

## ***Interactive comment on “Stratospheric tropical warming event and its impact on the polar and tropical troposphere” by Kunihiro Koderu et al.***

### **Anonymous Referee #1**

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This manuscript presents an exceptional stratosphere-troposphere coupling event associated with a strengthening of the middle atmospheric subtropical jet and a rapid change of the polar night jet. This study is very interesting not only for the description of a very particular dynamics event occurring in the middle atmosphere during the Northern winter but also for the understanding of its impact on the tropical tropospheric convection. It merits to be published in Atmospheric Chemistry and Physics after taking into account the minor remarks given below.

1) Section 3.2.1 page 4 lines 29-31 and page 5 lines 1-10 and Figure 4: I would expect to have a better correlation between the EP flux divergence (Fig4 bottom) and the acceleration of the zonal flow (Fig 4 top). For instance on 28 November the two quantities are anticorrelated at 30°N and correlated at 50 to 70°N. Please could you explain why it is not the case.

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2) The term “anomalous” is used for the zonal-mean wind and zonal-mean temperature in Fig. 2, for vertical pressure velocity in Fig. 3 and at several places in the text. Please explain what it means. Is it a deviation from a climatological mean?

Page 6, lines 25-27: It is indicated that some recovery of the upwelling is seen in the NH from period (ii) to period (iii). When I look at the Figure 7c, this is not obvious. The upwelling between 5 and 10°N seems to be about of the same amplitude. It may be a problem of representation.

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