Geophysical Research Abstracts
Vol. 14, EGU2012-2599, 2012
EGU General Assembly 2012

Uncertainties of climate change scenarios of precipitation extremes in the Mediterranean based on ENSEMBLES RCMs

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Heavy precipitation events are associated with large negative impacts on human society, mainly as they may trigger floods and landslides. There is also concern that climate change may increase severity of precipitation extremes in many parts of Europe, even in areas and seasons in which mean precipitation is projected to decline. The study examines climate change scenarios of precipitation extremes over the Mediterranean region for the late 21st century (2070-99) in an ensemble of high-resolution regional climate model (RCM) simulations from the ENSEMBLES project. Precipitation extremes are considered at a wide range of time scales from hourly to multi-day amounts and in individual seasons (DJF, MAM, JJA, SON). We focus on (i) uncertainties of the climate change scenarios (related to differences amongst the RCM simulations), (ii) seasonal differences, (iii) dependence of the results on the time scale of precipitation aggregation (from hourly to multi-day), and (iv) identification of regions/seasons in which the projected changes in precipitation extremes are particularly large and/or robust in the RCM ensemble.