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The Geographic Climate Information System Project (GEOCLIMA): Overview and preliminary results

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The project GEOCLIMA aims at developing an integrated Geographic Information System (GIS) allowing the user to manage, analyze and visualize the information which is directly or indirectly related to climate and its future projections in Greece. The main components of the project are: a) collection and homogenization of climate and environmental related information, b) estimation of future climate change based on existing regional climate model (RCM) simulations as well as a supplementary high resolution (10 km x 10 km) simulation over the period 1961-2100 using RegCM3, c) compilation of an integrated uniform geographic database, and d) mapping of climate data, creation of digital thematic maps, and development of the integrated web GIS application. This paper provides an overview of the ongoing research efforts and preliminary results of the project. First, the trends in the annual and seasonal time series of precipitation and air temperature observations for all available stations in Greece are assessed. Then the set-up of the high resolution RCM simulation (10 km x 10 km) is discussed with respect to the selected convective scheme. Finally, the relationship of climatic variables with geophysical features over Greece such as altitude, location, distance from the sea, slope, aspect, distance from climatic barriers, land cover etc) is investigated, to support climate mapping. The research has been co-financed by the European Union (European Regional Development Fund) and Greek national funds through the Operational Program “Competitiveness and Entrepreneurship” of the National Strategic Reference Framework (NSRF) – Research Funding Program COOPERATION 2009.