

Downscaling climate change information for agriculture and natural resource management

The fifth IPCC assessment, due out in 2014, will give considerable importance to the interactions between food production, food security and climate change. Similarly, the EC has decided that this will be an important topic in the future. The basis of food production is the interaction between genotype, environment and management and how the balance and interactions between these three elements may change regionally and/or under the influence of climate – although climate is only one of many factors that can affect GEM. This PhD will pursue some new ideas on how food production's interaction with climate can be benchmarked and modeled and to allow regional analyses of how food production might be affected by climate and how food production may contribute to climate. At the core will be the test of a modified form of the Kaya identity equation that is used to predict GHG emissions from the energy and economic sectors via a series of benchmarks such as energy per unit GDP, GDP per person and GHG emissions per unit energy. The modified Kaya (Porter-Kaya) uses similar benchmarks to calculate emissions from land based activities. Once tested and validated the new equation can then incorporate downscaled regional climate and regional information (RCPs) and spatially extrapolated.

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