

Supporting Information for “Interaction between stratospheric Kelvin waves and gravity waves in the easterly QBO phase”

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Contents of this file

1. Text S1
2. Figure S1

Introduction

In the paper, in addition to the original simulation, the simulations with suppressed GW forcing (e.g., EXPz25) are described briefly. The detailed setups of these simulations are described in this material.

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Text S1.

The setups of the additional simulations are identical with the original simulation (which is described in Section 2) in all aspects except that the GW forcing in the model equation is suppressed artificially in the tropical stratosphere from $t = 10$ d. The suppression is done by multiplying a factor, which varies smoothly from 1 to 0 in latitude and altitude (see Figure S1), to the GW forcing. The factor is 0 at 15°N – 15°S at $z_0 \leq z \leq 35$ km, and it has transition layers outside this region, with depths of 10° in latitude and 2 km (3 km) in height below z_0 (above 35 km). We have performed three simulations with $z_0 = 19, 22,$ and 25 km, respectively, and in the paper the results are explained mainly based on the latter simulation (EXPz25, see Figure 4).

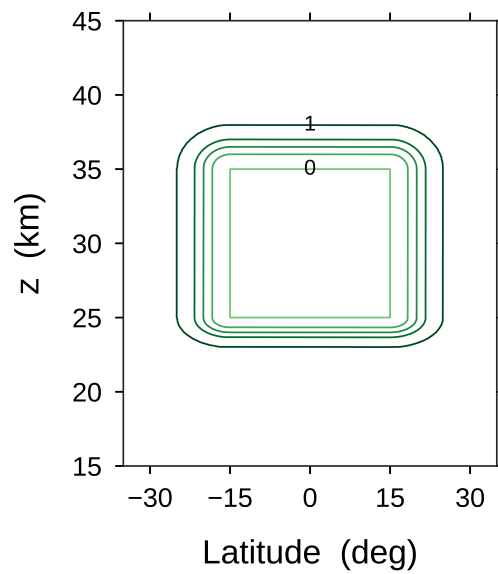


Figure S1. Multiplication factor used for the suppression of gravity-wave forcing to the model dynamics in the tropical stratosphere in the EXPz25 simulation. The contour intervals are 0.25.