Geophysical Research Abstracts
Vol. 12, EGU2010-14402, 2010
EGU General Assembly 2010

Risk management and resilience to floods under climate change in Paris region: feedbacks from an interdisciplinary research project

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An objective of the GARP-3C project is the investigation, classification and quantification of possible local scale climate changes in order to plan the future development of socio-technical systems to manage floods in Paris region. Their efficiency strongly depends on the capacity to predict the structure and frequency of forthcoming rainfall events that under climate change could become particularly local and intensive. For instance, the automated management of sewer systems in Paris region requires robust rainfall information on the timescale of 5 minutes or less.

Due to the associated differences in storm water management protocols the discussion of convective vs. stratiform rainfall, which was initially triggered by climatological studies, is widely enlarged by enhanced radar rainfall measurements and hydrologic modeling. We used Meteo-France ARAMIS radar mosaics over Paris region (1 km*1 km*5 min) to investigate the capacity of a multiscale analysis to distinguish stratiform and convective rainfalls. The obtained results encourage further extensive use of radar archives for better detection of local climate trends and to dynamically evaluate rainfall quantiles to be used by water authorities.

Overall, this project point out the possibility to significantly reduce the uncertainty on further development of regional hydrological extremes, and hence to better evaluate the main scientific and socio-technical challenges faced by the regional water services.