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An atmospheric teleconnection linking ENSO to the North African-Asian jet

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A potential atmospheric teleconnection between the equatorial Pacific and the North African-Asian jet is investigated. This teleconnection is explored using ray tracing and solutions of the linearized barotroic vorticity equation. The findings indicate that conditions associated with El Nino events excite stationary barotropic Rossby waves that propagate eastward into the North African-Asian jet. These waves increase the vorticity within the jet. During northern hemisphere winter, these changes in vorticity appear associated with increased storminess and snow accumulation over the Tibetan Plateau. During northern hemisphere summer, the increased vorticity produces colder upper tropospheric temperatures in the jet and reduces the upper tropospheric meridional temperature gradient between Asia and the equatorial Indian Ocean. It is proposed that this reduced temperature gradient suppresses the monsoon overturning circulation and may explain the negative correlation between summertime ENSO conditions and the Indian monsoons.