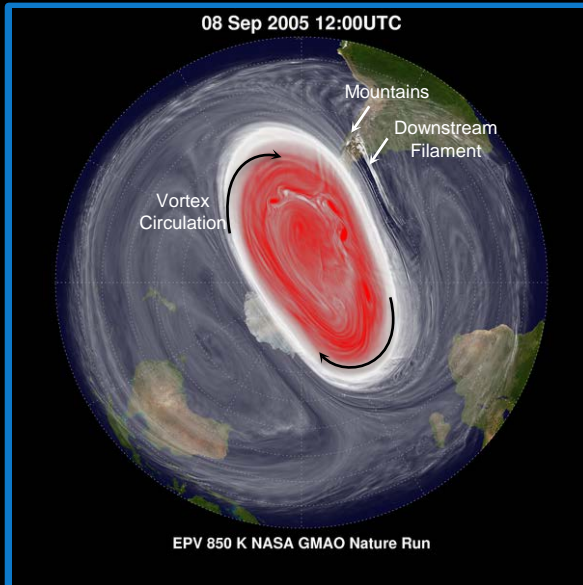


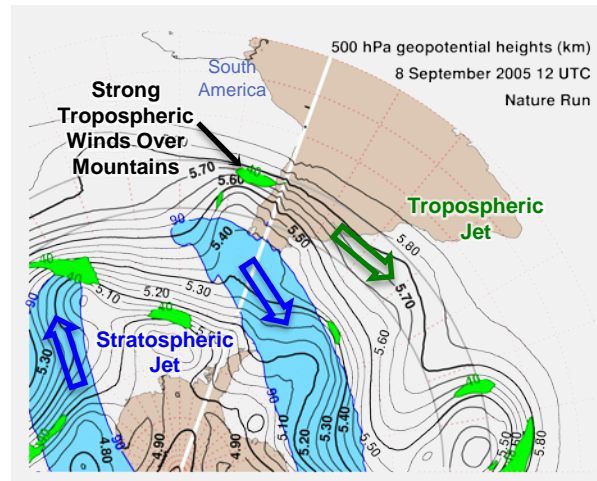
# Influence of Orography on the Stratosphere

An Examination of the NASA 7 km Nature Run

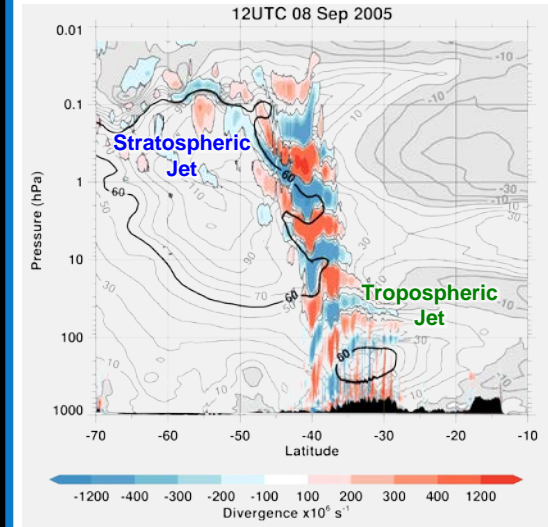


Ertel Potential Vorticity (EPV) in the mid-stratosphere. Red, white, and clear areas correspond to high, mid, and low absolute values of EPV.

Orographic generated atmospheric gravity waves can “break” in the stratosphere and disturb winds not only over the forcing region but far downstream as well.



Stratospheric winter jet (light blue shading, wind speed  $> 90 \text{ ms}^{-1}$ ) is located poleward of the strong tropospheric jet (green shading, wind speed  $> 40 \text{ ms}^{-1}$ ) over the Andes.



Latitude Height Section showing the horizontal divergence in the regions between the tropospheric and stratospheric jets.

**SUMMARY:** These filaments in the GMAO 7 km Nature run show that the effects of orography influence not only the stratospheric winds over the mountains, but can perturb winds, vorticity, and EPV far downstream.