



CHANGE DETECTION IN HYDROLOGICAL EXTREMES - PRECIPITATION AND RIVER FLOW

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Studying changes in hydrological extremes is of considerable, and increasing, importance in the context of large losses caused by recent extreme events and the need to evaluate impacts of global environmental changes, in particular climate change. However, there is a number of inherent difficulties related to detection of change, and – even more so – to attribution of change. There are problems related to the availability of long records, to the quality of data, missing values and gaps. Results of change detection in long time series of observed data will be presented, including studies of mean values, annual maximum, annual minimum, peak-over/under-threshold in precipitation and river flow, seasonal effects (summer data), length of dry (dry and hot) period, and fractal dimension changing with time. Methods of change detection appropriate for application to hydrological data, subject to complicating factors of dependence, strong natural variability and weakness of change, will be reviewed. Blind use of statistical testing does not augur well – one should enhance understanding by seeking and incorporating additional information. Annual maximum flow records show no ubiquitous growth, but interesting results for a part of European data (observations and climate model results) can be reported.