



Development of a Disaster Information Visualization Dashboard: A Case Study of Three Typhoons in Taiwan in 2016

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To facilitate disaster response and enhance the effectiveness of disaster prevention and relief, people and emergency response personnel should be able to rapidly acquire and understand information when disasters occur. However, in existing disaster platforms information is typically presented in text tables, static charts, and maps with points. These formats do not make it easy for users to understand the overall situation. Therefore, this study converts data into human-readable charts by using data visualization techniques, and builds a disaster information dashboard that is concise, attractive and flexible. This information dashboard integrates temporally and spatially correlated data, disaster statistics according to category and county, lists of disasters, and any other relevant information. The graphs are animated and interactive. The dashboard allows users to filter the data according to their needs and thus to assimilate the information more rapidly. In this study, we applied the information dashboard to the analysis of landslides during three typhoon events in 2016: Typhoon Nepartak, Typhoon Meranti and Typhoon Megi. According to the statistical results in the dashboard, the order of frequency of the disaster categories in all three events combined was rock fall, roadbed loss, slope slump, road blockage and debris flow. Disasters occurred mainly in the areas that received the most rainfall. Typhoons Nepartak and Meranti mainly affected Taitung, and Typhoon Megi mainly affected Kaohsiung. The towns Xiulin, Fengbin, Fenglin and Guangfu in Hualian County were all issued with debris flow warnings in all three typhoon events. The disaster information dashboard developed in this study allows the user to rapidly assess the overall disaster situation. It clearly and concisely reveals interactions between time, space and disaster type, and also provides comprehensive details about the disaster. The dashboard provides a foundation for future disaster visualization, since it can combine and present real-time information of various types; as such it will strengthen decision making in disaster prevention management.