

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

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We thank the referee for the comments. We will add additional descriptions and clarifications to the points raised. We repeat the concerns here, and add our response in italics.

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?

*We will add graphs from the current model version for terdiurnal, diurnal and semid-*

C1

*urnal tides to the supplement and discuss this problem in more detail. The forcing of the QDT takes place up to a height of about 70 km for the important solar forcing. The wavelength is of the order of 100 km, but becomes substantially smaller at higher altitude (where nonlinear and gravity interaction force QDT), therefore the model height is most probably sufficient for the simulation of the QDT.*

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.

*We will add some earlier papers.*

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

*We will add the word "migrating".*

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

*We will go into more detail here.*

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.

*We will specify the discussion more and supplement the graphics of the DT and SDT in this paper.*

C2

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

Figure 4 has the same issue with color scale.

*The scales in the figure will be adjusted again and standardized.*

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

*It is difficult to find a contour color that is easy to recognize in all cases. We will try to improve this.*