

# 臺灣地區動力與統計降尺度颱風降雨比較分析

## Comparing the difference of typhoon rainfall between dynamics and statistical downscaling methods in Taiwan

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### 摘 要

由於臺灣地形複雜崎嶇，使用全球模式模擬的颱風降雨並無法真實反應地形對台灣地區颱風降雨的影響，因此過去多使用區域氣候模式WRF進行動力降尺度，以得到台灣地區較真實的颱風降雨變遷情形。然而，隨著系集模擬的增加，未來將可望得到更多的颱風樣本數，但卻沒有相對應的運算資源能進行動力降尺度，因此本研究中試圖使用統計降尺度方式對台灣地區颱風降雨進行降尺度，並與動力降尺度的颱風降雨進行比較分析，以期未來能使用統計降尺度方法來獲得台灣地區高解析度的颱風降雨變化。分析結果顯示，統計降尺度方法能得到與動力降尺度方法相似的降雨空間分布，且在未來的模擬有一致的變遷趨勢，因此統計降尺度方法未來將可望應用於颱風降雨的降尺度。

**關鍵字：**侵臺颱風、颱風降雨降尺度

### Abstract

Due to the complex terrain of Taiwan, the typhoon rainfall simulated by the global climate model cannot truly reflect the impact of the terrain on the typhoon rainfall in Taiwan. Therefore, in the past, the regional climate model WRF was used for dynamic downscaling to obtain a more realistic typhoon rainfall change in Taiwan. However, with the increase of ensemble simulations, it is expected that more typhoon samples will be obtained in the future, but there are no corresponding computing resources to perform dynamic downscaling. We tried to use statistical downscaling method to downscaling typhoon rainfall in Taiwan, and compared to the typhoon rainfall downscaled by dynamic method, in the hope that statistical downscaling method can be used to obtain high-resolution typhoon rainfall changes in Taiwan in the future. The results show that the statistical downscaling method can obtain similar rainfall spatial distribution to the dynamic downscaling method, and there will be a consistent change trend in the future. Therefore, the statistical downscaling method is expected to be applied to the downscaling of typhoon rainfall in the future.