Dear Reviewer:

Thanks very much for your comments. These comments were all valuable and very helpful for revising and improving our paper. In the revised manuscript, we have carefully revised it. The following is a point-to-point response to the comments

Thank you very much!

•Put a space between the number and “ns” in the whole paper, like in line 15, “0.80 ns”.

Response:

We have made corrections in the revised manuscript.

• Replace “sine” by since in line 25.

Response:

We have revised it in the revised manuscript.

• It should be a space before the parentheses in the whole paper, like in line 30, “…..removed (Sanz et al., 2017)”.

Response:

We have made corrections in the revised manuscript.

• The used calculation software or the programming language environment are not mentioned in the paper.

Response:

The MATLAB processing program is used in the paper, which is developed based on the M_DCB software (Jin et al., 2012).
We have added it in the revised manuscript.

• What is the used value of the height of the single layer “H” in equation (2)?

Response:

The value of H is 450km. We have added it in the revised manuscript.

• The data availability link of the satellite data is not exist in the paper, which is required to calculate the elevation angle of the satellite used in the weight function (equation 6).

Response:

The precise satellite ephemeris is provided by Wuhan University, which is available at ftp://cddis.gsfc.nasa.gov/pub/gps/products/mgex/.
We have added the data source link in the revised manuscript.

• In the post processing programs, one value of the satellite and receiver DCB is used (the mean through the day), so the authors should clearly show the importance and the applications of the epoch by epoch DCB values.

Response:

In the DCB estimation, the satellite and receiver DCBs of BDS are generally estimated as constants every day. However, the receiver DCB may varies within one day due to varying space environments and temperatures. The estimation of receiver DCB as constant every day may cause errors in ionospheric modelling, if the receiver DCB has significant intra-day fluctuations. It would have been better to analyze the intra-day variation of receiver DCB before the estimation of receiver DCB as constant over a day. Thus, the intra-day variation analysis of BDS receiver DCB with the additional BDS-3 observations is carried out in the study.
We have added it in the revised manuscript.

• It should provide the used GIM data source link.

Response:

The GIM used is downloaded at ftp://cddis.gsfc.nasa.gov/pub/gps/products/ionex/.
We have added the data source link in the revised manuscript.

• It should mentioned in the abstract and the conclusions that the calculations are based on the GIM of the IGS, because it is an important factor can affect the resulted DCB, which can be changed when using another GIM from other sources like CODE or JPL.

Response:

Yes, the GIM is an important factor in our DCB estimation.
We have added it in the abstract and the conclusions of the revised manuscript.

• The temporal resolution of the Ionex file is 1 hr (IGS) or 2 hrs (CODE) and the observation epoch is 30 sec, that means the ionosphere value still constant through number of calculated DCB, so did you try to calculate DCB from 1 hr file and 2 hrs file and compare the results.

Response:

Yes, the temporal resolution of GIM is 2h or 1h. The GIM used in this study is from IGS‘s CODE with 1 h resolution. Since the GIM of CODE has higher temporal resolution, we did not calculate DCB using GIM with 2 h resolution.