

# Applying of the Digital Aerial Image for Protection Forest Assessment and Simulating Flooding in Pingtung, Taiwan.

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## **Abstract**

The protection forest could adjust of infiltration ability and reduce the impact of flooding; moreover, it is also provided with landscape efficacy. In this study, the No. 2414 protection forest in Pingtung is study site which were built for avoid flooding at year 1907. There had no conservation of water resources and flood control functions in that the No. 2414 were rented or occupied as agriculture since year 1969. Typhoon Morakot attacked south Taiwan that brought extreme rainfall in a few days. It triggered serious flooding and debris flow in Pingtung. Hence, the purpose of this study assessed the function of protection forest in Pingtung of Taiwan. We collected digital aerial images in 1981, 1993, 2003 and 2013 to establish land use map. Furthermore, we calculated the weight of land use type and slope via land use suitability analysis to assess the function of protection forest that it classified five levels as level 1 to level 5. The result showed that there were 78.14% unsuitable to be protection forest in this area. Besides those subjects, we also simulated the flooding area with FLO-2D. The precipitation data were collected on 8<sup>th</sup> of August 2009 from 9 rainfall stations, f Manning's roughness coefficient of different land use type, and spatial distribution of precipitation of Donggang River basin for simulate flooding condition. It found the flooding area focused on downstream and there were no flooding on No. 2414 protection forest until end of simulating flooding. We think No.2414 have no flood control function when extreme rainfall or flooding happen.

**Key words:** Protection forest, Simulating flooding, FLO-2D