

# CURRICULUM VITAE

## **HIROHIKO MASUNAGA** ASSOCIATE PROFESSOR

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### **Education**

Ph.D. University of Tokyo, Astrophysics 1999

M.Sc. University of Tokyo, Astrophysics 1996

B.Sc. University of Tokyo, Astrophysics 1994

### **Professional experience**

10/2015-present: Associate Professor, Institute for Space-Earth Environmental Research,  
Nagoya University

07/2006-09/2015: Associate Professor, Hydrospheric Atmospheric Research Center,  
Nagoya University

05/2004-05/2006: Research Scientist II, Department of Atmospheric Science,  
Colorado State University

05/2002-04/2004: Postdoctoral Fellow, Department of Atmospheric Science,  
Colorado State University

10/1999-04/2002: NASDA Research Fellow, Earth Observation Research Center, National Space  
Development Agency (NASDA) of Japan (currently Japan Aerospace Exploration  
Agency)

04/1999-09/1999: Postdoctoral Fellow, Center for Climate System Research, University of Tokyo

04/1997-04/1999: Doctoral Student Fellow, Japan Society for the Promotion of Science

### **Professional experience (temporary contracts)**

2023 : Fellow, Brussels Institute for Advanced Studies (BrIAS)

04/2009-03/2011: Visiting Associate Professor, Center for Environmental Remote Sensing, Chiba University

## **Research Interests**

Satellite meteorology and climatology

Tropical convection and large-scale dynamics

Convectively-coupled equatorial waves and the Madden-Julian Oscillation

Tropical air-sea interactions

Development of satellite retrieval algorithms

Development of satellite data simulators and cloud model evaluation

## **Membership of Academic Societies**

Meteorological Society of Japan

American Meteorological Society

American Geophysical Union

## **Academic recognition**

2022 Atmospheric Science Librarians International (ASLI) Choice (Science and Technology Award) for the book "Satellite Measurements of Clouds and Precipitation: Theoretical Basis"

2019 Award of the Meteorological Society of Japan

## **Professional service**

Editor, Journal of the Meteorological Society of Japan, Jul 2010-

Japan-France Frontiers of Science Symposium (JFFoS) planning group member (PGM), FY2010-12 (Co-chair for FY2011)

UK-Japan Frontiers of Science Symposium (UK-Japan FoS) planning group member (PGM), FY2016 (Co-chair)

Global Energy and Water Exchanges Project (GEWEX) Data and Analysis Panel (formerly Radiation Panel) (GDAP) Co-chair (2022-) (member since 2010)

Scientific Advisory Board, Max Planck Institute for Meteorology (2026-)

## Publication List (as of 27<sup>th</sup> January, 2026)

Hirohiko Masunaga  
Institute for Space-Earth Environmental Research,  
Nagoya University

### I. Peer-reviewed papers

76. **Masunaga, H.** and H. Takahashi, 2025:  
Transitions toward a Midheavy State of Tropical Convection  
*J. Geophys. Res. Atmos.*, **130**, e2025JD043909. [doi:10.1029/2025JD043909](https://doi.org/10.1029/2025JD043909)
75. Li, Y.-X., M. S. Singh, **H. Masunaga**, and J.-Y. Yu, 2025:  
Bimodal evolution of vertical motion in tropical precipitation extremes  
*Geophys. Res. Lett.*, **52**, e2025GL116056. [doi: 10.1029/2025GL116056](https://doi.org/10.1029/2025GL116056)
74. Chen, Y.-C. and **H. Masunaga**, 2025:  
Vertical velocity and diabatic heating top-heaviness in the convective evolution over tropical oceans  
*J. Geophys. Res. Atmos.*, **130**, e2024JD043054. [doi:10.1029/2024JD043054](https://doi.org/10.1029/2024JD043054)
73. Ohara, K. and **H. Masunaga**, 2025:  
Synergy of millimeter-wave radar and radiometer measurements for retrieving frozen hydrometeors in deep convective systems  
*Atmos. Meas. Tech.*, **18**, 4791-4807. [doi:10.5194/amt-18-4791-2025](https://doi.org/10.5194/amt-18-4791-2025)
72. Ocarina, D. T. and **H. Masunaga**, 2025:  
Tropical cloud classification with a clustering analysis applied to CloudSat and CALIPSO observations  
*J. Geophys. Res. Atmos.*, **130**, e2024JD043098. [doi:10.1029/2024JD043098](https://doi.org/10.1029/2024JD043098)
71. Chen, Y.-C. and **H. Masunaga**, 2024:  
The Tropical Convective Evolution in Different Rain Types over the West and East Pacific  
*SOLA*, **20**, 392-399. [doi:10.2151/sola.2024-052](https://doi.org/10.2151/sola.2024-052)
70. Li, Y.-X., **H. Masunaga**, H. Takahashi, and J.-Y. Yu, 2024:  
When, where and to what extent do temperature perturbations near tropical deep convection follow convective quasi equilibrium?  
*Geophys. Res. Lett.*, **51**, e2024GL108233. [doi:10.1029/2024GL108233](https://doi.org/10.1029/2024GL108233)
69. Watari, A., Iizuka, Y., Fujita, K. **H. Masunaga**, and K. Kawamoto 2024:

- Long-term relationships between summer clouds and aerosols over mid-high latitudes of the Northern Hemisphere  
*Sci. Rep.*, **14**, 9059 [doi:10.1038/s41598-024-59817-7](https://doi.org/10.1038/s41598-024-59817-7)
68. **Masunaga, H.** and H. Takahashi, 2024:  
The Energetics of the Lagrangian Evolution of Tropical Convective Systems  
*J. Atmos. Sci.*, **81**, 783-799 [doi:10.1175/JAS-D-23-0141.1](https://doi.org/10.1175/JAS-D-23-0141.1)
67. Takahashi, H., Z. J. Luo, **H. Masunaga**, R. Storer, and A. T. Noda, 2024:  
Investigating convective processes underlying ENSO: New insights into the fixed anvil temperature hypothesis  
*Geophys. Res. Lett.*, **51**, e2023GL107113, [doi:10.1029/2023GL107113](https://doi.org/10.1029/2023GL107113)
66. **Masunaga, H.**, 2023:  
The edge intensification of eastern Pacific ITCZ convection  
*J. Climate*, **36**, 3469-3480 [doi:10.1175/JCLI-D-22-0382.1](https://doi.org/10.1175/JCLI-D-22-0382.1)
65. Ito, M. and **H. Masunaga**, 2022:  
Process-level assessment of the Iris effect over tropical oceans  
*Geophys. Res. Lett.*, **49**, e2022GL097997, [doi:10.1029/2022GL097997](https://doi.org/10.1029/2022GL097997)
64. Hirose, M., S. Shige, T. Kubota, F. A. Furuzawa, H. Minda, and **H. Masunaga**, 2021:  
Refinement of surface precipitation estimates for the Dual-frequency Precipitation Radar on the GPM Core Observatory using near-nadir measurements.  
*J. Meteor. Soc. Japan*, **99**, 1231-1252, [doi:10.2151/jmsj.2021-060](https://doi.org/10.2151/jmsj.2021-060)
63. Sekaranom, A. B., E. Nurjani, S. B. Wibowo, and **H. Masunaga**, 2021:  
Characterizing ice-scattering homogeneity in TRMM Microwave Imagers and its influence on ocean rainrate estimation bias of TRMM Precipitation Radar  
*Atmos.*, **12**, 1377 [doi:10.3390/atmos12111377](https://doi.org/10.3390/atmos12111377)
62. Takahashi, H., M. Lebsock, Z. J. Luo, **H. Masunaga**, and C. Wang, 2021:  
Detection and tracking of tropical convective storms based on globally precipitation measurements: Algorithm and Survey over the Tropics  
*J. Appl. Meteorol. Climatol.*, **60**, 403-421, [doi:10.1175/JAMC-D-20-0171.1](https://doi.org/10.1175/JAMC-D-20-0171.1)
61. **Masunaga, H.**, C. E. Holloway, H. Kanamori, S. Bony, and T. H. M. Stein, 2021:  
Transient aggregation of convection: Observed behavior and underlying processes  
*J. Climate*, **34**, 1685-1700, [doi:10.1175/JCLI-D-19-0933.1](https://doi.org/10.1175/JCLI-D-19-0933.1)
60. Jeyaratnam, J., Z. J. Luo, S. Giangrande, D. Wang, and **H. Masunaga**, 2021:

A satellite-based estimate of convective vertical velocity and convective mass flux: Global survey and comparison with radar wind profiler observations  
*Geophys. Res. Lett.*, **48**, e2020GL090675, [doi:10.1029/2020GL090675](https://doi.org/10.1029/2020GL090675)

59. **Masunaga, H.** and B. E. Mapes, 2020:

A mechanism for the maintenance of sharp tropical margins.  
*J. Atmos. Sci.*, **77**, 1181-1197, [doi:10.1175/JAS-D-19-0154.1](https://doi.org/10.1175/JAS-D-19-0154.1)

58. **Masunaga, H.**, M. Schröder, F. A. Furuzawa, C. Kummerow, E. Rustemeier and U. Schneider, 2019:

Inter-product biases in global precipitation extremes.  
*Environ. Res. Lett.*, **14**, 125016, [doi:10.1088/1748-9326/ab5da9](https://doi.org/10.1088/1748-9326/ab5da9)

57. Sumi, Y. and **H. Masunaga**, 2019:

Vertical modes and effective stability of Quasi-2-day waves.  
*J. Atmos. Sci.*, **76**, 2005-2022, [doi:10.1175/JAS-D-19-0092.1](https://doi.org/10.1175/JAS-D-19-0092.1)

56. Sekaranom, A. B. and **H. Masunaga**, 2019:

Origins of heavy precipitation biases in the TRMM PR and TMI products assessed with CloudSat and reanalysis data.  
*J. Appl. Meteor. Clim.*, **58**, 37-54, [doi:10.1175/JAMC-D-18-0011.1](https://doi.org/10.1175/JAMC-D-18-0011.1)

55. Kadoya, T. and **H. Masunaga**, 2018:

New observational metrics of convective self-aggregation: Methodology and a case study.  
*J. Meteor. Soc. Japan*, **96**, 535-548, [doi:10.2151/jmsj.2018-054](https://doi.org/10.2151/jmsj.2018-054)

54. **Masunaga, H.** and S. Bony, 2018:

Radiative invigoration of tropical convection by preceding cirrus clouds.  
*J. Atmos. Sci.*, **75**, 1327-1342, [doi:10.1175/JAS-D-17-0355.1](https://doi.org/10.1175/JAS-D-17-0355.1)

53. Mapes, B. E., E.-S. Chung, W. M. Hannah, **H. Masunaga**, A. J. Wimmers, and C. S. Velden, 2018:

The meandering margin of the meteorological moist Tropics.  
*Geophys. Res. Lett.*, **45**, 1177-1184, [doi:10.1002/2017GL076440](https://doi.org/10.1002/2017GL076440)

52. Nuijens, L., K. Emanuel, **H. Masunaga**, and T. S. L'Ecuyer, 2017:

Implications of warm rain in shallow cumulus and congestus clouds for large-scale circulations.  
*Surv. Geophys.*, **38**, 1257-1282, [doi:10.1007/s10712-017-9429-z](https://doi.org/10.1007/s10712-017-9429-z)

51. Sekaranom, A. B. and **H. Masunaga**, 2017:

- Comparison of TRMM-derived rainfall products for general and extreme rains over the Maritime Continent.  
*J. Appl. Meteor. Clim.*, **56**, 1867-1881, [doi:10.1175/JAMC-D-16-0272.1](https://doi.org/10.1175/JAMC-D-16-0272.1)
50. Tapiador, F. J., A. Navarro, V. Levizzani, E. García-Ortega, G. J. Huffman, C. Kidd, P. A. Kucera, C. D. Kummerow, **H. Masunaga**, W. A. Petersen, R. Roca, J.-L. Sánchez, W.-K. Tao, and F. J. Turk, 2017:  
Global precipitation measurements for validating climate models.  
*Atmos. Res.*, **197**, 1-20, [doi:10.1016/j.atmosres.2017.06.021](https://doi.org/10.1016/j.atmosres.2017.06.021)
49. Choi, Y.-S., W.M. Kim, S.-W. Yeh, **H. Masunaga**, M.-J. Kwon, H.-S. Jo, and L. Huang, 2017:  
Revisiting the iris effect of tropical cirrus clouds with TRMM and A-Train satellite data.  
*J. Geophys. Res. Atmos.*, **112**, 5917-5931, [doi:10.1002/2016JD025827](https://doi.org/10.1002/2016JD025827)
48. Holloway, C. E., A. A. Wing, S. Bony, C. Muller, **H. Masunaga**, T. S. L'Ecuyer, D. D. Turner, and P. Zuidema, 2017:  
Observing convective aggregation.  
*Surv. Geophys.*, 1199-1236, [doi:10.1007/s10712-017-9419-1](https://doi.org/10.1007/s10712-017-9419-1)
47. **Masunaga, H.** and Y. Sumi, 2017:  
A toy model of tropical convection with a moisture storage closure.  
*J. Adv. Model. Earth Syst.*, **9**, [doi:10.1002/2016MS000855](https://doi.org/10.1002/2016MS000855)
46. Yanase, A., K. Yasunaga, and **H. Masunaga**, 2017:  
Relationship between the direction of diurnal rainfall migration and the ambient wind over the southern Sumatra island.  
*Earth Space Sci.*, **4**, [doi:10.1002/2016EA000181](https://doi.org/10.1002/2016EA000181)
45. **Masunaga, H.**, and Z. J. Luo, 2016:  
Convective and large-scale mass flux profiles over tropical oceans determined from synergistic analysis of a suite of satellite observations.  
*J. Geophys. Res. Atmos.*, **121**, [doi:10.1002/2016JD024753](https://doi.org/10.1002/2016JD024753)
44. Sumi, Y. and **H. Masunaga**, 2016:  
A Moist Static Energy Budget Analysis of Quasi 2-day Wave Using Satellite and Reanalysis Data.  
*J. Atmos. Sci.*, **73**, 743-759, [doi:10.1175/JAS-D-15-0098.1](https://doi.org/10.1175/JAS-D-15-0098.1)
43. **Masunaga, H.**, 2015:  
Assessment of a Satellite-based Atmospheric Budget Analysis Method with

- CINDY2011/DYNAMO/AMIE and TOGA COARE Sounding Array Data.  
*J. Meteor. Soc. Japan*, **93A** (Special issue on the Coordinated International Field Campaign on the Madden-Julian Oscillation), 21-40, [doi:10.2151/jmsj.2015-032](https://doi.org/10.2151/jmsj.2015-032)
42. Norouzi, H., M. Temimi, C. Prigent, J. Turk, R. Khanbilvardi, Y. Tian, F. A. Furuzawa, and **H. Masunaga**, 2015:  
Assessment of the consistency among global microwave land surface emissivity products.  
*Atmos. Meas. Tech.*, **8**, 1197-1205, [doi:10.5194/amt-8-1197-2015](https://doi.org/10.5194/amt-8-1197-2015)
41. Toyoshima, K., **H. Masunaga**, and F. A. Furuzawa, 2015:  
Early evaluation of Ku- and Ka-band sensitivities for the Global Precipitation Measurement (GPM) Dual-frequency Precipitation Radar (DPR).  
*SOLA*, **11**, 14-17, [doi:10.2151/sola.2015-004](https://doi.org/10.2151/sola.2015-004)
40. **Masunaga, H.**, 2014:  
Free-tropospheric moisture convergence and tropical convective regimes.  
*Geophys. Res. Lett.*, **41**, 8611-8618, [doi:10.1002/2014GL062301](https://doi.org/10.1002/2014GL062301)
39. **Masunaga, H.** and T. S. L'Ecuyer, 2014:  
A mechanism of tropical convection inferred from observed variability in the moist static energy budget.  
*J. Atmos. Sci.*, **71**, 3747-3766, [doi:10.1175/JAS-D-14-0015.1](https://doi.org/10.1175/JAS-D-14-0015.1)
38. Kanemaru, K. and **H. Masunaga**, 2014:  
The potential roles of background surface wind in the SST variability associated with intraseasonal oscillations.  
*J. Climate*, **27**, 7053-7068, [doi:10.1175/JCLI-D-13-00774.1](https://doi.org/10.1175/JCLI-D-13-00774.1)
37. Tian, Y., C. Peters-Lidard, K. W. Harrison, C. Prigent, H. Norouzi, F. Aires, S.-A. Boukabara, F. A. Furuzawa, and **H. Masunaga**, 2014:  
Quantifying uncertainties in land surface microwave emissivity retrievals.  
*IEEE Trans. Geosci. Remote Sens.*, **52**, 829-840, [doi:10.1109/TGRS.2013.2244214](https://doi.org/10.1109/TGRS.2013.2244214)
36. Li, X., W.-K. Tao, **H. Masunaga**, G. Gu, and X. Zeng, 2013:  
Aerosol effects on cumulus congestus population over the tropical Pacific: A cloud-resolving modeling study.  
*J. Meteor. Soc. Japan*, **91**, 817-833, [doi: 10.2151/jmsj.2013-607](https://doi.org/10.2151/jmsj.2013-607)
35. **Masunaga, H.**, 2013:  
A satellite study of tropical moist convection and environmental variability: A moisture and thermal budget analysis.

- J. Atmos. Sci.*, **70**, 2443-2466, [doi:10.1175/JAS-D-12-0273.1](https://doi.org/10.1175/JAS-D-12-0273.1)
34. Kanemaru, K. and **H. Masunaga**, 2013:  
A satellite study of the relationship between sea surface temperature and column water vapor over tropical and subtropical oceans.  
*J. Climate*, **26**, 4204-4218, [doi:10.1175/JCLI-D-12-00307.1](https://doi.org/10.1175/JCLI-D-12-00307.1)
33. Ferraro, R., C. Peters-Lidard, C. Hernandez, F. J. Turk, F. Aires, C. Prigent, X. Lin, S.-A. Boukabara, F. Furuzawa, K. Gopalan, K. Harrison, F. Karbou, L. Li, C. Li, **H. Masunaga**, L. Moy, S. Ringerud, G. Skofronik-Jackson, Y. Tian, and N.-Y. Wang, 2013:  
An evaluation of microwave land surface emissivities over the continental United States to benefit GPM-era precipitation algorithms.  
*IEEE Trans. Geosci. Remote Sens.*, **51**, 378-398, [doi:10.1109/TGRS.2012.2199121](https://doi.org/10.1109/TGRS.2012.2199121)
32. Ichikawa, H., **H. Masunaga**, Y. Tsushima, and H. Kanzawa, 2012:  
Analysis of cloud properties associated with tropical convection in climate models and satellite data.  
*J. Meteor. Soc. Japan*, **90**, 629-646, [doi:10.2151/jmsj.2012-504](https://doi.org/10.2151/jmsj.2012-504)
31. **Masunaga, H.**, 2012:  
Short-term versus climatological relationship between precipitation and tropospheric humidity.  
*J. Climate*, **25**, 7983-7990, [doi:10.1175/JCLI-D-12-00037.1](https://doi.org/10.1175/JCLI-D-12-00037.1)
30. Ichikawa, H., **H. Masunaga**, Y. Tsushima, and H. Kanzawa, 2012:  
Reproducibility by climate models of cloud radiative forcing associated with tropical convection.  
*J. Climate*, **25**, 1247-1262, [doi:10.1175/JCLI-D-11-00114.1](https://doi.org/10.1175/JCLI-D-11-00114.1)
29. **Masunaga, H.**, 2012:  
A satellite study of the atmospheric forcing and response to moist convection over tropical and subtropical oceans.  
*J. Atmos. Sci.*, **69**, 150-167, [doi:10.1175/JAS-D-11-016.1](https://doi.org/10.1175/JAS-D-11-016.1)
28. **Masunaga, H.** and T. S. L'Ecuyer, 2011:  
Equatorial asymmetry of the east Pacific ITCZ: Observational constraints on the underlying processes.  
*J. Climate*, **24**, 1784-1800, [doi:10.1175/2010JCLI3854.1](https://doi.org/10.1175/2010JCLI3854.1)
27. **Masunaga, H.**, T. Matsui, W.-K. Tao, A. Y. Hou, C. D. Kummerow, T. Nakajima, P. Bauer, W. S. Olson, M. Sekiguchi, and T. Y. Nakajima, 2010:

- Satellite Data Simulator Unit (SDSU): A multi-sensor, multi-spectral satellite simulator package.  
*Bull. Amer. Meteorol. Soc.*, **91**, 1625-1632, [doi:10.1175/2010BAMS2809.1](https://doi.org/10.1175/2010BAMS2809.1)
26. Li, X., W.-K. Tao, T. Matsui, C. Liu, and **H. Masunaga**, 2010:  
Improving a spectral bin microphysical scheme using TRMM satellite observations  
*Quart. J. Roy. Meteor. Soc.*, **136**, 382-399, [doi:10.1002/qj.569](https://doi.org/10.1002/qj.569)
25. **Masunaga, H.** and T. S. L'Ecuyer, 2010:  
The southeast Pacific warm band and double ITCZ.  
*J. Climate*, **23**, 1189-1208, [doi:10.1175/2009JCLI3124.1](https://doi.org/10.1175/2009JCLI3124.1)
24. Liu, P., M. Satoh, B. Wang, H. Fudeyasu, T. Nasuno, T. Li, H. Miura, H. Taniguchi, **H. Masunaga**, X. Fu, and H. Annamalai, 2009:  
An MJO simulated by the NICAM at 14-km and 7-km resolutions.  
*Mon. Wea. Rev.*, **137**, 3254-3268, [doi:10.1175/2009MWR2965.1](https://doi.org/10.1175/2009MWR2965.1)
23. Ichikawa, H., **H. Masunaga**, and H. Kanzawa, 2009:  
Evaluation of Precipitation and Upper-level Clouds Associated with Large-scale Circulation over the Tropical Pacific Ocean in the Coupled AOGCMs.  
*J. Meteor. Soc. Japan.*, **87**, 771-789, [doi:10.2151/jmsj.87.771](https://doi.org/10.2151/jmsj.87.771)
22. Matsui, T., X. Zeng, W.-K. Tao, **H. Masunaga**, W. S. Olson, and S. Lang, 2009:  
Evaluation of Long-term Cloud-resolving Model Simulations Using Satellite Radiance Observations and Multi-frequency Satellite Simulators.  
*J. Atmos. Oceanic Tech.*, **26**, 1261-1274, [doi:10.1175/2008JTECHA1168.1](https://doi.org/10.1175/2008JTECHA1168.1)
21. **Masunaga, H.**, 2009:  
A 9-season TRMM observation of the Austral Summer MJO and Low-frequency Equatorial Waves.  
*J. Meteor. Soc. Japan*, **87A**, Special issue on Precipitation Measurements from Space, 295-315, [doi:10.2151/jmsj.87A.295](https://doi.org/10.2151/jmsj.87A.295)
20. Nakajima, T. Y., **H. Masunaga**, and T. Nakajima, 2009:  
Near-global Scale Retrievals of the Cloud Optical and Microphysical Properties from the Midori-II GLI and AMSR Data.  
*J. Remote Sens. Soc. Japan.*, **29**, 29-30.
19. **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](https://doi.org/10.1029/2008JD009986)

18. **Masunaga, H.**, 2007:  
Seasonality and Regionality of the Madden-Julian Oscillation, Kelvin Wave, and equatorial Rossby Wave.  
*J. Atmos. Sci.*, **64**, 4400-4416, [doi:10.1175/2007JAS2179.1](https://doi.org/10.1175/2007JAS2179.1)
17. **Masunaga, H.**, T. S. L'Ecuyer, and C. D. Kummerow , 2006:  
The Madden-Julian Oscillation Recorded in Early Observations from the Tropical Rainfall Measuring Mission (TRMM).  
*J. Atmos. Sci.*, **63**, 2777-2794, [doi:10.1175/JAS3783.1](https://doi.org/10.1175/JAS3783.1)
16. Matsui, T., **H. Masunaga**, R. A. Pielke Sr., S. M. Kreidenweis, W.-K. Tao, M. Chin, and Y. J. Kaufman, 2006:  
Satellite-based Assessment of Marine Low Cloud Variability Associated with Aerosol, Atmospheric Stability, and the Diurnal Cycles.  
*J. Geophys. Res.*, **33**, L16805, [doi:10.1029/2005JD006097](https://doi.org/10.1029/2005JD006097).
15. **Masunaga, H.**, and C. D. Kummerow , 2006:  
Observations of Tropical Precipitating Clouds Ranging from Shallow to Deep Convective Systems.  
*Geophys. Res. Lett.*, **33**, L16805, [doi:10.1029/2006GL026547](https://doi.org/10.1029/2006GL026547)
14. L'Ecuyer, T. S., **H. Masunaga**, and C. D. Kummerow, 2006:  
Variability in the Characteristics of Precipitation Systems in the Tropical Pacific. Part II. Implications for Atmospheric Heating.  
*J. Climate*, **19**, 1388-1406, [doi:10.1175/JCLI3698.1](https://doi.org/10.1175/JCLI3698.1)
13. Kummerow, C. D., W. Berg, J. Thomas-Stahle, and **H. Masunaga**, 2006:  
Quantifying Global Uncertainties in a Simple Microwave Rainfall Algorithm.  
*J. Atmos. Oceanic Tech.*, **23**, 23-37, [doi:10.1175/JTECH1827.1](https://doi.org/10.1175/JTECH1827.1)
12. Kurokawa, J., H. Akiyoshi, T. Nagashima, **H. Masunaga**, T. Nakajima, M. Takahashi, and H. Nakane, 2005:  
Effects of Atmospheric Sphericity on Stratospheric Chemistry and Dynamics over Antarctica.  
*J. Geophys. Res.*, **110**, D21305, [doi:10.1029/2005JD005798](https://doi.org/10.1029/2005JD005798)
11. **Masunaga, H.** and C. D. Kummerow, 2005:  
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## **IV. Book chapters**

3. ANDERSON, T. L. (RAPPORTEUR), A. ACKERMAN, D. L. HARTMANN, G. A. ISAAC, S. KINNE, **H. MASUNAGA**, J. R. NORRIS, U. PÖSCHL, K. S. SCHMIDT, A. SLINGO, AND Y. N. TAKAYABU , 2009:  
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1. KUMMEROW, C., **H. MASUNAGA**, AND P. BAUER, 2007:  
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## **V. Invited talks**

### **18. H. Masunaga:**

Cloud and convective dynamics revealed from space: multi-platform synergy and EarthCARE

*EarthCARE Science and Validation Workshop 2025*, Tokyo, Japan, December 2025

### **17. H. Masunaga:**

Vertical air motion and tropical precipitation: New perspectives and an old problem

*Klimacampus Kolloquium*, Hamburg, Germany, June 2025

### **16. H. Masunaga, and M. Ito:**

Understanding the physical processes governing the iris effect: Precipitation efficiency, upper-tropospheric stability, and possible roles of shallow convection

*3rd Pan-GASS Meeting Understanding and Modeling Atmospheric Processes*, Monterey, CA, USA, July 2022

### **15. H. Masunaga, R. Oki, M. Yamaji, and K. Yamamoto:**

JAXA-NASA collaborations toward a better understanding of the global water and energy cycle: From TRMM and GPM to ACCP

*JpGU-AGU Joint Meeting 2020*, Online, May 2020

### **14. Masunaga, H.:**

The fundamental time scales intrinsic of convectively coupled equatorial waves

*CLICCS Workshop*, Bad Segeberg, Germany, Sep 2019.

### **13. Masunaga, H. and B. Mapes:**

A Mechanism for the Maintenance of Sharp Tropical Margins

in *"Large-scale moisture and organized cloud systems"*, *Japan Geoscience Union Meeting 2019*, Chiba, Japan, May 2019.

### **12. Masunaga, H.:**

Radiative regulation of tropical convection as implied from satellite observations

*Future of Cumulus Parametrization Workshop*, Delft, Netherlands, Jul 2017.

### **11. Masunaga, H. and Z. J. Luo:**

Large-scale and Convective-scale Updraft Profiles from Satellite Observations

in *"Tropical and Midlatitude Convective Systems and Their Roles in Weather and Climate"*, *American Geophysical Union Fall Meeting*, San Francisco, CA, USA, Dec 2015.

10. **Masunaga, H.**  
Free-tropospheric Moisture Convergence and Tropical Convective Regimes  
*The Climate Symposium 2014*, Darmstadt, Germany, Oct 2014.
9. **Masunaga, H.**  
Satellite Data Simulators and Their Applications to Cloud Model Evaluation  
*The 8th Workshop on Satellite Data Application for Global Environmental Monitoring*, Seoul, Korea, Oct 2014.
8. **Masunaga, H.**  
Microwave Precipitation Measurements from Space: Heritage from TRMM and future with GPM  
*The 8th Workshop on Satellite Data Application for Global Environmental Monitoring*, Seoul, Korea, Oct 2014.
7. **Masunaga, H.**  
Satellite Observations of Large-scale Vertical Motion over the Indian Ocean  
*Asia Oceania Geosciences Society 2014 Conference*, Sapporo, Japan, Jul. 2014
6. **Masunaga, H.**  
The Evolution of Tropical Convective Systems Inferred from Satellite Measurements of Convective Updraft and Surrounding Downdraft  
*Asia Oceania Geosciences Society 2014 Conference*, Sapporo, Japan, Jul. 2014
5. **Masunaga, H.** and T. S. L'Ecuyer  
Thermal and moisture budget of tropical moist convection analyzed with multi-satellite observations  
*Gordon Research Conference: Radiation & Climate*, New London, NH, USA, Jul. 2013
4. **Masunaga, H.**, M. Satoh, and H. Miura  
An Application of TRMM and CloudSat Observations to Global Model Diagnosis.  
*in "Innovative Applications of Satellite and Ground Observations in Evaluating General Circulation Models"*, American Geophysical Union Fall Meeting, San Francisco, CA, USA, Dec. 2008
3. **Masunaga, H.**, M. Satoh, and H. Miura  
An Application of TRMM and CloudSat Observations to Global Model Diagnosis.  
*Third International Workshop on High-Resolution Cloud Modeling - Tropical Cyclones and Climate*, Honolulu, Hawaii, USA, Dec. 2008

2. **MASUNAGA, H.**,

The Meteorological Society of Japan 125<sup>th</sup> Anniversary Int'l Symposium "Toward Next Generation of Atmospheric Sciences"

*"Prospective Meteorological Studies Using Next-Generation Earth-Observing Satellites"*, Tokyo, Japan, May 2008

1. **MASUNAGA, H.** , AND C. KUMMEROW

Improvement of the GPROF

*International Workshop on Precipitation Retrieval Algorithms Using Satellite Microwave Radiometer, Radar, and IR Data*, Tokyo, Japan, Mar. 2005

**VI. Conference and seminar presentations** (include all oral presentations given as the lead author after 2000 except where denoted by (P) for posters. Japanese domestic conferences are not included.)

57. **MASUNAGA, H.** AND H. TAKAHASHI:

Convective regime evolution toward a mid-heavy state

*AGU Fall Meeting*, Washington D.C., USA, Dec. 2024

56. **MASUNAGA, H.** AND H. TAKAHASHI:

The energetics in the Lagrangian evolution of tropical convective systems

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The energetics in the Lagrangian evolution of tropical convective systems

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54. **MASUNAGA, H.** AND H. TAKAHASHI:

The energetics in the Lagrangian evolution of tropical convective systems as diagnosed from satellite precipitation and radiation measurements

*ICCP-GSRA Workshop 2023, jointly with 2<sup>nd</sup> EarthCARE Modeling Workshop*, Izu, Shizuoka, Japan, Mar. 2023

53. **MASUNAGA, H.** AND M. ITO:

Process-level assessment of the iris effect over tropical oceans

*AGU Fall Meeting*, Chicago, IL, USA, Dec. 2022

52. **MASUNAGA, H.** AND M. ITO:

Observational assessment of radiative-convective feedbacks in the tropics

*ISSI Workshop: Challenges in Understanding the Global Water Energy Cycle and its Changes*

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51. **MASUNAGA, H.**, F. A. FURUZAWA, M. HIROSE, AND H. MINDA:  
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50. M. ITO AND **MASUNAGA, H.** :  
Process-level assessment of the iris effect over tropical oceans  
*JpGU Meeting*, Makuhari, Chiba, Japan, May 2022
49. **MASUNAGA, H.**:  
Cloud-radiation interactions in the real atmosphere: A-Train, EarthCARE, and beyond  
*EarthCARE Modeling Workshop*, Online, Feb. 2022
48. **MASUNAGA, H.**:  
The edge intensification of ITCZ convection  
*AOS Colloquium Series, University of Wisconsin Madison*, Online, Oct. 2021
47. **MASUNAGA, H.**:  
The edge intensification of ITCZ convection  
*AGU Fall Meeting 2020*, Online, Dec. 2020
46. **MASUNAGA, H.**, C. HOLLWAY, H. KANAMORI, S. BONY, T. H. M. STEIN:  
Transient aggregation of convection: Observed behavior and underlying processes (P)  
JpGU-AGU Joint Meeting 2020, online, May 2020
45. **MASUNAGA, H.**, C. HOLLWAY, H. KANAMORI, S. BONY, T. H. M. STEIN:  
Transient aggregation of convection: Observed behavior and underlying processes  
*AGU Fall Meeting 2019*, San Francisco, Dec. 2019
44. **MASUNAGA, H.** AND B. E. MAPES:  
A Mechanism for the Maintenance of Sharp Tropical Margins  
*8th International EarthCARE Science Workshop*, Fukuoka, Japan, Nov. 2019
43. **MASUNAGA, H.** AND B. E. MAPES:  
A Mechanism for the Maintenance of Sharp Tropical Margins (P)  
*22nd Conference on Atmospheric and Oceanic Fluid Dynamics*, Portland Maine, USA, Jun.  
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42. **MASUNAGA, H.** AND B. E. MAPES:

- A Mechanism for the Maintenance of Sharp Tropical Margins (P)  
*American Geophysical Union Fall Meeting*, Washington DC, USA, Dec. 2018
41. **MASUNAGA, H.:**  
Roles of Convection in the Maintenance of Tropical Margins  
*2018 UTCC PROES Workshop*, Paris, France, Oct. 2018
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39. **MASUNAGA, H. AND S. BONY:**  
Radiative Invigoration of Tropical Convection by Preceding Cirrus Clouds  
*33rd Conference on Hurricanes and Tropical Meteorology*, Ponte Vedra Beach, FL, USA, Apr. 2018
38. **MASUNAGA, H. AND S. BONY:**  
Radiative Regulation of Tropical Convection by Preceding Cirrus Clouds (P)  
*American Geophysical Union Fall Meeting*, New Orleans, LA, USA, Dec. 2017
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Radiative Regulation of Tropical Convection by Preceding Cirrus Clouds  
*ATS/CIRA Colloquium, Colorado State University*, Fort Collins, CO, USA, Oct. 2017
36. **MASUNAGA, H.:**  
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*LMD Seminar, Université de Pierre et Marie Curie*, Paris, France, Sep. 2017
35. **MASUNAGA, H.:**  
A simple model of tropical convection with a moisture storage closure  
*Meteorology Departmental Seminar, University of Reading*, Reading, UK, May 2017
34. **MASUNAGA, H. AND Y.SUMI:**  
The moisture and MSE budget of developing tropical convection: Vertical modes and free-tropospheric moisture convergence  
*American Geophysical Union Fall Meeting*, San Francisco, CA, USA, Dec. 2016
33. **MASUNAGA, H.:**  
Strategy to exploit satellite observations for evaluating large-scale and convective-scale updraft profiles  
*Seminar at Atmosphere and Ocean Research Institute, University of Tokyo*, Kashiwa, Chiba,

Japan, Nov. 2016

32. **MASUNAGA, H.** AND Z. J. LUO:

Large-scale and Convective-scale Mass Fluxes Determined from a Combined Analysis of Satellite Observations

*32nd Conference on Hurricanes and Tropical Meteorology*, San Juan, PR, USA, Apr. 2016

31. **MASUNAGA, H.:**

Pushing the limits of satellite observations for further understanding of tropical convective dynamics

*ISSI Workshop on Shallow Clouds, Water Vapour and Climate Sensitivity*, Bern, Switzerland, Feb. 2016

30. **MASUNAGA, H.:**

Large-scale and Convective-scale Updraft Profiles from a Suite of Satellite Observations

*Seminar at Dept. of Atmospheric and Oceanic Sciences, University of Wisconsin-Madison*, Madison, WI, USA, Oct. 2015

29. **MASUNAGA, H.:**

Large-scale and Convective-scale Updraft Profiles from a Suite of Satellite Observations

*Seminar at Dept. of Earth & Atmospheric Sciences, City College of New York*, New York City, NY, USA, Oct. 2015

28. **MASUNAGA, H.:**

Free tropospheric moisture convergence and tropical convective regimes. (P)

*American Geophysical Union Fall Meeting*, San Francisco, CA, USA, Dec. 2014

27. **MASUNAGA, H.:**

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*7th International Scientific Conference on the Global Water and Energy Cycle*, Den Haag, Netherlands, Jul. 2014

26. **MASUNAGA, H.**, AND T. S. L'ECUYER, 2014:

A Mechanism of Tropical Convection Inferred from Observed Variability in the Moist Static Energy Budget.

*31st Conference on Hurricanes and Tropical Meteorology*, San Diego, CA, USA, Apr. 2014

25. **MASUNAGA, H.**, AND T. S. L'ECUYER, 2013:

Short-term Variability in the Moist Static Energy Budget inferred from Satellite Observations.

*American Geophysical Union Fall Meeting, San Francisco, CA, USA, Dec. 2013*

24. **MASUNAGA, H.**, 2012:

A Satellite study of tropical moist convection and environmental variability: A moisture and thermal budget analysis

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23. **MASUNAGA, H.**, 2012:

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22. **MASUNAGA, H.**, 2012:

Global observations of atmospheric variability on a convective time scale: Using LEO satellites like a GEO

*Toward Global LES (5th International Workshop on Cloud-Resolving Global Modelling), Schloss Ringberg, Germany, Jun. 2012*

21. **MASUNAGA, H.**, 2012:

Satellite Observed Atmospheric Variability over the Life Cycle of Tropical Convective Systems

*30th Conference on Hurricanes and Tropical Meteorology, Ponte Vedra Beach, FL, USA, Apr. 2012*

20. **MASUNAGA, H.**, 2011:

A satellite study of convective development and moisture variability on hourly to daily time scales

*American Geophysical Union (AGU) Fall meeting, San Francisco, CA, USA, Dec. 2011*

19. **MASUNAGA, H.**, 2011:

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18. **MASUNAGA, H.**, 2011:

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*Dpt. of Atmospheric Science Colloquium, Colorado State University, Fort Collins, CO, Feb. 2011*

17. **MASUNAGA, H.**, AND T. S. L'ECUYER, 2010:

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*The 29th Conference on Hurricanes and Tropical Meteorology, Tucson, AZ, USA, May 2011*

16. **MASUNAGA, H.**, 2009:  
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*“Development and Applications of Satellite Simulators for Aerosol-Cloud-Precipitation Observation from Space”, American Geophysical Union Fall Meeting, San Francisco, CA, USA, Dec. 2009*
15. **MASUNAGA, H.**, 2009:  
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*MOCA-09 (the IAMAS/IAPSO/IACS 2009 joint assembly), Montreal, Canada, Jul. 2009*
14. **MASUNAGA, H.**, AND T. S. L'ECUYER, 2009:  
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*“Satellite Observations of Air-sea Interaction”, 89<sup>th</sup> American Meteorological Society Annual Meeting, Phoenix, AZ, USA, Jan. 2009*
13. **MASUNAGA, H.**, 2008:  
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*JSPS-DFG Round Table on ‘Climate System Research – Status and Perspective’, Hamburg, Germany, Jan. 2008*
12. **MASUNAGA, H.**, M. SATOH, AND H. MIURA, 2007:  
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*2007 American Geophysical Union Fall Meeting, San Francisco, CA, USA, Dec. 2007*
11. **MASUNAGA, H.**, 2007:  
TRMM observations of convective variability associated with the austral summer MJO, Kelvin wave, and equatorial Rossby wave. (P)  
*New Approaches to Meet the Challenge of the Madden-Julian Oscillation, Irvine, CA, USA, Nov. 2007*
10. **MASUNAGA, H.**, 2007:  
Satellite Data Analysis of the Madden-Julian Oscillation, Kelvin wave, and the Equatorial Rossby Wave.  
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9. **MASUNAGA, H.**, C. KUMMEROW, AND T. L'ECUYER, 2007:  
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8. **MASUNAGA, H.,** AND C. KUMMEROW, 2005:  
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*Precipitation Measurement Missions Science Team Meeting, #54*, Monterey, California, Dec. 2005
7. **MASUNAGA, H.,** C. KUMMEROW, AND T. S. L'ECUYER, 2004:  
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*The 2nd TRMM International Science Conference, #2.6*, Nara, Japan, Sep. 2004
6. **MASUNAGA, H.,** AND C. KUMMEROW, 2004:  
GPM Microwave rainfall Retrievals and Error Models.  
*International Radiation Symposium 2004, #F-P8*, Busan, South Korea, Aug. 2004
5. **MASUNAGA, H.,** C. KUMMEROW, AND T. L'ECUYER, 2003:  
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*3rd GPM Workshop, #RE-6*, Noordwijk, Netherlands, Jun. 2003
4. **MASUNAGA, H.,** AND C. KUMMEROW, 2003:  
A Rain Profile Analysis using TRMM PR and TMI Toward a Future Precipitation Algorithm. (P)  
*2003 83rd AMS Annual Meeting, #P5.7*, Long Beach, California, Feb. 2003
3. **MASUNAGA, H.,** T. Y. NAKAJIMA, T. NAKAJIMA, M. KACHI, AND K. SUZUKI, 2002:  
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*TRMM International Science Conference, #6P-16*, Honolulu, Hawaii, Jul. 2002
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1. **MASUNAGA, H.,** 2002:  
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*11th Conference of Atmospheric Radiation, #P2.19*, Ogden, Utah, Jun. 2002