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<b>BIRTHPLACE:</b>	Miyagi, Japan
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#### **EDUCATION:**

- 1998.04-1999.03: Climate Physics Laboratory, Kyoto University, Japan.  
B.S. Majoring in diurnal variations of convection over Thailand
- 1999.04-2004.03: Center for Climate System Research, University of Tokyo, Japan.  
M.S. Majoring in three-dimensional simulations of clouds  
Ph. D. Majoring in numerical schemes on spherical hexagonal/pentagonal grids

#### **PROFESSIONAL EXPERIENCE:**

- Postdoctoral Researcher, Frontier Research Center for Global Change, Japan Agency for Marine-Earth Science and Technology, Japan. 2004.04-2008.01
- Invited Scientist, Frontier Research Center for Global Change, Japan Agency for Marine-Earth Science and Technology, Japan. 2008.02-2019.03
- Visiting Scientist, Department of Atmospheric Science, Colorado State University, USA. 2008.02-2009.09 (visited to 2010.01)
- Project Assistant Professor, Center for Climate System Research, University of Tokyo, Japan. 2009.10-2012.03
- Associate Professor, Department of Earth and Planetary Science, Graduate School of Science, University of Tokyo, Japan. 2012.04-

#### **AWARDS:**

- 2008 Yamamoto-Syono Award for Outstanding Papers, Meteorological Society of Japan (2008 年度気象学会山本・正野論文賞)
- 2016 PEPS Most Accessed Paper Award (Satoh et al. 2014)
- 2017 PEPS Most Cited Paper Award (Satoh et al. 2014)
- 2017 SOLA Award (2017 年 SOLA 論文賞)

#### **PROFESSIONAL ACTIVITIES AND SERVICES:**

##### **Academic Society:**

- Meteorological Society of Japan (2001-)
- American Meteorological Society (2014-)

- American Geophysics Union (2014-)
- Japan Geoscience Union (2016-)

**Paper/proposal reviews:**

- Journal of the Meteorological Society of Japan
- Monthly Weather Review
- Journal of Climate
- Geophysical Research Letters
- Atmospheric Research
- Scientific Online Letters on the Atmosphere
- Asia-Pacific Journal of Atmospheric Sciences
- Nagare (Japanese)
- National Science Foundation
- Journal of Geophysical Research Atmosphere
- Quarterly Journal of the Royal Meteorological Society
- Climate Dynamics
- Journal of the Atmospheric Sciences
- Journal of Computational Physics
- Scientific Reports
- Meteorology and Atmospheric Physics
- Atmospheric Chemistry and Physics
- Journal of Advances in Modeling Earth Systems

**RESEARCH AND PUBLICATIONS:**

**Current interests:**

- The multi-scale structure in the earth system
- Multi-scale models of the climate system
- Numerical schemes

**Published/accepted papers (author):**

Miura, H., 2019: Application of the synchronized B grid staggering for solution of the shallow-water equations on the spherical icosahedral grid. *Mon. Wea. Rev.*, **147**, 2485-2509, <https://doi.org/10.1175/MWR-D-18-0304.1>.

Miura, H., 2017: Coupling the hexagonal B1-grid and B2-grid to avoid a computational mode problem of the hexagonal ZM-grid. *Sci. Online Lett. Atmos.*, **13**, 69-73, doi:10.2151/sola.2017-013.

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- Miura, H., 2013: An upwind-biased conservative transport scheme for multi-stage temporal integrations on spherical icosahedral grids. *Mon. Wea. Rev.*, **141**, 4049-4068, <https://doi.org/10.1175/MWR-D-13-00083.1>
- Miura, H., and W. C. Skamarock, 2013: An upwind-biased transport scheme using a quadratic reconstruction on spherical icosahedral grids. *Mon. Wea. Rev.*, **141**, 832-847, <https://doi.org/10.1175/MWR-D-11-00355.1>
- Miura, H., T. Maeda, and M. Kimoto, 2012: A comparison of the Madden-Julian Oscillation simulated by different versions of the MIROC climate model. *Sci. Online Lett. Atmos.*, **8**, 165-169. doi:10.2151/sola.2012-040.
- Miura, H., M. Satoh, and M. Katsumata, 2009: Spontaneous onset of a Madden-Julian oscillation event in a cloud-system-resolving simulation. *Geophys. Res. Lett.*, **36**, L13802, doi:10.1029/2009GL039056.
- Miura, H., M. Satoh, T. Nasuno, A. Noda, and K. Oouchi, 2007: A Madden-Julian oscillation event realistically simulated by a global cloud-resolving model. *Science*, **318**, 1763-1765, doi: 10.1126/science.1148443.
- Miura, H., 2007: An upwind-biased conservative advection scheme for spherical hexagonal-pentagonal grids. *Mon. Wea. Rev.*, **135**, 4038-4044.
- Miura, H., 2007: A fourth-order-centered finite-volume scheme for regular hexagonal grids. *Mon. Wea. Rev.*, **135**, 4030-4037.
- Miura, H., M. Satoh, H. Tomita, A. Noda, T. Nasuno, and S. Iga, 2007: A short-duration global cloud-resolving simulation with a realistic land and sea distribution. *Geophys. Res. Lett.*, **34**, L02804, doi:10.1029/2006GL027448.
- Miura, H., H. Tomita, T. Nasuno, S. Iga, M. Satoh, and T. Matsuno, 2005: A climate sensitivity test using a global cloud resolving model under an aqua planet condition. *Geophys. Res. Lett.*, **32**, L19717, doi:10.1029/2005GL023672.
- Miura, H., and M. Kimoto, 2005: A comparison of grid quality of optimized spherical hexagonal-pentagonal geodesic grids. *Mon. Wea. Rev.*, **133**, 2817-2833.

#### **Responses (author):**

- Miura, H., M. Satoh, T. Nasuno, A. Noda, and K. Oouchi, 2008: Response to “Coarse-resolution models only partly cloudy.” *Science*, **320**, 613.

**Book (author):**

Miura, H., 2019: Difficulties in the subgrid-scale redistribution of moisture of a global cloud-resolving model. *Current Trends in the Representation of Physical Processes in Weather and Climate Models*, D. A. Randall, Ed., Springer, 207-215.

**Published/accepted papers (coauthor):**

Yanase, T., S. Nishizawa, H. Miura, T. Takemi, and H. Tomita, 2022: Low-Level Circulation and Its Coupling with Free-Tropospheric Variability as a Mechanism of Spontaneous Aggregation of Moist Convection. *J. Atmos. Sci.*, 79, 3429–3451, <https://doi.org/10.1175/JAS-D-21-0313.1>.

Yanase, T., Nishizawa, S., Miura, H., & Tomita, H. (2022). Characteristic form and distance in high-level hierarchical structure of self-aggregated clouds in radiative-convective equilibrium. *Geophysical Research Letters*, 49, e2022GL100000. <https://doi.org/10.1029/2022GL100000>

Suematsu, T., Miura, H., Kodama, C., & Takasuka, D. (2022). Deceleration of Madden–Julian Oscillation speed in NICAM AMIP-type simulation associated with biases in the Walker circulation strength. *Geophysical Research Letters*, 49, e2022GL098628. <https://doi.org/10.1029/2022GL098628>

Ong, C. R., Koike, M., Hashino, T., & Miura, H. (2022). Modeling performance of SCALE-AMPS: Simulations of Arctic mixed-phase clouds observed during SHEBA. *Journal of Advances in Modeling Earth Systems*, 14, e2021MS002887. <https://doi.org/10.1029/2021MS002887>

Suematsu, T., and H. Miura, 2022: Changes in the Eastward Movement Speed of the Madden–Julian Oscillation with Fluctuation in the Walker Circulation, *Journal of Climate*, 35, 211-225, <https://doi.org/10.1175/JCLI-D-21-0269.1>

Kohyama, T., H. Miura, and S. Kido, 2021: Intensive Variability Extraction. *Sci. Online Lett. Atmos.*, 17, 246-250. <https://doi.org/10.2151/sola.2021-043>

Kohyama, T., Y. Yamagami, H. Miura, S. Kido, H. Tatebe, and M. Watanabe, 2021: The Gulf Stream and Kuroshio Current are synchronized. *Science*, 374, 341-346, DOI: 10.1126/science.abh3295

Yamazaki, K., and H. Miura, 2021: On the Formation Mechanism of Cirrus Banding: Radiosonde Observations, Numerical Simulations, and Stability Analyses, *Journal of the Atmospheric Sciences*, 78, 3477-3502, <https://doi.org/10.1175/JAS-D-20-0356.1>

Kohyama, T., T., Suematsu, T., H., Miura, and D. Takasuka, 2021: A Wall-like sharp downward branch of the Walker circulation above the western Indian Ocean.

- Journal of Geophysical Research: Atmospheres, 126, e2021JD034650.  
<https://doi.org/10.1029/2021JD034650>
- Hung, C.-S., and H. Miura, 2021: Ensemble of radiative-convective equilibrium simulations near the aggregated and scattered boundary. *Geophysical Research Letters*, 48, e2021GL095279. <https://doi.org/10.1029/2021GL095279>.
- Takasuka, D., T. Kohyama, H. Miura, and T. Suematsu, 2021: MJO initiation triggered by amplification of upper-tropospheric dry mixed Rossby-gravity waves. *Geophysical Research Letters*, 48, e2021GL094239.  
<https://doi.org/10.1029/2021GL094239>
- Shibuya, R., M. Nakano, C. Kodama, T. Nasuno, K. Kikuchi, M. Satoh, H. Miura, T. Miyakawa, 2021: Prediction Skill of the Boreal Summer Intra-Seasonal Oscillation in Global Non-hydrostatic Atmospheric Model Simulations with Explicit Cloud Microphysics. *J. Meteor. Soc. Jpn.*, 99, 973-992. <https://doi.org/10.2151/jmsj.2021-046>
- Inoue, T., Kavirajan, R., M Satoh, and H. Miura, 2021: On the Semidiurnal Variation in Surface Rainfall Rate over the Tropics in a Global Cloud-Resolving Model Simulation and Satellite Observations. *J. Meteor. Soc. Jpn.*, 99, 1371-1388,  
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- Ong, C. R., H. Miura, and M. Koike, 2021: The Terminal Velocity of Axisymmetric Cloud Drops and Raindrops Evaluated by the Immersed Boundary Method. *J. Atmos. Sci.*, 78, 1129–1146, <https://doi.org/10.1175/jas-d-20-0161.1>
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- Matsugishi, S., H. Miura, T. Nasuno, and M. Satoh, 2020: Impact of latent heat flux modifications on the reproduction of a Madden–Julian Oscillation event during the 2015 pre-YMC campaign using a global cloud-system-resolving model. *Sci. Online Lett. Atmos.*, 16A, 12–18, doi:10.2151/sola.16A-003.
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- Yanase, T., S. Nishizawa, H. Miura, T. Takemi, and H. Tomita, 2020: New Critical Length for the Onset of Self-Aggregation of Moist Convection. *Geophys. Res. Lett.*, 47, doi:10.1029/2020GL088763.
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- Ong, C. R., and H. Miura, 2019: Immersed boundary method with irrotational delta vector for droplet simulations of large density ratio. *J. Comput. Phys.*, **391**, 280–302. <https://doi.org/10.1016/j.jcp.2019.04.026>.
- Miyakawa, T., and H. Miura, 2019: Resolution dependencies of tropical convection in a global cloud/cloud-system resolving model. *J. Meteor. Soc. Japan*, **97**, 745–756. <https://doi.org/10.2151/jmsj.2019-034>.
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- Kikuchi, K., C. Kodama, T. Nasuno, M. Nakano, H. Miura, M. Satoh, A. T. Noda, and Y. Yamada, 2017: Tropical intraseasonal oscillation simulated in an AMIP-type experiment by NICAM. *Climate Dyn.*, **48**, 2507-2528; doi: 10.1007/s00382-016-3219-z.
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- Shibuya, R., H. Miura, and K. Sato, 2016: A grid transformation method for a quasi-uniform, circular fine region using the spring dynamics. *J. Meteor. Soc. Japan*, **94**; doi: 10.2151/jmsj.2016-022.
- Takasuka, D., T. Miyakawa, M. Satoh, and H. Miura, 2015: Topographical effects on internally produced MJO-like disturbances in an aqua-planet version of NICAM. *Sci. Online Lett. Atmos.*, **11**, 170-176, <https://doi.org/10.2151/sola.2015-038>.
- Tomikawa, Y., M. Nomoto, H. Miura, M. Tsutsumi, K. Nishimura, T. Nakamura, H. Yamagishi, T. Yamanouchi, T. Sato, and K. Sato, 2015: Vertical wind disturbances during a strong wind event observed by the PANSY radar at Syowa station, antarctica. *Mon. Wea. Rev.*, **143**, 1804–1821, <https://doi.org/10.1175/MWR-D-14-00289.1>
- Satoh, M., Tomita, H., Yashiro, H., Miura, H., Kodama, C., Seiki, T., Noda, A. T., Yamada, Y., Goto, D., Sawada, M., Miyoshi, T., Niwa, Y., Hara, M., Ohno, T., Iga, S., Arakawa, T., Inoue, T., Kubokawa, H., 2014: The Non-hydrostatic Icosahedral Atmospheric Model: Description and Development. *Progress in Earth and Planetary Science*, **1**, 18, doi:10.1186/s40645-014-0018-1
- Miyakawa, T., M. Satoh, H. Miura, H. Tomita, H. Yashiro, A. T. Noda, Y. Yamada, C. Kodama, M. Kimoto, and K. Yoneyama, 2014: Madden-Julian Oscillation prediction skill of a new-generation global model demonstrated using a supercomputer. *Nature Communications*, **5**, 3769. 10.1038/ncomms4769
- Yasunaga, K., T. Nasuno, H. Miura, Y. N. Takayabu, and M. Yoshizaki, 2013: Afternoon precipitation peak simulated in an aqua-planet global non-hydrostatic model (aqua-planet-NICAM). *J. Meteor. Soc. Japan*, **91A**, 217-229, <https://doi.org/10.2151/jmsj.2013-A07>.
- Kubokawa, H., M. Fujiwara, T. Nasuno, H. Miura, M. K. Yamamoto, and M. Satoh, 2012: Analysis of the tropical tropopause layer using the Nonhydrostatic Icosahedral Atmospheric Model (NICAM): 2. An experiment under the

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- Miyakawa, T., Y. N. Takayabu, T. Nasuno, H. Miura, M. Satoh, and M. W. Moncrieff, 2012: Convective momentum transport by rainbands within a Madden-Julian oscillation in a global nonhydrostatic model with explicit deep convective processes. Part I: Methodology and general results. *J. Atmos. Sci.*, **69**, 1317-1338, <https://doi.org/10.1175/JAS-D-11-024.1>.
- Wehner M.F., L. Oliker, J. Shalf, D. Donofrio, L.A. Drummond, R. Heikes, S. Kamil, C. Lonor, N. Miller, H. Miura, M. Mohiyuddin, D. Randall, and W.-S. Yang, 2011: Hardware/software co-design of global cloud system resolving models. *J. Adv. Model. Earth Syst.*, 3, M100003.
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- Nasuno, T., H. Miura, M. Satoh, A. T. Noda, K. Oouchi, 2009: Multi-scale organization of convection in a global numerical simulation of the December 2006 MJO event using explicit moist processes. *J. Meteor. Soc. Jpn.*, 87, 335-345, doi:10.2151/jmsj.87.335.
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- Masunaga, H., M. Satoh, and H. Miura, 2008: A joint satellite and global cloud-resolving model analysis of a Madden-Julian Oscillation event: Model diagnosis. *J. Geophys. Res.*, 113, D17210, doi:10.1029/2008JD009986.
- Watanabe, S., H. Miura, M. Sekiguchi, T. Nagashima, K. Sudo, S. Emori, and M. Kawamiya, 2008: Development of an atmospheric general circulation model for integrated earth system modeling on the earth simulator. *J. Earth Simulator*, 9, 27-35.
- Sato, M., T. Matsuno, H. Tomita, H. Miura, T. Nasuno, and S. Iga, 2008: Nonhydrostatic Icosahedral Atmospheric Model (NICAM) for global cloud resolving simulations. *Journal of Computational Physics*,

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Satoh, M., T. Nasuno, H. Miura, H. Tomita, S. Iga, Y. Takayabu, 2008: Precipitation statistics comparison between global cloud resolving simulation with NICAM and TRMM PR data. High Resolution Numerical Modelling of the Atmosphere and Ocean, edited by Wataru Ohfuchi and Kevin Hamilton, 99-112, ISBN-13: 978-0387366715, 293pp.

Sato, T., H. Miura, and M. Satoh, 2007: Spring diurnal cycle of clouds over Tibetan Plateau: global cloud-resolving simulations and satellite observations. *Geophys. Res. Lett.*, **34**, L18816, doi:10.1029/2007GL030782.

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Satoh, M., H. Tomita, H. Miura, S. Iga, and T. Nasuno, 2005: Development of a global cloud resolving model -- a multi-scale structure of tropical convections --. *J. Earth Simulator*, **3**, 11-19.

#### **Submitted papers (author):**

#### **Proceedings:**

Miura, H., and M. Kimoto: A comparison of error reduction schemes for a shallow water model on a spherical geodesic grid, International Union of Geodesy and Geophysics, A53, 2003.

Miura, H., and T. Satomura: Diurnal variations of precipitation, wind and convection activity in Monsoon period over Thailand, 99' Workshop on GAME-Tropics in Thailand, p219-221, 1999.

#### **Presentations:**

Hiroaki Miura, Rinoka Ono, Ching-Shu Hung, Miho Sekiguchi: Update of MSTRNX to MSTRN11 in MIROC climate model and its verification in the aquaplanet

experiments, The Joint CFMIP-GASS Meeting on Cliud, Precipitation, Circulation & Climate Sensitivity, 2023-07-11, Sorbonne University, Paris, France. (poster)

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