Responses to the interactive comments Referee#2 (Atmos. Chem. Phys. Discuss., doi:10.5194/acp-2016-118-RC2, 2016) on

"Observational evidences of the influences of tropospheric subtropical and midlatitude stratospheric westerly jets on the equatorial stratospheric intraseasonal oscillations"

by G. Karthick Kumar Reddy et al.

General Responses:

We express our sincere thanks to the reviewer for the critical comments. We provide below our one to one responses to the reviewer's comments and hope that the reviewer will give us a chance to revise our manuscript to the acceptable level of publication in ACP journal.

Point by point responses:

This manuscript is a follow-up paper of Guharay et al. [2004] cited in their reference list. Guharay et al. studied the intraseasonal variability (broadly defined as periods between 11 – 80 days) in zonal wind over Gadanki, India (13_ N) using radiosonde, reanalysis and satellite data between surface and 100 km. Guharay et al. noted a drop of intraseasonal signal in the lower stratosphere and the signal reappears in the upper stratosphere and above. Guharay et al. did not provide any explanation why the intraseasonal variability exhibits such vertical structure over Guharay, but simply speculated a few possible mechanisms, including the Ziemke-Stanford mechanism, in which tropospheric intraseasonal variability first propagate poleward tropics near thetropopause, then refracted back to tropical stratosphere. The current manuscript reexamines the same vertical structure using satellite temperature data. The authors show that, by further categorizing the intraseasonal variability into short (10 – 40 days) and long regimes (40 – 80 days), the long intraseasonal variability reappears in the upper stratosphere but not the short one. Simply assuming that Guharay et al.'s speculation about the Ziemke-Stanford mechanism is true, the authors further propose that the meriodional movement of the stratospheric subtropical jet is responsible for the equatorward propagation of the extratropical intraseasonal signals.

Unless I am missing something, I feel strongly that this paper is not well written and I cannot recommend it to be published in Atmos. Chem. Phys in the current form.

Response 1: If chance is given we will attempt to revise the manuscript to the acceptable level of publication in ACP journal.

(2) 1. The introductory section is not well written. At least a thorough review of Guharay et al. [2004] should be provided. Otherwise, the reader has very hard time to figure out why the authors only look at India although they have access to global reanalysis data. Indeed, some writings in the current manuscript seem to be directly copied from the Introduction and Conclusion sections of Guharay et al. [2004].

Response 2: Global reanalyses data do not have such high resolution in vertical as the RO data have. Hence it is not possible to find exactly at what height near the tropopause the ISO signals are refracting towards subtropical latitudes.

(3) 2. The Ziemke-Stanford mechanism is only one of a few possible mechanisms mentioned in Guharay et al. [2004], which Guharay et al. did not provide any proof of its applicability to the zonal wind data. The current manuscript seems to have built solely on the assumption that the Ziemke-Stanford mechanism is correct.

Response 3: The present work is an extension of previous works to test whether the Ziemke-Stanford mechanism works all times and other longitudinal (India) also.

(4) 3. The connection between the stratospheric subtropical jet and equatorward refraction is meant to support the validity of the Ziemke-Stanford mechanism for temperature, but such connection is not a strong evidence. The authors should at least analyze the E-P flux as in Ziemke and Stanford [1991].

Response 4: If it is given a chance, we will surely revise our manuscript uitilizing E-P flux

(5) 4. There are too many grammatical mistakes.

Response 5: Grammatical mistakes can be easily removed.