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The Inundation Potential Database and Its Applications in Taiwan

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Taiwan is located at the intersection of the Euro-Asian continent and the Pacific Ocean, where is right at the tracks often visited by typhoons during summer and fall. The official statistics shows that the average attack frequency by typhoon is 3.6 times and the financial losses exceeds 0.5 billion U.S. dollars per year. To minimize the losses induced by flood, non-structural measures such as the inundation potential database was built by the simulation results from a series of numerical models. The database contains the island-wide inundation potential maps with different rainfall criteria. Four hyetographs with total daily rainfall of 150 mm, 300 mm, 450 mm and 600 mm, were selected as the design rainfalls for model applications. The database is used for setting the proper flood prevention strategies for flood mitigation, such as prevention, emergency response and post-disaster recovery.

Before flood period, the inundation potential database can be used to proposal the local disaster prevention & response basic plan, such as the allotment of rescue resources, the planning of refuges and evacuating routes, the improvement of the drainage system for high risk inundation areas. Besides, the database could also be used for the flood insurance programs to determine the insurance premium rates.

During flood events, the inundation potential map is selected automatically from the database according to the real-time rainfall conditions. Consequently, the commander of response center will clearly understand the regions with higher flooding risks and then draw up the proper emergency response measures. After the flood events, the flood extents and depths are usually investigated to delineate the affected area. To compare the differences between the actual flooding map and the inundation potential map, the causes of inundation could be deduced and analyzed.

Keywords: inundation potential database, flood mitigation, disaster prevention & response basic plan.

References

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