

Summary of NTU-UTokyo Workshop on Atmospheric Convection

NTU-UTokyo Workshop on Atmospheric Convection was held on March 2-4, 2023, at the Department of Atmospheric Sciences, National Taiwan University (NTU). The workshop's main objective was to promote scientific exchange and collaboration between researchers from NTU and the University of Tokyo (UTokyo) in the area of atmospheric convection.

The workshop began on March 2, with Prof. Wei-Ting Chen and students introducing the NTU campus to students from UTokyo. This was followed by a series of short talks by researchers at NTU. Prof. Hiroaki Miura, Mr. Kazumasa Ueno, Mr. Kazuya Yamazaki, and Mr. Keiichi Hashimoto shared their studies. The talks covered a range of topics related to atmospheric convection, including modeling framework to understand atmospheric circulations, applying the multigrid method for multiscale representation of fluids, impacts of biogeophysical processes in MIROC-E2SL, and the development of the blockwise-coupled SP-MIROC. There was a demonstration of the Storm Tracker mini radiosonde between these talks.

On March 3, the workshop continued with more talks and discussions. Mr. Min-Ken Hsieh and Yi-Chang Chen presented their work on applying machine learning methods to develop frameworks using cloud-resolving model data for understanding convection and local circulations. Ms. Yuka Sato shared analyses of potential instabilities for severe Senjo-Kousuitai precipitation events. Mr. Sosaku Ino presented his work on investigating Coriolis parameter dependence of tropical cyclone formation in a modeled environment of radiative-convective equilibrium. The workshop concluded on March 4 with a field trip to Maokong, providing a chance for participants to experience the local culture and environment of Taiwan.

Overall, the workshop was a success, with researchers from NTU and UTokyo sharing their latest research findings and exploring potential areas for collaboration. By bringing together researchers

with diverse expertise, the workshop provided a platform for fostering interdisciplinary collaborations that could lead to new insights and breakthroughs in atmospheric convection. The participants left the workshop with new insights, research ideas, and potential collaborations. We hope this workshop will serve as a catalyst for future collaborations between NTU and UTokyo.



NTU-UTokyo Workshop on Atmospheric Convection

March 2-4, 2023

Venue: National Taiwan University, Department of Atmospheric Sciences, Building A, Room A206.

March 2 (Thursday)

10:00 – 11:30 Discussion with Prof. Wei-Ting Chen and Mr. Jin-De Huang

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Lunch
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13:30 – 14:00 Opening with 12 short talks

14:00 – 14:30 Collaboration between a High-resolution Modeling and an Existing Climate Modeling Groups for a Global 1-km Scale Earth System Model

Hiroaki Miura

14:30 – 15:00 Preliminary Validation of the Applicability of the Multigrid Method to a Multi-scale Representation of Fluids

Kazumasa Ueno

15:00 – 15:15 Discussion

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Demo of Storm Tracker mini radiosonde and Break
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15:45 – 16:15 Implementation and performance of "blockwise-coupled" SP-MIROC

Kazuya Yamazaki

16:15 – 16:45 Representation of biogeophysical processes in South America in the earth system model MIROC-ES2L

Keiichi Hashimoto

16:45 – 17:00 Discussion

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Dinner
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March 3 (Friday)

- 10:00 – 10:30 Building a reduced order model of lee vortex in Taiwan through representation learning
Min-Ken Hsieh
- 10:30 – 11:00 A deep learning framework for analyzing cloud characteristics of aggregated convection using cloud-resolving model simulations
Yi-Chang Chen
- 11:00 – 11:15 Discussion
- 11:15 – 11:45 Analyses of potential instabilities for severe Senjo-Kousuitai precipitation events
Yuka Sato
- 11:45 – 12:15 Coriolis Parameter Dependence of TC Formation in a modeled environment of Radiative-Convective Equilibrium
Sosaku Ino
- 12:15 – 12:30 Discussion and Concluding Remarks
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Lunch

March 4 (Saturday)

- 9:00 – 12:00 Field Trip (マオコン)
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