

**Response to Urban Flash Flood due to
Urbanization and Climate Change in Phnom Penh City**

プノンペンにおける都市化と気候変化に対する
内水氾濫の変化に関する研究

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ABSTRACT

Urban flash flood has been known as a critical/hot issue in Phnom Penh Capital city. Most part of Phnom Penh city was suffering more frequently during rainy season including Daun Penh District “Lady Penh” since the runoff generation has been increasing due to the rapid growth of urbanization and downpour rainfall intensity in this remote area. Furthermore, because of prolonged inundated in the study area, it has been affected and damaged public properties, infrastructures, business activities, city movement, and citizens lives in many aspects. This study was employing the Storm water Management Model (SWMM), one of the widely used urban flash flood planning to simulated the urban flash flooding of the study area based on DSD’s database and underground pipe network drawing. The urban flood processes were simulated with different return period, design storms precipitation (2 year, 5 year, and 10 year) and land surface cover changed. As a consequence the studied area was localized flooding (overflow of Node flooding) and pipe was pressurized /surcharged. It has good potential information as a decision-making tool in urban drainage management and design. Additionally, the obtained results were analyzed to determine the critical area, where required any appropriated countermeasures for urban flash flood.

要旨：

近年の都市化の進展や降雨強度の増加から、Daun Penh 街区を含むプノンペンの多くの地区では都市型洪水（内水氾濫）の頻度が増加し、資産・人的被害、公共施設の被災、都市活動への影響など、都市型洪水への対策は急務となっている。本研究では、プノンペン街区を対象に、降雨・流出、下水道管路網内の流動を Storm Water Management Model (SWMM) モデルを用いて解析した。異なる降雨確率年、土地利用・被覆条件の下で解析を実施し、マンホールからの氾濫や下水管が満管状態となる時間、箇所などを分析した。解析から、土地利用・被覆条件や下水管網の管径の違いなどから都市型水害の弱点となる箇所・地区が抽出され、SWMM を用いた解析が雨水排除計画上の意思決定を行う上で有用なツールとなることが示された。