Responses to Referee #2:

We thank the reviewer for his valuable and very constructive comments*:*

Comment:

This paper contains a modeling study of the generation and evolution of mountain waves. It is found that secondary waves are created with shorter wavelengths (Fig 9), and that they may be generated by the shear instability, as they occur along the mtn wave phase lines. The modeling results are compared with radiosonde and aircraft observations, and the agreement is found to be quite good (Fig.19). I really enjoyed this paper, and think it is an excellent study on this topic.

Minor comments:

Comment:

pg 13, line (l) 27: do you mean 1<y<20 km instead?

Answer:

Yes, we replaced 0<x<20km by 1<y<20 km

Comment:

pg 17, l 1: say whether the models results are 2D or 3D.

Answer:

We now explicitly say that the idealized model is 2D.

Comment:

Fig 2. Are the scales wrong for the Theta axis? The main obvious wave has an amplitude of theta'=+-150 K at z=20 km, and seems to have a vertical wavelength of 3-4 km. In Fig 3, you apply a band-pass filter of 3-5 km, and only get a wave with an amplitude of theta=+- 10 K. something is wrong. Either the axis on Fig 2a seems wrong, or the band pass filter seems wrong. It seems unlikely that the amplitude would reduce by 15 from the band-pass filter.

Answer:

We improved Fig.2 (Fig.1a in the revised manuscript) by using different color code for the eastward wind (red) and potential theta (black). The scales in and the filtering used are both right. The main obvious wave has an amplitude of U=±10 m/s and theta=±10 K. These amplitudes are similar to the ones found in the filtered curves presented in Fig. 3 (Fig. 2 in the revised manuscript).