Dear Editors and Reviewers:

Thank you for your letter and for the reviewers' comments concerning our manuscript entitled "The Effect of Quadric Shear Zonal Flows and Beta on the Downstream Development of Unstable Baroclinic Waves" (ID: npg-2020-43). Those comments are all valuable and very helpful for revising and improving our paper, as well as the important guiding significance to our researches. We have studied comments carefully and have made correction which we hope meet with approval. The main corrections in the paper and the responds to the reviewer's comments are as flowing:

Responds to the reviewer's comments:

Reviewer #2:

Response to comment:

Baroclinic instability has always been an issue that scholars have been interested in. By referring to and learning the literature of Pedlosky(2019), it is considered that it is of practical significance to consider the influence of zonal shear flow on baroclinic wave. The research method of Pedlosky(2019) is used for reference and popularized.

1. The name of quadratic shear fundamental flow means that the fundamental flow is a quadratic function of latitude. In "LV Keli , Large orography and barotropic solitary Rossby waves-weak quadric shearing basic flow(in Chinese), *Acta Meteorologica Sinica*, 1988, 46(4):412-420", the concept of quadric shear was also put forward, that is, the shear of base flow is formed by quadric curve.

2. In the literature of Pedlosky(2019), U_B and U_T are constants. In this paper, It are functions of latitude y, respectively. So equation (2.3) has a non-constant coefficient. In this paper, we consider that the basic flow is a quadratic function of latitude. If the form is $U_i(1 - a_i y^2)$, $(i = B,T)$, with small a_i if $a_i y^2$ is ignored, then U_i, $(i = B,T)$ becomes a constant, which is the same as the problem discussed in the paper of Pedlosky(2019).

3. We have carefully corrected the spelling errors and language errors in the result part of the third section (including Figure 1 and Figure 2) your mentioned, this

part has been modified emphatically，and constantly improved the language and style of the paper, so that the paper can reach the best state.

4. We sincerely listen to your opinions and add Pedlosky, 2019 to the references. When submitting this article, the article of Zhang et al had not been published, so it was impossible to quote them. As for the result that the Weakly nonlinear flow development is influenced by beta and the Zonal shear flow (Top of Section 4), we have conducted some further analysis to make the paper more perfect.

We appreciate for Editors/Reviewers' warm work earnestly, and hope that the correction will meet with approval. Once again, thank you very much for your comments and suggestions.