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Vertical propagation of teleconnections and the North Atlantic Oscillation

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Abstract:

Results from climate model experiments and observational analyses are used to demonstrate an important role for vertical propagation of remote teleconnections to the North Atlantic Oscillation. Case studies from seasonal, interannual and multidecadal timescales all point toward a common mechanism. This involves slow downward propagation of zonal mean wind anomalies through the stratosphere followed by a fast but persistent tropospheric response. On centennial timescales we show that including these vertical teleconnections in climate models could alter surface winter climate projections in the Atlantic-European region.

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