

# Lu Zhang

Roskilde, Denmark

☎ (+45) 5026 8027 • ✉ luzhang@envs.au.dk

🌐 scholar.google.com/citations?user=BvIkcrUAAAAJ • 🌐 Louisa121

## Research Interests

---

I am interested in how global warming affects Arctic aerosol properties, aerosol–cloud interactions, radiative forcing, and how these processes feed back to Arctic climate change.

## Education

---

**Ph.D., Meteorology** 2014 – 2017

*University of Chinese Academy of Sciences, Beijing, China*

Dissertation: *Long-term measurements and modelling studies of aerosol hygroscopicity in Lin'an, China.*

**M.S., Meteorology** 2011 – 2014

*Chinese Academy of Meteorological Sciences, Beijing, China*

Thesis: *Long-term measurements of the influence of relative humidity on aerosol scattering properties in the Yangtze River Delta of China.*

**B.S. (Hons.), Atmospheric Sciences** 2007 – 2011

*Lanzhou University, Lanzhou, China*

**Excellent Graduate** of Lanzhou University; GPA: 3.64/4.00.

## Research Experience

---

**Postdoctoral Researcher** 2024 – present

*Department of Environmental Sciences, Aarhus University, Roskilde, Denmark*

Leading research on **aerosol–cloud interactions** and their role in **Arctic climate change**, with a particular focus on how particles influence cloud microphysics and cloud feedbacks under global warming. Integrating **satellite observations**, **ground-based measurements**, and **climate modelling** to reduce uncertainties in Arctic climate projections.

**Guest Researcher** 2023 – 2024

*Department of Geosciences, University of Oslo, Oslo, Norway*

Applied the Norwegian Earth System Model (**NorESM**) to assess the influence of **organic aerosol hygroscopicity** on **cloud condensation nuclei (CCN) activity** and its implications for **radiative forcing**. Designed and implemented sensitivity experiments to quantify climate impacts of hygroscopicity variability.

**Postdoctoral Researcher** 2020 – 2023

*Department of Geophysics, Tel Aviv University, Tel Aviv, Israel*

Investigated **aerosol–cloud interactions** and **aerosol hygroscopicity** of biomass burning aerosols over the South-Eastern Atlantic Ocean. Conducted shipborne and airborne field data analysis to quantify the role of **black carbon**, **brown carbon**, and **iron oxides** in aerosol optical properties and climate effects.

**Student Assistant** 2011 – 2017

*University of Chinese Academy of Sciences, Beijing, China*

Conducted in situ aerosol experiments at multiple observation stations across China. Measured aerosol optical, chemical, and microphysical properties, contributing to long-term datasets for climate and air quality studies.

## Academic Service and Professional Activities

---

### ○ Editorial and Peer Review

Guest Editor for *Atmosphere*. Reviewer for *Atmospheric Chemistry and Physics*, *Geophysical Research Letters*, *Atmospheric Measurement Techniques*, *Remote Sensing*, and *Atmosphere*.

- **Mentorship**  
Co-supervisor of two Master's students  
Tutor at the Climate Academy
- **Conference and Community Engagement**  
Co-chair and co-organizer of ACTRIS DK, Denmark, 2026  
Guide of National 12th Five-Year Plan Science and Technology Innovation Achievements Exhibition, Beijing, 2016

## Honors, Awards, and Grants

---

- 'Cloud phase shifts and their Role in shaping ARCTIC climate toward a warming future', FRIPPO Norwegian research council, 8 Mio NOK, Che H. (PI), Storelvmo T., ... , Zhang L.,...2025-2029
- Trans-National Access, ATMO-ACCESS funding, 2023
- Postdoctoral Scholarship, Tel Aviv University, Israel
- Excellent graduate of ISCS, China
- Excellent Graduate, Lanzhou University, China

## Selected Presentations and Posters

---

- **2026** *Why Arctic black carbon stopped declining after 2020?* ACTRIS DK, Roskilde, Denmark.
- **2025** *Long-term variation of key chemical species in the high Arctic and possible drivers.* European Aerosol Conference, Lecce, Italy.
- **2025** *Long-term trend of elemental carbon in the high Arctic.* NOSA (Nordic Society for Aerosol Research) Conference, Aarhus, Denmark.
- **2024** *Organic aerosol hygroscopicity and volatility.* University of Oslo, Oslo, Norway.
- **2017** *The influence of relative humidity on aerosol scattering properties.* American Geophysical Union Fall Meeting, San Francisco, USA.
- **2016** *The influence of relative humidity on aerosol scattering properties.* Beijing, China.

## Selected Publications

---

- First- and Corresponding-author.....
- **Zhang, L.\***, Skov, H., Massling, A., Dall'Osto, M., Evangeliou, N., Che, H.C., Eckhardt, S., Nøjgaard, J.N.K., Jensen, B, Im, U. (2024) *Vertical coupling as a key driver of spring and summer surface composition in the high Arctic.* **Atmospheric Chemistry and Physics**, in prep.
  - **Zhang, L.\***, Skov, H., Massling, A., Dall'Osto, M., Evangeliou, N., Che, H.C., Eckhardt, S., Nøjgaard, J.N.K., Jensen, B, Im, U. (2024) *The long-term trend of elemental carbon in the high Arctic.* **Atmospheric Chemistry and Physics**, in prep.
  - Che, H., **Zhang, L.\***, Segal-Rozenhaimer, M., Dang, C., Zuidema, P., Sedlacek, A. (2025) *Aerosol hygroscopicity over the South-East Atlantic Ocean during the biomass burning season: Part II – Influence of sea salt and burning conditions on CCN hygroscopicity.* **Atmospheric Chemistry and Physics**, 25, 10987–11002, <https://doi.org/10.5194/acp-25-10987-2025>, 2025.
  - **Zhang, L.\***, Segal-Rozenhaimer, M., Che, H., Dang, C., Sun, J., Kuang, Y., Howell, S., Formenti, P. (2024) *Aerosol hygroscopicity over the South-East Atlantic Ocean during the biomass burning season: Part I – From the perspective of scattering enhancement.* **Atmospheric Chemistry and Physics**, <https://doi.org/10.5194/acp-24-13849-2024>.
  - **Zhang, L.\***, Segal-Rozenhaimer, M., Che, H., Dang, C., Sedlacek, A., Lewis, E., Dobracki, A., Wong, J., Formenti, P., Howell, S., Nenes, A. (2022) *Light absorption by brown carbon over the South-East Atlantic Ocean.* **Atmospheric Chemistry and Physics**, 14(22).
  - **Zhang, L.**, Sun, J., Shen, X., Che, H., Ma, Q., Zhang, Y., Zhang, X., Ogren, J. (2015) *Observations of relative humidity effects on aerosol light scattering in the Yangtze River Delta of China.* **Atmospheric Chemistry and Physics**, 15(14), 8439–8454.

## Collaborative.....

- Ephraim, S., Zuidema, P., Bansemmer, A., Cai, L.T., Cruikshank, O, **Zhang, L.** (2026) *Closed to Open-Celled Mixed-Phase Cloud Transition Over the Nordic Seas Under High Aerosol Loading*. **EA****Atmospheric Chemistry and Physics**, in prep.
- Yechezkel, Y., Sand, N., **Zhang, L.**, Lester, Y., Segal-Rozenhaimer, M., Zucker, I. (2025) *The dual role of tropospheric ozone in controlling COVID-19 outbreaks*. **Environmental Chemistry Letters**, 23, 1153–1159, <https://doi.org/10.1007/s10311-025-01840-9>.
- Che, H., Segal-Rozenhaimer, M., **Zhang, L.**, Dang, C., Zuidema, P., Dobracki, A., Sedlacek, A., Coe, H., Wu, H., Taylor, J., Zhang, X., Redemann, J., Haywood, J. (2022) *Cloud processing and weeklong ageing significantly affect the biomass burning aerosols over the south-eastern Atlantic*. **Communications Earth & Environment**, 3, 182.
- Che, H., Segal-Rozenhaimer, M., **Zhang, L.**, Dang, C., Zuidema, P., Sedlacek, A., Zhang, X., Flynn, C. (2022) *Seasonal variations in fire conditions are important drivers to the trend of aerosol optical properties over the south-eastern Atlantic*. **Atmospheric Chemistry and Physics**, 14(22).
- Dang, C., Segal-Rozenhaimer, M., Che, H., **Zhang, L.**, Formenti, P., Taylor, J., Dobracki, A., Purdue, S., Wong, J., Nenes, A., Sedlacek, A., Coe, H., Redemann, J., Zuidema, P., Howell, S., Haywood, J. (2022) *Biomass burning and marine aerosol processing over the Southeast Atlantic Ocean: A TEM single-particle analysis*. **Atmospheric Chemistry and Physics**, 14(22).
- Shen, X., Sun, J., Kivekäs, N., Kristensson, A., Zhang, X., Zhang, Y., **Zhang, L.**, Fan, R., Qi, X., Ma, Q., Zhou, H. (2018) *Spatial distribution and occurrence probability of regional new particle formation events in Eastern China*. **Atmospheric Chemistry and Physics**, 18(2), 587–599.
- Qi, X., Sun, J., **Zhang, L.**, Shen, X., Zhang, X., Zhang, Y. (2018) *Aerosol hygroscopicity during the haze red-alert period in December 2016 at a rural site of the North China Plain*. **Journal of Meteorological Research**, 32, 38–48.
- Zhang, Z., Zhang, X., Zhang, Y., Wang, Y., Zhou, H., Shen, X., Che, H., Sun, J., **Zhang, L.** (2017) *Characteristics of chemical composition and role of meteorological factors during heavy aerosol pollution episodes in northern Beijing area in autumn and winter of 2015*. **Tellus B: Chemical and Physical Meteorology**, 69(1), DOI: 10.1080/16000889.2017.1347484.
- Zhong, J., Zhang, X., Wang, Y., Sun, J., Zhang, Y., Wang, J., Tan, K., Shen, X., Che, H., **Zhang, L.**, Zhang, Z., Qi, X., Zhao, H., Ren, S., Li, Y. (2017) *Relative contributions of boundary-layer meteorological factors to the explosive growth of PM<sub>2.5</sub> during the red-alert heavy pollution episodes in Beijing in December 2016*. **Journal of Meteorological Research**, 31, 809–819.
- Che, H., Zhang, X., **Zhang, L.**, Wang, Y., Zhang, Y., Shen, X., Ma, Q., Sun, J., Zhong, J. (2017) *Prediction of size-resolved number concentration of cloud condensation nuclei and long-term measurements of their activation characteristics*. **Scientific Reports**, 7:5819.
- Sun, J., **Zhang, L.**, Shen, X., Che, H., Zhang, Y., Fan, R., Ma, Q., Yue, Y., Yu, X. (2016) *A review of the effects of relative humidity on aerosol scattering properties*. **Acta Meteorologica Sinica**, 74(5), 672–682.
- Che, H., Zhang, X., Wang, Y., **Zhang, L.**, Shen, X., Zhang, Y., Ma, Q., Sun, J., Zhang, Y., Wang, T. (2016) *Characterization and parameterization of aerosol cloud condensation nuclei activation under different pollution conditions*. **Scientific Reports**, 6:24497.
- Shen, X., Sun, J., Zhang, X., Zhang, Y., **Zhang, L.**, Che, H., Ma, Q., Yu, X., Yue, Y., Zhang, Y. (2015) *Characterization of submicron aerosols and effect on visibility during a severe haze-fog episode in the Yangtze River Delta, China*. **Atmospheric Environment**, 120, 307–316.