Geophysical Research Abstracts
Vol. 14, EGU2012-11139, 2012
EGU General Assembly 2012


# The Impacts and Economic Costs of Climate Change in Agriculture and the Costs and Benefits of Adaptation

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This paper provides monetary estimates of the effects of agricultural adaptation to climate change in Europe. The model computes spatial crop productivity changes as a response to climate change linking biophysical and socioeconomic components. It combines available data sets of crop productivity changes under climate change (Iglesias et al 2011, Ciscar et al 2011), statistical functions of productivity response to water and nitrogen inputs, catchment level water availability, and environmental policy scenarios. Future global change scenarios are derived from several socio-economic futures of representative concentration pathways and regional climate models. The economic valuation is conducted by using GTAP general equilibrium model. The marginal productivity changes has been used as an input for the economic general equilibrium model in order to analyse the economic impact of the agricultural changes induced by climate change in the world. The study also includes the analysis of an adaptive capacity index computed by using the socio-economic results of GTAP. The results are combined to prioritize agricultural adaptation policy needs in Europe.