

Ann. Geophys. Discuss., referee comment RC1  
<https://doi.org/10.5194/angeo-2022-17-RC1>, 2022  
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## Comment on angeo-2022-17

Anonymous Referee #1

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Referee comment on "Effects of the terdiurnal tide on the sporadic E ( $E_s$ ) layer development at low latitudes over the Brazilian sector" by Pedro Alves Fontes et al., Ann. Geophys. Discuss., <https://doi.org/10.5194/angeo-2022-17-RC1>, 2022

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Comments on "Effects of the terdiurnal tide on the Sporadic-E layers ( $E_s$ ) development at low latitudes over the Brazilian sector" by Fontes et al.,

Using the ionosonde and meteor radar observations and the MIRE model, this study investigated the effects of terdiurnal tide on the  $E_s$  layers at low latitudes in the Southern Hemisphere. The paper suggested that the terdiurnal tide could help in the formation of the  $E_s$  layers in the Brazilian sector. The results could improve our understanding of the formation of  $E_s$  layers in the lower latitudes. However, they are major issues that need to be clarified first.

### Comments

1. The production and loss terms used in the model should be given.

- The paper mentioned that the wind data used in MIRE were obtained by the meteor radar. The altitude range for the meteor radar is from 80 to 100 km while the height range of interest in this study is between 86 and 140 km. The authors mentioned that they expanded the wind equation to 120 km. It is not clear to me how the authors obtain the neutral wind data from 100 to 140 km and the accuracy of the wind data in this altitude range. The neutral wind data is very important in simulating the formation of the  $E_s$  layers.
- I think that to study the seasonal variation, multiple years of data are needed. This paper only used one year of data. I suggest that the authors use a larger dataset.
- Figures 1 to 5 are not new to me. At least, the authors should make comparisons with previous studies.
- Figure 8: the comparisons should be made among observations, simulation1 (D+S), and simulation2 (D+S+T).
- Terdiurnal tides in the low latitudes have been widely studied. The literature research could be done better.