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泥石流点密度和面密度对区域泥石流危险度的影响

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Title: Influence of debris flow spot and area densities on regional hazardousness of debris flow:a comparative study

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关键词: 泥石流; 分布密度; 区域危险度

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摘要: 泥石流分布密度是区域泥石流危险度评价的主要指标。泥石流分布密度分为点密度和面密度,前者是指每10^3km内泥石流沟的数量;后者是指每10^3km内泥石流沟的流域面积。以川西山区60个县市区为研究样本,分别以泥石流点密度和面密度作为区域泥石流危险度的主要评价指标,结合7个相同的区域泥石流危险度的次要评价指标,对研究区以县市区为基本单元的区域泥石流危险度进行了定量评价。结果表明,各县市区面积加权平均后的泥石流危险度分别为0.51(面密度)和0.52(点密度),差别甚微,整体上均属于泥石流中度危险区。两者的平均绝对差值0.04,远小于0.2这一危险度等级差值,平均相对差值为6.49%,小于10%这一允许的均方差范围。由此可知,用泥石流面密度来评价区域泥石流危险度,并非优于点密度;相反地,由于泥石流点密度具有获取资料相对容易、计算比较简便、工作量较小等优点,因而具有更为便利的推广应用价值。

Abstract: Debris flow density is the primary factor to assess regional hazardousness of debris flow.Debris flow density includes spot density and area density.The former is the number of debris flows per 10^3km^2 land;the later is the drainage area of debris flows per 10^3km^2 land.Taking 60 counties in west Sichuan for the study samples,using the spot and area densities as primary indices incorporated with

the other 7 secondary indices,this paper assesses the regional hazardousness of debris flow with the basic unit of county.The results indicate that the hazardousness is 0.51 and 0.52 separately for area density and spot density of debris flows which are differential each other very slightly and are the same class of moderate hazardousness of debris flow.The mean of absolute difference of the both is 0.04,which is far smaller than 0.2 of the class difference.The average relative difference of the both is 6.49%,which falls in the neglected mean square difference.Thus the assessment using the area density is not better than that using the spot density.Adversely,because of the relative easy for data acquirement,simplicity for calculation,and laborsaving work,the spot density assessment for regional hazardousness of debris flow is more valuable to application.

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