



## **Assessing climate change in small isolated islands**

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In the analysis of climate change scenarios, and even in current climate hydrological analysis, the evaluation of spatially distributed precipitation is not possible without appropriate downscaling models. In the case of islands with significant topography, which are characterized by precipitation regimes highly influenced orographic precipitation enhancement, statistical downscaling is often not feasible due to a lack of sufficient observations. In the present study we evaluate two simple downscaling models, the model recently proposed by Smith and Barstad (2003) and a modified version of a model proposed by Azevedo (1998). Results obtained by the two models are compared with observations in a network of 25 meteorological stations in the Island of Madeira, and with results from simulations with two mesoscale models, MM5 and WRF, at horizontal resolutions down to 1 km. The downscaling model is then applied to downscale precipitation fields in the Hadley Centre control simulation, results are verified against current climate, and the SRES scenarios A2 and B2 are computed.