

2020年與2021年西北太平洋季風的差異 及其對台灣氣候的影響

The contrast in western North Pacific Monsoon between 2020/21 and the impacts on Taiwan's summer climate

吳宜昭¹ (Wu Y.-c.) 黃柏誠¹ (Huang B.-C.) 黃紹欽¹ (Huang S.-C.)
王安翔¹ (Wang A.-H.) 李宗融¹ (Lee T.-J.)

¹國家災害防救科技中心

¹National Science and Technology Center for Disaster Reduction

摘 要

2020年中至2021年中，台灣西半部經歷了嚴重的乾旱。由於2020年的梅雨季短促、颱風季無颱風接近或登陸，而2021年的春雨也偏少，近一年的降雨持續偏少造成台灣西半部的嚴重乾旱。直至2021年梅雨季數波鋒面、西南風帶來的豪雨為西半部及時補水；後續颱風季更有颱風與西南氣流帶來降雨，至8月台灣各地水情終於完全恢復正常，乾旱事件落幕。

這次乾旱發生與結束的關鍵在於2020/2021年台灣夏季降雨的顯著差異，而這又和西北太平洋季風環流的差異密切相關。2020年的夏季，台灣梅雨季提早結束，5至6月西北太平洋的颱風稀少，7月甚至無颱風生成，8月起陸續生成的颱風也都未接近或登陸台灣，因此台灣降雨不足；這些現象和西北太平洋副熱帶高壓（後簡稱副高）偏強有密切相關。2021年的夏季，台灣梅雨季降雨偏多；後續的颱風季，副高大多數時間仍然偏強，但7月中旬起至8月上旬期間，西北太平洋一波季風急速增強時期造成大尺度對流的活躍，前期於強盛的季風低壓內生成了3個颱風，後期於西南氣流增強間又生成了3個颱風，其中7月下旬的煙花颱風、8月上旬的盧碧颱風與西南氣流陸續為台灣帶來充沛降雨。

2020/2021年台灣夏季降雨的顯著差異，使得防災預警工作的目標，由抗旱轉為防洪。開發適合的季風監測資訊，將對防災預警有很大助益。

關鍵字：西北太平洋季風、季風低壓、西北太平洋副熱帶高壓、西南氣流

Abstract

The western North Pacific (WNP) monsoon in 2020/2021 exhibits contrasting features, which impacted differently in the summers of Taiwan. The early summer of 2020 featured an early-ending meiyu season in Taiwan as well as the inactive typhoon activity in WNP with the record-breaking zero typhoon formation in July. These caused the summer precipitation deficiency in western Taiwan and led to the beginning of a severe drought event. These abnormal climates very likely resulted from the anomalously strong WNP subtropical high. The drought event lasted till 2021. It were relieved during the active meiyu season and ultimately ended later by the active typhoon activity. Though the WNP subtropical high were still strong during most of the subsequent typhoon season, the monsoon surge brought a convection-active period in WNP from late July to early August. In early July, three typhoons formed first in the strong WNP monsoon gyre. In early August, another three formed within the southwesterly surge toward Taiwan. These typhoon activity and southwesterly brought abundant precipitation and ended the drought event.

With the contrasts in rainy seasons in Taiwan in 2020/2021, the target of disaster prevention and early warning practice were also adjusted from drought warning in 2020 to flood prevention in 2021. The development of suitable monsoon monitoring information will be of great help to disaster prevention and early warning.

Key words: western North Pacific monsoon, monsoon depression, western North Pacific subtropical high, southwesterly