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Urban Flooding Risk Assessment in the Rural-Urban Fringe Based on a Bayesian Classifier

Table S1. A comparison of the proposed urban flooding risk assessment in the rural-urban fringe based on a Bayesian Classifier with other state-of-the-art studies recently published in the domain. [22–25,27,28,31,32].

ID	Author	Title	Journal	Year	Innovative points	Main content
1	Liu, Rui, Chen, Yun, Wu, Jianping, Gao, Lei, Barrett, Damian, Xu, Tingbao, Li, Xiaojuan, Li, Linyi, Huang, Chang, Yu, Jia	Integrating Entropy-Based Naive Bayes and GIS for Spatial Evaluation of Flood Hazard	*RISK ANALYSIS*	2017	Technological innovation	An integrated framework was presented for estimating the spatial likelihood of flood hazard by coupling weighted naive Bayes (WNB), geographic information systems, and remote sensing. The performance of the WNB and NB models for assessing urban waterlogging is compared.
2	W. S. Jäger, E.K. Christie, X. A.M. Hanea, C. den Heijer, T. Spencer	A Bayesian network approach for coastal risk analysis and decision making	*COASTAL ENGINEERING*	2018	Technological innovation	A Bayesian network (BN) model was developed to evaluate the percentage of affected receptors in different zones of the site by predicting their hazards and damages.
3	Yang Xiao, Beiqun Li, Zaiwu Gong	Real-time identification of urban rainstorm waterlogging disasters based on Weibo big data	*NATURAL HAZARDS*	2018	Naive Bayes application	Comparison of Naive Bayes, Support Vector Machine, and Random Forest for urban waterlogging assessment revealed that the Naive Bayes algorithm performed the best with the highest macro-average accuracy.
4	Xianzhe Tang, Yuqin Shu, Yanqing Lian, Yaolong Zhao, Yingchun Fu	A spatial assessment of urban waterlogging risk based on a Weighted Naive Bayes classifier	*SCIENCE OF THE TOTAL ENVIRONMENT*	2018	Technological innovation	Comprehensive framework integrating WNB and Geographic Information Systems (GIS) for assessing the spatial likelihood of flood hazards in urban catchments was explored.
5	Xianzhe Tang, Jiufeng Li, Minnan Liu, Wei Liu, Haoyuan Hong	Flood susceptibility assessment based on a novel random Naive Bayes method: A comparison between different factor discretization methods	*CATENA*	2020	Technological innovation	A novel approach was proposed to optimize Naive Bayes (NB) classification for urban waterlogging assessment, utilizing the Random Forest (RF) framework. The classification performance of RF-optimized Naive Bayes (RNB), RF, and NB were compared, revealing that RF outperformed RNB and NB, in that order.
6	Shanqing Huang, Huimin Wang, Yejun Xu, Jingwen She, Jing Huang	Key Disaster-Causing Factors Chains on Urban Flood Risk Based on Bayesian Network	*LAND*	2021	Naive Bayes application	An urban flood inundation risk assessment model was established using Bayesian networks, followed by the exploration of key disaster-causing factor chains through influence strength analysis.
7	Xianzhe Tang, Yuqin Shu, Wei Liu, Jiufeng Li, Minnan Liu, Huafei Yu	An Optimized Weighted Naive Bayes Method for Flood Risk Assessment	*RISK ANALYSIS*	2021	Technological innovation	WNB functions were developed using the MATLAB platform to integrate directly with the sampling and verifying model, resulting in a WNB-based MACPT that enhances the model's interpretability and extensibility.
8	Hongfa Wang, Yajuan Zhao, Yihong Zhou, Huiliang Wang	Prediction of urban water accumulation points and water accumulation process based on machine learning	*EARTH SCIENCE INFORMATICS*	2021	Naive Bayes application	NB and RF were employed to forecast the waterlogging point and the watesrlogging process, respectively. The results demonstrated the reliability of the NB model's prediction for the waterlogging point.

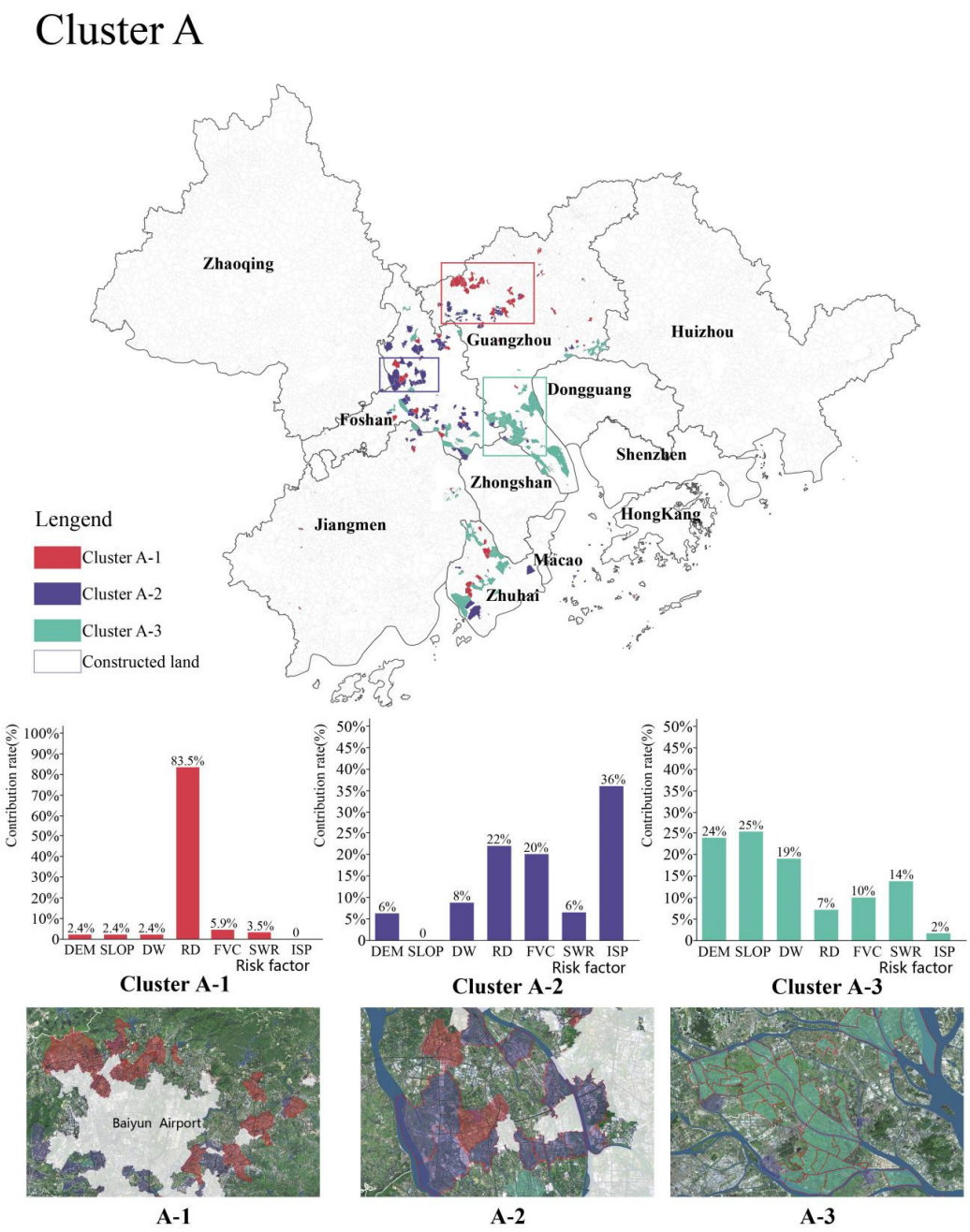

Figure S1. The spatial distribution of flood risk and contribution of driven factors in Cluster A.

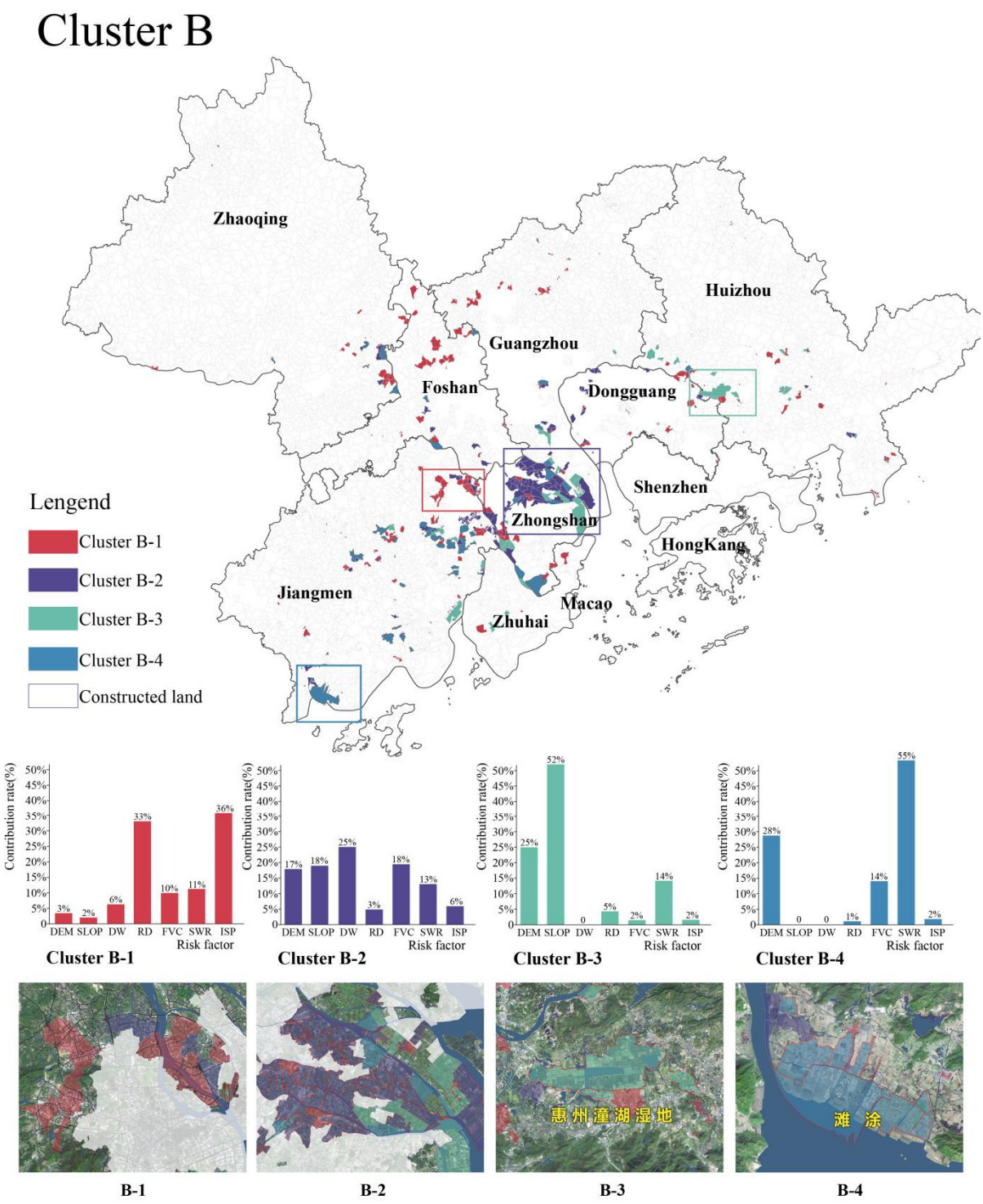

Figure S2. The spatial distribution of flood risk and contribution of driven factors in Cluster B.

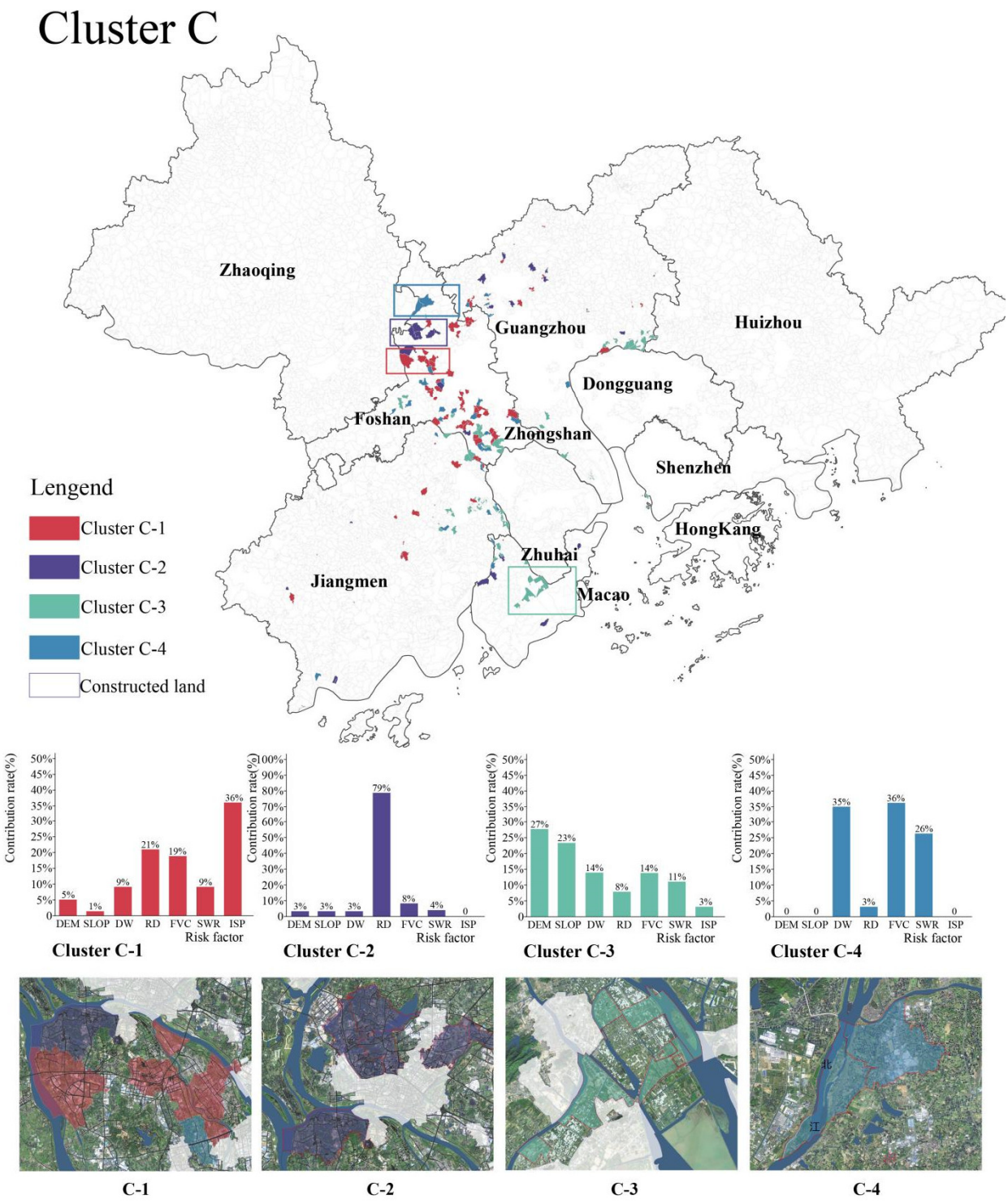

Figure S3. The spatial distribution of flood risk and contribution of driven factors in Cluster C.

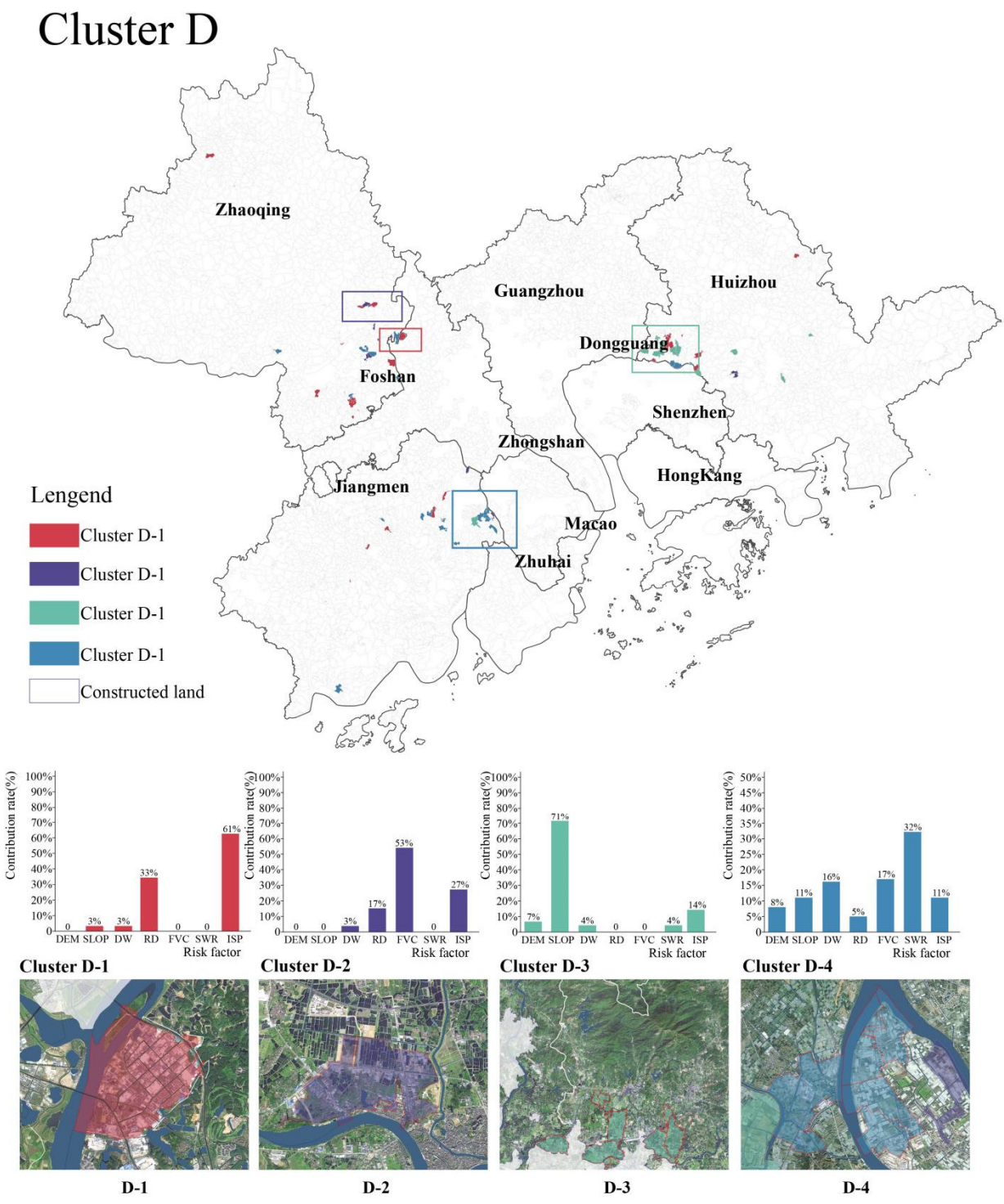

Figure S4. The spatial distribution of flood risk and contribution of driven factors in Cluster D.