Geophysical Research Abstracts
Vol. 12, EGU2010-9240, 2010
EGU General Assembly 2010

Severe Climate Induced Flash Floods and Droughts in Crete

Aristeidis G. Koutroulis (1), Ioannis K. Tsanis (1), Daniela Jacob (2), Philip Lorenz (2), and Jens H. Christensen (3)

(1) Technical University of Crete, Environmental Engineering Department, Chania, Greece, (2) Max Planck Institute of Meteorology, Hamburg, Germany, (3) Danish Climate Center, Danish Meteorological Institute, Denmark

Climate change will bring an increased risk of flooding and prolonged droughts at increasingly frequent periods. Recent simulations give a collective picture of a substantial drying and warming of the Mediterranean, especially during warm periods with precipitation decreases exceeding 25–30% over a 30 year past climate average. Despite a decreasing annual rainfall trend, an increase in the amount and intensity of wintertime rainfall is evident. These signals are robust in that they are present in most projections from both global and regional models and in that they are consistent across emission scenarios and future time periods. However, the impact of these signals to small scale watersheds and local communities has not been fully studied. The present study shows the impact of climate included extreme events on small scale watersheds by employing precipitation data from the state-of-the-art climate change ENSEMBLES dataset in order to quantify the influence of global warming for the period 1970-2100. Data analysis, following a bias correction based on the precipitation field data, reveals an overall decreasing precipitation trend over the period 1970-2100, an increase in the number of days with heavy precipitation and a decrease in the number of months with light precipitation. Even though the late fall/early spring wet periods are becoming drier, the intensity of the maximum daily wintertime precipitation will be increasing. Quantitative results of these hydrological extremes at small watershed scale provide the data required to improve the existing policies on how to adapt to flash floods and droughts.