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## The construction of confidence intervals for frequency analysis using resampling techniques: a supplementary note

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**Abstract.** In a recent contribution, Hall *et al.* (2004) examined the use of the Bootstrap resampling technique as a means of constructing confidence limits for the quantiles of the (two-parameter) Gumbel and the (three-parameter) Weibull distributions. Particular emphasis was placed on the behaviour of sample sizes of the order of 30, which are typical of those encountered in hydrological frequency analysis. The resampled confidence limits obtained for the Gumbel distribution were found to be comparable with those based upon a well-known theoretical approximation. However, those for samples of size 30 from the Weibull distribution were shown to be more problematical, with the results dependent upon the skewnesses of the resampled distributional parameters. For a further and more quantitative assessment of the suitability of Bootstrap resampling for constructing confidence intervals, so-called coverage rates were evaluated for the Weibull distribution in a supplementary study. The results show a satisfactory performance when using the percentile method but do not really mitigate the conclusion of the original study that resampled confidence limits should be employed with caution when sample sizes are of the order of 30.

**Keywords:** Bootstrap, Jack-knife, frequency analysis, maximum likelihood method, maximum product of spacings method, confidence intervals, coverage rates

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