近地空氣層微氣象因子之垂直剖面研究

Studies on the Vertical Profiles of Micro-meteorological Factors in the Air Layers near the Ground.

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一、前　言：

太陽及天空輻射經大氣層到達地面，部份熱能向下傳入土壤，部份又復轉移進入空氣層。近地空氣層因熱能之得失，常引致各項因子之變化，包括溫度、濕度及溫度之垂直變化。此種變化常導致低層空氣之擾動、渦流、擴散等局部現象或產生溫度逆增之穩定層，而產生霧、靄等現象。本研究即為有效利用現有設備及各項精密儀器，作近地空氣層中各項微氣象因子之垂直剖面研究。

二、觀測場概況及資料之獲取：

本研究之資料均取自台灣大學大氣科學系氣象觀測場，關於儀器之裝設，略述如下：

㈠儀器裝設位置：

(1) 36 公尺高鐵塔一座，分別於 3.5 公尺 ，7.0 公尺、14

Abstract

From the ground surface upward the meteorological factors of the air layer near the ground variation are determined by surface heat budget. Research on the vertical profile of micrometeorological factors for the period August 25, 1975 to May 31, 1976, were conducted within the observation field of the Department of Atmospheric Science, National Taiwan University. Remote recording temperature and humidity system, remote recording dew point and temperature system and anemometers were exposed on 12 different levels, to measure air temperature, dew point temperature, relative humidity and wind velocity near the ground.

Having all data been analysed, the following are discussed:

1) The vertical variation of air temperature and dew point in a spring bright sunshine day and fog night, we found that a lapse rate of more than 91°C/100m before sunset between ground level and up to about 35m, and 700°C/100m in the 0.1 -0.2m layer. Then it fell fast to 50°C/100m when fog formed.

2) In a calm clear winter night, an obvious inversion near the surface appeared. In an hour between 1700 and 1800 the temperature fell 4.6°C fast at 0.1m, and droped 1.5°C only at 21m. The top of the inversion layer was located between 14 and 28m. Above the inversion layer dew point temperature fell with height, and under that layer relative humidity rose up, where fog formed.

3) When a winter night with breeze, dew point between 3.5 and 28m rose fast with wind velocity, but it was calm, dew point at higher level fell down.