

Review report of the manuscript entitled “Diurnal mesospheric tidal winds observed simultaneously by meteor radar in Costa Rica (10°N, 86°W) and Cariri (7°S, 37°W)” by R. A. Buriti et al. The paper presents comparative features of mean winds and tides in the MLT between two low latitude sites located in the opposite hemispheres using meteor radar winds. They further compared the observations with GSWM model. The topic of the present paper is interesting to the scientific community. However, the present manuscript contains several serious issues pertained to technical and scientific aspects. In view of presentation and language/vocabulary it can be considered as a draft and requires substantial modification to improve it to a communicatory level. Anyways, I am detailing my comments/suggestions below.

Major points

The theme of the paper is not clear as the title/abstract/conclusion points out the diurnal tide characteristics, but the results start with SAO and AO of the mean winds. Authors should decide the theme and organize the manuscript accordingly.

In the present comparative study the observational interval is too short (9.5 months) to present seasonal behaviour over a year which is another weak point of the paper. Derived AO features are questionable, especially at CR due to short data length. Since CA and GSWM database is longer, results can be shown for the missing months of the year.

Fig. 2: It seems that the authors carry out least square fit considering both SAO and AO simultaneously in the fitting function (as found in the caption of the figure). It is not clear how the authors decipher the individual SAO/AO amplitude/phase from the figure.

Fig. 7: Here GSWM data are shown over whole latitude range of $\pm 12^\circ$, which is not necessary. Also, authors limit to only two height bins. Instead of the present figure the authors can show four subplots using contours, estimating the difference between radar and GSWM amplitudes incorporating total MLT range of zonal/meridional for CR/CA. Deviation of amplitude can provide better clarity regarding the scientific point authors attempt to express.

Language needs significant improvement to bring coherence in the results/interpretations. It hinders spread of the essence of the work to the readers. Vocabulary, tense and preposition should be corrected. It will be a good idea to check with a native English speaker.

Other points

L. 21: “In regard to phases, agreement between meridional tidal phases at the two sites was excellent”. The statement is incorrect. The meridional tide phases of two sites are almost opposite (~ 12 h difference).

Fig. 1: Assign marks, i.e., a, b, c, d

Fig. 2: Wind data should be shown along with the fit.

L. 96-116: The amplitudes of SAO and AO contain temporal variability. Authors’ statement of specific amplitude at a particular altitude raises confusion as it does not make any sense. Same applies to phases.

L.25: correct “heat latent release” to “latent heat release”

L. 37: Replace “diagnostics” by “parameters”

L. 42: Correct “has shown....” to “showed....”

L. 44: Correct “have shown that...” to “showed that...”

L. 51: Delete “atmospheric” from the statement “mesospheric atmospheric dynamics...”

L. 86: Correct “variationson scalesof months...” to “variation on the time scale of month...”

L. 96: What do the authors mean by the term “A long-term yearly harmonic analysis”?

Amplitude of SAO and AO are found to be very small ~ 1-2 m/s. Information related to the uncertainty of the radar winds should be discussed in section 2.

Do the values shown after “±” represent standard deviations?

L.116: “On average, the phase is close to 6 doy (January 6th)”. The meaning is not clear as the range in Fig. 2 is shown within 90-390 doy.

L. 136: correct “maximum intensity to the south...” to “maximum magnitude towards south...”

L. 140: correct “do not coincident...” to “do not coincide...”

L. 183: “upward propagation...”. Please mention upward propagation of what.

L. 204: Correct “presented previously” to “mentioned ealier”

L. 206: Correct “thing that was...” to “feature...”

L. 210: Delete the statement “So the phases are close to 12 hours different.”

Discussion: The first paragraph provides information related to the GSWM and it should be shifted to section 2 with some modifications.

L. 301: “Some reports have proposed that latent heat release is important to semidiurnal tides.” Please provide reference.

L. 307: “So, convective activity could explain the difference of zonal component behavior between CR and CA”. Since the tide is more prominent in the meridional wind such influence of convective activity should also be visible in that. Authors’ claim of convective effect only on zonal component is not acceptable. Similar statement is also mentioned at the end of the abstract section.

The abbreviations CA and Cariri are used interchangeably throughout the manuscript. Please adhere to either CA or Cariri. Same applies to Costa Rica.