



Consistency of extreme flood estimation approaches

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Estimations of low-probability flood events are frequently used for the planning of infrastructure as well as for determining the dimensions of flood protection measures. There are several well-established methodical procedures to estimate low-probability floods. However, a global assessment of the consistency of these methods is difficult to achieve, the “true value” of an extreme flood being not observable. Anyway, a detailed comparison performed on a given case study brings useful information about the statistical and hydrological processes involved in different methods. In this study, the following three different approaches for estimating low-probability floods are compared: a purely statistical approach (ordinary extreme value statistics), a statistical approach based on stochastic rainfall-runoff simulation (SCHADEX method), and a deterministic approach (physically based PMF estimation). These methods are tested for two different Swiss catchments. The results and some intermediate variables are used for assessing potential strengths and weaknesses of each method, as well as for evaluating the consistency of these methods.