

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-

Editor (with temporary contracts), Journal of the Meteorological Society of Japan special issues, 2009

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)

Publication List (as of 8th May, 2024)

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

I. Peer-reviewed papers

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:
Combined Radar and Radiometer Analysis of Precipitation Profiles for a Parametric Algorithm.
J. Atmos. Oceanic Tech., **22**, 909-929, [doi:10.1175/JTECH1751.1](https://doi.org/10.1175/JTECH1751.1)
 10. **Masunaga, H.**, T. S. L'Ecuyer, and C. D. Kummerow, 2005:
Variability in the Characteristics of Precipitation Systems in the Tropical Pacific. Part I. Spatial Structure.
J. Climate, **18**, 823-840, [doi:10.1175/JCLI-3304.1](https://doi.org/10.1175/JCLI-3304.1)
 9. Matsui, T., **H. Masunaga**, R. Pielke Sr., and W.-K. Tao, 2004:
Impact of Aerosols and Atmospheric Thermodynamics on Cloud properties within the Climate System.
Geophys. Res. Lett., **31**, L06109, [doi:10.1029/2003GL019287](https://doi.org/10.1029/2003GL019287)
 8. **Masunaga, H.**, T. Y. Nakajima, T. Nakajima, M. Kachi, and K. Suzuki, 2002:
Physical Properties of Maritime Low Clouds as Retrieved by Combined Use of TRMM Microwave Imager and Visible/Infrared Scanner. 2. Climatology of Warm Clouds and Rain.
J. Geophys. Res., **107**, NO.D19, 4367, [doi:10.1029/2001JD001269](https://doi.org/10.1029/2001JD001269)
 7. **Masunaga, H.**, T. Iguchi, R. Oki, and M. Kachi, 2002:
Comparison of Rainfall Products Derived from TRMM Microwave Imager and Precipitation Radar.
J. Appl. Meteor. **41**, 849-862, [doi:10.1175/1520-0450\(2002\)041<0849:CORPDF>2.0.CO;2](https://doi.org/10.1175/1520-0450(2002)041<0849:CORPDF>2.0.CO;2)
 6. **Masunaga, H.**, T. Y. Nakajima, T. Nakajima, M. Kachi, R. Oki, and S. Kuroda, 2002:
Physical Properties of Maritime Low Clouds as Retrieved by Combined Use of TRMM Microwave Imager and Visible/Infrared Scanner. Algorithm.
J. Geophys. Res., **107**, NO.D10, [doi:10.1029/2001JD000734](https://doi.org/10.1029/2001JD000734)
 5. **Masunaga, H.** and T. Nakajima, 2001:
The Effective Cloud Fraction of Broken Clouds Obtained by Multi-stream Radiative Transfer. I. Longwave Radiation.
J. Atmos. Sci., **58**, 2455-2467, [doi:10.1175/1520-0469\(2001\)058<2455:TECFOB>2.0.CO;2](https://doi.org/10.1175/1520-0469(2001)058<2455:TECFOB>2.0.CO;2)
 4. **Masunaga, H.** and Inutsuka, S. , 2000:
Infall Signifatures in Molecular Line Spectra of Protostellar Envelopes.

Astrophysical Journal, **536**, 406-415, [doi:10.1086/308901](https://doi.org/10.1086/308901)

3. **Masunaga, H.** and Inutsuka, S., 2000:
A Radiation Hydrodynamic Model For Protostellar Collapse II. The Second Collapse and the Birth of a Protostar.
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2. **Masunaga, H.** and Inutsuka, S. , 1999:
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III. Books

1. **H. MASUNAGA**, 2022:
Satellite Measurements of Clouds and Precipitation: Theoretical Basis
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eBook [ISBN: 978-981-19-2243-5](https://doi.org/10.1007/978-981-19-2243-5) (Hardcover ISBN: 978-981-19-2242-8)

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:
Temporal and Spatial Variability of Clouds and Related Aerosols
in *Clouds in the Perturbed Climate System: Their Relationship to Energy Balance, Atmospheric Dynamics, and Precipitation*,
Ed. by Heintzenberg, J., and R. J. Charlson
Strüngmann Forum Report, **2**, Cambridge, MA: The MIT Press, 127-147.

2. TAKAYABU, Y. N., AND **H. MASUNAGA**, 2009:
Clouds and Precipitation: Extreme Rainfall and Rain from Shallow Clouds
in *Clouds in the Perturbed Climate System: Their Relationship to Energy Balance, Atmospheric Dynamics, and Precipitation*,
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Strüngmann Forum Report, **2**, Cambridge, MA: The MIT Press, 107-125.
1. KUMMEROW, C., **H. MASUNAGA**, AND P. BAUER, 2007:
A Next-generation Microwave Rainfall Retrieval Algorithms for use by TRMM and GPM,
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V. Invited talks

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 125th 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.)

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

The energetics in the Lagrangian evolution of tropical convective systems
The 2023 joint CFMIP-GASS Meeting on Cloud, Precipitation, Circulation & Climate Sensitivity, Paris, France, Jul. 2023

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 2nd 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 in Response to Greenhouse Gas Emissions, Bern, Switzerland, Sep. 2022

51. **MASUNAGA, H.**, F. A. FURUZAWA, M. HIROSE, AND H. MINDA:

Non-uniform Local Time Coverage of Polar-orbiting Passive Microwave Observations in Global Precipitation Datasets
IPWG10/TWSSM6 Meeting, hybrid format (online participation), Jun. 2022

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. 2019
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

40. **MASUNAGA, H. :**
A Mechanism for the Maintenance of Sharp Tropical Margins
Séminaire, Département de Géosciences - École normale supérieure, Paris, France, Oct. 2018
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
37. **MASUNAGA, H.:**
Radiative Regulation of Tropical Convection by Preceding Cirrus Clouds
ATS/CIRA Colloquium, Colorado State University, Fort Collins, CO, USA, Oct. 2017
36. **MASUNAGA, H.:**
Radiative Regulation of Tropical Convection by Preceding Cirrus Clouds
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.:**
A Mechanism of the Onset and Development of Tropical Convection Inferred from Satellite Observations of Large-scale Energy Budget. (P)
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
American Geophysical Union Fall Meeting, San Francisco, CA, USA, Dec. 2012

23. **MASUNAGA, H.**, 2012:
A Satellite study of tropical moist convection and environmental variability: A moisture and thermal budget analysis
The 4th TRMM and GPM International Science Conference, Tokyo, Japan, Nov. 2012
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:
A Satellite Study of the Atmospheric Forcing and Response to Moist Convection
International Union of Geodesy and Geophysics (IUGG) General Assembly, Melbourne, Australia, Jul. 2011
18. **MASUNAGA, H.**, 2011:
A Satellite Study of the Atmospheric Forcing and Response to Moist Convection
Dpt. of Atmospheric Science Colloquium, Colorado State University, Fort Collins, CO, Feb. 2011
17. **MASUNAGA, H.**, AND T. S. L'ECUYER, 2010:
The southeast Pacific warm band and double ITCZ
The 29th Conference on Hurricanes and Tropical Meteorology, Tucson, AZ, USA, May 2011
16. **MASUNAGA, H.**, 2009:
Satellite Data Simulator Unit version 2
"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:
Origins of moisture development leading MJO convective burst
MOCA-09 (the IAMAS/IAPSO/IACS 2009 joint assembly), Montreal, Canada, Jul. 2009
14. **MASUNAGA, H.**, AND T. S. L'ECUYER, 2009:
On the development of the eastern Pacific double ITCZ.
"Satellite Observations of Air-sea Interaction", 89th American Meteorological Society Annual Meeting, Phoenix, AZ, USA, Jan. 2009
13. **MASUNAGA, H.**, 2008:
A Joint Satellite and Global CRM Analysis of the MJO.
JSPS-DFG Round Table on 'Climate System Research – Status and Perspective', Hamburg, Germany, Jan. 2008
12. **MASUNAGA, H.**, M. SATOH, AND H. MIURA, 2007:
A Joint Satellite and Global Cloud-Resolving Model Analysis of the 2006/07 Madden-Julian Oscillation.
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.
International Union of Geodesy and Geophysics, Perugia, Italy, Jul. 2007
9. **MASUNAGA, H.**, C. KUMMEROW, AND T. L'ECUYER, 2007:
Tropical Rainfall Climatology analyzed from satellite measurements
European Geosciences Union General Assembly, Vienna, Austria, Apr. 2007
8. **MASUNAGA, H.**, AND C. KUMMEROW, 2005:
Combined Radar and Radiometer Analysis of Precipitation Profiles for a Parametric Algorithm.(P)
Precipitation Measurement Missions Science Team Meeting, #54, Monterey, California, Dec. 2005

7. **MASUNAGA, H.**, C. KUMMEROW, AND T. S. L'ECUYER, 2004:
TRMM Multi-sensor Analysis of Tropical Precipitation Systems.
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:
Improvement of the A Priori Database for a Precipitation Algorithm in the GPM Era. (P)
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:
Physical Properties of Maritime Low Clouds as Retrieved by Combined Use of VIRS and TMI. (P)
TRMM International Science Conference, #6P-16, Honolulu, Hawaii, Jul. 2002
2. **MASUNAGA, H.**, T. Y. NAKAJIMA, T. NAKAJIMA, M. KACHI, AND K. SUZUKI, 2002:
Physical Properties of Maritime Low Clouds as Retrieved by Combined Use of TRMM/VIRS and TMI. (P)
11th Conference of Atmospheric Radiation, #JP.9A, Ogden, Utah, Jun. 2002
1. **MASUNAGA, H.**, 2002:
An Analytic Formulation of Climate Sensitivity. (P)
11th Conference of Atmospheric Radiation, #P2.19, Ogden, Utah, Jun. 2002