Comment on revised version of "Retrieving characteristics of Inertia Gravity Wave parameters with least uncertainties using hodograph method" by Gopa Dutta et al.

Referee #2, Vladimir Gubenko

This paper presents an attempt to overcome the inconsistency of hodograph method when retrieving the internal wave parameters from radisonde measurements. The paper may become suitable for publication in ACP following implementation of the following points.

Major Comments:

1. Text from line 13, page 3 ("For the general case…") to line 27, page 3 ("…obtained using equation (2)") should be deleted. Instead of this text it is need to write the following:

"The polarization relation for internal gravity waves is given by Gubenko et al. (2008, 2011):

$$v'/u' = -i\,(f/\omega), \qquad (1)$$

where u' and v' are the velocity perturbations for the parallel and perpendicular components of wave-induced horizontal wind relative to the wave propagation direction, correspondingly. This formula implies elliptical wave polarization, with frequency dependent ellipse eccentricity of (f/ω). A few IGW parameters have been extracted using Eq. (1). The horizontal wave number k for internal waves with both low and intermediate intrinsic frequencies ($f^2 < \omega^2 << N^2$) is given by the following dispersion equation (Fritts and Alexander, 2003; Gubenko et al., 2012):

$$|k| = (1 - f^2/\omega^2)^{1/2} \cdot \omega\, |m| / N, \qquad (2)$$

where parameters k and m represent the horizontal and vertical wave numbers, N is the Brunt-Vaisala frequency, f and ω are the inertial (Coriolis parameter) and intrinsic frequencies, correspondingly. Intrinsic periods of IGW obtained using equation (1)"

P.S.: Because you agree to introduce u_{we}' and u_{sn}', these corrections are necessary to avoid contradictions with the designations.

References

Fritts, D.C., and Alexander M.J.: Gravity wave dynamics and effects in the middle atmosphere, Rev. Geophys., 41(1), 1003, doi:10.1029/ 2001RG000106, 2003.

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