# 都會區短延時強降雨引發之積淹水事件分析

## Analysis of Urban Flash Flood Induced by Short-Duration Rainfall Extremes

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## 摘　要

隨著極端天氣事件頻繁發生，導致都會區容易在短時間內承受大量降雨，造成雨水下水道系統不堪負荷，進而迅速引發積淹水。本研究以 2024 年 7 月 10 日，發生在臺北市信義區、大安區及南港區的短延時強降雨積淹水事件為例，分析強降雨熱區與淹水災點的關係，再應用數值模擬方式，追報淹水的空間分布。氣象署的雨量監測資料顯示，7 月 10 日 13:00，位於信義區的留公國中雨量站小時雨量達 88.5 mm，同時間，位於信義區的四獸雨量站小時雨量也達 83 mm，皆超出目前臺北市下水道設可承受的時雨量每小時 78.8 mm，因此，即時多數通報淹水災點位於下水道分布密集的區域，在強降雨區也形成 20 到 30 公分不等的淹水深度。另外，本研究分析後發現，位於信義區象山公園鄰近的淹水災點，呈現出黃土色的水色，顯示強降雨落在象山後造成的小規模山區逕流，也影響此次的短延時強降雨積淹水事件的規模。數值淹水追報成果雖然與災點相當吻合，但也指出，都會區短延時強降雨預測相當不易的事實，因此，以歷史事件所歸納得出的強降雨熱區，可以潛勢的概念，做為短延時強降雨防災參考利器。

關鍵詞：短延時強降雨，都會區閃洪，強降雨熱區，淹水追報

## Abstract

With the increasing frequency of extreme weather events, metropolitan areas are often subjected to intense rainfall over short periods, overwhelming stormwater drainage systems and rapidly causing flooding. This study examines the short-duration rainfall extremes-induced flooding event on July 10, 2024, in the Xinyi, Daan, and Nangang districts of Taipei City. We analyze the relationship between heavy rainfall hotspots and flood disaster sites and apply numerical simulation methods to trace and predict the spatial distribution of flooding. According to the Central Weather Administration's rainfall monitoring data, at 13:00 on July 10, the hourly rainfall at the Liugong Junior High School station in Xinyi District

reached 88.5 mm, while the hourly rainfall at the Sishou station in the same district also reached 83 mm. Both measurements exceed the current hourly rainfall capacity of 78.8 mm that Taipei City's drainage system can handle. Consequently, numerous reported flooding sites were located in areas with dense sewer networks, and water depths in heavy rainfall areas ranged from 20 to 30 centimeters. Furthermore, our analysis revealed that the flood disaster site near Xiangshan Park in Xinyi District showed yellowish-brown water, indicating that small-scale mountainous runoff from heavy rainfall on Xiangshan contributed to the scale of this short-duration rainfall extreme-induced flooding event. Although the numerical flood hindcasts closely matched the flooding sites, they also highlighted the significant difficulty in predicting short-duration rainfall extremes in metropolitan areas. Therefore, the heavy rainfall hotspots derived from historical events can be used as a reference tool for flash flood disaster prevention in short-duration rainfall extremes.

Keywords: short-duration rainfall extremes，urban flash flood，heavy rainfall hotspots，flood hindcasts