

Hydrological determination of hierarchical clustering scheme by using small experimental matrix

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Abstract. In this investigation we tested the performance of the five available hierarchical clustering algorithms and nine distance metrics. An arbitrarily chosen experimental matrix (6x3) is used in this analysis to evaluate 45 clustering schemes using dendrogram and cophonet coefficient index. Prior knowledge of cluster dispersion was the key element to determine non-useful cluster structures. The Euclidean metric and Wards method combination is most preferred to define homogenous clusters in hydrological studies; however, Mahalanobis metric-Average Linkage method combination was emerged with a higher cophonet index, 0.90420 in this study. The most efficient grouping was achieved by the use of City Block and Euclidean metrics in all combinations while the other distance metrics resulted in a non-interpretable dendrogram. Major dendrogram plots and the cophonet index values are presented for visual comparison.

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