Hung-Chi Kuo

Position

Chair professor of Department of Atmospheric Science, NTU

Research field

Typhoon and Vortex Dynamics
Mathematical Modeling and Scientific Computing
Atmospheric & Oceanic Fluid Dynamics
Two-Dimensional Turbulence

Research Interests

My recent research interests cover the following subjects:

- **Extreme Rainfall of Typhoon**
  This study examines the factors that contributed to the heavy rainfall. It is found that the amount of rainfall in Taiwan was nearly proportional to the reciprocal of TC translation speed rather than the TC intensity.

- **Filamentation time diagnosis of thinning troughs and cutoff lows**
  This study analyzes synoptic-scale trough-thinning processes using a filamentation time diagnostic. The filamentation time diagnostic is derived from the potential vorticity equation expressed in spherical coordinates in the horizontal plane and the isentropic coordinate in the vertical direction. The results show that the filamentation time diagnostic can serve as a useful aid in the analysis and prediction of trough thinning and cutoff-low formation

- **Western North Pacific typhoons with concentric eyewalls**
  We examine the intensity change and moat dynamics of typhoons with concentric eyewalls using passive microwave data and best track data in the western North Pacific between 1997 and 2006. We found the filamentation dynamics play vital role in the concentric eyewall dynamics. This discovery is new and important in the typhoon dynamics.

- **Cloud microphysics impact on hurricane track**
  We explore the impact of cloud microphysical on the typhoon track. We found the average particle fall speed can strongly influence the typhoon outer structure and change the typhoon track.

Research Group

- Shih-Hao Su (University of Wisconsin-Madison , USA)
- Li-Huan Hsu (National Taiwan University, Taiwan)
- Yi-Ting Yang (National Taiwan University, Taiwan)
- Hung-Jui Yu (National Taiwan University, Taiwan)
- Li-Wei Kuo (National Taiwan University, Taiwan)