

My researches mainly focus on the studies of southwesterly flows, typhoons, Mei-yu rainfall, and marine boundary layer. Using 40-y of climatological data, we have identified formation stages of southwesterly flows in Mei-yu seasons. In a study of Typhoon Marakot, we have found the roles of typhoon interaction with southwesterly flows in heavy rainfall. We have also documented the marine boundary layer height in western North Pacific using the COSMIC/FORMOSAT 3 GPS radio occultation data.

### Techniques used in study

Weather Research and Forecast model simulation,  
Data assimilation,  
Ensemble forecast,  
Terrain effect

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### Background:

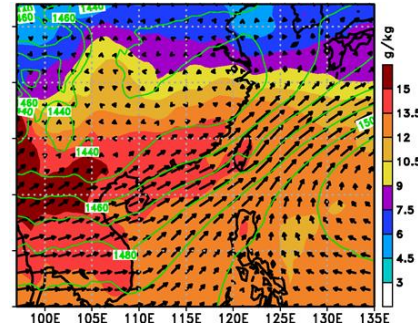
Ph.D. in Atmospheric Sciences,  
Department of Atmospheric Sciences,  
University of Washington, USA

### Funding:

Ministry of Science and Technology

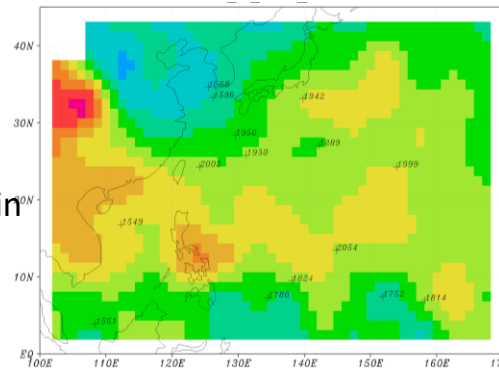


## Study typhoon and Mei-yu rainfall



Strong southwesterly flows transport moisture-laden air to Taiwan, resulting in heavy rainfall.

In winter high marine boundary layer heights are approximately located within the paths of the North Equatorial Current and the Kuroshio Current.



### Publications

**Chien, F.-C.\***, J.-S. Hong, and Y.-H. Kuo, 2019: The marine boundary layer height over the western North Pacific based on GPS radio occultation, island soundings, and numerical models. *Sensors*, **19**, 155. <https://doi.org/10.3390/s19010155>.

**Chien, F.-C.\***, and Y.-C. Chiu, 2019: A composite study of southwesterly flows and rainfall in Taiwan. *J. Meteor. Soc. Japan*, **97**, 1023–1040, <https://doi.org/10.2151/jmsj.2019-057>.

Paul, S., C.-C. Wang\*, **F.-C. Chien**, and D.-I. Lee, 2018: An evaluation of WRF Mei-yu rainfall forecasts in Taiwan during 2008–2010: Differences in elevation and sub-regions. *Meteorol. Appl.*, **25**, 269–282.

