

Statistical downscaling of monthly rainfall over East Asia from large scale general circulation.

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Abstract:

A SVD based regression model is developed to downscale the monthly precipitation over East Asian region. An analysis of the performance of a general circulation model (GCM), ECHAM4, in reproducing the large scale circulation mechanisms controlling East Asian region has been presented. The link between GCM and regional precipitation is established in last century climate. The monthly precipitation of resolution $.5^{\circ} \times .5^{\circ}$ over East Asia produced by CRU from 1901-1990 is used. Whether these relationships continue to next century is tried to verify by two methods. Firstly, the main SVD mode of predictor is compared with the EOFs of same large scale variability, and then an attempt has been made to analyze that these EOFs are continuing to the next century. In the second method, the downscaling model generated change of precipitation in 2090s with 1990s is compared with the GCM's result. If in both the cases, the compared patterns are same then are assumed, that the established relationships between GCM and local scale would be continued in this century. It is found that for all the season the established relationship can be used in this century.

The projected result shows that after 100 years, i.e. at 2090s with respect to 1990s the annual rainfall over East Asia will increase up to 100 mm over northern part of China and indo China peninsula and decrease by 100 mm over coastal part of south China.