2019年11月10日

ANN-based statistical downscaling of climatic parameters using decision tree predictor screening method

Methods:

1. 15个GCMs(CMIP3(7个), CMIP5(8个))；
2. Tabriz station(Tabriz airport) for the period of 1951-2016；

时间：1951-2000(calibration)、2020-2060(validation)

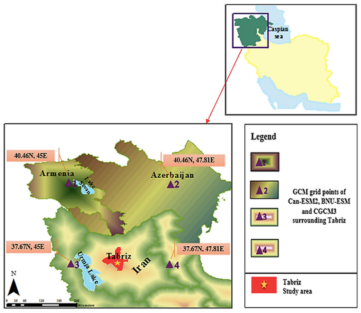


Fig. 1 Geographical location of the study area

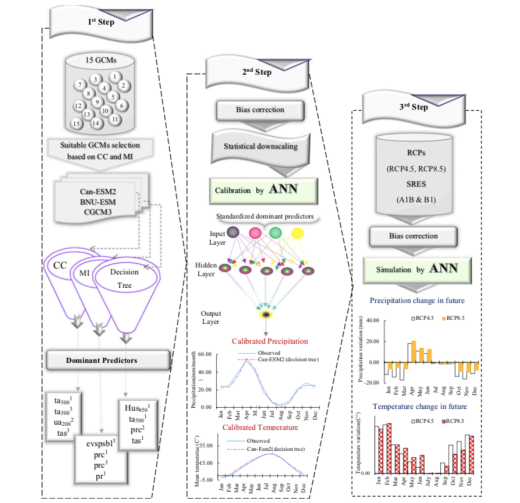


Fig. 3 Schematic figure of the proposed methodology. (It is noted that dominant predictors in this figure belong to Can-ESM2 model as an example)

Results:

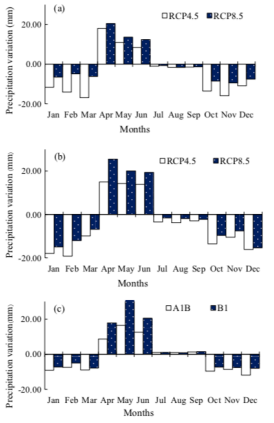


Fig. 7 Monthly precipitation variation according to projected and baseline periods for **a** Can-ESM2, **b** BNU-ESM, and **c** CGCM3 models

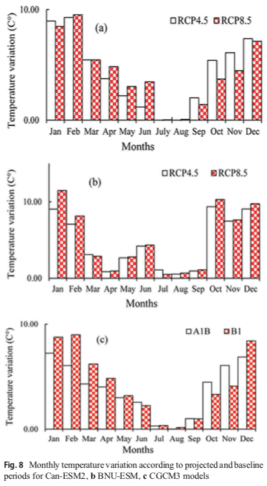
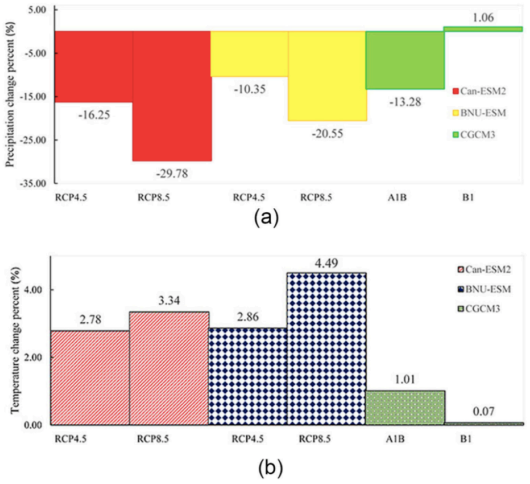


Fig. 8 Monthly temperature variation according to projected and baseline periods for Can-ESM2, **b** BNU-ESM, **c** CGCM3 models

Fig. 9 The change percentage of annual observed and simulated **a** precipitation and **b** temperature



Conclusions:

1. 使用非线性的决策树方法且基于ANN方法的降尺度模型比使用CC和MI（线性方法）更加准确；
2. 使用非线性的决策树方法且基于ANN方法的降尺度模型在降水和温度两个变量上比MLR方法准确率提高了31%和25%；
3. 未来的降水和温度既有增加的时候也有减少的时候。这暗示了全球变暖正在发生，全球温度上升、海平面上升都会使降水的特征和总量发生变化；
4. 本文认为未来降水将减少10.35-29.78%，而温度将上升0.06-2.49%。