In the following, the responses are in blue and the corresponding revisions in the manuscript are highlighted in yellow.

Line 218-222 "Even though there are wave patterns at higher altitudes above 100 km, the wave pattern is less consistent in different directions and shows up with varying periods. Multiple thin unstable layers exist in this altitude range, so upward propagation waves might undergo nonlinear wave mean flow interaction, resulting in wave dissipation. This is also shown by the spectra in Figure 4, where the broader spectra at the higher altitudes indicate the dispersion of wave packets."
As shown in Figure A1, above 100 km and below 84 km, the uncertainties of the temperature and winds are too large, so the frequency spectra and wave patterns may mainly due to the uncertainty of the measurement.

We agree that the large uncertainties near the top and bottom sides of the altitude range are large (~10 K), which is comparable to the potential wave amplitudes. So, the resulting spectrum containing such uncertainties may not show the actual wave characteristics in these two areas. So we deleted the sentence about "wave dispersion seen in the spectrum".
~~This is also shown by the spectra in Figure 4, where the broader spectra at the higher altitudes indicate the dispersion of wave packets.~~

Line 228-230 "The measurement uncertainties of 5–10 m s−1 are too large compared to the wave amplitudes of 10–20 m s−1 , making the slight phase shift hard to be distinguished. In later analysis, only the temperature measurements are used for the cross-spectral method to estimate wave parameters."
Note that the temperature uncertainties are larger than 5 K above 96 km and below 84 km, while the amplitudes of the two identified waves are about 10 K as shown in Figures 6 and 7, is it more suitable than wind measurements in estimating wave parameters?

I may not fully understand the reviewer's concern here. We indeed used temperature, rather than winds, to estimate wave parameters. If the reviewer means the opposite, I have the following responses. We choose to use temperature, instead of winds, to estimate the wave parameters due to multiple reasons. The main reason is that in the decomposition line-of-sight winds to obtain horizontal winds (u and v), we have to assume homogeneity **(aka, assuming no phase shift)** to separate vertical wind components. This adds additional uncertainties in the horizontal winds (u and v) if we use them to derive wave parameters **considering phase shift**. We did a simple sensitivity analysis showing that the wave amplitude in winds should be much larger than uncertainties in winds to make this method reliable. Another benefit of temperature over winds is there are measurements at the Zenith direction with higher resolution. This helps a lot to verify the phase shift and determine the wave period.

Line 353-354 ". In Table 2, the observational results are estimated with larger uncertainties, and all show discrepancies with the predicted ones" which are the observational results, which are the predicted ones in Table 2? Also in Table 2, the A(u)/A(v) and phase difference between u and v are equal in the processing of wave propagation and wave evanescent, why? Please correct "evenescent" to "evanescent" in Table 2.

In this work, the "predicted" amplitudes/phases are calculated by the formulas using observed wave parameters, and "observed" amplitudes are directly estimated from observed wave amplitudes; no "observed" phases were estimated.

We adjusted the 1st column in the table 2 to clarify the differences:
"Wave #1 XX" changed to "Predicted (Wave #1 XX)"
"Data" changed to "Observed"

In this context, "theoretical" is not a very proper word, as observations are also involved in the calculations. We made the following changes:
"The theoretical values of" changed to "The predicted values of".

Amplitude ratios and phase differences between u and v, are not influenced by the dissipation and evanescence of the wave in the vertical direction, at least within the linear wave assumption made in this study. The polarization relation can be simplified as u/v = k/l if we ignore the inertial frequency. In this study, the k and l are assumed to be the constants. So the derived values are the same between the free-propagation and evanescent regions for each wave. The main reason for this assumption is that the lidar field of view (100 km) covers a small part of the wave field (450-900 km wavelength). It could not directly resolve any meaningful horizontal variations within such a small area; thus, we have to assume them to be constants. The realistic waves propagate in an oblique path and should have dissipation in both horizontal and vertical directions.

The typo of "evanescent" is corrected in the table.