Geophysical Research Abstracts
Vol. 19, EGU2017-10894, 2017
EGU General Assembly 2017

Influence of atmospheric waves on the maintenance and variability of the southern subtropical jet in winter

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The mechanisms behind the maintenance and variability of the Southern Hemisphere (SH) winter subtropical jet are examined, in comparison with those of the Northern Hemisphere (NH) jet. It is found that atmospheric waves play an important role in setting the climatological jet position and controlling its variability on various timescales. The mechanisms of maintenance and variability are broadly very similar in the two hemispheres, but low-frequency transient waves and synoptic waves play major roles in maintaining the climatological jet and in forcing monthly timescale variability, respectively, in the SH; whereas stationary waves are dominant for both roles in the NH. Accordingly, the one-month-lagged autocorrelation for the subtropical jet zonal wind is found to be much smaller in the SH than in the NH.