

Review of revised angeo-2018-51, “Connection between the length of day and wind measurements in the mesosphere and lower thermosphere and mid and high latitudes”

### **General comments**

The manuscript is revised very well. My main concern in the original one was it might impress that the authors concluded that fluctuations in the length of a day (LOD) caused interhemispheric variations of mean zonal winds. Because the topic is not conclusive, rather introducing a new insight, it needs to be very careful that the LOD may be one of possible sources of interhemispheric variations.

This interesting topic in the manuscript addresses further curious questions to readers, correlations of the LOD with mean meridional winds and tidal amplitudes while it may be very difficult to analyze correlations with tidal phases and periods due to very small values if they exist. I expect that the authors have already had them for future work.

Adding correlations of the LOD with global mean zonal winds from MLS satellite observations presents very interesting, why the correlations are not consistent globally and it is probably because the LOD is not the only source for interannual variations. My only one concern is that mean winds from a radar at one site is a superposition of zonal mean and stationary planetary wave winds. Using satellite data at nearby longitudes is fine for comparisons with radars. But I would like authors to present global correlations by averaging data at all longitudes, so that correlations with zonal mean zonal winds are seen by cancelling stationary planetary waves.

### **Specific comments**

Page 1, Line 8: Does a value “~4 m/s” a critical value regardless locations (latitude and latitude) and time (season)? If not, please specify conditions for this value.

Page 1, Line 14: “show” must be “shows”.

Page 1, Line 17: “zonal mean wind” must be “mean zonal wind”.

Page 2, Line 3: “inverse” must be “inversely”.

Page 2, Line 10: “affects” must be “affect”.

Page 2, Line 12: Add “by” between “simulation” and “Marsh”.

Page 2, Line 20: “show” must be “showed”.

Page 3, Line 3: Add “to” between “according” and “Trenberth”.

Page 5, Line 1: Replace “of” by “around”.

Page 5, Line 2: “fluctuations in the day length” can be replaced by “LOD”.

Page 5, Line 29: “hemisphere” must be “hemispheres”.

Page 6, Line 27: “station” must be “stations”.

Page 6, Line 28: Add space between “Davis” and “(”.

Page 8, Line 7: “influences” must be “influence”.

Page 8, Line 8: “are” must be “is”.

Page 8, Line 9: “causes” must be “caused”.

Page 8, Line 32: What does “this is only one reason”?

Page 10, Line 20: Remove “the” between “quite” and “opposite”?

Page 11, Lines 2, 5 and 16: “zonal mean wind” must be “mean zonal wind”.

Page 11, Line 7: Remove “be”.

Page 11, Line 11: “locations” must be “locations”.

Page 11, Line 14: “explain” must be “explained”.

Page 11, Line 18: “are” must be “is”

Page 11, Line 20: “fits” must be “fit”.

Page 11, Line 25: Does “smaller” mean “shorter”?

Page 12, Line 9: “theses” must be “these”.

Page 12, Line 13: “Additional” must be “Additionally”.

Page 12, Line 17: Remove “way”.

Page 12, Line 18: “point on” is “point out”?