

CHAEHYEONG LEE

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RESEARCH INTERESTS

Ocean Dynamics and Climate Sciences

- Ocean's heat budget and its change
- Ocean's role in climate systems

Physical Oceanography

- Upper ocean mixing processes in a frequency domain

EDUCATION

Ph.D in Atmospheric and Oceanic Sciences

University of Colorado Boulder, Boulder, CO

Advisor: Dr. Donata Giglio & Dr. Aneesh Subramanian

Aug. 2024 - present

M.S. in Atmospheric Sciences

Yonsei University, Seoul, Republic of Korea

Advisor: Dr. Hajoong Song

Mar. 2022 - Aug. 2023

B.S. in Atmospheric Sciences

Yonsei University, Seoul, Republic of Korea
class ranking (2/22)

Mar. 2016 - Feb. 2022

Selected course taken:

(at Yonsei) Advanced Physical Oceanography(A+); Air-sea interaction(A+); Ocean Modeling(A+); Mechanics(A+); Data Assimilation(A+); Turbulence(audit)

(at CUB) Physical Oceanography & Climate(A); Atmospheric Thermodynamics & Dynamics(A)

PUBLICATIONS

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. <https://doi.org/10.1038/s41558-025-02245-w>.

Work in Progress

Lee, C., Giglio, D., & Subramanian, A. C. Assessing the impact of sea salinity assimilation on extreme events prediction in NASA GEOS-S2S v2 Model.

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

PROFESSIONAL EXPERIENCES

Research Experiences

Research Assistant — Giglio's research group, Univ. of Colo. Boulder

Aug. 2024 - present

Working with Dr. Donata Giglio and Dr. Aneesh Subramanian to better understand the physical properties of the upper ocean and its role in Earth's climate. Developing methods to improve climate models to better simulate the real world, with ongoing research quantifying how sea surface salinity assimilation improves the NASA GEOS S2S v2 model.

Worked on many projects with Dr. Hajoon Song and colleagues estimating changes in the thermal state in the upper ocean using sea surface temperature observations. The hysteresis of thermal memory at the ocean surface is analyzed from the CESM 4×CO₂ emission and recovery experiment.

AWARDS & SCHOLARSHIPS

Third Prize (Outstanding Thesis Award), Yonsei University	<i>Jul. 2024</i>
Full tuition scholarship for merit (18.6M KRW), Yonsei University	<i>Mar. 2022 - Aug. 2023</i>
High Honors (for High Academic Performance), Yonsei University	<i>Feb. 2022</i>
Jilli Scholarship (2.3M KRW) (for High Academic Performance), Yonsei University	<i>Jun. 2020 - Jun. 2021</i>

CONFERENCES & WORKSHOPS

Conferences

AGU Fall meeting, <i>Chicago, IL</i>	<i>Dec. 2022</i>
Lee C.* , Song H., Cho A., & Tak Y. The increasing trend of persistence of sea surface temperature in the past 40 years. (poster)	
The Korean Society of Oceanography Spring conference, <i>Jeju, Rep. of Korea</i>	<i>Jun. 2022</i>
Lee C. , Song H., Cho A., & Tak Y. Increasing persistence of sea surface temperature anomaly and duration of marine heatwaves. (oral)	

Workshops

User training for the GloSea 6 climate prediction model	<i>Jan. 2022</i>
<i>Korea Meteorological Administration, Jeju, Rep. of Korea</i>	

TECHNICAL SKILLS

Programming	Python (Numpy, Xarray, Pangeo, Tensorflow and Dask) Julia
Software & Tools	Oceananigans High performance computing

PATENT

Hajoon Song & Chaehyeong Lee, Evaluation System and Method of persistence of Sea Surface Temperature anomalies using autocorrelation coefficient and Arctangent regressive model, Republic of Korea Patent Registered: 1028135790000	<i>Nov. 2022</i>
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SERVICES

Peer reviewer

Journal of Climate