

Statistically corrected GCM simulations of Central Southwest Asia
winter precipitation

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Severe drought is a notable feature of the hydrology of Central Southwest (CSW) Asia. Several studies have linked the region's interannual precipitation variability to remote forcings including Western Pacific Tropical convection. However, atmospheric GCMs forced with observed SST demonstrate little skill in simulating interannual precipitation variability in this region. Here statistical methods of correcting systematic errors in GCM simulations of CSW Asia precipitation are investigated. Canonical correlation analysis is used to identify model precipitation patterns related to observed CSW Asia precipitation anomaly patterns, and these correspondences are used to predict observed precipitation anomalies. This approach is applied to several GCMs used in IRI Net Assessment Forecasts. The statistical corrections result in modest, but significant and cross-validated, skill in simulating CSW Asia precipitation anomalies. Statistical corrections also improve the skill of retrospective forecasts forced with persisted SST anomalies.