

摘要

本研究主要針對西北太平洋地區初秋期間(九~十月)，通過 120-130° E 的颱風頻率年際與年代際變化進行診斷分析。從結果來看，初秋時期生成於西北太平洋地區的颱風移動路徑於 1998 年開始，通過北緯 20 度以北的頻率有增加趨勢，顯示其路徑有明顯往北偏移的現象。從大尺度環流場來看，1998 年之後，相對應之北太平洋處於負 PDO 相位，低層的輻合中心位於西太平洋海洋大陸附近，台灣東側海面則伴隨有氣旋式環流距平，使得颱風生成位置於 1998 年後往北偏移，此外，受到太平洋副高往西擴張影響，高壓南側駛流，讓颱風容易往北或往西北方向移動，提高颱風通過 20° N 以北、120-130° E 的機率。除了年代際變化特徵外，1998 年之後的颱風活動特性也同時具有明顯的年際變化訊號，此受 ENSO 影響較大。整體來說，El Niño 期間，颱風通過 20° N 以北、120-130° E 的機率較低，但 La Niña 期間則較為複雜。於 La Niña 期間，若西太平洋輻合中心位於 130° E 以西，則通過上述區域的機率偏高，不過，若輻合中心位於 135° E 以東，則相對偏少。從區域降雨的角度來看，以台灣為例，當通過 20° N 以北、120-130° E 區域之颱風頻率較高(低)時，台灣初秋的降雨量相對較多(少)，兩者之間有高度的正相關。

This study examines interdecadal and interannual variability of meridional tropical cyclone (TC) activity during September-October (SO) in the northwestern North Pacific (NWNP) around Taiwan after 1998. From interdecadal period 1 (1980-1997) to period 2 (1998-2017), the Pacific Decadal Oscillation (PDO) changes its phase from positive to negative, characterizing cold sea surface temperature (SST) anomalies in the tropical eastern Pacific and warm SST anomalies in the tropical western Pacific. An induced low-level convergent center around the Maritime Continent evokes a cyclonic anomaly on its northwestern side overlying Taiwan that facilitates TC formation in the region north of 20°N. These TCs later move northward/northwestward in association with a westward extension of the Western Pacific Subtropical High, leading to interdecadal increase of northward TC movements in the 120°-130°E region. For interannual variability, TC passage frequency in the NWNP tends to decrease during El Niño events, but to increase or decrease in La Niña-related events. In La Niña-related conditions, the low-level anomalous convergent center situating to the west of 130°E (east of 135°E) tends to increase (decrease) TC passage frequency in the NWNP around Taiwan. This region is influenced by an anomalous anticyclone (cyclone) on its eastern side that induces anomalous southeasterly (northeasterly) steering flows to facilitate (hinder) TC movement from the tropical western Pacific into this region. Interannual and interdecadal variability of TC passage frequency in the NWNP is highly and positively connected with TC passage frequency and TC counts affecting Taiwan. More (less) TC passage frequency in the NWNP thus tends to relate to increased (decreased) TC rainfall in Taiwan.

關鍵字：颱風路徑，年代際變化，年際變化，大尺度環流

Keywords: typhoon track, interdecadal variation, interannual variation, large-scale circulation