Geophysical Research Abstracts, Vol. 6, 01477, 2004 SRef-ID: 1607-7962/gra/EGU04-A-01477 © European Geosciences Union 2004



## CLIMATE CHANGE EFFECTS ON SPATIAL DISTRIBUTION OF THESSALY PLAIN IRRIGATION, GREECE

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Gradual warming of the global atmosphere, and regional changes in precipitation by three consecutive periods until the end of 21st century, as greenhouse gases mount, is expected. A composite model coupling soil-crop-water and spline contours predicts the effects on the spatial distribution of Thessaly Plain irrigation. Percentages of cultivated area irrigated are projected through correlation of harvested cropland irrigated with the potential net irrigation requirements for 45 defined regions in a topographically heterogeneous environment in the Plain. Predictions of actually irrigated area, which would depend on economic conditions and availability of new water supplies are not made. Seven climate transient scenarios resulted from HadCM2GGa general circulation model predicted increase in potential net irrigation requirements for all crops and growing stages. The irrigated percentages increased for the crops, cotton, tobacco and alfalfa covering the largest extent of the Plain, and decreased for the crops, corn and sugarbeets. The greatest impact of a warmer climate on irrigation demands and cropping patterns and hence on the agricultural economy would occur in the Central and East Plain. In the Central-East areas this would occur because of decreases in totally cultivated area. In the other regions, irrigation would increase, accompanied by some decrease in cultivated areas. Improved use of technologies could help meet increasing evapotranspiration needs, but large new surface supplies would generally be required to maintain or increase present levels of irrigation.