

[1]高焱,蒙小亮,劳小青.基于聚类分析的海南岛雷电灾害易损度风险区划[J].自然灾害学报,2013,01:175-182.

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## 基于聚类分析的海南岛雷电灾害易损度风险区划(PDF)

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Title: Cluster analysis-based vulnerability risk zoning of lightning disaster in Hainan Island

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关键词: 聚类分析; 雷电灾害; 易损度; 区划

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摘要: 利用1998-2009年全国雷电灾害汇编资料、海南岛18个气象台站雷暴资料、海南闪电定位网观测资料和海南省统计年鉴的区域经济、人口数据,选取了表征海南岛雷电灾害致灾因子、孕灾环境和承灾体特征的指标变量。采用R型聚类分析方法对影响易损度的指标进行了筛选和检验。以雷暴日数、50 kA以上平均地闪密度、雷灾频数、人员伤亡频数和区域经济易损模数等5个指标为依据变量,用欧氏距离(Euclidean distance)计算了各样本的相似性测度,应用Q型聚类中的Ward' s法(离差平方和法)进行了层次聚类分析,并用Q型迭代聚类分析法进行了聚类解验证,开展了海南岛雷电灾害风险区划。结果表明:海口属于易损度高风险的第1类地区,该类地区雷电灾害综合易损值高达3.89;文昌、澄迈、临高、定安、屯昌和琼海为易损度次高风险的第2类地区;儋州、琼中、白沙、通什和保亭为中等风险的第3类地区;昌江、东方、乐东、万宁、陵水和三亚为较弱风险的第四类地区。

Abstract: From the national collected data of lightning disasters from 1998 to 2009, the observational thunderstorm data of 18 meteorological stations, and lightning locating networks data and economy and population data in statistical yearbook of Hainan Province, the indices representing hazard-formative factor, hazard pregnant environment and hazard-affected body of lightning was selected. Through R-Cluster analysis, the indices influencing vulnerability were screened and checked. Based on 5 indices, i.e., thunderstorm days, lightning density above 50 kA, thunderstorm frequency, casualty frequency and regional vulnerability economic modulus as basic variables, similarity measures of samples were calculated. With Ward' s method in Q-Cluster, the hierarchy cluster analysis was carried out and Q-iterative cluster was adopted to explain and testify the result of the cluster. Finally the zoning of lightning risk in Hainan Island was

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constructed. Results show that Haikou City is within the first category zone, whose vulnerability is extremely high, with comprehensive vulnerability as high as 3.89; Wencang, Chenmai, Linggao, Dangan, Tuncang and Qionghai are in the second category zone, whose vulnerability is just next to the extremely high zones; Danzhou, Qiongzong, Baisha, Tongshi, Baoting are in the third category zone with moderate risks; Changjiang, Dongfang, Ledong, Wannin, Lingshui and Sanya are in the fourth category zone with weak risks.

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#### 参考文献/REFERENCES

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