

2020年11月宜蘭劇烈降雨實驗(YESR)

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摘要

臺灣因處於特殊的地理位置，造就四季鮮明不同的氣候環境，再加上渾然天成的特殊地形，產生許多特有的天氣現象。過去大多的天氣觀測實驗都集中在西半部地區，鮮少關注東半部。早在過去有『竹風蘭雨』之說，意思新竹風大，宜蘭多雨。在臺灣冬季屬於乾季，全臺各地降雨稀少，臺灣東北部及宜蘭地區降雨量相對其他地區是相當多。為了解宜蘭降雨與風場的關係，中國文化大學、臺灣大學、天氣局、中研院、中央大學及國防大學，於2020年11月20日至24日於宜蘭地區進行觀測實驗，針對東北季風環境下宜蘭地區三維風場變化進行觀測。

本研究選用在宜蘭、三星、武淵、蘇澳等地區的微型探空(storm tracker, ST)，以及宜蘭、三星、土場的微波降雨雷達(MRR)，針對宜蘭地區的風場變化以及降雨特徵進行分析，根據地面測站資料顯示在11月23日8時至14時，西南方山區附近的地面測站出現南風分量，ST顯示在底層南風隨高度(至高度1000m)順轉為東北風，推測是東北風遇到第二類地形產生的return flow，導致底層風向發生轉變。

關鍵字：東北季風、地形性降雨

Abstract

Due to the geographical location and special terrain, Taiwan has many special weather phenomena. In the past, most of the field experiments were mainly held in the western area of Taiwan while the eastern area were seldom being remarked. Back in the early years, there has already had a Chinese saying, 『竹風蘭雨』, to describe how strong is the wind in Hsinchu and how often it rains in Yilan. In the winters it behaviors little rain in most of areas. However, in compare to other regions, the Northeastern area and Yilan area have an abundant rainfall. To understand the connection between rainfall and wind field, Chinese Culture University, National Taiwan University, Central Weather Bureau, Academia Sinica, National Central University, and National Defense University conducted an observation experiment in Yilan from November 20th to 24th, 2020. The actions focus on observing the changes of three-dimensional wind during the northeast monsoon in the Yilan area.

In this study, storm tracker (ST) in Yilan, Sunsing, Wuyuan, and Suaou areas, and Micro Rain Radar (MRR) in Yilan, Sunsing, and Tuchang, were used to analyzed wind field changes and rainfall characteristics in Lanyang plain. According to the data, a southerly component of wind was observed at the ground station near the southwestern mountains from 08:00 to 14:00 on November 23rd. ST shows this the southerly component at the bottom layer turned into northeast direction as the altitude raised (up to 1000 meters). The deviated flow is induced probably due to the "second type rainfall".

Key words: Northeast monsoon, Orographic precipitation