Regional probabilities of climate change and water resource management

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Probability Distributions Functions of temperature and precipitation change over Northern California are produced using a Bayesian statistical model that combines projections from a multimodel ensemble of GCMs under specific SRES scenarios. These PDFs can be used outright to yield a general message regarding the kinds of climate change suggested by the ensemble for the region, over the decades and in the different seasons.

We use these distributions to derive synthetic weather time series through a K-nearest neighbors resampling scheme, thus linking the regional scale projections to the local scales (specifically in this case the Sacramento river basin scale) relevant for water resource management. We show how a water resource management model can make use of these local climate scenarios to provide input for decision-making processes sensitive to climate change, thus propagating the uncertainty estimated at the large regional scales to the level of stake-holders and policy-makers decisions.