

Masashi Minamide

Assistant Professor

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RESEARCH INTEREST

- Disaster prevention from severe weather events
- Data assimilation, numerical weather prediction, remote sensing observations
- Atmospheric dynamics and predictability
- Tropical meteorology and tropical cyclones

EDUCATION

2014.9 – 2018.5, **Ph.D. in Meteorology and Atmospheric Science**

Department of Meteorology and Atmospheric Science, The Pennsylvania State University

Thesis: On the Predictability of Tropical Cyclones through All-sky Satellite Infrared Brightness Temperatures Assimilation

Advisor: Fuqing Zhang

2013.4 – 2014.9, **M.S. in Civil Engineering**

Department of Civil Engineering, The University of Tokyo

Thesis: Improvement of the Understandings of Asian Summer Monsoon Variability by Theoretical, Analytical and Numerical Approaches

Advisor: Toshio Koike

2009.4 – 2013.3, **B.S. in Civil Engineering**

Department of Civil Engineering, The University of Tokyo

Thesis: Research on the seasonal prediction of extreme precipitation events in Pakistan, focusing on the anomaly of global circulation

Advisor: Toshio Koike

HONORS and AWARDS

2020	Yamamoto Award (early career award from the Meteorological Society of Japan)
2018	AMS IOAS-AOLS Travel Award for the 22nd IOAS-AOLS Conference
2017	NCAR's Advanced Study Program (ASP)'s Graduate Student Fellowship
2014 - 2016	Funai Overseas Scholarship (Scholarship for PhD study by Funai Foundation for Information Technology, Japan)
2014	Kōi Furuichi Award (Master Dissertation Award in Department of Civil Engineering, University of Tokyo)

RESEARCH EXPERIENCE

2020.4 – present, **Assistant Professor**

The Department of Civil Engineering, the University of Tokyo, Japan

2020.4 – present, **JPL Affiliate**

Jet Propulsion Laboratory, California Institute of Technology / NASA, Pasadena, CA, US

2018.6 – 2020.3, **JPL Postdoctoral Fellow**

Jet Propulsion Laboratory, California Institute of Technology / NASA, Pasadena, CA, US

- Conducting Observing System Simulation Experiments (OSSEs) for the numerical weather and air-quality predictions to evaluate the impacts of current/future satellite missions

2014.9 – 2018.5, **Research Assistant**

Department of Meteorology and Atmospheric Science, The Pennsylvania State University, University Park, PA, US

- Built the Advanced-PSU ensemble-based data assimilation system for infrared satellite radiances with ensemble Kalman filter, using Weather Research and Forecasting Model (WRF) and Community Radiative Transfer Model (CRTM)
- Developed new data assimilation algorithms for all-sky satellite radiances with ensemble Kalman filter
- Analyzed the impacts of assimilating all-sky satellite radiances from new-generation geostationary satellites GOES-16 and Himawari-8 through observing system simulation experiments (OSSEs), and real-data observing system experiments (OSEs)
- Analyzed the predictability of tropical cyclones through sensitivity experiments

2017.4 – 2017.7, **NCAR's Advanced Study Program's Graduate Visiting Program**

National Center for Atmospheric Research, Boulder, CO, US

- Developed a modified version of Empirical (covariance) Localization Functions (ELFs) in ensemble Kalman filter for all-sky satellite radiance assimilation

2012.4 – 2014.9, **Research Assistant**

Department of Civil Engineering, University of Tokyo, Tokyo, Japan

- Conducted numerical experiments for sensitivity analysis of orographic effect on typhoon precipitation with Regional Spectral Model (RSM)
- Conducted numerical experiments for idealized simulation of artificially modified sea surface temperature with WRF
- Analyzed extreme events in South Asian Summer Monsoon region with NCEP and JRA25 reanalysis datasets

2011.8 – 2011.9, **Field observation (through visiting study)**

Department of Civil Engineering, University of Notre Dame, IN, US

- Conducted the field observation of the inundation with a hydraulic gauge in North Carolina caused by the Hurricane Irene in 2011, through the international visiting program of the Department of Civil Engineering, the University of Tokyo

PEER-REVIEWED PUBLICATIONS

- Minamide, M.**, D. J. Posselt, 2021: Using Ensemble Data Assimilation to Explore the Environmental Controls on the Initiation and Predictability of Moist Convection, *Journal of the Atmospheric Sciences*, doi:10.1175/JAS-D-21-0140.1.
- Zhang Y., S. B. Sieron, Y. Lu, X. Chen, R. G. Nystrom, **M. Minamide**, M.Y. Chan, C. M. Hartman, Z. Yao, J. H. Ruppert Jr., A. Okazaki, S. J. Greybush, E. E. Clothiaux, F. Zhang, 2021: Ensemble-Based Assimilation of Satellite All-Sky Microwave Radiances Improves Intensity and Rainfall Predictions for Hurricane Harvey (2017), *Geophysical Research Letters*, doi:10.1029/2021GL096410.
- Minamide, M.**, F. Zhang, E.E. Clothiaux, 2020: Nonlinear Forecast Error Growth of Rapidly Intensifying Hurricane Harvey (2017) Examined through Convection-permitting Ensemble Assimilation of GOES-16 All-sky Radiances, *Journal of the Atmospheric Sciences*, doi: 10.1175/JAS-D-19-0279.1
- Minamide, M.**, and F. Zhang, 2019: Adaptive Background Error Inflation for Assimilating All-sky Satellite Radiance, *Quarterly Journal of the Royal Meteorological Society*, doi:10.1002/qj.3466.
- Zhang, F., **M. Minamide**, X. Chen, R. G. Nystrom, S.-J. Lin and L. M. Harris, 2019: Improving Harvey Forecasts with Next-Generation Weather Satellites: Advanced Hurricane Analysis and Prediction with Assimilation of GOES-R All-Sky Radiances, *Bulletin of American Meteorological Society*, 100, doi:10.1175/BAMS-D-18-0149.1
- Minamide, M.**, and F. Zhang, 2018: Assimilation of all-sky infrared radiances from Himawari-8 and impacts of moisture and hydrometer initialization on convection-permitting tropical cyclone prediction, *Monthly Weather Review*, 146, 3241-3258, doi:10.1175/MWR-D-17-0367.1.
- Liu, S., D. Tao, K. Zhao, **M. Minamide**, and F. Zhang, 2018: Dynamics and predictability of the rapid intensification of Super Typhoon Usagi (2013), *Journal of Geophysical Research – Atmospheres*, 123, 2147-2159, doi:10.1029/2018JD028561.
- Minamide, M.**, and F. Zhang, 2017: Adaptive Observation Error Inflation for Assimilating All-sky Satellite Radiance, *Monthly Weather Review*, 145,1063-1081, doi:10.1175/MWR-D-16-0257.1
- Zhang, F., **M. Minamide**, E.E. Clothiaux, 2016: Potential Impacts of Assimilating All-sky Satellite Radiances from GOES-R on Convection-Permitting Analysis and Prediction of Tropical Cyclones, *Geophysical Research Letters*, 43, doi:10.1002/2016GL068468.
- Minamide M.**, K. Yoshimura, 2014: Orographic effect on the precipitation with Typhoon Washi, *Scientific Online Letters on the Atmosphere*, 10, 67–71, doi:10.2151/sola.2014-014
- Minamide M.**, T. Koike, 2013: Research on the Difficulty in Seasonal Prediction of Extreme Precipitation Events in Pakistan Focusing on the Anomaly of General Circulation, *Journal of Hydraulic Engineering (Japan Society of Civil Engineering)*, Vol.70, 301-306
- Kennedy A. B., J. J. Westerink, J. M. Smith, M. E. Hope, M. Hartman, A. A. Taflanidis, S. Tanaka, H. Westerink, K. F. Cheung, T. Smith, M. Hamann, **M. Minamide**, A. Ota, C. Dawson, 2012: Tropical cyclone inundation potential on the Hawaiian Islands of Oahu and Kauai, *Ocean*

Modeling, Vol.52-53, 54-68

Yokouchi N., I. Shibata, S. Abe, **M. Minamide**, H. Kato, 2011: Newspaper Reports on East Japan Great Earthquake in Four Countries: Comparative Analysis with Articles during One Month After the Disaster, *Sociotechnology Research Journal*, Vol.9, 1-29

SELECTED PRESENTATIONS

Minamide M., D. J. Posselt: Convection-Permitting Ensemble Tropical Cyclone Initializations with All-sky Satellite Radiance Assimilation: Performances Through an Entire Hurricane Season, the 9th EnKF workshop, University Park, PA, USA (postponed due to COVID-19)

Minamide M., S. Sieron, E. Clothiaux, 2022: Pursuing the promise of satellite all-sky radiance assimilation for improving hurricane prediction: A recent adventure of Fuqing Zhang, The 35th Conference on Hurricanes and Tropical Meteorology, New Orleans, LA, USA (Invited Oral Presentation)

Minamide M.2020: All-sky Infrared Satellite Radiance Assimilation for the severe weather event predictions, *Fall Meeting of the Meteorological Society of Japan*, online, Japan (Invited Oral Presentation as a Yamamoto Awardee recipient)

Minamide M., F. Zhang, D. J. Posselt, 2020: Forecast error growth of convective processes through nonlinear interaction between dynamical and moisture initialization uncertainties, *the 100th Annual Meeting of American Meteorological Society*, Boston, MA (Invited Oral Presentation)

Minamide M., F. Zhang, 2018: On the Predictability of Tropical Cyclones through All-sky Infrared Satellite Radiance Assimilation, *Second ADAPT Symposium on "Advanced Understanding, Monitoring and Prediction of Weather, Climate and Environmental Systems"*, University Park, PA (Invited Oral Presentation)

Minamide M., F. Zhang, E. Clothiaux, 2016: Assimilation of all-sky infrared radiance from geostationary satellites, *Symposium on Advanced Assimilation and Uncertainty Quantification in BigData Research for Weather, Climate and Earth System Monitoring and Prediction*, State College, PA (Invited Oral Presentation)

SKILLS

- **OS:** Linux, Unix, Windows, macOS
- **Programming:** Fortran, Python, MATLAB, GrADS
- **Office suites:** Microsoft Office
- **Miscellaneous:** Vim, Git, shell scripts
- **Language:** English (fluent), Japanese (native), French (intermediate)

TEACHING, LEADERSHIP AND MANEGERIAL EXPERIENCE

2016.9 – present, **President of Japanese Graduate Student Association in the US (JGSAU)**

- Managed an all-volunteer organization that serves the community of Japanese graduate students who are going to attain academic degrees in the US or some other countries

- Held and managed more than 30 seminars at more than 10 universities in Japan (including the University of Tokyo), to provide information about graduate schools all over the world (such as the comparison of education system)

2017-2018, **Director of Funai Overseas Scholarship's Summer Workshop**

The Westin Bonaventure Hotel and Suites, Los Angeles, CA, US

- Coordinated and managed an academic workshop among the recipients of Funai Overseas Scholarship (FOS) as a representative of all recipients studying all over the world

2009.5 – 2012.8, **Teaching Assistant**

Sundai Preparatory School, Tokyo and Kanagawa, Japan

- Guided high school students for their preparation of university entrance exam
 - Particularly, Mathematics, Physics, English and national language

2011.12 – 2012.5, **Project Manager of Disaster Recovery Assistance Program**

Kuya Fish Campaign, Cagayan de Oro, the Philippines

- Planned, Managed and Completed a well-construction project in the devastated area of Typhoon Washi (2011) in the Mindanao island of the Philippines

2011.3 – 2011.4, **Work-Camp Leader of Disaster Recovery Assistance Program**

NGO NICE, Rikuzentakada, Iwate, Japan

- Coordinated various volunteer work in the Devastated Area of East Japan Great Earthquake, cleaning destroyed houses, cultivating rice and offering mental care

2010.2 – 2010.3, **Internship for International Development Program**

NGO Gawad Kalinga, Davao, the Philippines

- Engaged in development assistance, construction and Elementary education projects