Jung-Sub Lim

Dr. rer. nat. · Physics / Atmospheric Sciences

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Education

Ludwig-Maximilians-Universität München (LMU) *Munich, Germany*

Dr. rer. nat. (Ph.D. Meteorology / Physics) *Sep. 2021 – Dec. 2024*

- Dissertation title: Entrainment, Mixing, and the Evolution of the Cloud Droplet Size Distribution
- Honors: *magna cum laude*
- Committee: Prof. Dr. Fabian Hoffmann, Prof. Dr. Bernhard Mayer, Prof. Dr. George Craig, Prof. Dr. Dieter Braun

Yonsei University *Seoul, Republic of Korea*

M.Sc. Atmospheric Sciences *Sep. 2019 – Aug. 2021*

- Dissertation title: The Effects of Giant Aerosol and Turbulence on the Stochastic Coalescence in Clouds
- Committee: Prof. Dr. Yign Noh, Prof. Dr. Hyunho Lee, Prof. Dr. Sungsoo Yum

Yonsei University *Seoul, Republic of Korea*

B.Sc. Atmospheric Sciences *Sep. 2017 – Aug. 2019*

Pusan National University *Busan, Republic of Korea*

Undergraduate Studies in Atmospheric Sciences *Mar. 2012 – Dec. 2014*

- Transferred to Yonsei University

Professional Experience

2025-Present	**Postdoctoral Associate**, CIRES at the University of Colorado Boulder / NOAA Chemical Sciences Laboratory, Cloud, Aerosol, and Climate Group (Lead: Dr. Graham Feingold) Research Focus: Quantifying Arctic mixed-phase cloud stability by validating the Lagrangian Cloud Model framework against observational data (e.g., MOSAiC).
2021-2024	**Research Associate**, Meteorological Institute Munich / LMU
2019-2021	**Research Associate**, Geophysical Fluid Dynamics Lab., Dept. of Atmospheric Sciences, Yonsei University
2018	**Research Internship**, Computational Science and Engineering, Yonsei University
2015-2017	**Social Service**, Republic of Korea Army

Publications

Published

[3] **Lim, J. S.**, Noh, Y., Lee, H., Hoffmann, F. (2025). The Critical Number and Size of Precipitation Embryos to Accelerate Warm Rain Initiation. *Atmospheric Chemistry and Physics*, 25(10), 5313–5329. https://doi.org/10.5194/acp-25-5313-2025

[2] **Lim, J. S.**, & Hoffmann, F. (2024). Life cycle evolution of mixing in shallow cumulus clouds. *Journal of Geophysical Research: Atmospheres*, 129(10), e2023JD040393. https://doi.org/10.1029/2023JD040393

[1] **Lim, J. S.**, & Hoffmann, F. (2023). Between Broadening and Narrowing: How Mixing Affects the Width of the Droplet Size Distribution. *Journal of Geophysical Research: Atmospheres*, 128(8), e2022JD037900. https://doi.org/10.1029/2022JD037900

Under Review

[*] Zhang, J., Painemal, D., Dror, T., **Lim, J.S.**, Sorooshian, A., & Feingold, G. (2025). Inferring processes governing cloud transition during mid-latitude marine cold-air outbreaks from satellite. *Atmospheric Chemistry and Physics Discussions* [preprint]. https://doi.org/10.5194/egusphere-2025-5119

[*] **Lim, J. S.,** & Hoffmann, F. (2025). Aging of Droplet Size Distribution in Stratocumulus Clouds: Regimes of Droplet Size Distribution Evolution. EGUsphere, 2025, 1-28. https://doi.org/10.5194/egusphere-2025-6099

In Preparation

Presentations

** presenting author*

Invited Talks

Evolution of Individual Cloud Droplets: A Lagrangian View of Turbulent Entrainment, Mixing and Droplet Growth Pathways. Ewha Womans University Colloquium, Seoul, Republic of Korea., Oct., 2025

Scale-Crossing Lagrangian Cloud Modeling: From the Kilometer Scale to the Millimeter Scale. Ewha Womans University Colloquium, Seoul, Republic of Korea., Oct., 2022

Media and Press

SBS 8 O'Clock News (29.08.2023) Featured interview on research regarding cloud–climate interactions in *SBS 8 O'Clock News* (Aug. 29, 2023). `https://www.youtube.com/watch?v=bbkcWEUPxS0`

Contributed Presentations

Lim, J. S., and Hoffmann, F. 2025., Regimes of Droplet Size Distribution Evolution in Stratocumulus: From Adiabatic Growth to Entrainment–Descent. Oral Presentation: Third Symposium on Cloud Physics at the 106th AMS Annual Meeting, Houston, Texas

Kim S., La, I, Hoffmann, F., **Lim, J. S.**, and Yum, S., 2025., Modeling Inhomogeneous and Homogeneous Mixing Traits in Marine Stratocumulus Clouds: Effects of CTEI and Radiative Cooling. Presentation: Third Symposium on Cloud Physics at the 106th AMS Annual Meeting, Houston, Texas

Rug, L., Ascher, B., Kainz, J., **Lim, J. S.**, and Hoffmann, F. 2025., Marine Cloud Brightening: Constraining Small-Scale Uncertainty. Oral Presentation: ICNAA 2025, Vienna, Austria

Lim, J. S., and Hoffmann, F. 2025., Regimes of Droplet Size Distribution Evolution in Stratocumulus: From Adiabatic Growth to Entrainment and Mixing. Poster Presentation: EGU General Assembly 2025, Vienna, Austria

Lim, J. S., and Hoffmann, F. 2025., Aging of DSD in Stratocumulus: The Role of Adiabatic Growth and Entrainment-Mixing. Oral Presentation: Workshop on Cloud Across Scales, Zugspitze, Bavaria, Germany, April 2025

Lim, J. S., and Hoffmann, F., 2024. Life Cycle Evolution of Inhomogeneous Mixing in Shallow Cumulus Clouds. Oral Presentation: ICCP 2024, Jeju, Republic of Korea

Lim, J. S., and Hoffmann, F., 2024. Case D: Precipitating cumulus congestus cloud with SAM-LCM. Oral Presentation: ICMW 2024, Seoul, Republic of Korea

Lim, J. S., and Hoffmann, F., 2024. Environmental and Lifecycle Effects on Entrainment and Mixing in Maritime Shallow Cumulus Cloud. Oral Presentation: ACPC 2024, London, United Kingdom

Lim, J. S., and Hoffmann, F., 2023. The Evolution from Homogeneous to Inhomogeneous Mixing During Cloud Lifecycle. Poster Presentation: AGU 2023 Fall meeting, San Francisco, USA

Lim, J. S., 2023. Scale-Crossing Lagrangian Cloud Modeling to Understand the Role of Clouds in Climate. Oral Presentation: The Korean Scientists and Engineers Association in Germany 2023 Fall meeting, Essen, Germany

Lim, J. S. Effect of Anthropogenic Aerosols on Cloud Lifecycle. Oral Presentation: Europe-Korea Conference on Science and Technology 2023, Munich, Germany

Lim, J. S., and Hoffmann, F., 2023. Between Broadening and Narrowing: How Mixing Affects the Width of the Droplet Size Distribution. Poster Presentation: 2023 CFMIP-GASS meeting, Paris, France

Lim, J. S., and Hoffmann, F., 2022. Effects of Entrainment and Mixing Scenarios on the Droplet Size Distribution: Spatiotemporal Variability and Cloud-Lifecycle Dependence. Poster Presentation: AGU 2022 Fall Meeting, Chicago, USA

Lim, J. S., Kainz, J., and Hoffmann, F., 2022. The Present and Future of Lagrangian Cloud Modeling: From the Centimeter to Kilometer Scale. Oral Presentation: EMS 2022 Annual meeting, Bonn, Germany

Lim, J. S., Hoffmann, F., 2022. Entrainment and Mixing in Cumulus Clouds: A New Mixing Scenario That Narrows the Width of the Droplet Size Distribution. Oral Presentation: AMS, 16th Conference on Cloud Physics, Madison, USA

Lim, J. S. The Effects of Giant Aerosols in Clouds and their Possible Role in Geoengineering. Poster Presentation: Europe-Korea Conference on Science and Technology 2022, Marseille, France

Lim, J. S., Noh, Y., Hoffmann, F., Lee, H., 2021. Idealized Lagrangian Cloud Model Approach to Investigate Early Collisional Growth of Cloud Droplet: Effect of Giant Aerosol and Turbulence. Poster Presentation: AGU 2021 Fall meeting, Online

Lim, J. S., Lee, H., Noh, Y., 2020. Impact of GCCN and TICE on the formation of precipitation and lucky droplets using LCM ensemble model. Oral Presentation: Korean Meteorological Society Fall session, Online

Kim, S., **Lim, J. S.**, Choi, J., 2018 Optimal Ventilation Efficiency Analysis in Various Circular Building Structures Using Immersed Boundary Methods, Oral Presentation: Korean Society of Mechanical Engineering Spring Annual Conference, Jeongseon, Republic of Korea

Teaching Experience

Teaching Assistant

Spring 2023	**Instrumenten-Praktikum (Meteorological Instruments Practicum)**, TA	*LMU*
Spring 2022	**Instrumenten-Praktikum (Meteorological Instruments Practicum)**, TA	*LMU*
Fall 2020	**Fluid dynamics**, TA	*Yonsei University*
Spring 2020	**Climate and civilization**, TA	*Yonsei University*

Mentored Students

since 2025	**Sanggyeom Kim**, Ph.D. Student	*Yonsei University, Republic of Korea*
2023	**Julian Sebastian Humer-Hager**, student research assistant	*LMU, Germany*

Awards & Fellowships

2019, 2020, 2021	**BK21 (Brain Korea 21) Graduate Fellowship**, NRF Korea
2018	**Bronze Prize in the Undergraduate Fluid Dynamics Competition**, Korean Society of Mechanical Engineering
2014	**Undergraduate scholarship**, The East
2013, 2014	**Undergraduate scholarship**, Rotary International
2013	**Undergraduate scholarship**, Shin-heung Youth Association

Outreach & Professional Development

Professional Service

Session Convener, Proposed and organized session “Bridging Experiments, Observations, and Models to Develop Process-Level Understanding of Mixed-Phase Clouds,” Third Symposium on Cloud Physics at the 106th AMS Annual Meeting

Session Chair, session “Mixed-Phase Clouds: Lab Studies, Field Studies and Parameterization,” Third Symposium on Cloud Physics at the 106th AMS Annual Meeting

Peer Reviewer

13 reviews for Journals (Quarterly Journal of the Royal Meteorological Society, Journal of Geophysical Research: Atmospheres, Journal of Atmospheric Sciences, npj Climate and Atmospheric Science, Atmospheric Research, Atmospheric Chemistry and Physics, Geophysical Research Letters, and Journal of Advances in Modeling Earth Systems, GIScience & Remote Sensing, Earth System Science Data).

Software Development

Develop and maintain PyLCM, an open-source, simplified version of the Lagrangian Cloud Model designed for undergraduate lectures and theses. `https://github.com/jslim93/PyLCM_edu`

Membership

Korean Meteorological Society (since 2020), American Geophysical Union (since 2021), American Meteorological Society (since 2022), The Korean Scientists and Engineers Association in the FRG (2022-2024)

Service and Outreach

since 2025	**CSL Science Social All-hands**, Organizing committee member	*NOAA CSL*
2024	**Introduction to Scientific Writing**, Lecturer	*The Korean Scientists and Engineers Association in the FRG*
2022	**Cloud–Climate Interactions**, Invited Speaker	*The Korean Scientists and Engineers Association in the FRG*
2020-2021	**Youth meteorology career camp for high school and middle school students**, Lecturer	*Korea Productivity Center*
2019	**Weather Debate Contest: Finalist team (top 8 teams)**, Team leader	*Korea Meteorological Administration*
2018-2019	**Undergraduate Student Society of Atmospheric Sciences**, Co-founder/University representative	*Yonsei-SNU-Ewha joint group*
2018	**Big Data Study Club, BITAMIN**, Member/Python teaching member	*Seoul, Korea*