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MASTER'S THESIS PRESENTATION

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# Statistical Evaluation of Dynamically Downscaled Climate Models

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Eckhart 135, 5734 S. University Avenue

## ABSTRCT


General circulation models (GCM) are numerical models that represent various physical processes in the atmosphere, ocean, cryosphere and land surface. However, the GCM's capabilities are restricted to simulating global scale climate information such as wind, temperature, precipitation, radiation, relative humidity, etc. at a very coarse resolution (typically horizontal resolution of 250-600 km, 10-20 layers in the atmosphere and up to 30 layers in the oceans). Therefore, in order to obtain high resolution (scales of 10-15 km) climate simulations, the nested regional climate modeling technique is used (also referred to as dynamical downscaling). Dynamical downscaling involves modeling the physical processes at the regional scale using the coarse resolution information from either the GCMs or reanalysis, which provide the initial conditions and lateral boundary conditions to the nested regional climate model (NRCM). The NRCMs are useful not just for forecasting purpose but also to understand regional climate change and variability and thus the impact of climate on various aspects such as agriculture, food supply, human health, etc. This work emphasizes on evaluation of the NRCM over the contiguous US (CONUS) with respect to its precipitation output. This evaluation was done by studying fitted probabilities of rain over different regions using logistic regression. In addition, spatio-temporal correlation coefficients and seasonal cycle patterns of the model simulations and other precipitation products were compared.


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