



Local and regional assessment of extreme rainfall variability

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The possible presence of non-stationarity in long rainfall records observed in Europe, along with the related consequences in the estimation of the frequency distribution of the extreme events, was recently pointed out in several scientific studies. However, it is well known that the detection of the presence of non-stationarity may be affected by relevant uncertainties, which are mainly originated by the limited length of the available data samples. Therefore, the process of distinguishing between the effects due to non-stationarity and those produced by sampling variability is never straightforward. The present paper develops two different analyses aimed at detecting the possible presence of non-stationarity in several long rainfall records observed in Northern-Central Italy. The former compares observed rainfall data and synthetic stationary series, in order to clarify to which extent the tendencies identifiable in the data might be induced by sample variability. The latter exploits the outcomes of a regional analysis in assessing if the tendencies detected in point rainfall series are confirmed at regional scale.