

**Transition-phase teleconnection of Pacific climate oscillations**

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The teleconnectional effect of Pacific oscillatory modes on climate in the American West has been extensively researched. Most studies focus on the extreme phases (i.e. warm/cold), as well as phase superpositions among different climate modes. We present evidence of a unique teleconnection induced in the transition phases (i.e. between warm and cold) of the major climate modes. Details about teleconnection associated with the Pacific quasi-decadal oscillation (QDO) are discussed. Recurrent sea surface temperature (SST) and circulation patterns are observed during the warm-to-cold and cold-to-warm transitions of the Pacific QDO, inducing a distinct wave train emanating from Southeast Asia towards North America. This wave train has a profound impact on the American West climate, particularly over the Great Basin when the direct influences of ENSO and PDO are weak. Diagnostic analyses indicate that such a wave train is thermodynamically maintained and is forced by diabatic heating outside the typical ENSO. Additional forcing sources in the western and eastern tropical Pacific also help maintain the wave train. In particular, a long-term records of the Great Salt Lake elevation provide evidence to the existence of such a transition-phase teleconnection. This result may enhance decadal prediction of the distinct wet-dry cycles across the Great Basin and the Rockies.