Functional ANOVA and regional climate experiments: A statistical analysis

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The North American Regional Climate Change Assessment Project (NARCCAP) is a regional climate experiment in which a collection of global climate models are being used to drive a collection of regional climate models. A statistical hierarchical model will be presented that utilizes a functional analysis of variance (ANOVA) decomposition for quantifying and analyzing relevant sources of variation in the spatial fields output by the models. A key feature of the approach is the use of informed priors based on information gleamed from observational datasets, global models, etc. The approach will be demonstrated on seasonal temperature and precipitation fields associated with some of the initial runs of NARCCAP.