

(4) For deflected typhoons the path lines seem to be somewhat insensitive to the typhoon strengths.

(5) The vortex movement is strongly affected by the approaching pathway of the vortex relative to the barrier.

(6) Laboratory modeling may provide a reliable and effective way for predicting the movement of a typhoon vortex when it is in the immediate vicinity of the island of Taiwan.

Acknowledgments: The author wishes to express his gratitude to Dr. Chun-Tsung Wang for his encouragement and hospitality while visiting the Institute of Physics, Academia Sinica, to Col. K. C. Chu and Col. Shih-Ting Wang for providing the analyzed typhoon data in Fig. 2, 3, 4 and 5, and for their valuable discussions, to Mr. Jin Jso for his assistance in the laboratory experiments. This work was supported by the Office of International Programs, National Science Foundation under Grant OIP 75-09275. Thanks are also due to the National Science Council of ROC for its partial support.

References

- Batchelor, G. K., 1967: *An Introduction to Fluid Mechanics*. London, Cambridge University Press.
- Brand, S., and J. W. Blelloch, 1974: Changes in characteristics of typhoons crossing the island of Taiwan. *Mon. Wea. Rev.*, 102, 708-713.
- Greenspan, H. P., 1969: *The Theory of Rotating Fluids*, London, Cambridge University Press.
- Hsu, Y. C., and S. T. Wang, 1960: On the problem of prediction of typhoons in the vicinity of Taiwan. *Weather Forecast and Analysis*, Quarterly, No. 2, Weather Central, CAF. (in Chinese)
- Lamb, H., 1932: *Hydrodynamics*. New York, Dover.
- Lin, T. M., K. C. Chu, C. C. Yu, and Others, 1972, 1973 & 1974: On the wind force of typhoons affecting Taiwan. Research Reports of Weather Central, CAF, No. 004, No. 005, No. 006. (in Chinese)
- Wang, S. T., 1954: On typhoons passing over the central mountain of Taiwan. *Weather Analysis of China*, Monthly, Vol. 4, No. 10, Weather Central, CAF. (in Chinese)
- Wang, S. T., 1963: Topographical effect on typhoons moving along the central mountain of Taiwan. *Weather Forecasting and Analysis*, Quarterly, No. 14, Weather Central, CAF. (in Chinese)
- Yanai, M., 1964: Formation of tropical cyclones. *Reviews Geophys.*, 2, 367-414.

山脈對颱風影響的實驗研究

鮑 威 平

美國天主教大學

摘 要

在這分報告裏，藉着一個與臺灣地形相似的二度橢圓障礙體和一個二度強渦流發生作用，以從事實驗研究。將實驗結果與氣象實際觀測數據比較，發現在實驗室中，可以合理地模擬颱風渦旋與臺灣島交互作用時的一般動態及其表面流態。在有偏流的狀況時，颱風渦旋頗類似一二度渦旋流經一二度山脈，而其路徑與渦旋的強度似乎並不關聯。這分研究顯示模型實驗似可提供一可靠且有效的方法來預測颱風在臺灣島附近的運動情形。