
Selection of Representative Climate Models for West Asia Precipitation Patterns

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Abstract

West Asia has different climate types and precipitation regimes. Generally, it is more difficult for models to accurately simulate precipitation than other climate variables such as temperature. The models produce very different results from each other in terms of precipitation over the same region. The precipitation outputs of the models of the CORDEX Project are compared to observation data from CRU for West Asia in the period between 1976 and 2005. For each season and grid point the errors are calculated via Root Mean Square Error (RMSE) and the distribution of the errors is translated into basic mathematical/statistical equations. The accuracies of the models from CORDEX Project are tested for each of the four seasons separately. But it is difficult to determine the most/more accurate model(s) since they produce varying errors in these four seasons. One model may have the least error in one season but it may be unrepresentative of other seasons. Hence, it may not be wise to totally ignore or include a model in further studies based on particular season results. Therefore, first for each model all seasonal data are integrated into the study with equal importance, illustrated in a single map and used for further calculations. In this way, the success of RCMs and GCMs over various regions can be determined and models can be improved further by analyzing the large errors over some areas of the observed region. Furthermore, the more/most successive RCM-GCM combinations over specific areas can be found via this methodology.

Keywords: CORDEX, RMSE, precipitation, West Asia

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