Ann. Geophys. Discuss.,
https://doi.org/10.5194/angeo-2019-145-RC2, 2020

Annales Geophysicae Discussions

Interactive comment on "Forcing mechanisms of the quarterdiurnal tide" *by* Christoph Geißler et al.

Anonymous Referee #2

Received and published: 27 January 2020

Dear Editor,

The paper titled "Forcing mechanisms of the quarterdiurnal tide" describes a mechanistic model simulations of various forcing terms of the quarterdiurnal tide. Quarterdiurnal tide is not well studied in the past because of its small amplitudes. Consequently, we know little about its sources. Mechanistic model simulation can lead to a better understanding of these sources. The paper should be considered for publication, however, there are some issues need to addressed.

Major issues

1. The model underestimates the QDT. It will be a great help to understand the cause if we know how much the model underestimates the diurnal and semidiurnal tides. It is true that other mechanistic models also underestimate the tides. Nevertheless, there should be some discussion on this. The top height is 160 km, while the vertical

wavelength is about 100 km, is the top height sufficiently high enough for the tide?

2. When describing solar tide, the reference cited is Yigit and Medvedev (2015). While the paper may be important, it gives impression that we only found out the solar tide after 2015. Some earlier papers should be included.

Minor issues

1. I would consider add the word 'migrating' on the title.

2. P1 L8 '. . . certain seasons, latitudes, and altitudes . . .' Should be more specific.

3. P5 L16 'In addition the amplitudes of other tides (DT, SDT, TDT) are also too small compared to observations (Lilienthal, 2018)' The reference only shows the TD. There is no information on DT and SDT.

4. Figure 3 has different color scales for different terms making comparison much more difficult. Should use the same scale.

5. Figure 4 has the same issue with color scale.

6. Figures 3 4 have grey color contours, which are not easy to see. Should consider using different color.

Interactive comment on Ann. Geophys. Discuss., https://doi.org/10.5194/angeo-2019-145, 2019.