

## Statistical Classification, Downscaling and Uncertainty Assessment for Global Climate Model Outputs

**Authors :** Queen Suraajini Rajendran, Sai Hung Cheung

**Abstract :** Statistical down scaling models are required to connect the global climate model outputs and the local weather variables for climate change impact prediction. For reliable climate change impact studies, the uncertainty associated with the model including natural variability, uncertainty in the climate model(s), down scaling model, model inadequacy and in the predicted results should be quantified appropriately. In this work, a new approach is developed by the authors for statistical classification, statistical down scaling and uncertainty assessment and is applied to Singapore rainfall. It is a robust Bayesian uncertainty analysis methodology and tools based on coupling dependent modeling error with classification and statistical down scaling models in a way that the dependency among modeling errors will impact the results of both classification and statistical down scaling model calibration and uncertainty analysis for future prediction. Singapore data are considered here and the uncertainty and prediction results are obtained. From the results obtained, directions of research for improvement are briefly presented.

**Keywords :** statistical downscaling, global climate model, climate change, uncertainty

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