



A comparative analysis of the responses of temperature and $\delta^{18}\text{O}$ of precipitation to atmospheric circulation anomalies

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In the winter extratropics, where variability of atmospheric circulation patterns is the primary generator of temperature fluctuations over land, the associated shifts of vapor transport pathways to particular sites may impact local temporal relationships between condensation temperatures and the $\delta^{18}\text{O}$ anomalies in precipitation at those sites. Using two different approaches, the respective influences of local and transport effects are investigated by means of an ensemble of 20th-century simulations with an isotope-equipped version of the ECHAM4 GCM. A semi-quantitative method, having the benefit of allowing comparison of GCM behavior with observational data, assesses the similarity of temperature-circulation teleconnections to the corresponding teleconnections for $\delta^{18}\text{O}$. A more direct technique employs computational tracers designed to characterize moisture origins. In addition, the length and number of the simulations permit some exploration of the degree to which multidecadal variability is a response to forcings.