



New Perspective on the Role of Gravity Waves in the Stratospheric Dynamics and Variability

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In the lower and middle atmosphere, the most natural, immediate and fastest way for communication of information in the vertical are gravity waves (GWs). Although GWs induce highest accelerations in the mesosphere, lower thermosphere region, the imposed drag force is much bigger in the stratosphere.

In our study we present results from idealistic model sensitivity simulations showing an important role of the spatial distribution of GW activity for the polar vortex stability, formation of planetary waves and for the strength and structure of the zonal mean residual circulation.

Consequently, using multiple linear regression and conditional analysis, we study the relation between spatial distribution of the GW drag in the stratosphere and selected atmospheric phenomena (ENSO, NAO, QBO) showing possible implications for the middle atmospheric dynamics and teleconnection patterns.