臺灣近期高溫事件初探

An Investigation into Recent High Temperature Events in Taiwan

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摘　要

本研究基於測站資料與高溫事件偵測方法（Lo et al., 2021），並應用於TaiSA高解析度資料，探討1991至2023年間臺灣各地區高溫事件的發生情況及其時間變化趨勢。研究發現，臺灣四分區(北、中、南、東)的高溫事件在不同程度上呈現逐年增加的趨勢，且事件發生的時間範圍逐漸擴大，具體表現為事件發生的時間提前，結束時間延後。南部地區的高溫事件則呈現震盪式分布，可能與大氣環境場配置或其他氣候變數的變化有關。另外，進一步利用TaiSA高解析度網格數據進行的事件偵測顯示，北部及中部的高溫事件集中於6至8月，南部的高溫事件則跨越較長的時間範圍，東部則以盛夏季節的高溫事件為主。

依據過去研究指出，極端高溫事件通常與西南風環境、颱風或外圍環流影響、以及太平洋副熱帶高壓的強勢控制等大尺度氣候場有關。透過高溫事件的分類與分析發現，臺灣不同區域的高溫事件類型有著相異的表現，中部的高溫事件主要與高壓及鋒面有關；南部則顯示較容易受到鋒面影響，西南風影響所造成的極端高溫事件；北部及東部的高溫事件較常發生於盛夏，部分事件顯示可能與熱帶系統(如颱風或熱低壓)有關，但仍需更細緻的資料作區域內環境場的分析。透過針對高溫事件的探討，希望更理解臺灣不同地區高溫事件的發生模式，並對未來極端氣候事件的預測與應對提供參考。

關鍵字：高溫事件

Abstract

This study, based on station data and the heatwave event detection method (Lo et al., 2021), is applied to high-resolution TaiSA grid data to investigate the occurrence and temporal trends of heatwave events in Taiwan from 1991 to 2023. The study found that heatwave events in the four regions of Taiwan (North, Central, South, East) show a gradual increasing trend, with the event durations also expanding, characterized by an earlier onset and later end. In the southern region, heatwave events exhibit a fluctuating distribution, which may be related to changes in atmospheric conditions or other climatic factors. Additionally, event detection using the high-resolution TaiSA grid data revealed that heatwave events in the northern and central regions primarily occur from June to August, while those in the southern region span a broader timeframe, with the eastern region experiencing heatwaves primarily during the peak summer months.

Past studies indicate that extreme heat events are typically associated with large-scale atmospheric patterns such as southwest monsoonal flow, typhoons or peripheral circulation, and the dominant influence of the Pacific subtropical high. Through classification and analysis of the heatwave events, this study found that the heatwave types across Taiwan differ significantly. In the central region, heatwaves are mainly linked to high-pressure systems and fronts; in the southern region, heatwave events are more likely to be influenced by fronts and southwest winds, which lead to more extreme temperatures. In the northern and eastern regions, heatwave events

are more common during mid-summer, with some events potentially associated with tropical systems (such as typhoons or tropical depressions). However, the precise environmental conditions within these regions require further detailed data analysis for clarification. By investigating heatwave events, this study aims to deepen the understanding of the occurrence patterns of heatwaves across Taiwan and provide insights for future predictions and responses to extreme climate events.

Key words : Heatwave, High temperature events