

## 2011 Special Program: Two-Phase Flow, Interface Flow and Related Phenomena

*On the extreme rainfall of typhoon Morakot (2009): The slow translation  
speed and southwesterly flow*

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16:10 - 17:10

308, Mathematics Research Center Building (ori. New Math. Bldg.)

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This study primarily focuses on the slow translation speed and southwesterly flow associated with Typhoon Morakot (2009) which brought record-breaking torrential rainfall over southern Taiwan in August 2009. The numerous flooding and mudslides associated with the huge amount of rainfall caused tremendous loss of property and human lives such that it is considered the most devastating weather event of Taiwan in the past 50 years. It is found that the slow transition speed of Morakot and the continuous formation of mesoscale convection with the moisture supply from the southwesterly flow are the two most important factors that contributed to the heavy rainfall. The slow movement of Morakot was closely related to the weak steering flow that resulted from the weakening Pacific subtropical high (PSH) and the broad low-pressure systems surrounding Morakot. Such pressure systems came about by a combination of three typhoons, Typhoon Goni (2009) near the south coast of China, Morakot to the east of Taiwan, and Typhoon Etau (2009) farther to the east over the western North Pacific. However, a question remained unanswered is how Goni and Etau influenced the movement of Morakot. This study therefore uses the WRF model to carry out sensitivity experiments in which either Goni or Etau is removed by applying the TC bogus technique. The simulation results demonstrate the influence of Goni and Etau on the movement of Morakot.

