



## **Development of MASH procedure for homogenization of standard deviation**

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The theme of homogenization can be divided into two subgroups, such as monthly and daily data series homogenization. These subjects are in strong connection with each other of course, for example the monthly results can be used for the homogenization of daily data. In the practice the monthly series are homogenized in the mean only, while there exist some trials to homogenize the daily series also in higher order moments. These procedures are based on a popular assumption that is the correction of mean is sufficient for monthly series, and the correction of higher order moments is necessary only in the case of daily data series. In general, it is tacitly assumed that the averaging is capable to filter out the inhomogeneity in the higher order moments. However, this assumption is false, since it can be proved if there is a common inhomogeneity in the standard deviation of daily data then we have the same inhomogeneity in monthly data. Therefore we developed a mathematical procedure for the homogenization of mean and standard deviation together. This procedure is built in our software MASH (Multiple Analysis of Series for Homogenization; Szentimrey) and it is based on the examination of monthly series and the monthly results are applied for the homogenization of daily series. We remark if the data are normally distributed then the homogenization of mean and standard deviation is sufficient since in case of normal distribution if the first two moments are homogenous then the higher order moments are also homogeneous.