).

P7, L2: Should be (a) 2D-FFT, (b) running mean, …..

P7, L5: You stated earlier that the background removal is critical and here you say your methods could work without this step? Then why not skip it in the first place? If you are no doing it, then better remove this sentence.

P9, L16: It's only a circle for frequencies *equal to* the Coriolis frequency. For low frequency GWs the hodograph forms an ellipse.

P10, L21: Name the characteristics here.

P11, Section title, L6: Reconstruction, better use derivation/determination instead of reconstruction

P13, L32: why likely? They are assigned to the background by the method.