

论文

2009年6·5重庆武隆鸡尾山崩滑灾害基本特征与成因机理初步研究

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摘要:

2009年6月5日下午15时许,重庆市武隆县铁矿乡鸡尾山山体发生了大规模的崩滑,约500万m³被结构面切割成“积木块”状的灰岩山体,沿缓倾页岩软弱夹层发生整体滑动。高速运动的滑体物质在堵塞前部宽约200m,深约50m的铁匠沟沟谷后,形成平均厚约30m,纵向长度约2200m的堆积区,掩埋了12户民房和正在开采铁矿的矿井入口,造成10人死亡,64人失踪,8人受伤,成为近年来少有的一次崩滑灾难性事件。本文在对灾害现场进行大量地质调查的基础上,结合遥感、三维激光扫描等综合手段,对鸡尾山崩滑体特征进行了详细描述,对灾害发生原因进行了初步分析。结果表明,鸡尾山山体垮塌是在不利的地质结构条件下,并受到长期重力、岩溶等作用 and 采矿活动的影响,因前部起阻挡作用的关键块体被剪断突破而导致的一起大型山体崩滑事件。深入研究鸡尾山崩滑体的形成条件和成灾机理,对我国西南地区存在与鸡尾山崩滑体类似地质条件的灾害隐患点的减灾防灾工作,具有重要的指导意义。

关键词: 鸡尾山滑坡 关键块体 地下采矿 成因机理 失稳前兆

THE JIWEISHAN LANDSLIDE OF JUNE 5, 2009 IN WULONG, CHONGQING: CHARACTERISTICS AND FAILURE MECHANISM

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Abstract:

A large scale of mountain collapse occurred in Jiwei mountain, Wulong county. Chongqing City on June 5, 2009. Its volume is of 5×10⁶ m³. The limestone rock mass was cut by a set of discontinuities into a shape of "building blocks", and slipped down along a low angle dip inter-bedded shale plane. The high speed moving mass blocked the valley. The valley was 200 m wide and 50 deep. The debris accumulated in the valley. It is of 30 m thick in general and 2200 m long. The debris destroyed 12 houses, killed 10 people, buried 64 people, and injured 8 people. Based on site investigation, the remote sensing, three dimension laser scanning technologies, this paper provides a detailed description on the landslide. It then gives the analysis on the mechanism of the landslide. The results show that the causes of the Jiweishan landslide are complex geological settings, long term loading stress, karst effect and the underground mining activities. The triggering factor is the failure of a relatively small key rock block in front of the main landslide body. The key block had been functioned as a barrier or shear key to make the main landslide body stable. There will be a big attribution if such case can be studied further. It can provide the significant experience on dealing with this kind of landslide and how to provide advice on early warning and remediation project on similar cases in south western China under such complex geological setting.

Keywords: iweishan Landslide, Crucial mass block, Underground mining, Failure mechanism, Failure precursor, Limestone, Shale

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