

Risk assessment of people trapped in earthquake based on km grid: a case study of the 2014 Ludian earthquake

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China is one of the most earthquake prone countries in the world. The priority during earthquake emergency response is saving lives and minimizing casualties. Rapid judgment of the trapped location is the important basis for government to reasonable arrange the emergency rescue forces and resources after the earthquake. Through analyzing the key factors resulting in people trapped, we constructed an assessment model of personal trapped (PTED) in collapsed buildings caused by earthquake disaster. Then taking the 2014 Ludian Earthquake as a case, this study evaluated the distribution of trapped personal during this earthquake using the assessment model based on km grid data. Results showed that, there are two prerequisites for people might be trapped by the collapse of buildings in earthquake: earthquake caused buildings collapse and there are people in building when building collapsing; the PTED model could be suitable to assess the trapped people in collapsed buildings caused by earthquake. The distribution of people trapped by the collapse of buildings in the Ludian earthquake assessed by the model is basically the same as that obtained by the actual survey. Assessment of people trapped in earthquake based on km grid can meet the requirements of search-and-rescue zone identification and rescue forces allocation in the early stage of the earthquake emergency. In future, as the basic data become more complete, assessment of people trapped in earthquake based on km grid should provide more accurate and valid suggestions for earthquake emergency search and rescue.