

군집분석을 이용한 침수관련 유역특성 분류

Classification of basin characteristics related to inundation using clustering

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Abstract

In order to establish the risk criteria of inundation due to typhoons or heavy rainfall, research is underway to predict the limit rainfall using basin characteristics, limit rainfall and artificial intelligence algorithms. In order to improve the model performance in estimating the limit rainfall, the learning data are used after the pre-processing. When 50.0% of the entire data was removed as an outlier in the pre-processing process, it was confirmed that the accuracy is over 90%. However, the use rate of learning data is very low, so there is a limitation that various characteristics cannot be considered. Accordingly, in order to predict the limit rainfall reflecting various watershed characteristics by increasing the use rate of learning data, the watersheds with similar characteristics were clustered.

The algorithms used for clustering are K-Means, Agglomerative, DBSCAN and Spectral Clustering. The k-Means, DBSCAN and Agglomerative clustering algorithms are clustered at the impervious area ratio, and the Spectral clustering algorithm is clustered in various forms depending on the parameters. If the results of the clustering algorithm are applied to the limit rainfall prediction algorithm, various watershed characteristics will be considered, and at the same time, the performance of predicting the limit rainfall will be improved.

Key words: Limit rainfall, Basin characteristics, Clustering, k-Means, Agglomerative, DBSCAN, Spectral

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