Chaehyeong Lee

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Research Interests

Ocean dynamics and climate sciences: ocean heat budget; ocean's role in climate systems.

Geofluid dynamics: upper-ocean mixing processes in the frequency domain.

Education

University of Colorado Boulder — **Boulder, CO, USA**

Ph.D. in Atmospheric and Oceanic Sciences — *Aug. 2024 – present*

Advisors: Dr. Donata Giglio & Dr. Aneesh Subramanian

Yonsei University — **Seoul, Rep. of Korea**

M.S. in Atmospheric Science — *Mar. 2022 – Aug. 2023*

Advisor: Dr. Hajoon Song

Yonsei University — **Seoul, Rep. of Korea**

B.S. in Atmospheric Science — *Mar. 2016 – Feb. 2022*

Publications

In Progress

Lee, C., Giglio, D., Subramanian, A. C., Han, W., Capotondi, A., Du, D., & Molod, A. *Assessing the impact of sea surface salinity assimilation on extreme event prediction in NASA GEOS-S2S v2 model*.

Lee, C., Giglio, D., & Subramanian, A. C. *Bridging gaps in the upper-ocean heat budget between observations and climate models: a frequency-domain perspective*.

Published

Lee, C., Song, H., Choi, Y., Cho, A., & Marshall, J. (2025). Observed multi-decadal increase in the surface ocean's thermal inertia. *Nature Climate Change*, 1–7. doi:10.1038/s41558-025-02245-w

Research Experience

Giglio's Research Group, CU Boulder — **Boulder, CO, USA**

Research Assistant — *Aug. 2024 – present*

Developing methods to improve NASA GEOS-S2S v2 simulations via sea-surface salinity assimilation; Filling gaps in upper-ocean mixing processes between observations and models through frequency-domain analysis.

Climate Processes and Predictability Group, CU Boulder — **Boulder, CO, USA**

Research Assistant — *Aug. 2024 – present*

Air-Sea Modeling Lab, Yonsei University — **Seoul, Rep. of Korea**

Research Assistant — *Dec. 2020 – Aug. 2024*

Analyzed changes in the upper-ocean thermal state using SST observations; examined hysteresis of thermal memory under CESM 4×CO_2 experiments.

Teaching Experience

Data Science Laboratory, taught by Dr. Donata Giglio at CU Boulder — **Boulder, CO, USA**
Teaching Assistant — *Spring 2026*

Climate & Civilization, taught by Dr. Yign Noh at Yonsei Univ. — **Seoul, Rep. of Korea**
Teaching Assistant — *Spring 2023*

Physical Oceanography, taught by Dr. Hajoon Song at Yonsei Univ. — **Seoul, Rep. of Korea**
Teaching Assistant — *Fall 2022*

Awards & Scholarships

2025: ATOC Fellowship, Department of Atmospheric and Oceanic Sciences, University of Colorado Boulder

2025: Academic Research Grants (GCP research credits), Google LLC

2024: Outstanding Thesis Award, Yonsei University Graduate School, Yonsei University

2022–2023: Full tuition merit scholarship (for the top 2 graduate students), Yonsei University

2022: High Honors for academic performance, Yonsei University

2020–2021: Jilli Scholarship for academic performance, Yonsei University

Patent

Song, H., & **Lee, C.** (2025). *Evaluation system and method of persistence of SST anomalies using autocorrelation coefficient and arctangent regressive model.* Rep. of Korea Patent #1028135790000. doi:10.8080/1020220157159

Invited Talk

NASA Salinity Telecon — **Virtual Meeting**
Assessing the Impact of Satellite Sea Surface Salinity Assimilation on Vertical Structure of the Upper Ocean in the NASA GEOS-S2S 2. — *Dec. 2025*

Conferences

OSM 2026 (poster) — **Glasgow, Scotland**
Assessing the Impact of Satellite Sea Surface Salinity Assimilation on the Upper Ocean Thermal State in the NASA GEOS S2S-v2 Model. — *Feb. 2026*
***Lee, C.**, Giglio, D., & Subramanian, A. C.*

AGU Fall Meeting (poster) — **Chicago, IL, USA**
The increasing trend of persistence of sea surface temperature in the past 40 years. — *Dec. 2022*
***Lee, C.**, Song, H., Cho, A., & Tak, Y.*

Korean Society of Oceanography Spring Conference (talk) — **Jeju, Rep. of Korea**
Increasing persistence of SST anomalies and duration of marine heatwaves. — *Jun. 2022*
***Lee, C.**, Song, H., Cho, A., & Tak, Y.*

Workshops

User Training for the Glosea 6 Climate Prediction Model — **Jeju, Rep. of Korea**
Organized by the Korea Meteorological Administration — *Jan. 2022*

Deep Learning Training: Fundamentals of Deep Learning — **Gonju, Rep. of Korea**
NVIDIA Deep Learning Institute — *Jan. 2022*

Service

Peer Reviewer: *Journal of Climate*

Technical Skills

Programming: Python (xarray, dask, Pangeo), Julia (Oceananigans)
HPC: Parallel/distributed computing, NCAR Casper/Derecho clusters
Tools: Git, Linux shell scripting, LaTeX