



## **Arctic Oscillation/Northern Annular Mode: Downward zonal mean wind propagation and planetary wave resonance.**

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Both reanalysis and model simulations show that zonal mean zonal wind anomalies sometimes descend from the stratosphere into the lower troposphere. In the stratosphere, the geopotential height anomalies are dominated by a zonal symmetric component, and the downward propagation may be interpreted as zonal mean flow-wave interaction. However, in the troposphere the geopotential height anomalies show more wavy structures of zonal wave numbers  $s=1,2$ .

The results presented in this paper suggest that the tropospheric wave structure of the Northern Annular Mode results from wave resonance driven by the variation of the zonal mean zonal wind.