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Curriculum Vitae

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Educational Background

- B.S. in Meteorology, Meteorology College (Affiliated organization of the Japan Meteorological Agency), 2002
- M.S. in Meteorology and Physical Oceanography, University of Miami, 2010
  - Thesis Title: Initial Condition Sensitivity and Dynamical Mechanisms of Perturbation Growth in Tropical Cyclones
- Ph.D. in Geophysics, Tohoku University, 2011
  - Thesis Title: On the Use of Singular Vectors for Tropical Cyclone Track Forecasts

Professional Experience

2026.04 –Present
Head, Department of Typhoon and Severe Weather Research, Meteorological Research Institute, Japan Meteorological Agency

2019.04 –2026.03
Senior Researcher, Department of Applied Meteorology Research, Meteorological Research Institute, Japan Meteorological Agency

2021.10 –2023.09
Scientific Officer, World Weather Research Division, Science and Innovation Department, World Meteorological Organization

2010.08 –2019.03
Researcher (Senior Researcher from 2016.04), Typhoon Research Department, Meteorological Research Institute, Japan Meteorological Agency

2013.01 –2014.01
Visiting Scientist, Predictability Division, European Centre for Medium Range Weather Forecasts

2002.04 – 2010.07
Scientific Official, Global and Typhoon Modeling Team, Numerical Prediction Division, Japan Meteorological Agency

2008.08 – 2010.07
Graduate Research Assistant, Division of Meteorology and Physical Oceanography, Rosenstiel School of Marine and Atmospheric Science, University of Miami

Research Interests

Tropical cyclone track, intensity, and genesis forecasts. Aircraft observations. Ensemble forecasting. Tropical cyclone and global warming.

Award

- Journal of the Meteorological Society of Japan Award, 2023
  - Kawabata, Y., U. Shimada, and **M. Yamaguchi**, 2023: The 30-year (1987–2016) Trend of Strong Typhoons and Genesis Locations Found in the Japan Meteorological Agency's Dvorak Reanalysis Data, *J. Meteor. Soc. Japan*, **101**, 435-443.
- Journal of the Meteorological Society of Japan Award, 2020
  - Kawabata, Y., and **M. Yamaguchi**, 2020: Probability ellipse for tropical cyclone track forecasts with multiple ensembles. *J. Meteor. Soc. Japan*, **98**, 821-833.
- Japan Meteorological Agency Director-General Award (Group award), 2019
  - Implementation of five-day typhoon intensity forecast
- SOLA Best Paper Award 2018, Meteorological Society of Japan, 2019
  - Ito, K., H. Yamada, M. Yamaguchi, T. Nakazawa, N. Nagahama, K. Shimizu, T. Ohigashi, T. Shinoda, and K. Tsuboki, 2018: Analysis and Forecast Using Dropsonde Data from the Inner-Core Region of Tropical Cyclone Lan (2017) Obtained during the First Aircraft Missions of T-PARCII. *SOL*A, **14**, 105-110.
- Syono Award, Meteorological Society of Japan, 2015
  - Research and development of typhoon forecasting technique using a singular vector method and ensemble approaches.
- Certificate of Appreciation from WMO, 2015
  - Contribution to the WMO THORPEX Programme
- Meteorological Research Institute (MRI/JMA) Director-General Award (Group award), 2014
  - Research and development of TIGGE products and international contribution to meteorological disaster reduction operations
- Japan Meteorological Agency Director-General Award (Group award), 2010
  - Implementation of five-day typhoon track forecasts
- MPO Best Paper Award, Division of Meteorology and Physical Oceanography, University of Miami, 2010
  - Yamaguchi, M., and S. J. Majumdar, 2010: Using TIGGE data to diagnose initial perturbations and their growth for tropical cyclone ensemble forecasts, *Mon. Wea. Rev.*, **138**, 3634–3655.

International service

- Co-lead of the special focus session on AI for the WMO 11th International Workshop on Tropical Cyclones (2025-Present)
- Member of the international committee of the WMO 11th International Workshop on Tropical Cyclones (2025-Present)
- Co-chair of the expert term on AI Applications in Tropical Cyclone Analysis and Forecasting under the Typhoon Committee (2025-present)
- Member of the expert term of the Fourth Assessment Report on Impacts of Climate Change on Tropical Cyclones in Typhoon Committee Region (2024-present)
- Member of Working Group on Predictability, Dynamics and Ensemble Forecasting (PDEF), World Weather Research Programme, World Meteorological Organization (2015-2021)
- Co-chair of Tropical Cyclone Structure Analysis and Change Topic of WMO

9th International Workshop on Tropical Cyclones (IWTC, 2018)

- Co-chair of Tropical Cyclone Motion Topic of WMO 8th International Workshop on Tropical Cyclones (IWTC, 2014)
- Member of GIFS-TIGGE Working Group, THORPEX Asian Regional Committee (2011-2014)

Refereed Publications from 2020-present

1. Lee, W., **M. Yamaguchi**, Y.-H. He, Y.-S. Lui, Z. Sun, X. Fan, G. Nie, Y. Ikuta, and S. Won, 2026: Track-pattern-aware verification of AI-based tropical cyclone forecasts in the western North Pacific: 2025 performance and cross-year interpretation, Tropical Cyclone Research and Review (Under review)
2. Lee, W., **M. Yamaguchi**, Y.-H. He, Y.-S. Lui, Z. Sun, X. Fan, G. Nie, and Y. Ikuta, 2026: Evaluation of AI-based tropical cyclone forecasts in the western North Pacific: Insights from the 2024 Typhoon Committee ET-AITC multi model dataset, Artificial Intelligence for the Earth Systems (In Press)
3. Tsujino, S., K. Tsuboki, S. Kanada, S. Hirano, T. Takahashi, **M. Yamaguchi**, M. Kato, U. Shimada, and A. Wada, 2026: Potential-Vorticity Bridge and Inner-Core Structural Change During Mature to Weakening Phases of Typhoon Neoguri (2025) Captured by Aircraft and Satellite Observations. SOLA, doi:10.1007/s44393-026-00033-z.
4. **Yamaguchi, M.**, Y. Ikuta, K. Ito, and M. Satoh, 2025: Tropical cyclone track and intensity predictions in the western North Pacific basin using Pangu-Weather and JMA initial conditions. *J. Meteor. Soc. Japan.,* **103**, http://doi.org/10.2151/jmsj.2025-018.
5. **Yamaguchi, M.**, N. Usui, and N. Hirose, 2024: Typhoon Intensity Forecasts using TIFS with Pseudo Ocean Coupling, *SOLA*. **20**, 86-91.
6. Kawabata, Y., **M. Yamaguchi**, H. Fudeyasu, and R. Yoshida, 2024: Assessing global ensemble systems' forecasts of tropical cyclone genesis in differing environmental flow regimes in the western North Pacific, Tropical Cyclone Research and Review, 13, 344-355.
7. Woolnough, S. J., F. Vitart, A. W. Robertson, C. A. S. Coelho, R. Lee, H. Lin, A. Kumar, C. Stan, M. Balmaseda, N. Caltabiano, **M. Yamaguchi**, H. Afargan-Gerstman, V. L. Boult, F. M. De Andrade, D. Büeler, A. Carreric, D. A. Campos Diaz, J. Day, J. Dorrington, M. Feldmann, J. C. Furtado, C. M. Grams, R. Koster, L. Hirons, V. S. Indasi, P. Jadhav, Y. Liu, P. Nying'uro, C. D. Roberts, E. Rouges, and J. Ryu, 2024: Celebrating 10 Years of the Subseasonal to Seasonal Prediction Project and Looking to the Future, *Bulletin of the American Meteorological Society*, **105**, E521-E526.
8. Jason P. Dunion, C. Davis, H. Titley, H. Greatrex, **M. Yamaguchi**, J. Methven, R. Ashrit, Z. Wang, H. Yu, A.-C. Fontan, A. Brammer, M. Kucas, M. Ford, P. Papin, F. Prates, C. Mooney, A. Kruczkiewicz, P. Chakraborty, A. Burton, M. DeMaria, R. Torn, J. L. Vigh, 2023: Recommendations for improved tropical cyclone formation and position probabilistic forecast products, *Tropical Cyclone Research and Review*, **12**, 241-258.
9. Kawabata, Y., U. Shimada, and **M. Yamaguchi**, 2023: The 30-year (1987–2016) Trend of Strong Typhoons and Genesis Locations Found in the Japan Meteorological Agency's Dvorak Reanalysis Data, *J. Meteor. Soc. Japan*, **101**, 435-443.
10. **Yamaguchi, M.**, T. Nakaegawa, and L. Magnusson, 2023: Utilizing Ensemble Reforecast Data for Reservoir Operation, *Journal of Japan Society of Hydrology & Water Resources*, **36**, 52-62.

11. Magnusson, L., D. Ackerley, Y. Bouteloup, J.-H. Chen, J. Doyle, P. Earnshaw, Y. C. Kwon, M. Köhler, S. T. K Lang, Y.-J. Lim, M. Matsueda, T. Matsunobu, R. McTaggart-Cowan, A. Reinecke, **M. Yamaguchi**, and L. Zhou, 2022: Skill of Medium-Range Forecast Models Using the Same Initial Conditions. *Bull. Amer. Meteor. Soc.*, **103**, E2050–E2068.
12. Liang, M., J. C. L. Chan, J. Xu, and **M. Yamaguchi**, 2022: Numerical Prediction of Tropical Cyclogenesis Part II: Identification of large-scale physical processes under the monsoon shear line synoptic pattern, *Q. J. R. Meteorol. Soc.*, **148**, 1965-1982.
13. Tang, K., J. C. L. Chan, and **M. Yamaguchi**, 2021: Large Tropical Cyclone Track Forecast Errors of Global Numerical Weather Prediction Models in western North Pacific Basin, *Tropical Cyclone Research and Review*, **10**, 151-169.
14. Yamada, H., K. Ito, K. Tsuboki, T. Shinoda, T. Ohigashi, **M. Yamaguchi**, T. Nakazawa, N. Nagahama, and K. Shimizu, 2021: The Double Warm-Core Structure of Typhoon Lan (2017) as Observed through the First Japanese Eyewall-Penetrating Aircraft Reconnaissance, *J. Meteor. Soc. Japan,* **99**, 1297-1327.
15. Liang, M., J. C. L. Chan, J. Xu, and **M. Yamaguchi**, 2021: Numerical Prediction of Tropical Cyclogenesis Part I: Evaluation of Model Performance, *Q. J. R. Meteorol. Soc.*, **147**, 1626-1641.
16. Kawase, H., **M. Yamaguchi**, Y. Imada, S. Hayashi, A. Murata, T. Nakaegawa, T. Miyasaka, and I. Takayabu, 2021: Enhancement of extremely heavy precipitation induced by Typhoon Hagibis (2019) due to historical warming, *SOLA*, **17**, 7-13.
17. **Yamaguchi, M.**, and S. Maeda, 2020: Slowdown of typhoon translation speeds in mid-latitudes in September influenced by the Pacific Decadal Oscillation and global warming, *J. Meteor. Soc. Japan*, **98**, 1321-1334. (cited in ARC6)
18. **Yamaguchi, M.**, and S. Maeda, 2020: Increase in the Number of Tropical Cyclones Approaching Tokyo Since 1980, *J. Meteor. Soc. Japan*, **98**, 775-786. (cited in ARC6)
19. Kawabata, Y., and **M. Yamaguchi**, 2020: Probability ellipse for tropical cyclone track forecasts with multiple ensembles. *J. Meteor. Soc. Japan*, **98**, 821-833.
20. **Yamaguchi, M.**, J. C. L. Chan, I.-J. Moon, K. Yoshida, and R. Mizuta, 2020: Global warming changes tropical cyclone translation speed, *Nature Communications*, **11**, 47. (cited in ARC6)
21. Tang, K., J. C. L. Chan, and **M. Yamaguchi**, 2020: Effects of the Outer Size on Tropical Cyclone Track Forecasts, *Meteorological Applications*, **27**. https://doi.org/10.1002/met.1888
22. Shimada, U., **M. Yamaguchi**, and S. Nishimura, 2020: Is the Number of Tropical Cyclone Rapid Intensification Events in the Western North Pacific Increasing?, *SOLA*, **16**, 1-5.
23. Fudeyasu. H., R. Yoshida, **M. Yamaguchi**, H. Eito, C. Muroi, S. Nishimura, K. Bessho, Y. Oikawa, and N. Koide, 2020: Development Conditions for Tropical Storms over the Western North Pacific Stratified by Large-scale Flow Patterns, *J. Meteor. Soc. Japan*, **98**, 61-72

Selected Refereed Publications before 2019 (Lead author only)

24. **Yamaguchi, M.**, H. Owada, U. Shimada, M. Sawada, T. Iriguchi, K. D. Musgrave, and M. DeMaria, 2018: Tropical Cyclone Intensity Prediction in the Western North Pacific Basin using SHIPS and JMA/GSM, *SOLA*, **14**, 138-143.
25. **Yamaguchi, M.**, J. Ishida, H. Sato, and M. Nakagawa, 2017: WGNE Intercomparison of Tropical Cyclone Forecasts by Operational NWP Models: A

Quarter Century and Beyond. *Bull. Amer. Meteor. Soc.*, **98**, 2337–2349.

26. **Yamaguchi, M.**, F. Vitart, S. T. K. Lang, L. Magnusson, R. L. Elsberry, G. Elliott, M. Kyouda, and T. Nakazawa, 2015: Global distribution on the skill of tropical cyclone activity forecasts from short- to medium-range time scales. *Weather and Forecasting*. **30**, 1695-1709.
27. **Yamaguchi, M.**, T. Nakazawa, and S. Hoshino, 2012: On the Relative Benefits of a Multi-Centre Grand Ensemble for Tropical Cyclone Track Prediction in the Western North Pacific. *Q. J. R. Meteorol. Soc.*, **138**, 2019-2029.
28. **Yamaguchi, M.**, D. S. Nolan, M. Iskandarani, S. J. Majumdar, M. S. Peng, and C. A. Reynolds, 2011: Singular vectors for tropical cyclone-like vortices in a nondivergent barotropic framework, *J. Atmos. Sci.*, **68**, 2273-2291.
29. **Yamaguchi, M.**, and S. J. Majumdar, 2010: Using TIGGE data to diagnose initial perturbations and their growth for tropical cyclone ensemble forecasts, *Mon. Wea. Rev.*, **138**, 3634–3655.
30. **Yamaguchi, M.**, T. Iriguchi, T. Nakazawa, and C.-C. Wu, 2009: An observing system experiment for Typhoon Conson (2004) using a singular vector method and DOTSTAR data, *Mon. Wea. Rev.*, **137**, 2801-2816.
31. **Yamaguchi, M.**, R. Sakai, M. Kyoda, T. Komori, and T. Kadowaki, 2009: Typhoon Ensemble Prediction System developed at the Japan Meteorological Agency, *Mon. Wea. Rev.*, **137**, 2592-2604.