

# A comparative study of the snowfall events between Yusha and AnPu in Taiwan

Li-Min Tsai\*

Koung-Ying Lu\*\*

## Abstract

Moisture supply is one of the major components of precipitation. In Taiwan, south west flow, with its high water content from South China Sea, contributes a lot for cases of flash flood in the one hand. On the other hand, the abnormal heavy precipitation in the north part of Taiwan, occurs in the cold half year, is due to the conflict between north east wind and the pre-trough south west wind on the Southeastern part of China . All these winds are controlled by the synoptic situation. This work is to accomplish a purpose that even for snow event in Taiwan wind system is also a leading factor. In doing this we chose Yushan and AnPu as our bases to be analyze and do our comparison. Yushan, located in central part of the Central Mountain Range (CMR, here after) of Taiwan. It has the highest weather station in East Asia and, therefore, is the most famous snow spot of Taiwan. AnPu, a station in the Young Ming Shan National Park just on the northeast part of Taipei, is another hot point. They have different height and, more importantly, their prevailing wind fields are in different. In order to show that the synoptic condition is the key factor which controls the snowfall in Taiwan, and find out what differences are for the two stations snowing simultaneously or alone, a comparative study is carry out in this work. We found that the synoptic situation, including the location of the continental high, the surface to low tropospheric wind and vertical wind shear, as well as the moisture advection, is quite different for the two snowfall patterns. That is to say any shift in the atmospheric circulation can lead to changes in regional weather and / climate. So to understand the characteristics of the overall circulation, regardless for weather or climatic analysis and diagnostics, are very important.

There are two parts in this paper. First, a climatic analysis is conducted. In which monthly mean snow days, and three sets of composite charts, one for the period we considered (gives out the mean situation), and one for each station, are conducted. Then, in the second part, anomalies from the mean and differences between the two are conducted and analyzed. It is very clear that it is the synoptic condition which controls the snowfall events.

**Key Words: snowfall, Yushan, Anpu, comparative study of snow event**

---

\* Ph.D. student, Graduate Institute of Earth Science, Chinese Culture University, Taipei

\* Ph.D. student, Institute of Atmospheric Physics, Chinese Academy of Sciences, Beijing

\*\* Corresponding author, Dean, College of Science, Chinese Culture University, Taipei