



Altitudinal and latitudinal dependence of future warming in an island of multi climate zones: Taiwan as an example

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In this study, a global model, ECHAM5, and a mesoscale regional model, Weather Research Forecasting (WRF) were combined to perform dynamic downscaling of Taiwan's climate in the recent past (1979-2003) and climate change projection of near and distant future (2015-2039 and 2075-2099, respectively). Simulation results showed close correlation between fine-resolution downscaling by ECHAM5-WRF and the actual observation data for the period 1979-2003. Projection of future climate changes revealed both altitudinal and latitudinal variations in warming trend, with more significant temperature increase in mountain areas than in plain areas toward the end of the 21st century and more obvious warming in the north than in the south of Taiwan. These findings have essential implications on climate impact issues such as mountain ecology and disease transmission. The results obtained in this study can be applied to other regions of similar latitudes and with comparable relief.