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Software for Regional Frequency Analysis: the R package nsRFA

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R is a language and environment for statistical computing and graphics available under the terms of the Free Software Foundation's GNU General Public License. The term 'environment' is intended to characterize it as a fully planned and coherent system, designed around a true computer language that allows users to add additional functionality by defining new functions and extensions. The package nsRFA is an extension of R that provides a collection of statistical tools for Regional Frequency Analysis in hydrology. These tools allow an objective application of the widely used index-flood method, which assumes that the frequency distribution of the hydrological variable of interest (i.e., flood peak) for different sites belonging to a homogeneous region is the same except for a site-specific scale factor, the index-value. nsRFA contains more than 100 'functions', described by comprehensive documentation, which include methods of choice of classification variables, cluster analysis algorithms, homogeneity tests, goodness-of-fit tests, diagnostic plots and more. Here some examples are presented in order to show the capabilities of nsRFA in handling the following steps of the index-flood method: (1) regionalisation of the index-value; (2) formation of homogeneous regions; (3) fit of regional distribution functions. The package nsRFA is freely available at http://cran.at.r-project.org/web/packages/nsRFA.