Geophysical Research Abstracts,
Vol. 10, EGU2008-A-06965, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-06965
EGU General Assembly 2008

On fitting distribution functions in maximum monthly precipitation under global warming

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To investigate the fitting of distribution functions in maximum monthly precipitation under present and future climate described via global warming a suite of distribution functions was examined. The precipitation was modelled as a stochastic process coupled with atmospheric circulation. In this investigation, an automated objective classification of daily patterns (CPs) based on optimized fuzzy rules was used. This kind of classification was used to classify both observed CPs and ECHAM4 GCM-generated CPs for $1xCO_2$and. $2xCO_2$ climate scenarios. From the so resulted daily precipitation we calculated the maximum monthly precipitation. We considered the Lognormal, Galton, Gamma, Exponential, Pareto, and Weibull distributions, as well as the sample limits and confidence interval limits 95% for observed and modelled precipitation under present and future climate over the Mesochora mountainous catchment in Central Greece. The analysis revealed that the best fitting distributions are the Exponential and Pareto for both present and future ($2xCO_2$) climates.