Department of

Earth and Environmental Sciences

Yearbook

2023-2024

Contents

Message from the Dean of Faculty of Science

We are very excited with the establishment of the new Department of Earth and Environmental Sciences (DEES) in the Faculty of Science at The Chinese University of Hong Kong. Many of us have worked together for this new initiative involving collaborative efforts of multiple units in the Faculty for four years since November 2020.

This is a milestone of the strategic development in our Faculty towards enhancing our education and research capability for addressing global societal and scientific challenges in the key areas of earth, environment, and sustainability. As Dean of Science and a researcher deeply invested in catalysis and sustainable energy solutions, I believe establishing DEES is a bold step toward enhancing the interdisciplinary education and research at CUHK and solving humanity's existential challenges.

Born from the pioneering Earth System Science Program (directly under the Faculty) and Environmental Science Program (under the School of Life Sciences and Department of Chemistry) in the Faculty, DEES unites interdisciplinary expertise to address climate change, ecosystem resilience, and sustainable development with scientific rigor and urgency. Hong Kong, as a global metropolis in the Greater Bay Area, faces acute vulnerabilities to environmental shifts, positioning DEES at the nexus of innovation and real-world impact. This new department embodies atmospheric science, geophysics, environmental sciences, and cutting-edge technology, aligning with global imperatives like the UN Decade on Ecosystem Restoration. My own research in catalysis and CO_2 conversion for sustainable chemicals and fuels reinforces my belief: progress demands collaboration across disciplines, borders, and generations.

To DEES faculty, staff, and students—champion interdisciplinary curiosity, embrace bold ideas, and lead with purpose. Together, we will nurture the next generation of talents, leaders and advance science that safeguards our planet and empowers our societies. Let this milestone mark not just a new department, but a renewed pledge to shape a sustainable future through education, discovery, innovation and global engagement. I would like to thank all the academic and administrative staff members for their efforts in this initiative, all the students and alumni for their support and the university leadership team for their support!

Finally, a warm congratulations to all staff and students in the DEES!

SONG Chunshan
Dean of Science
Wei Lun Professor of Chemistry

Message from the Chairman

Dear Faculty, Staff, and Students,

I am thrilled to introduce the inaugural yearbook of Department of Earth and Environmental Sciences at The Chinese University of Hong Kong. This publication marks a significant milestone in our department's journey, capturing the essence of our community, achievements, and shared experiences.

I would like to express my deepest gratitude to Dean, Prof. Chunshan Song, for his unwavering support in establishing and guiding our department. His vision and leadership have played a pivotal role in driving our academic endeavors and cultivating a standard of excellence.

I also want to extend my heartfelt thanks to our previous program directors of Earth System Science and Environmental Science, Prof. Teng-Fong Wong, Prof. Po-Keung Wong, and Prof. Joe Lee, Prof. Amos Tai, Prof. Martin Tsui for their contributions to the development of our department. Their expertise, mentorship, and commitment to academic excellence have laid a strong foundation for our continued success.

As we reflect on the journey that has brought us to this moment, let us celebrate the collective efforts and achievements of our faculty, staff, and students. This yearbook serves as a testament to the passion, hard work, and creativity that define our department and drive us towards new horizons.

I invite each of you to explore the pages of this yearbook, filled with memories, accomplishments, and the spirit of collaboration that defines our community. Let us cherish these moments and look forward to the bright future that lies ahead for the Department of Earth and Environmental Sciences.

Thank you to everyone who has contributed to this publication and to the success of our department. Your dedication and commitment are truly appreciated.

Warm regards,

CHOW Tat Shing Alex
Chairman, Department of Earth and Environmental Sciences
Professor

Message from the Founding Director

The Earth System Science Programme was founded in 2012, and the next year I was asked to describe the endeavor. "To tackle the complex scientific questions related to global change, natural hazards, and the Earth's habitability, it is critical to understand the dynamics of the Earth as a system, including the atmosphere, biosphere, geosphere, hydrosphere, and human impacts. This requires scientific research that integrates traditional disciplines such as geology, meteorology, and oceanography, and curriculum development to prepare a new generation of students in this interdisciplinary framework. Indeed, it is in this spirit that the Faculty of Science established the Earth System Science Programme. As the new kid on the block, my colleagues and I will strive to develop a curriculum that is relevant and rigorous, and to mentor students and actively conduct cutting-edge research to probe the complexity and elucidate the dynamics of the Earth system."

We should be proud that this mission has been accomplished in just twelve years; ESSC has blossomed, merged with the Environmental Science Programme, and evolved into the interdisciplinary Department of Earth and Environmental Sciences, first of its kind in Hong Kong.

On our journey to reach this milestone, numerous colleagues and students have made significant contributions. First and foremost are the teaching and administrative staff in the first academic year of ESSC (the late Albert Hsui, Jason Zhang, and Sally Cheuk), who labored to lay the foundation from scratch, as well as the first cohort of bright and motivated students who bought into the academic mission of ESSC and "courageously" declared it as their major. Kudos to our first professorial recruits (ManNin Chan, Lin Liu, Amos Tai, Francis Tam, and Hongfeng Yang) for their dedication and pioneer efforts to implement our strategic vision and establish a robust research enterprise. We are most grateful to Deans (Ng, Wong, Xie and Song) of the Faculty of Science for their foresight and unwavering support over the years. Last but not least, we truly appreciate the collaborative spirit of ENSC colleagues that has expedited and streamlined the merge.

With the formal establishment of the Department of Earth and Environmental Sciences in August 2024, a milestone has been reached, and a new page turned. Congratulations to EES colleagues and students as you embark on this exciting journey. I am confident that you will uphold the tradition of interdisciplinary collaboration and cordiality, and I look forward to your sustaining and further enhancing the track record of excellence in teaching, research, and service to the community.

WONG Teng Fong
Founding Director, Earth System Science Programme
Emeritus Professor

Department Overview

Our mission is to address the interplay between nature and the long-term sustainability of human society using a quantitative scientific approach.

As the first of its kind in Hong Kong, we integrate and synergise Earth System Science and Environmental Science to tackle global challenges such as climate change, the food-energy-water nexus, natural hazards, ecosystem degradation, and planetary health.

History

From ESSC and ENSC to EESC

The Department of Earth and Environmental Sciences (EES) has grown from two pioneering programmes—Environmental Science (ENSC) and Earth System Science (ESSC)—to a unified department dedicated to interdisciplinary research and education in sustainability, climate change, and environmental challenges. Explore key milestones in our journey.

2012 Founding of ESSC

Earth System Science (ESSC) Programme is launched, focusing on interdisciplinary research and teaching in Earth and atmospheric sciences.

2012-2022 Growth of ESSC

Earth System Science (ESSC) Programme is launched, focusing on interdisciplinary research and teaching in Earth and atmospheric sciences.

1994 Founding of ENSC

The Environmental Science Programme (ENSC), the first of its kind in Hong Kong, is established with multidisciplinary staff from Chemistry, Biology, and Biochemistry.

2012-2014 Formative Phase

ESSC develops its vision and recruits key faculty. The postgraduate division of Earth & Atmospheric Sciences is established.

First Batch of Graduates from ENSC
1997

Mong Man Wai Building Office Establishment
2015

Our Logo

The Correlated Dynamics: Earth System Science

Miss Yvonne Ip, from the programme's first cohort, designed its logo to reflect the Earth's interconnected spheres—atmosphere, geosphere, hydrosphere, and biosphere. Using white strokes, she depicted a cloud, Earth's crust, water, and a leaf, colored in sky blue, ochre brown, ocean blue, and green. Their circular arrangement symbolizes the interrelation and mutual influence of these spheres.

2022
Integration into EESC

ENSC and ESSC merge to form the EESC: Earth and Environmental Sciences Programme, with a streamlined curriculum and expanded faculty.

2024
Establishment of EES Department!

On 1 August 2024, the Department of Earth and Environmental Sciences is formally established, embarking on a new journey to tackle pressing environmental challenges.

2014-2020
Growth Phase

ESSC becomes a full-fledged academic unit, achieving excellence in research and teaching. New offices and teaching labs are established, and external funding is secured.

2020-2024
Integration Phase

ESSC and ENSC are working towards integration under the initiative of professors, with additional support from the Faculty.
ESSC celebrates its 10th anniversary in 2022.

First Batch of Graduates from ESSC
2016

EES Department Establishment Celebration
2024

Faculty and Staff

Our EES department boasts a world-class faculty committed to advancing research and education to meet future challenges.

Faculty expertise spans diverse fields such as climate dynamics, biogeochemistry, geophysics, atmospheric chemistry, and cryospheric science.

Notable achievements include groundbreaking work on atmospheric aerosol transformations, sustainable agriculture, earthquakes and volcanoes, and marine biogeochemical dynamics. Our faculty members lead innovative projects, such as smart floating wetlands, wildfire impacts on ecosystems, and AI applications in Earth sciences. With global collaborations and cutting-edge research, EES faculty are shaping solutions to pressing environmental and societal issues.

achow@cuhk.edu.hk

Ph.D.,
University of California, Davis

M.Sc.,
University of California, Davis

B.Sc.,
University of California, Berkeley

CHOW Tat Shing Alex

Chairman/Professor

Prof. CHOW Tat Shing Alex is a Professor in the Department of Earth and Environmental Sciences at The Chinese University of Hong Kong (CUHK), where he is affiliated with United College.

Prof. CHOW is the principal investigator on a project funded by the Environmental and Conservation Fund from 2023-2025 to design smart floating wetlands to optimise ecosystem services for the urban environment in Hong Kong.

He is also a co-investigator on a large-scale research project with the US Pacific Northwest National Laboratory from 2023-2025, studying the influence of wildfire and post-fire precipitation on the fate and transport of pyrogenic organic carbon and nitrogen in terrestrial-aquatic interfaces.

—— *Research Interest(s)*

- Aquatic and Terrestrial Organic Matter
- Source Water Quality and Drinking Water Treatability
- Biogeochemical Cycles and Ecosystem Services

—— *Research Project(s)*

Prof. CHOW's team conducted a watershed-scale high-severity forest burning experiment at the U.S. Department of Energy Savannah River Site in South Carolina.

Samples were collected for detailed molecular characterisation using the highest-resolution mass spectrometer (21T FT-ICR MS) at the National High Magnetic Field Laboratory in Tallahassee, FL, along with other advanced instruments at the Environmental Molecular Sciences Laboratory in Richland, WA.

hyang@cuhk.edu.hk

Ph.D.,
Saint Louis University

M.Sc.,
University of Science and Technology of China

B.Sc.,
University of Science and Technology of China

YANG Hongfeng

Professor

Prof. YANG Hongfeng is a Professor in the Department of Earth and Environmental Sciences at The Chinese University of Hong Kong (CUHK). At CUHK, Prof. YANG is also the Director of the Aerospace Science and Earth Informatics & X Double Major Programme, and affiliated with New Asia College.

—— *Research Interest(s)*

- Earthquake Seismology
- Earthquake Source Physics
- Human Induced Earthquakes and Energy Demand
- High-resolution Imaging of Crustal Fault Zone Structure
- Subduction Zone Exploration Using Ocean Bottom Seismograph Data

—— *Research Project(s)*

In recent years, Prof. YANG has been primarily interested in earthquakes associated with energy development, such as shale gas development, underground natural gas storage, geothermal energy, etc. His team has found new mechanisms by which human activities may trigger earthquakes and is striving to provide solutions to balance energy demand and earthquake risks.

—— *Notable Achievement(s)*

Prof. YANG was interviewed by TVB about a provisional earthquake message for the South China Sea in August 2024.

mnchan@cuhk.edu.hk

Ph.D.,
California Institute of Technology

M.Phil.,
The Hong Kong University of Science and Technology

M.Sc.,
The Hong Kong University of Science and Technology

B.Sc.,
The Hong Kong University of Science and Technology

CHAN Man Nin

Associate Professor

Prof. CHAN Man Nin is an Associate Professor in the Department of Earth and Environmental Sciences at The Chinese University of Hong Kong (CUHK). Prof. CHAN is affiliated with New Asia College, where he also serves as the Warden of Mei Yun Tang.

—— *Research Interest(s)*

- Chemical Transformation of Organosulfur Compounds via Heterogeneous Oxidation: Implications for Atmospheric Aerosol Sulphur Cycle
- Chemical Transformation of Isoprene Derived Secondary Organic Aerosols via Heterogeneous Oxidation during Daytime and Nighttime,
- Evolution of Heterogeneous Reactivity of Atmospheric Aerosols over Time

—— *Research Project(s)*

Prof. CHAN has co-authored a publication in 2024 in ACS EST Air on the deactivating effect of hydroxyl radicals by sulfate and sulfite functional groups.

Organosulfur compounds such as organosulfates ($R–OSO_3^-$) and sulfonates ($R–SO_3^-$) are important constituents of atmospheric aerosols. One crucial process that can significantly affect the abundance and fate of these compounds in atmospheric aerosols is their oxidation by hydroxyl ($\bullet OH$) radicals in aqueous phase.

Prof. CHAN's research team reveal that the two sulfur-containing groups, sulfate ($-OSO_3^-$) group for alkyl sulfates and sulfite ($-SO_3^-$) group for sulfonates, exhibit strong deactivating effect on oxidative kinetics. This could be explained by the strong electron-withdrawing nature of the $-OSO_3^-$ and $-SO_3^-$ groups, which lowers the hydrogen abstraction rates during $\bullet OH$ oxidation.

They demonstrate that the oxidation of organosulfates and sulfonates by $\bullet OH$ radical in aqueous phase can be significantly modulated by the presence of the sulfur functional groups.

liulin@cuhk.edu.hk

Ph.D.,
University of Colorado
Boulder

B.Sc.,
Wuhan University

LIU Lin

Associate Professor

Prof. LIU Lin is an Associate Professor in the Department of Earth and Environmental Sciences at The Chinese University of Hong Kong (CUHK). At CUHK, Prof. LIU is affiliated with Chung Chi College, where he serves as the Department Coordinator.

Prof. LIU has contributed a book chapter on "GNSS and the Cryosphere" in the recently published book "GNSS Monitoring of the Terrestrial Environment: Earthquakes, Volcanoes, and Climate Changes" edited by C. Kreemer and Y. Aoki.

—— *Research Interest(s)*

- Cryospheric Science
- Geodesy and Geophysics
- Remote Sensing
- Deep Learning Applications in Earth and Environmental Sciences

—— *Research Project(s)*

Prof. LIU's research team uses artificial intelligence in the studies of cold region landforms. His recent projects focused on rock glaciers on the Tibetan Plateau. His team has produced the very first comprehensive inventory that includes more than 44 thousand rock glaciers across the entire plateau.

—— *Notable Achievement(s)*

Prof. LIU took the role as a Science Adviser to Eos. He is serving a 5-year term representing AGU's Geodesy section to this influential science news magazine.

amostai@cuhk.edu.hk

Ph.D.,
Harvard University

B.Sc.,
Massachusetts Institute
of Technology

TAI Pui Kuen Amos

Associate Professor

Prof. TAI Pui Kuen Amos is an Associate Professor and Director of the Earth System Sciences Programme. At CUHK, Prof. TAI is affiliated with C.W. Chu College.

—— *Research Interest(s)*

- Atmospheric Chemistry and Physics
- Ecoclimatology and Biosphere-atmosphere Interactions
- Air Pollution, Agricultural and Forest Meteorology
- Sustainable Food Systems and Forestry Under Climate Change

—— *Research Project(s)*

Prof. TAI's team continued to focus on two main topics of research, which they believe are highly relevant for the pursuit of various United Nations' Sustainable Development Goals:
1) How Agriculture and Food Systems can be Improved to Reduce Climate Change and Air Pollution;
2) Effects of Land Use and Forest Changes and Management on Air Quality and Climate

—— *Notable Achievement(s)*

Prof. TAI has attended COP28, including the discussion on the roles of Hong Kong in global climate finance and the importance of food system transformation and climate-resilient agriculture. It has been documented and covered by various media outlets.

In addition, he have also been interviewed and covered by various media outlets for his research and personal journey as a scientist, including a one-hour interview on a famous programme on RTHK1, and full-page coverage by Hong Kong Economic Journal.

He has also contributed three times to an RTHK1 programme on various topics related to climate change, ecosystems and agriculture, and contributed to a science education article on Wenweipo.

He was also awarded the Science Faculty Young Researcher Award at Science Faculty, CUHK.

TAM Chi Yung Francis

Associate Professor

francis.tam@cuhk.edu.hk

Ph.D.,
Princeton University

M.Phil.,
The Chinese University of Hong Kong

B.Sc.,
The Chinese University of Hong Kong

Prof. TAM Chi Yung Francis is an Associate Professor in the Department of Earth and Environmental Sciences at The Chinese University of Hong Kong (CUHK). At CUHK, Prof. TAM is affiliated with United College.

Professor Tam's research focuses on climate dynamics, particularly in the areas of monsoons, tropical circulation systems, impacts of climate change on extreme weather.

He is interested in understanding the implications of urbanization and land-use changes on heat waves, tropical cyclones, severe rainstorms and air quality in megacities. His inspiration stems from curiosity about the interactions between physics of the atmosphere, oceans and land surfaces. While pursuing a Ph.D. at Princeton, he became fascinated by the complexities of monsoons and related air-sea interactions.

Professor Tam employs advanced Earth System models to understand how human activities affect extreme weather and climate. Ultimately, his work is driven by a commitment to enhance our resilience to climate extremes in vulnerable regions.

Professor Tam is a recipient of Association of Commonwealth Universities (ACU) Fellowship, Oliver Lectureship from UT Austin, World Universities Network (WUN) research development fund, and is a Fellow of the Hong Kong Meteorological Society.

—— *Research Interest(s)*

- Atmospheric and Climate Dynamics
- Sub-seasonal to Seasonal Predictability
- Influence of Global Warming
- Specialised in Using Earth System Models with Various Spatial Resolutions for Studying Extreme Climate and Weather in the Tropics and Asian Monsoon Region (including El Nino, Intense Precipitation, Tropical Cyclones, their Induced Storm Surges and Extreme Sea Waves), and their Impacts on Highly Urbanised Coastal Megacities

phdu@cuhk.edu.hk

Ph.D.,
University of Chinese
Academy of Sciences

B.Sc.,
China University of
Petroleum (East China)

DU Penghui

Research Assistant Professor

Prof. DU Penghui is a Research Assistant Professor in the Department of Earth and Environmental Sciences at The Chinese University of Hong Kong (CUHK). Prof. DU joined CUHK in 2024. At CUHK, he is affiliated with New Asia College.

Prof. DU was an Research Assistant Professor in Southern University of Science and Technology from 2020 to 2024. He also joins the Youth Editorial Board of Chinese Chemical Letters.

—— *Research Interest(s)*

- Aquatic Environmental Chemistry
- Emerging Contaminants and Dissolved Organic Matter
- Quantum Chemistry and Data Science

yjtan@cuhk.edu.hk

Ph.D.,
Columbia University

B.Sc.,
Lafayette College

B.A.,
Lafayette College

TAN Yen Joe

Assistant Professor

Prof. TAN Yen Joe is an Assistant Professor in the Department of Earth and Environmental Sciences at The Chinese University of Hong Kong (CUHK). At CUHK, Prof. TAN is affiliated with Morningside College.

Prior to his role at CUHK, Prof. TAN served as an Adjunct Associate Research Scientist at the Lamont-Doherty Earth Observatory, Columbia University, USA.

—— *Research Interest(s)*

- Marine geophysics
- Volcano seismology
- Earthquake processes
- Environmental seismology
- Machine learning applications in geophysics

—— *Research Project(s)*

Prof. TAN's team has been working on applying machine learning methods to improve detection and classification of various types of seismic events (earthquakes, volcanic long-period events, impulsive submarine lava events, whale call, etc).

They have also been studying how earthquake swarms and the triggering of earthquakes by seismic waves from large remote earthquakes relate to fluids and subsurface permeability.

Lastly, they have been investigating how seismology can be applied to study various land surface processes e.g., landslides, debris flows, and landslide-dammed lake outburst floods.

—— *Notable Achievement(s)*

Prof. TAN was interviewed by RTHK and SCMP about Turkey and Hong Kong earthquake respectively in 2023. Besides, Prof. TAN was interviewed by local Hong Kong media outlets such as Oriental Daily News, Ming Pao, and Master Insight about a publication he released in February 2024.

Prof. TAN was awarded:

- University of Tokyo Earthquake Research Institute Visiting Fellowship
- 2024 CUHK Faculty of Science Exemplary Teaching Award

benoit.thibodeau@cuhk.edu.hk

Ph.D.,
University of Quebec at Montreal

M.Sc.,
University of Quebec at Montreal

B.Sc.,
University of Quebec at Montreal

THIBODEAU Benoit

Assistant Professor

Prof. THIBODEAU Benoit is an Assistant Professor, holding a joint appointment in the Department of Earth and Environmental Sciences and School of Life Sciences in the Faculty of Science, The Chinese University of Hong Kong (CUHK). At CUHK, Prof. THIBODEAU is affiliated with New Asia College.

—— *Research Interest(s)*

- Ocean Biogeochemical Dynamics
- Stable Isotope Geochemistry
- Anthropogenic impacts
- Paleoceanography and Paleoclimate

—— *Research Project(s)*

Prof. THIBODEAU's team has recently completed a large-scale Environmental Conservation Fund project focused on mapping ecological redundancy in three of Hong Kong's mangroves. By analyzing the nitrogen stable isotopes of individual amino acids in crabs, snails, microorganisms, and mangrove trees, the team uncovered insights into their diets and the nitrogen sources sustaining them.

In addition, Prof. THIBODEAU is a member of the newly funded Area of Excellence (AoE) initiative, which aims to construct a digital twin of the Earth System in the Greater Bay Area. As part of this initiative, Prof. THIBODEAU will focus on studying carbon, nutrient, and oxygen dynamics in Hong Kong's waters.

—— *Notable Achievement(s)*

- Prof. THIBODEAU was interviewed by RTHK and SCMP about the recent visit of the Chinese Icebreaker Xue Long 2.

- Miss CHU Wai Ching Rachel graduated from Prof. THIBODEAU's lab in 2024 and successful defended her thesis on Atlantic circulation during the Little Ice Age to examiners Profs. Lin LIU, Francis TAM (CUHK) and Prof. David THORNALLEY (UCL).

shixianzhai@cuhk.edu.hk

Ph.D.,
Nanjing University of Information Science and Technology
&
Harvard University

M.Sc.,
Chinese Academy of Meteorological Sciences

B.En.,
Nanjing University of Information Science and Technology

ZHAI Shixian

Assistant Professor

Prof. ZHAI Shixian is an Assistant Professor in the Department of Earth and Environmental Sciences at The Chinese University of Hong Kong (CUHK). At CUHK, Prof ZHAI is affiliated with the United College.

—— *Research Interest(s)*

- Atmospheric Chemistry and Air Quality
- Atmospheric Chemistry Modeling and Machine Learning
- Remote Sensing of Atmospheric Composition

—— *Research Project(s)*

Prof. ZHAI's team focuses on better understanding the physical and chemical processes controlling atmospheric composition and air quality. To this end, her team interprets observations from satellites, aircraft, ground networks, and sondes with atmospheric chemistry modeling and machine learning.

Her recent projects are about atmospheric reactive nitrogen, atmospheric aerosol optical properties, heterogeneous chemistry, and particulate matter and ozone interactions.

Prof. ZHAI's team aims to help improve air quality and maintain a sustainable planet.

—— *Teaching Specialties*

EESC 3800	Global Environmental Change
EESC 4550/ EASC 5550	Practical Atmospheric Modeling
EASC 5001	Research Frontiers in Earth & Atmospheric Sciences I

yanzhan@cuhk.edu.hk

Ph.D.,
University of Illinois at Urbana-Champaign

M.Sc.,
Peking University

B.Sc.,
Peking University

ZHAN Yan

Ng Yin Ying Assistant Professor of Geophysics

Prof. ZHAN Yan is Ng Yin Ying Assistant Professor of Geophysics in the Department of Earth and Environmental Sciences at The Chinese University of Hong Kong (CUHK). At CUHK, Prof. ZHAN is affiliated with Lee Woo Sing College.

Prof. ZHAN joined CUHK at 2022, prior to this, he served as a Postdoctoral Fellow at the Earth and Planets Laboratory of the Carnegie Institution for Science, USA.

—— *Research Interest(s)*

- Lithospheric Deformation
- Volcano Geophysics
- Dynamics of Magma
- Numerical Modelling of Crustal Processes
- Data Assimilation in Geoscience

—— *Research Project(s)*

Prof. ZHAN's research focuses on understanding the physical and chemical processes driving volcanic unrest, earthquakes, hydrothermal activities, and lithospheric deformation on Earth and beyond. By integrating observational data—such as surface deformation, seismic activity, and gas emissions—with advanced numerical modeling and data assimilation techniques like the Ensemble Kalman Filter, his work provides insights into the dynamics of magma reservoirs, dike propagation, and volcanic eruption forecasting.

Recent projects include modeling stress evolution in magma systems, investigating hydrofracturing processes, and studying the interaction between magma reservoirs and hydrothermal systems, with the ultimate goal of improving eruption predictions and mitigating geohazards.

tampuiyuk@cuhk.edu.hk

Ph.D.,
The University of Hong Kong

B.Sc.,
The University of Hong Kong

TAM Pui Yuk Tammy

Senior Lecturer

Dr. TAM Pui Yuk is a Senior Lecturer in the Department of Earth and Environmental Sciences at The Chinese University of Hong Kong (CUHK). Since August 2023, she has served as the Associate Director of the Service Learning Centre.

Dr. TAM is currently a Co-Investigator on a Knowledge Transfer Project Fund (KPF) 2023/24 entitled "Understanding Natural Hazards: From Peer Reviewed Publications to Digital Animated Videos in Social Media".

—— *Research Interest(s)*

- Metamorphic Petrology
- Geochronology
- Caenozoic (K-E) Red-bed Succession in Guangdong Province of Southeast China and Paleoenvironment

—— *Teaching Specialties*

EESC 2010	Solid Earth Dynamics
EESC 2130	Fundamental Geoscience Fieldwork
EESC 3100	Structural Geology
EESC 3110	Geoscience Field Course
EESC 3900	Internship
EESC 4120/ EASC 5120	Petrology
EESC 4130/ EASC 5130	Geomorphology
EESC 4602	Selected Topics in Earth System Science
EESC 4810	Senior Project I
EESC 4820	Senior Project II (Final Year Projects)
GECC3230	Service Learning Programme in the fields of Orphans in Nepal, Hong Kong Ethic Minority & Taitung sustainable development

—— *Notable Achievement(s)*

Dr. TAM received the Exemplary Teaching Award in Service-Learning 2023/24.

Besides, she received PI of Courseware Development Grant Scheme 2022-25 and PI of Course Development and Language Enhancement Grant 2022-25.

Dr. TAM was in charge of UK-HK Volcano-climate Geoscience Workshop 2024.

andie.ay@cuhk.edu.hk

Ph.D.,
City University of Hong Kong

M.Phil.,
City University of Hong Kong

B.Sc.,
City University of Hong Kong

AU YEUNG Yee Man Andie

Lecturer

Dr. AU YEUNG Yee Man Andie is a Lecturer in the Department of Earth and Environmental Sciences at The Chinese University of Hong Kong (CUHK). She joined CUHK in 2015 after completing her postdoctoral work.

Dr. AU YEUNG is affiliated with Lee Woo Sing College, where she serves on the Scholarship & Bursaries Committee and the Campus Environment and Sustainability Committee.

In 2022, she published a study on the "Sensitivity of Western North Pacific Summertime Tropical Synoptic-Scale Disturbances to Extratropical Forcing" in the Journal of the Meteorological Society of Japan.

—— *Research Interest(s)*

- Tropical Cyclones
- Tropical Waves
- Tropical Meteorology and Numerical Modelling

—— *Teaching Specialties*

EESC2030	Computational Earth and Environmental Sciences
EESC2800	Introduction to Environmental Engineering
EESC3900	Internship
EESC4210	Land-Atmosphere Interactions and Boundary Layer Meteorology
EESC4220	Tropical Meteorology
EESC4510	Statistical Methods and Data Analysis for Earth System Science
EESC4520	Numerical Methods and Modelling for Earth System Science

—— *Notable Achievement(s)*

Dr. AU YEUNG received the Faculty Exemplary Teaching Award 2023.

christylau@cuhk.edu.hk

Ph.D.,
The Hong Kong
Polytechnic University

B.Sc.,
The Hong Kong
Polytechnic University

LAU Yee Wai Christy

Lecturer

Dr. LAU Yee Wai Christy is a Lecturer in the Department of Earth and Environmental Sciences at The Chinese University of Hong Kong (CUHK). Dr. LAU joined CUHK at 2023. At CUHK, she is affiliated with Lee Woo Sing College.

Prior to her current role, she was an Assistant Professor and Program Leader at UOW College Hong Kong from 2022 to 2023.

—— *Research Interest(s)*

- Academic And Non-Academic Challenges Among Sub-Degree Students
- Pedagogy in Education
- Method Development for Quality Control of Chinese Medicine
- Biological Effects and Bioactive Compounds of Chinese Medicine

—— *Teaching Specialties*

ESSC2270	Introduction to Environmental Science
ESSC3230	Principles of Environmental Protection and Pollution Control
ESSC3520	Ecotoxicology and Environmental Management

kkrli@cuhk.edu.hk

Ph.D.,
University of Oxford

M.Sc.,
University of Oxford

LI Kwan Kit Ronald

Assistant Lecturer

Dr. LI Kwan Kit Ronald is an Assistant Lecturer in the Department of Earth and Environmental Sciences at The Chinese University of Hong Kong (CUHK). Prior to this, he was a Postdoctoral Fellow at the Institute of Environment, Energy and Sustainability at CUHK from 2019 to 2021. At CUHK, Dr. LI is affiliated with Shaw College.

In his recent work, he has collaborated on a study assessing the chance of unprecedented summer rainfall in several regions of Southeast China, using both meteorological observations and climate model simulations. This work investigates the dynamics of unprecedented events identified, finding atmospheric wave patterns and jet shifts associated with greater rainfall. This study is currently under peer review in the international journal Environmental Research Letters.

Dr. LI is a co-leader on a CUHK Knowledge Transfer Project Fund (2023/24) titled "Understanding Natural Hazards: From Peer Reviewed Publications to Digital Animated Videos in Social Media".

—— *Research Interest(s)*

- Atmospheric Dynamics
- Seasonal Predictions
- Mid-latitude Atmospheric Waves
- El Niño–Southern Oscillation Diversity
- South China Sea Summer Monsoon
- Southeast China Extreme Rainfall

—— *Teaching Specialties*

EESC1009	Elementary Earth and Environmental Sciences Practical Study
ESSC2020	Climate System Dynamics
ESSC3300	Oceanography
ESSC3600	Ecosystems and Climate
ESSC4210	Land-Atmosphere Interactions and Boundary-Layer Meteorology
ESSC4250	General Circulation and Climate Models
EESC4270	Cloud Dynamics

EESClizhang@cuhk.edu.hk

Ph.D.,
Miami University

B.Sc.,
Peking University

ZHANG Li

Assistant Lecturer

Dr. ZHANG Li is an Assistant Lecturer in the Department of Earth and Environmental Sciences at The Chinese University of Hong Kong (CUHK). She joined CUHK at 2023. At CUHK, Dr. ZHANG is affiliated with Chung Chi College.

Prior to her current role at CUHK, she was a Research Affiliate (Bioinformatician) at Illinois Sustainable Technology Centre, USA.

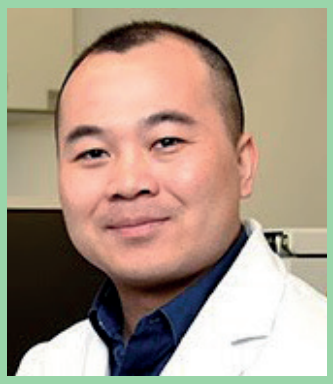
Dr. ZHANG is a co-leader on a CUHK Knowledge Transfer P roject Fund (2023/24) titled "Understanding Natural Hazards: From Peer Reviewed Publications to Digital Animated Videos in Social Media".

—— *Research Interest(s)*

- Impact of Environmental Factors such as Salinity on Microbial Communities
- Mineral-Microbe-Metal(Iron) Interactions
- Microbial Remediation of Nitrate
- Nitrogen Biogeochemical Cycling

—— *Teaching Specialties*

EESC1009	Elementary Earth and Environmental Sciences Practical Study
ESSC2009	Fundamental Earth and Environmental Field Study
ESSC2270	Introduction to Environmental Science
ESSC3330	Biogeochemistry
ESSC3510	Environmental Microbiology
ESSC4510	Statistical Methods and Data Analysis for Earth System Science



haiweiluo@cuhk.edu.hk

Ph.D.,
University of South Carolina

M.Sc.,
University of South Carolina

B.Sc.,
Xiamen University

LUO Haiwei

Associate Professor

Prof. LUO Haiwei is an Associate Professor, holding a joint appointment in School of Life Sciences and Department of Earth and Environmental Sciences in the Faculty of Science, the Chinese University of Hong Kong (CUHK). At CUHK, Prof. LUO is affiliated with New Asia College.

Prof. LUO has been a member of the Editorial Board of the ISME Journal since May 2020. Additionally, he has been invited to serve as a Guest Editor for a special issue on "Genomics of Speciation" in the journal Molecular Ecology, scheduled for 2024-2025. Furthermore, Prof. LUO was recently appointed as an Associate Editor of the Computational and Structural Biotechnology Journal starting in May 2023.

—— *Research Interest(s)*

- Next-generation Probiotics for Marine Wildlife Conservation and Aquaculture Safety and Productivity
- Adaptive Evolution of Genome-Reduced Marine Bacterioplankton
- New Strategies to Calibrate Molecular Clocks of Bacterial Evolution
- Ecology and Evolution of Free-Living Diazotrophic Bacteria in Soils and Application in Green Agriculture

TSUI Tsz Ki Martin

Associate Professor

mtktsui@cuhk.edu.hk

Ph.D.,
University of Minnesota

M.Phil.,
The Chinese University of Hong Kong

B.Sc.,
The Hong Kong University of Science and Technology

Prof. TSUI Tsz Ki Martin is an Associate Professor, holding a joint appointment in School of Life Sciences and Department of Earth and Environmental Sciences in the Faculty of Science, The Chinese University of Hong Kong (CUHK). At CUHK, Prof. TSUI is also the Director of the Environmental Science Programme (ENSC), and affiliated with CW Chu College.

—— *Research Interest(s)*

- Environmental Pollution
- Ecosystem Biogeochemistry
- Stable Isotope Applications
- Environmental Molecular Applications
- Environmental Human Health

nicholasiraboradimah@cuhk.edu.hk

Ph.D.,
National Geophysical Research Institute (NGRI)

ADIMAH Nicholas Irabor

Postdoctoral Fellow

Dr. ADIMAH Nicholas Irabor is a Postdoctoral Fellow in the Department of Earth and Environmental Sciences at The Chinese University of Hong Kong (CUHK).

—— *Research Interest(s)*

- Ocean Bottom Seismology
- Ambient Seismic Noise
- Seismic Tomography and Anisotropy
- Crustal and Upper Mantle Structure and Dynamics
- Machine Learning in Seismology

hemrajbhattarai@cuhk.edu.hk

Ph.D.,
The Chinese University of Hong Kong

BHATTARAI Hemraj

Postdoctoral Fellow

Dr. BHATTARAI Hemraj is a Postdoctoral Fellow in the Department of Earth and Environmental Sciences at The Chinese University of Hong Kong (CUHK).

—— *Research Interest(s)*

- Air Pollutants Study through Ground Observations, Reanalysis and Satellite Retrieved Data, and Modelling Studies
- Anthropogenic and Biomass Burning Emissions, Wildfire, Climate Change, and Land Use Change Impacts on Air Quality
- Atmospheric Chemistry Modelling Using CESM, GCHP
- Field Observation and Laboratory Analysis of Atmospheric Pollutants Using IC, TOC-L, EA-IRMS etc

chenxihu@cuhk.edu.hk

Ph.D.,
The Chinese University of Hong Kong

HU Chenxi

Postdoctoral Fellow

Dr. HU Chenxi is a Postdoctoral Fellow in the Department of Earth and Environmental Sciences at The Chinese University of Hong Kong (CUHK).

—— Research Interest(s)

- Urban Meteorology and Climate
- Climate Change
- Atmospheric Dynamics
- Specialised in Pseudo Global Warming Method, Dynamical Downscaling with High-resolution Meso-Scale Model, Model Evaluation and Climate Analysis Based on Observations and Reanalysis Data, Extreme Weather System Analysis and Diagnosis (Heatwave, Extreme Rainfall, and Tropical Cyclones)

aliismaeel@cuhk.edu.hk

Ph.D.,
Hong Kong Baptist University

ISMAEEL Ali

Postdoctoral Fellow

Dr. ISMAEEL Ali is a Postdoctoral Fellow in the Department of Earth and Environmental Sciences at The Chinese University of Hong Kong (CUHK).

—— Research Interest(s)

- Remote Sensing, GIS, and Machine Learning
- Process-based Crop Modelling
- Atmospheric Pollution and Crop Productivity
- Climate Change

mliu@cuhk.edu.hk

Ph.D.,
China University of
Geosciences (Beijing)

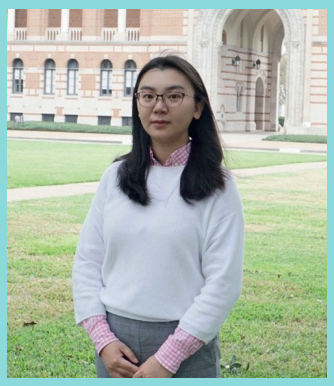
LIU Min

Postdoctoral Fellow

Dr. LIU Min is a Postdoctoral Fellow in the Department of Earth and Environmental Sciences at The Chinese University of Hong Kong (CUHK).

——— ***Research Interest(s)***

- Seismic Detection and Location
- Earthquake Swarms (and Associated Fluid-faulting Interactions)
- Earthquake Nucleation



linaluo@cuhk.edu.hk

Ph.D.,
Rice University

LUO Lina

Postdoctoral Fellow

Dr. LUO Lina is a Postdoctoral Fellow in the Department of Earth and Environmental Sciences at The Chinese University of Hong Kong (CUHK).

——— ***Research Interest(s)***

- Agricultural Nitrogen Emissions
- Environmental Impacts Assessment of Agricultural Nitrogen Emissions
- Mitigation Potential of Agricultural Emissions
- Agriculture-Atmosphere Interactions

XIE Jingchun

Postdoctoral Fellow

Dr. XIE Jingchun is a Postdoctoral Fellow in the Department of Earth and Environmental Sciences at The Chinese University of Hong Kong (CUHK).

—— ***Research Interest(s)***

- Planetary Science
- Lithospheric Deformation
- Mantle Dynamics of Terrestrial Planets

jingchunxie@cuhk.edu.hk

Ph.D.,
Chinese Academy of Sciences and Shanghai Tech University

XU Xingyu Carol

Postdoctoral Fellow

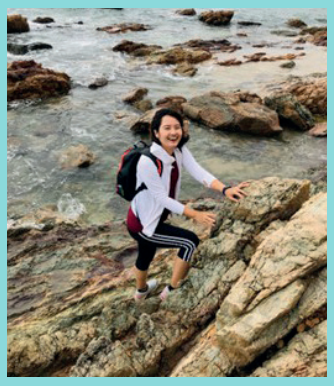
Dr. XU Xingyu Carol is a Postdoctoral Fellow in the Department of Earth and Environmental Sciences at The Chinese University of Hong Kong (CUHK).

—— ***Research Interest(s)***

- Deep Learning Applications in Glacial Lake Mapping
- Glacial Lake Changes in Hindu Kush, Karakoram Himalaya
- Hydrology of Debris-overed Glaciers

xingyuxu@cuhk.edu.hk

Ph.D.,
The Chinese University of Hong Kong



YANG Yuyun

Postdoctoral Fellow

Dr. YANG Yuyun is a Postdoctoral Fellow in the Department of Earth and Environmental Sciences at The Chinese University of Hong Kong (CUHK).

——— ***Research Interest(s)***

- Earthquake Sequence Modelling
- Earthquake Source Physics
- Fluid Migration in the Earthquake Cycle
- Induced Seismicity

yuyunyang@cuhk.edu.hk

Ph.D.,
Stanford University

YAO Suli

Postdoctoral Fellow

Dr. YAO Suli is a Postdoctoral Fellow in the Department of Earth and Environmental Sciences at The Chinese University of Hong Kong (CUHK).

——— ***Research Interest(s)***

- Earthquake Dynamics
- Earthquake Numerical Simulation

suliyao@cuhk.edu.hk

Ph.D.,
The Chinese University
of Hong Kong

tiangangyuan@cuhk.edu.hk

Ph.D.,
The Chinese University of Hong Kong

YUAN Tiangang

Postdoctoral Fellow

Dr. YUAN Tiangang is a Postdoctoral Fellow in the Department of Earth and Environmental Sciences at The Chinese University of Hong Kong (CUHK).

—— Research Interest(s)

- Atmospheric Chemistry
- Agricultural Irrigation and Fertilisation
- Climate, Air Pollution and Crop Yield Interaction
- Numerical Modelling
- Climate Effects of Light-absorbing Aerosols

jwzhang@cuhk.edu.hk

Ph.D.,
University of Oklahoma

ZHANG Jiewen

Postdoctoral Fellow

Dr. ZHANG Jiewen is a Postdoctoral Fellow in the Department of Earth and Environmental Sciences at The Chinese University of Hong Kong (CUHK).

—— Research Interest(s)

- Earthquake Source Physics
- Induced Seismicity
- Microseismic Monitoring

wingkwanso@cuhk.edu.hk

M.Phil.,
The University of Hong Kong

SO Wing Kwan Mandy

Senior Research Assistant

Miss SO Wing Kwan Mandy is a Senior Research Assistant (EF) in the Department of Earth and Environmental Sciences at The Chinese University of Hong Kong (CUHK).

Prior to her current role at CUHK, Mandy was a part-time Research Assistant in the Department of Earth Sciences at the University of Hong Kong from 2017 to 2022.

—— *Research Interest(s)*

- Plastic Pollution in Coastal Marine Environments
- Food Web of Resident Invertebrates
- Materials Recycling within Mangrove Habitat

—— *Teaching Specialties*

EESC3330 Biogeochemistry

—— *Research Project(s)*

In the past three years, Miss. SO has been studying the microplastic pollution in Hong Kong mangroves and their interactions with mangrove crabs.

Her current work at CUHK primarily focuses on constructing a comprehensive food web of mangrove invertebrates using compound-specific isotope analysis of amino acids, as well as bulk carbon and nitrogen isotopes. This research aims to assess the ecological redundancy of mangrove fauna by evaluating the robustness of the food web and their biodiversity.

LAI Chi Wing Eugenia

Research Assistant

Miss LAI Chi Wing Eugenia is a Research Assistant in the Department of Earth and Environmental Sciences at The Chinese University of Hong Kong (CUHK).

—— ***Research Interest(s)***

- Structural Geology
- Petrology
- Geomorphology

eugenialai@cuhk.edu.hk

M.Sc.,
University College
London

GUPTA Ashwin Rajesh

Junior Research Assistant

Mr. GUPTA Ashwin Rajesh is a Junior Research Assistant in the Department of Earth and Environmental Sciences at The Chinese University of Hong Kong (CUHK).

—— ***Research Interest(s)***

- Artificial Floating Wetlands and Biodiversity
- Biological Nitrogen Fixation and Plant Nutrition
- Urban Agriculture

ashwinrgupta@cuhk.edu.hk

M.Sc.,
University of
Copenhagen
&
University of
Hohenheim

Undergraduate Students

The Earth and Environmental Sciences Programme (EESC) is designed for students interested in scientifically understanding the interactions among the solid Earth, atmosphere, hydrosphere, and biosphere.

We address real-world environmental challenges, such as global climate change, natural hazards, and anthropogenic pollution, through an interdisciplinary approach that integrates applied physics, chemistry, biology, statistics, computation, machine learning, and more.

Our mission is to equip students with a strong scientific foundation and cutting-edge technical skills to observe, identify, analyse, and solve these pressing environmental issues.

Class of 2027

Class of 2026

Class of 2025

Class of 2024

Student Society

—— *Orientation Camp*

The theme of the Faculty of Science Orientation Camp for the 2023/24 academic year was "**Egyptian Mythology**", in which the new students of the Earth and Environmental Sciences programme were transformed into crony of Nwt, the goddess of the sky, and had fun with their "jobamas" (group facilitators) during the summer holidays. The activities include campfire, singers' performance, CU Hunt, night talk, etc., which help the new students to integrate into the family of the Earth and Environmental Sciences more easily.

—— *Inauguration*

The Inauguration Ceremony was held at the beginning of February to mark the beginning of the Student Society **Equatris**'s service to our members. The event brought together faculty staff, officers from the Student Society of the Faculty of Science at CUHK, and representatives from other universities to witness the inauguration of **Equatris,** the Student Society of Department of Earth and Environmental Sciences.

Equatris doing DEM BEAT during Inauguration Ceremony

—— *Spring Dinner*

To celebrate the Chinese New Year, **Equatris**, the Student Society organised a Spring Dinner at the end of February for faculty staff and students to enjoy the festive atmosphere. The programme included inscriptions by faculty staff, singing performances, musical instrument performances, interactive games and lucky draws, etc., leaving participants with wonderful memories.

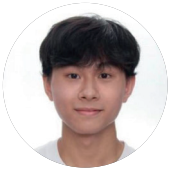
—— *7-a-side Football Match*

Towards the end of the semester, students were working hard for the final exams. In order to relieve students' pressure and to bring students and faculty stuff together, **Equatris**, the Student Society held the first round of 7-a-side football match in mid-April. The football match was a fierce competition and the red-black team beat the blue-white team by 3:0 and won the championship of the tournament.

Undergraduate Research Programme

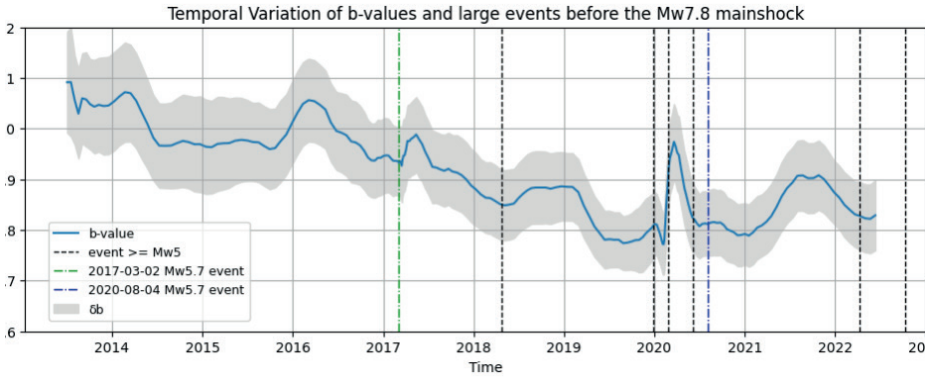
There are many opportunities for EESC undergraduates to conduct research. We offer a summer research programme, in which students will have opportunities to work in a research group, laboratory, or field to explore interesting and challenging questions related to geosciences, atmospheric science, and global environmental change.

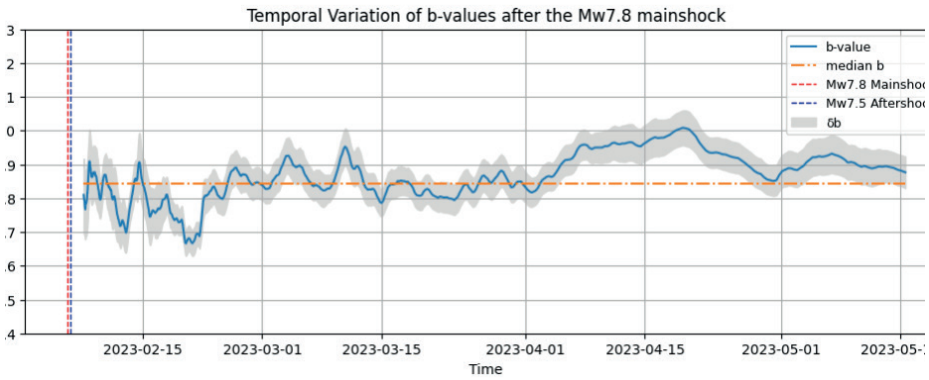
Temporal Variation of B-value before and after the 6 February 2023 NW 7.8 Kahramanmaras – Turkey Earthquake
Student: MOK Oi Nam Khalil
Supervisor: Prof. YANG Hongfeng



The objective of this project is to analyse the temporal variation of earthquake b-values before and after the 6 February 2023 Mw 7.8 Kahramanmaras-Turkey earthquake. The earthquake b-value obtained from the frequency-magnitude distribution is regarded as one of the important parameters characterising the stress regime of a region, where a decrease in b-value corresponds to the stress accumulation. From previous studies, it is believed that the temporal variation of b-value could be served as a medium-term earthquake precursor.

In this summer research project, the earthquake catalogues are obtained by the national monitoring centres in Turkey called AFAD and KOERI-RETMC. It covers the periods from 10 years before the Mw 7.8 mainshock to 3 months after the mainshock. The technique of sliding and overlapping time window method was applied to calculate the temporal variation of b-values, and the b-value for each window is calculated by maximum likelihood method using ZMAP, which is a software package for seismicity analysis.





The result shows that there was a significant decrease in b-values from 1.1 to 0.83 prior to the Kahramanmaras-Turkey earthquake, which then increased and reach the relatively stable and high value afterwards. Also, before the mainshock, 8 events with moderate magnitude were preceded by significant drops in b-values, which supported the hypothesis of lower b-value corresponding to higher stress and the potential of temporal b-value variation employed in predicting moderate to strong earthquake.

Effects of Various Agricultural Production Pathways on Global PM2.5 Concentration

Student: SHEK Yan To Stephen
Supervisor: Prof. TAI Pui Kuen Amos

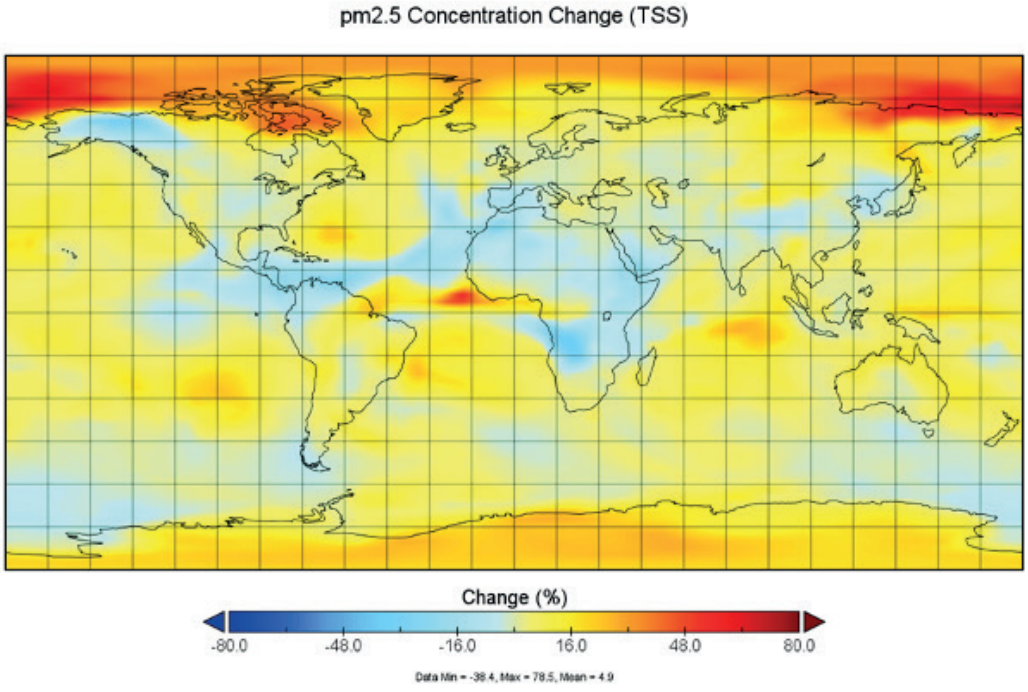
In this project, we studied global PM2.5 concentrations in 2050 under three agricultural production pathways established by the Food and Agriculture Organisation (FAO): Business As Usual (BAU), Stratified Society (SSS), and Towards Sustainability (TSS). PM2.5, a major cause of health issues, is of great interest. Previous studies show that agriculture contributes significantly to surface ammonia volatilization, with ammonia being a key precursor to nitrate PM2.5 formation.

Projected ammonia fluxes for the three pathways were input into the chemical transport model GEOS-Chem High Performance (GCHP) version 13.3.4, using 2019 MERRA-2 data as the meteorological baseline. The annual flux was divided into 12 portions, added monthly to the model. We focused on diurnal PM2.5 for July 1st and monthly PM2.5 for January, comparing SSS and TSS pathways to BAU to evaluate the potential effects of transitioning from BAU.

Surprisingly, the BAU scenario resulted in the lowest global mean PM2.5 concentration, while SSS and TSS caused higher concentrations, with less than 0.1% difference between them. Spatially, all three scenarios showed similar patterns. For July 1st, SSS and TSS projected significant increases in PM2.5 across Central and Western USA, Brazil, Southeast Africa, West Asia, Eastern Europe, and Eastern China, with only the sub-Saharan region differing slightly (SSS projecting a slight increase and TSS a decrease). In January, both scenarios projected increases in polar regions, offshore Western Africa, and the Central Indian Ocean, while decreases were observed in Southern Africa, Alaska, and sub-Saharan regions.

These findings suggest that transitioning to SSS or TSS alone may not significantly reduce global PM2.5 concentrations, especially for health protection. Broader efforts beyond agriculture are needed to achieve meaningful reductions.

This study, however, is limited by its short timeframe, as a one-month simulation is likely biased by seasonal variations. Future work will include simulations across all months and a reanalysis with annual data to provide a more comprehensive understanding of the pathways' impacts on global PM2.5 levels.



CUHK Information Day 2023

The Earth and Environmental Sciences programme held the information booth and organised admission events during the CUHK Information Day 2023 for Undergraduate Admission on 21 October 2023. Secondary students, teachers and parents had first-hand valuable information about our undergraduate programme. There were also opportunities for in-depth exchanges with professors and student ambassadors, including programme orientation talks and guided laboratory tours.

—— Programme Orientation Talk

—— Guided Laboratory Tour

Student Exchange

During the undergraduate studies at CUHK, in addition to courses that contribute to degree requirements, there are many opportunities for student development, such as going on exchanges and taking part in internships. We are pleased to welcome two students of our Earth and Environmental Sciences programme, to talk about how to prepare for the exchange programme and what they have learnt from the experience of studying on exchange.

TSANG Sam

The Univeristy of Copenhagen

The 2022 Innovation and Technology Scholarship allowed Sam Tsang to conduct hydrosphere research in Iceland, a region heavily affected by global warming. Together with a team of research scientists from Denmark, he is using remote sensing to monitor glacier loss rates and track water intrusion that affects ice melt. The research has important implications for the planet's water resources.

LAU Carson

The University of Helsinki, Finland

The biggest difference between teaching in Finland and Hong Kong is the strong interaction between teachers and students. In Finland, teachers use various charts in the classroom, encouraging students to engage in interactive discussions that connect to the content they will study later. Additionally, classes incorporate recent scientific findings and research examples to deepen students' understanding of the field.

Exchange Advice and Considerations

There are several factors that you should consider before embarking on an exchange programme. It is best to avoid destinations that are too similar to Hong Kong, or overly popular places, as this may limit real interaction with the locals.

The goal is to put yourself in the local culture, so less popular destinations can provide a richer experience. You should also explore programmes not offered at CUHK and learn about different research environments, especially if you are planning for a PhD later.

Personal interests and flight availability should be taken into account when choosing a destination, as more flights can provide more options. Mental preparation is essential for adapting to a new environment, and researching the local culture and activities is also beneficial.

Understanding the local payment system, preparing some local currency for emergencies and learning to cook can all enhance your experience. In addition, pack clothing appropriate for the climate and make sure you have all the necessary electronics and money transfer systems in place.

Finally, remember to apply for a scholarship to help ease the financial burden.

Internship

—— Hong Kong Observatory (HKO)

Every year EESC send out a few qualified students to the Hong Kong Observatory (HKO) for a fascinating internship opportunity to not only embark on weather and climate research, but also allow the students to experience first-hand the nature and routines of meteorological services. Both one-year and summer placements are available.

CHAN Justin

The project for my internship is to assess how people in Hong Kong are affected by heat-related health impacts by using various kinds of datasets from different departments and organizations. This aims to provide a risk-based foundation for setting up the second level of Hot Weather Services and for future study on heatwave. Through this project, I have learnt the physiology of human to adapt to hot weather, and how Hong Kong is affected by hot weather. As the analysis is carried out using statistical models, my programming skills are polished too.

HO Thomas

From this placement, not only have I learnt relevant programming skills, such as Python and Markdown, and fundamental knowledge and applications about AI models, I have also gained a lot of insights from the internal reports and models, such as understanding the components and their implication of Numerical Weather Model and the conditions of issuing warning signals. I also further understood the purposes of different sub-departments in the HKO and their instruments through various internal visits.

LAW Hayden

This valuable working experience not only allowed me to apply and refine my programming and data analysis skills but also provided me with the opportunity to broaden my horizons. I had the privilege of participating in and delivering presentations at the HKO ENMAF and HKO Technical Forum and engaging in meetings with representatives from other governmental departments. I have received consistent support throughout my internship. I would also like to express my gratitude to both the HKO and the University for providing me with such an unforgettable experience.

Internship

—— Geotechnical Companies

WOO Bosco

Before entering the workforce, ESSC ensures students gain real-world experiences. One of ESSC's remarkable aspects is its connections with geotechnical companies, offering numerous internship opportunities in companies like Fugro, AECOM, and GeoRisk Solutions.

I had the chance to work in a geotechnical consulting company during the summer of my third year. Through this internship, I learned to utilize software for ground modeling and analysis, which were not covered in lectures. Additionally, I gained exposure to various types of site investigations. These experiences made me a more competitive candidate during job interviews.

WONG Gavan

Reflecting on my internship at Fugro Geotechnical Services, I feel fortunate to have gained onshore and offshore ground investigation experience. This opportunity showed how theoretical knowledge is applied in real-world scenarios.

One valuable aspect was learning to perform detailed soil and rock descriptions. This was complemented by in-situ tests and visits to the geotechnical material lab, deepening my understanding of lab tests previously covered in lectures.

Internships offer industry insights, help explore personal interests, and prepare a career pathway early on. They provide exposure to the industry and opportunities to build a network of professional contacts. Overall, my time at Fugro solidified my interest in geotechnical engineering and provided a foundation for my future career.

Our graduates on internship: Owen in the middle, **Gavan** on the left, Tiffany on the right.

Capstone (Final Year) Project

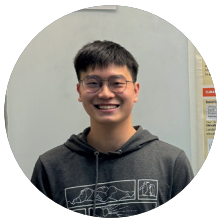
The capstone (final year) project represents the culmination of the Earth and Environmental Sciences programme, integrating knowledge and skills acquired throughout the undergraduate years.

Time of Emergence of Changes to the Characteristics of Baiu Frontal Rainfall in Japan due to Global Warming from CMIP6 Projections
Sophie Wai Chee Cheng Research Prize
Student: LIU Tsz Chun Adrian
Supervisor: Dr. LI Kwan Kit Ronald

Deriving Rupture Scenarios of the Xianshuihe-Anninghe Fault Zone: A Case Study of 2022 Mw 6.6 Luding Earthquake
Sophie Wai Chee Cheng Research Prize
Student: LAM Po Wang Ryan
Supervisor: Prof. YANG Hongfeng

Feasibility Study of Submarine Sewage Tunnel Construction at Tolo Harbour
Student: YU Suet Lui Carlotte
Supervisor: Dr. TAM Pui Yuk Tammy

A Study on the Characteristics and Tectonic Setting of the Foundation Seamount Chain
Student: CHUA Ching Yi Michelle
Supervisor: Prof. TAN Yen Joe



The Impact of Extreme Rainfall on Landslide Hazard in Hong Kong
Student: CHAN Yan Shing Owen
Supervisor: Prof. ZHAN Yan

Graduation Ceremony

In honor of the graduates of our program, a special graduation celebration was held. This event not only recognized their achievements but also brought graduates together, fostering a strong sense of community among all students. Please see some photos on the next page.


ESSC


Next Station
Grad
下一站 畢業


ESSC


ENSC


ESSC


ESSC

Awards and Scholarships

Department of Earth and Environmental Sciences offers admission scholarships to both local and non-local new undergraduate students on the basis of their excellent academic performance.

—— *EESC Admission Scholarship (2023 Entry)*

- CHAN Wai Hang
- YEUNG Hoi Lok Hillary
- YIP Chun Ho

Numerous Earth and Environmental Sciences students have been supported by study awards and scholarships by the Croucher Foundation, the Hong Kong Federation of Youth Groups (HKFYG), the Joseph Needham Foundation for Science & Civilisation (Hong Kong) and the Hong Kong Jockey Club.

—— *Croucher Study Awards*

- LAU King Heng

—— *Innovation and Technology Scholarship*

- LAU King Heng
- LAU Shu Lam

—— *Joseph Needham Merit Scholarship*

- LAU King Heng
- WONG Wing Ching Jeremy

—— *The Hong Kong Jockey Club Scholarship*

- LAU King Heng
- WONG Wing Ching Jeremy

Postgraduate Students

Earth and Atmospheric Sciences is a critical discipline addressing 21st-century challenges such as climate change, natural resource exploration, hazard mitigation, and sustainable development.

We offer a graduate programme on Earth & Atmospheric Sciences (EASC) at both the M.Phil. and Ph.D. levels. EASC stands out as the only interdisciplinary graduate program in the region that focuses on the foundational and applied sciences of the lithosphere, atmosphere, hydrosphere, biosphere, cryosphere, and their interactions. The program's dynamic faculty lead research across the full spectrum of Earth system science.

This graduate program (EASC) is dedicated to educating and mentoring exceptional young scientists, preparing them for impactful careers in academia, government, and the private sector.

PhD (2020)
ABBAS Aqeel

PhD (2024)
CHAN Mei Yu Dara

MPhil (2024)
CHAN Sheung Ki Suki

PhD (2024)
CHEN Xueyao

MPhil (2023)
CHENG Wing Kok Kylie

MPhil (2024)
CHOI Chi Keng Vincent

MPhil (2024)
CHUNG Nga Man Mani

PhD (2022)
DENG Di

PhD (2023)
DUAN Hanrui Harriet

PhD (2022)
HE Jianlong

MPhil (2022)
HO Chung Yan Joanne

MPhil (2022)
HU Yukai

PhD (2022)
HUANG Yiwen

PhD (2023)
JIANG Youjie

PhD (2022)
KONG Lin Flora

PhD (2021)
LAI Donger

MPhil (2023)
LAM Chak Hay Hayden

MPhil (2023)
LAU Chung Shing Martin

PhD (2024)
LAW Hoi Tang Hayden

PhD (2023)
LEI Guoyang

PhD (2024)
LI Mengze

PhD (2021)
LIU Hui

PhD (2022)
LUO Biao

PhD (2021)
MAO Jia

PhD (2024)
MO Xiaohan

PhD (2021)
NG Tsin Hung Leo

PhD (2024)
PAN Qian

PhD (2024)
PARVEEN Saira

PhD (2024)
QIN Yuxin

PhD (2020)
SONG Zilin Celine

PhD (2021)
SUN Zhangyu Joe

PhD (2023)
WANG Hongru

PhD (2023)
WANG Peifeng

PhD (2023)
WU Chenyan

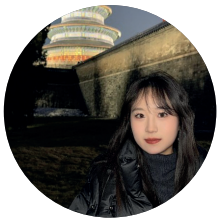
PhD (2020)
XIA Zhuoxuan Summer

PhD (2022)
XIAO Maiqian

PhD (2024)
YU Zheng Jane

PhD (2024)
YUE Hong

PhD (2022)
ZHANG Jingwei



MPhil (2024)
ZHANG Lin Eureka

PhD (2024)
ZHANG Shiyue

PhD (2023)
ZHANG Wensong Bill

MPhil (2024)
ZHANG Yiming John

PhD (2024)
ZHAO Yang

PhD (2022)
ZHONG Yiyuan

PhD (2020)
ZI Jinping

** (The year in brackets indicates their admission year)*

Thesis Project

Investigating Glacial and Periglacial Landforms in Low Latitudes Regions of Mars and the Potential Terrestrial Analogue for Valles Marineris
Student: HE Jianlong
Supervisor: Prof. LIU Lin

Analysing Dynamics of the 2000 Yigong Landslide using Seismic Observations
Student: HO Chung Yan Joanne
Supervisor: Prof. TAN Yen Joe

Dike-induced Seismicity: Insights from Observation and Modelling
Student: HUANG Yiwen
Supervisor: Prof. ZHAN Yan

OH-initiated Heterogeneous Oxidation of Nanoplastics in the Atmosphere
Student: KONG Lin Flora
Supervisor: Prof. CHAN Man Nin

Aqueous-Phase Processing of Organosulfur Compounds: Implications for their Environmental Fates and Impacts
Student: LAI Donger
Supervisor: Prof. CHAN Man Nin

Investigating Heatwaves over Greater Bay Area of China under Near-future Climate Change and Urbanisation
Student: LAU Chung Shing Martin
Supervisor: Prof. TAM Chi Yung Francis

Study of the Properties, Formation and Transformation of Atmospheric Aerosols
Student: LEI Guoyang
Supervisor: Prof. CHAN Man Nin

Characteristics and Behaviour of Deep Long-period Earthquakes at Alaskan Volcanoes
Student: SONG Zilin Celine
Supervisor: Prof. TAN Yen Joe

Investigation of the Occurrence and Dynamics of Rock Glaciers on the Tibetan Plateau using Remote Sensing and Deep Learning Techniques
Student: SUN Zhangyu Joe
Supervisor: Prof. LIU Lin

Source Mechanism of Impulsive Seafloor Events that Track Submarine Lava Flows at Axial Seamount
Student: WANG Peifeng
Supervisor: Prof. TAN Yen Joe

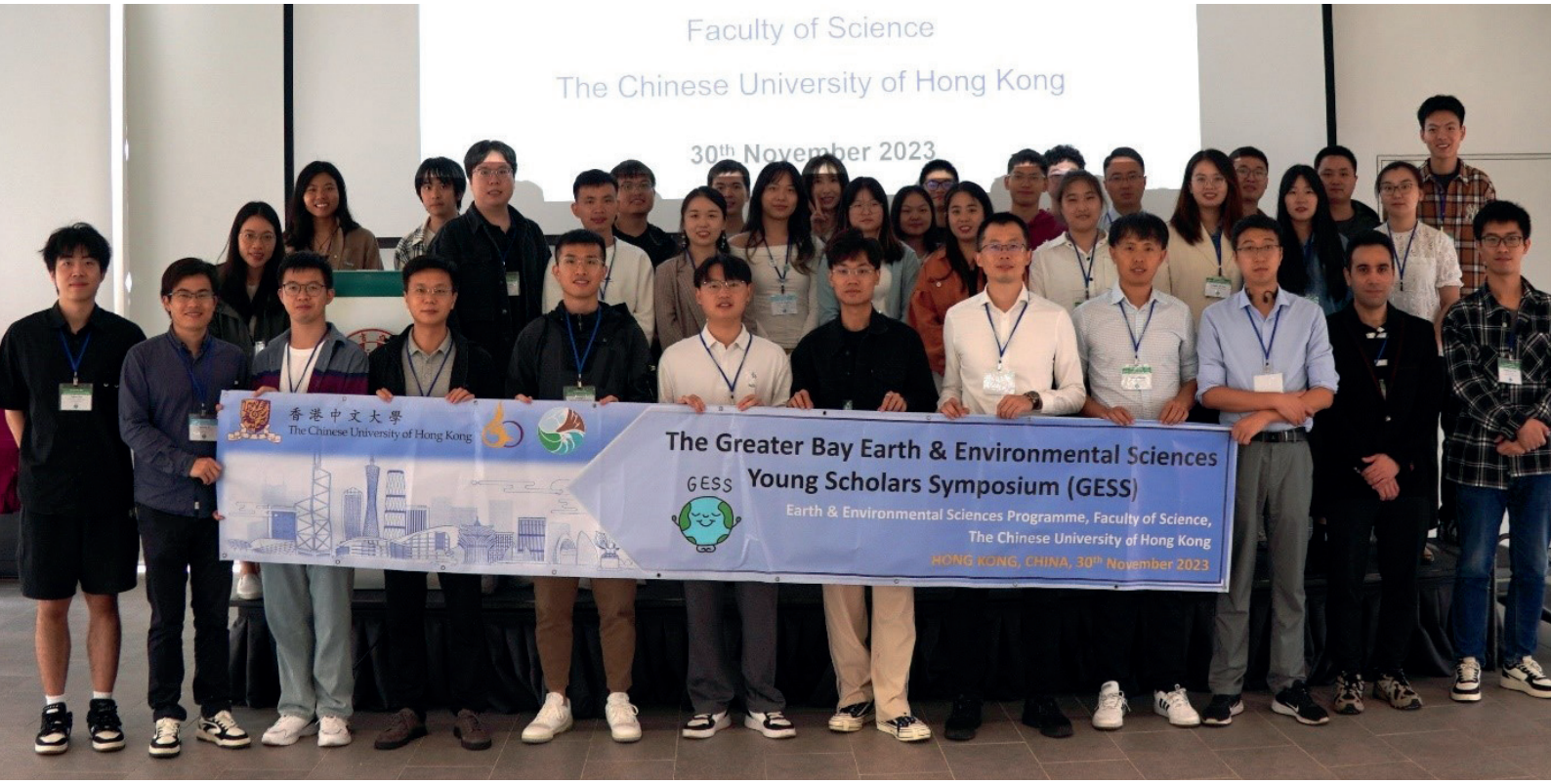
Mechanism of Large-Scale Low Temperature Anomaly before Volcanic Eruptions
Student: WU Chenyan
Supervisor: Prof. ZHAN Yan

Response of Early Colonisers in Retrogressive Thaw Slumps on the Trajectory
of Tundra Greening
Student: XIA Zhuoxuan Summer
Supervisor: Prof. LIU Lin

Response of Biogenic Volatile Organic Compound Emissions and Surface Ozone Air Pollution in the Greater Bay Area to Heatwaves and Land Use Changes
Student: ZHANG Jingwei
Supervisor: Prof. TAI Pui Kuen Amos

Revealing Greenland Ice Sheet Hydrology using Artificial Intelligence
Student: ZHANG Wensong Bill
Supervisor: Prof. LIU Lin

1st Greater Bay Area Earth & Environmental Sciences Young Scholars Symposium



The 1st Greater Bay Area Earth & Environmental Sciences Young Scholars Symposium, organised by postgraduate students from the Earth and Environmental Sciences Programme (EESC), was successfully launched on 30 November 2023. The one-day event attracted over fifty attendees from 7 universities and institutes in the Greater Bay area, including Sun Yat-sen University, Southern University of Science and Technology, South China Sea Institute of Oceanology of the Chinese Academy of Sciences, The University of Hong Kong, The Hong Kong University of Science and Technology, and The Hong Kong Polytechnic University, in addition to The Chinese University of Hong Kong.

The symposium featured 23 oral presentations and 13 posters covering a wide range of topics, including ocean, atmosphere & soil, structural geology, volcano, seismology, geodetic, and laboratory rock friction experiments. The event provides a platform for multidisciplinary collaboration and mutual promotion of young scholars. At the end of the symposium, three best-oral presentations and two best-poster presentations are awarded to recognise the excellence of the presenters after peer voting of participants.

The organising committee thanked attendees from different institutions for their coming, which greatly enhances multidisciplinary communication and provides opportunities for scientific cooperation. The committee also expressed gratitude for the support from the Earth and Environmental Sciences Programme, Faculty of Science, as well as extended thanks to all contributors and participants for their support, which contributed to the success of the symposium. Furthermore, The committee gave additional acknowledgement for Prof. CHAN Man Nin, Mr. HU Yukai, Ms. DENG Di and Ms. LEI Guoyang for their remarkable help in the symposium.

Award Ceremony

—— *Best-oral Presentation*

- Mr. WANG Peifeng

Earth and Environmental Sciences Programme, CUHK

- Ms. CHU Wai Ching

School of Life Science, CUHK

- Mr. HUANG Yin

School of Earth Sciences and Engineering, Sun Yat-sen University

—— *Best-poster Presentation*

- Ms. NG Sze In Madeleine

Earth and Environmental Sciences Programme, CUHK

- Ms. WANG Ziyan

School of Life Science, CUHK

—— *Committee Members*

- Ms. HUANG Yiwen
- Ms. LAI Donger
- Ms. LIU Hui
- Ms. MAO Jia
- Mr. XIAO Maiqian
- Ms. WANG Ziyan
- Mr. ZHANG Wensong
- Mr. ZI Jinping

The symposium is fully organised and run by post-graduate students, with only advisory support from professors. The organising committee comprises 8 postgraduate students from EESC and prepared the event in 1.5 months.

We are proud to share that Ms. Katie, a symposium participant from The University of Hong Kong, expressed her recognition of the symposium's performance and acknowledged the organising team in her e-mail after the symposium.

Student Society

—— *Tea Gathering*

The Tea Gathering, on 22 March 2024 was to give students a well-deserved break from their academic pursuits by engaging in light-hearted activities and meaningful conversation.

Organised by a dedicated team, the gathering will be characterised by games and open discussions to encourage networking among participants.

—— *BBQ Gathering*

The long-awaited return of the Postgraduate BBQ Gathering on 3 November, 2023 was for the postgraduate community at Earth and Environmental Sciences. Organised by ZHANG Jingwei, the event provided a much-needed opportunity for postgraduate students, professors, and staff to come together after three years of pandemic-induced isolation.

The gathering offered a chance to rebuild the strong sense of community that defines the postgraduate programmes at CUHK. Longtime members had the opportunity to reminisce, while newer additions felt welcomed and integrated into the culture.

Other Activities

—— *Student Orientation*

The Department of Earth and Environmental Sciences warmly welcomes postgraduate students with a comprehensive orientation program designed to help them adapt to graduate life.

This event fosters strong connections between students and faculty, ensuring a supportive and collaborative environment. Through interactive sessions, students gain valuable insights into academic resources, research opportunities, and departmental facilities. The program also emphasizes the importance of student well-being and teamwork, reflecting the department's dedication to appreciating students' efforts.

—— *Summer Workshop*

The summer workshop, organised by EASC, is open to all potential applicants who wish to enrol in a PhD programme in autumn 2025.

The workshop is free of charge and will provide participants with a variety of valuable resources. The workshop will include an introduction to the EASC Ph.D. programme and the Hong Kong Ph.D. Fellowship Scheme, application advice and tips, research talks by professors, and one-on-one and group meetings with faculty members. In addition, participants will have the opportunity to gain early admission to the PhD programme.

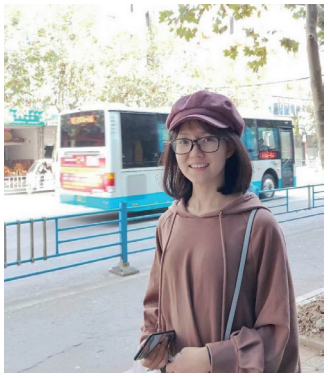
Student Exchange

During the postgraduate studies at CUHK, in addition to courses that contribute to degree requirements, there are many opportunities for student development, such as going on exchanges. We are pleased to welcome students of our Earth and Atmospheric Sciences programme, to talk about what they have learnt from the experience of studying on exchange.

KONG Lin Flora

University of Toronto

Participating in the International Visiting Graduate Student (IVGS) Programme for the 2023-24 academic year provides me with an excellent opportunity to engage in academic and research pursuits on a prestigious platform. Working alongside renowned researchers and accessing extensive resources has enhanced my research capabilities and broadened my academic horizons. Additionally, the programme fosters personal growth through cultural exchanges and resilience-building as I navigate new academic and social landscapes.



XIA Zhuoxuan Summer

University of Illinois at Urbana-Champaign

The visit broadened my research scope by connecting the retrogressive thaw slump inventory with the ecosystem and providing me with more opportunities to connect with international researchers. I appreciate this opportunity and will continue to work with the host supervisor and international collaborations on this interdisciplinary research topic.

Awards and Scholarships

Department of Earth and Environmental Sciences offers admission scholarships to both local and non-local new postgraduate students on the basis of their excellent academic performance.

—— EASC Admission Scholarship (2023 Entry)

- LAU Chung Shing (MPhil)
- ZHANG Wensong (PhD)

—— Outstanding Teaching Assistant Award

- LAM Chak Hay Hayden (MPhil)
- ZHANG Wensong (PhD)

Curriculum

The Earth and Environmental Sciences programme (EESC) is designed for students eager to explore interactions among the solid Earth, atmosphere, hydrosphere, and biosphere. Through an interdisciplinary approach integrating physics, chemistry, biology, and computation, it tackles global challenges like climate change, natural hazards, and pollution.

Its Environmental Science and Technology Stream, accredited by the Hong Kong Institute of Qualified Environmental Professionals (HKIQEP) in 2024, enhances its excellence.

Students gain hands-on experience through special lectures, workshops, and field trips, preparing them to lead in Earth and environmental sciences.

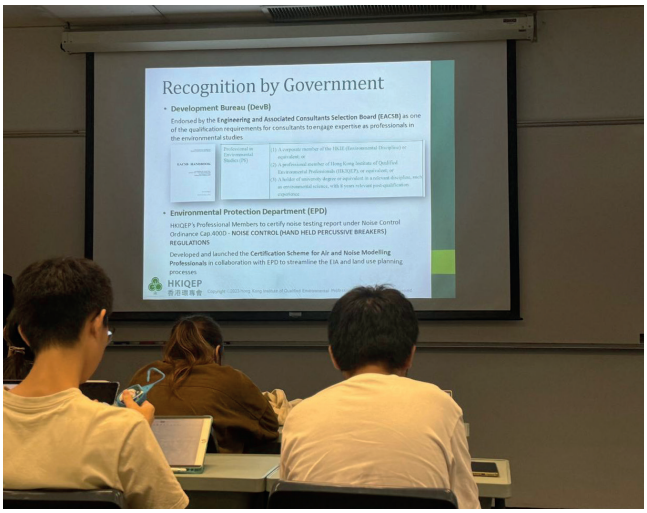
HKIQEP Accreditation

HKIQEP
香港環專會
Environmental Integrity & Excellence

The Hong Kong Institute of Qualified Environmental Professionals (HKIQEP) was established in 2015 to develop and raise the standards of environmental professionals with a view to promoting Hong Kong as the Centre of Excellence in environmental services.

EESC program (Environmental Science and Technology Stream) was accredited by the Hong Kong Institute of Qualified Environmental Professionals (HKIQEP) in 2024, indicating the programme meets rigorous environmental education and training standards. Accreditation by HKIQEP will provide our graduates with the following benefits:

1. ***Recognition:*** Accepted by government departments and the business community, enhancing the programme's credibility.
2. ***Enhanced Employability:*** Provides graduates with a competitive advantage and opens doors to various career opportunities.



Current Requirements of HKIQEP Professional Membership	Without Accredited Environmental Related Degree	With Accredited Environmental Related Degree
Environmental Related Work Experience	10 Years	**5 Years**

—— *Science Faculty 60th Anniversary Distinguished Science Lecture Series Modelling Extreme Weather Events and their Future Changes*

The Faculty of Science is honoured to have Dr. LEUNG Lai Yung Ruby, Battelle Fellow at Pacific Northwest National Laboratory and Chief Scientist of the U.S. Department of Energy's Energy Exascale Earth System Model (E3SM), to deliver a lecture for the Science Faculty 60th Anniversary Distinguished Science Lecture Series - ***Modelling Extreme Weather Events and their Future Changes*** on 15 Jan 2024.

Special Lectures and Workshops

ESG Guest Lecture *01*

——— How Does ESG Create Value for a Listed Company?

Environmental, Social, and Governance (ESG) factors have garnered significant attention in the business world as investors and stakeholders increasingly recognize their potential to create value for listed companies. This lecture will explore the relationship between ESG practices and value creation, highlighting the benefits that ESG integration can offer to a listed company. Using Towngas as a case study, we will examine how a listed company can go beyond mere compliance with ESG standards and effectively integrate these principles into its business decisions.

UK-HK Volcano-climate Geoscience Workshop *02*

____ Bridging Disciplines: Volcanology and Climate Science Course Ignites Cross-Collaboration in Hong Kong's Education Landscape

Our programme concluded the first interdisciplinary course on volcanology and climate science, held from 15-27 January 2024. Supported by the Croucher Foundation, Teaching Development and Language Enhancement Grant 2022-25, and the Geological Society of Hong Kong, this educational initiative marked a significant milestone in the region's education landscape.

This interdisciplinary course was non-credit bearing and open to the public, aiming to encourage collaboration and research in volcanology and climate science. The course brought together a team of expert educators to deliver various topics about volcanology and climate sciences, including the geological aspects of volcanoes, volcano monitoring techniques, and the climate effects of volcanic eruptions. The education team included Miss May CHIM, an ESSC graduate currently pursuing her PhD research on the impacts of volcanic eruptions on climate at the University of Cambridge, Dr. Tammy TAM, a Senior Lecturer at CUHK specializing in Geoscience Education and the Acting Chairlady of the Geological Society of Hong Kong, Prof. CHAN Man Nin, Associate Professor in Atmospheric Chemistry at CUHK, and Prof. TAN Yen Joe, Assistant Professor in Volcano Seismology at CUHK, who contributed their expertise and knowledge to enrich the participants' learning experience. Two highlights of the course were the climate modelling practice and the field trip to the High Island Reservoir situated within the caldera of an extinct super volcano. The hands-on laboratory and field experience allowed participants to study the impacts and remnants of volcanic activity, deepening their understanding of volcanology and its climate implications.

The course attracted participants from diverse backgrounds, including CUHK students, secondary school students, teachers, and members of the general public. The broad interest and attendance from individuals representing various educational backgrounds and professional fields underscored the relevance and importance of the subject matter to the general public. Participants expressed their gratitude for the opportunity to learn from leading experts in the field, with many highlighting the course's positive impact on expanding their knowledge base and inspiring interdisciplinary approaches in their own research and professional endeavours. Feedback from the participants further emphasized the value of interdisciplinary education in addressing complex scientific topics.

This interdisciplinary course demonstrates the potential for collaboration among professionals across disciplines. By exploring volcanic eruptions from ancient times to the present and studying them from deep within the ground to the atmosphere, this course has set a new precedent in the field of education. It is hoped that this course will inspire future endeavours and pave the way for interdisciplinary education in Hong Kong.

Participants discussed the climatic impacts from volcanic eruption with the teachers.

Participants actively responded to the course and were rewarded with some nice mineral samples.

There is lively exchange of ideas taking place among participants and researchers studying the rock formation at High Island, intensity of volcanic eruption and associated climate impacts in Cretaceous.

The teaching team led participants to a field excursion studying the remnants of volcanic activity at the High Island Reservoir situated within the caldera of an extinct super volcano.

Field Trips and Expeditions

Field study is a critical element in exploring our Earth as the environment is the best natural classroom for humans to learn about the past and present Earth. Our field study covers a wide range of themes about our Earth , including plate tectonics, volcanoes, earthquakes, natural hazards, and geo-technical infrastructures.

—— Local Field Study

EESC2020

The EESC2020 class had the opportunity to visit the Hong Kong Observatory (HKO) on 4 November 2023 for an enlightening field trip. Students gained firsthand insights into the operations of this vital meteorological institution, learning about weather prediction, climate monitoring, and the history of meteorological science in Hong Kong. The visit offered an engaging mix of educational presentations and interactive discussions, leaving students with a deeper appreciation for climate science and its importance in our daily lives.

Group Photo Outside the HKO Building

Interactive Lecture Inside the Observatory

EESC3100 Structural Geology

This course is in the 2nd term, it includes three major local field studies at Tung Ping Chau, Lai Chi Chong, and Bluff Head.

The primary focus is on analyzing geological structures and various deformation features to comprehend how tectonic processes have shaped the local geological landscape.

Through hands-on study, students gained insights into the records of these processes as they relate to current surface structures.

On the right is a field photo of Bluff Head.

—— Mainland China Field Study

EESC2110

This field study, conducted from 22-30 August, 2024, was a collaborative effort between our institution and the teachers and Year 1 students from the School of Earth Sciences and Engineering at Sun Yat-sen University. The aim of the field trip was to explore the interconnections between rocks, geological structures, paleobiology, landforms, and ecosystems in the stunning Shennongjia region of Hubei, China. The trip provided invaluable hands-on experience and fostered academic exchange, enhancing our understanding of the dynamic interplay between geological and ecological systems.

Group Photo in Shennongjia

—— *Taiwan Field Study*

EESC2130

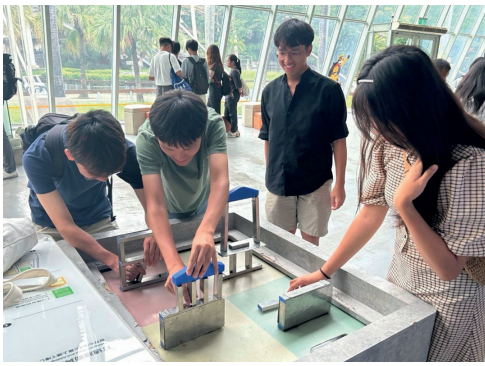
ESSC2130 Integrated Geoscience Field Studies is a 13-day (26/5-5/7/2024) undergraduate programme focusing on the geology and geophysics of Taiwan. A total of 17 students from grades 1-4 participated in this immersive programme with National Central University (NCU).

The programme included outdoor field trips to important geological sites along the eastern coast of Taiwan, the Central Mountain Range, and the southwestern region. Notable sites included Taroko National Park, the Liji Liji Badland and Moon World Landscape Park. In addition, students visited various organisations and museums, such as the Gold Museum, the Datun Volcanic Monitoring System and the Chelungpu Fault Preservation Park.

This field-based experience provided students with valuable practical training in geology and geophysics. Whilst the majority of students performed well, a few stood out for their exceptional contributions. The programme is comprehensively assessed, including individual and group work, as well as peer assessment, to ensure that students thoroughly understand the material and develop collaborative skills.


NARLabs
國家實驗研究院
歡迎蒞臨
國家地震工程研究中心


利吉惡地地質公園



Academic Highlights

Our department continues to excel in research and academic pursuits, with groundbreaking major research projects, impactful media coverage, and numerous publications in prestigious journals.

We have actively participated in many international conferences and meetings, fostering global collaboration and advancing our field.

Professor CHENG Chuen Hon Arthur

A Leading Exploration Geophysicist and Esteemed Donor

Exceptional Achievements

Professor Arthur Cheng is a world-renowned exploration geophysicist who has developed groundbreaking brain network models to extract signals from real data for reconstructing shale formations. His work has been widely adopted for applications such as charting underground oil and gas reservoirs and planning tunnels for trains.

Professor Cheng's academic journey began in Hong Kong, where he graduated from high school in 1969. He then pursued undergraduate studies at Cornell University and completed his doctoral studies at the Massachusetts Institute of Technology (MIT). During his time at MIT, he served as a principal research scientist in the Department of Earth, Atmospheric and Planetary Sciences, heading a major research consortium until 1996.

After an illustrious academic career, he transitioned into the commercial world, spending nearly 20 years in various roles across different organizations. Eventually, he returned to academia with appointments at the National University of Singapore and later as an adjunct professor at CUHK's Earth System Science Programme. In recognition of his professional advancements and contributions, Professor Cheng was awarded a life membership in 2013 and an Honorary Membership Award in 2021 by the Society of Exploration Geophysicists.

Generous Contributions

Professor Cheng's commitment to nurturing the next generation of scientists led to the establishment of the Ng Yin Ying Early Career Professorship. This initiative, made possible through the generous support of Professor Cheng and Dr. Winnie Wong, aims to recruit and nurture junior faculty members in the Faculty of Science.

On 6 January 2023, a special ceremony commemorated the inauguration of the professorship.

The event was attended by Professor Cheng, Dr. Wong, Dean of Science Professor Song Chunshan, colleagues, students, and guests.

The inaugural Ng Yin Ying Assistant Professor of Geophysics, Professor Zhan Yan, delivered a public lecture titled "Volcanoes: A Breathing Part of the Earth."

Achievements and Recognitions

Prof. YANG Hongfeng:

- 2024, World's Top 2% Scientists, Elsevier and Stanford University
- 2024 and 2023, Outstanding Editor, Earthquake Science
- 2023, Innovative Exploration Award of Dense Array, CGS-Continental Dynamics

Prof. LUO Haiwei:

- 2024 and 2023, World's Top 2% Scientists, Elsevier and Stanford University

Conferences

International Conference on Earth, Energy & Environmental Sciences for Carbon Neutrality (ICE3SCN)

We are honoured and privileged to attend the first "International Conference on Earth, Energy & Environmental Sciences for Carbon Neutrality" (ICE3SCN) in December 2023. The overarching theme of ICE3SCN is advancing the carbon neutrality science and technology and serving for experts, policymakers, and practitioners in academia, industry, and government, as well as students. The conference also serves in response to Hong Kong's Climate Action Plan 2050 for combating climate change and achieving carbon neutrality.

The American Geophysical Union (AGU) Meeting

The Graduate Division of Earth and Atmospheric Sciences at CUHK has recently participated in the American Geophysical Union (AGU) Fall Meeting, which took place in San Francisco from 11 to 14 December, 2023. With over 25,000 participants from 100+ countries, the event provided an exceptional platform for our professors and students to meet and engage in meaningful conversations with global researchers, scientists, educators, and policymakers dedicated to advancing planetary and environmental science. It was an incredibly fruitful and eye-opening experience for our students, and we eagerly anticipate participating in similar global events in the future.

Major Research Grants

—— *Biogeochemistry*

Prof. CHOW Tat Shing Alex

Designing smart floating wetlands to optimize ecosystem services for Hong Kong urban environment
Environmental and Conservation Fund.
$500,000 HKD (2024 – 2026)

Molecular composition and transformation of pyrogenic organic matter in wildland fires
Hong Kong Research Grants Council - General Research Fund.
$910,742 HKD (2024 – 2027)

Prof. DU Penghui

Identification and reaction properties study of carbon-centered radicals in peracetic acid-based advanced oxidation processes
National Natural Science Foundation of China, NSFC-22206070.
30,000 RMB (2023 – 2025)

Prof. LUO Haiwei

A novel endosymbiotic Ruegeria species and its probiotic effects on corals
Hong Kong Research Grants Council - General Research Fund.
$1,559,580 HKD (2025-2027)

Understanding biological nitrogen cycle evolution through new molecular clock approaches
Hong Kong Research Grants Council - General Research Fund.
$1,374,820 HKD (2024-2026)

Timing the bacterial tree of life based on host-bacteria co-evolution
Hong Kong Research Grants Council - General Research Fund.
$1,081,749 HKD (2023-2024)

Prof. TSUI Tsz Ki Martin

Ecosystem controls on the production and degradation of highly toxic methylmercury in upland vegetated landscapes
Hong Kong Research Grants Council- General Research Fund.
$910,742 HKD (2025-2027)

Production of methylmercury and its linkage to biomagnification in food webs at a subtropical mangrove ecosystem
Hong Kong Research Grants Council- General Research Fund.
$877,079 HKD (2024-2026)

—— *Biogeochemistry (continued)*

Prof. THIBODEAU Benoit

Carbon emissions from China's inland waters and coastal ecosystems under global change
Hong Kong Research Grants Council - Collaborative Research Fund.
$2,976,214 HKD (2025-2028), Co-investigator

C-FIST: Establishing World's Premier Environmental Organic Carbon Fingerprint Imaging Science & Technology Laboratory in Hong Kong
Hong Kong Research Grants Council - Collaborative Research Fund.
$7,070,800 HKD (2025-2028), Co-investigator

Aquatic carbon cycling and greenhouse gas emissions from (sub)tropical headwater streams
Hong Kong Research Grants Council - General Research Fund.
$838,660 HKD (2024-2027), Co-investigator

Study of the regional earth system for sustainable development under climate change in the Greater Bay Area
Hong Kong Research Grants Council - Areas of Excellence Scheme.
$87,147,000 HKD (2024-2028), Co-investigator

—— *Geophysics*

Prof. LIU Lin

Deep-learning-based mapping of rock glaciers on the Qinghai-Tibet Plateau
Hong Kong Research Grants Council - General Research Fund.
$436,014 HKD (2022 – 2024)

Rock glacier distribution across the Hindu Kush Himalaya and the French Alps based on remote sensing and deep learning
Hong Kong Research Grants Council - PROCORE-France/Hong Kong Joint Research Scheme.
$86,400 HKD (2023 – 2025), Co-investigator

Thermokarst Landforms on the Qinghai-Tibet Plateau: Spatio-temporal Evolution and Future Changes
Hong Kong Research Grants Council - National Natural Science Foundation of China/RGC Joint Research Scheme.
$1,169,912 HKD (2022 – 2025), Co-investigator

Characterization of ancient lake basins on Mars using advanced topographic modelling and innovative spectroscopic techniques
Hong Kong Research Grants Council - Collaborative Research Fund.
$4,621,350 HKD (2022 – 2025), Co-investigator

Prof. TAN Yen Joe

Probing Earthquake and Volcanic Processes on the Seafloor
Croucher Tak Wah Mak Innovation Award.
$5,000,000 HKD (2022 – 2027)

Tracking Deep Long-Period Volcanic Earthquakes
Hong Kong Research Grants Council - General Research Fund.
$783,000 HKD (2023 – 2026)

Earthquakes and Slow Slips on the Blanco Oceanic Transform Fault
Hong Kong Research Grants Council - Early Career Scheme.
$710,000 HKD (2022 – 2025)

Prof. YANG Hongfeng

Controlling mechanisms of earthquake and volcano in oblique subduction zones
National Key R&D Program of China, MOST
3,180,000 RMB (2024 – 2028)

Near-field ground motion prediction from dynamic rupture simulations and validation of strong earthquakes in western China
Hong Kong Research Grants Council - General Research Fund.
$877,079 HKD (2023 – 2026)

Foreshocks and subsurface changes prior to strong earthquakes in western Yunnan
Hong Kong Research Grants Council - General Research Fund.
$870,000 HKD (2022 – 2025)

Investigations of earthquakes in the Weiyuan shale gas field, Sichuan, based on dense array and machine learning methods
NSFC-CEA Joint Key Grant
2,800,000 RMB (2022 – 2025)

Prof. ZHAN Yan

Magma ascent via dike propagation at the Piton de la Fournaise volcano, Réunion Island
Hong Kong Research Grants Council - Early Career Scheme.
$831,657 HKD (2025-2028)

—— *Atmospheric Science*

Prof. CHAN Man Nin

Properties of Structurally Different Organosulfates: Surface Tension and Bulk-Surface Partitioning in Aerosol
Hong Kong Research Grants Council - General Research Fund.
$910,742 HKD (2025-2027)

Investigating the Effects of Organosulfates and the Sulfur Ester Group on the Hygroscopicity of Atmospheric Aerosols
Hong Kong Research Grants Council - General Research Fund.
$1,169,439 HKD (2024-2026)

Aqueous-Phase Processing of Organosulfates: Implications for their Environmental Fates and Impacts
Hong Kong Research Grants Council - General Research Fund.
$436,015 HKD (2022 – 2025)

Prof. TAI Pui Kuen Amos

Transforming Chinese agriculture and food systems to mitigate reactive nitrogen emissions and their contribution to air pollution and climate change
Hong Kong Research Grants Council - Areas of Excellence Scheme.
(2025 – 2028)

Prof. TAM Chi Yung Francis

Multi-sensor monitoring, geophysical interpretation and prediction of sea level rise in Hong Kong
Hong Kong Research Grants Council - Collaborative Research Fund.
$6,667,108 HKD (2024-2027), Co-investigator

Provision of Services for Feasibility Study on Using a Global Variable-resolution Meteorological Model for Hong Kong Air Quality Simulation
Environmental Protection Department.
$1,200,000 HKD (2023-2026)

Prof. ZHAI Shixian

Assessing atmospheric reactive nitrogen budget in the Greater Bay Area of South China: an integrated analysis of multi-source observations with atmospheric chemistry models
Hong Kong Research Grants Council - Early Career Scheme.
$831,657 HKD (2025-2028)

Improving the parameterization scheme of aerosol size distributions and assessing its impacts on ground-level ozone simulation in China
National Natural Science Foundation of China, Young Scientists Fund.
300,000 RMB (2025-2028)

Selected Publications

Song, F., Li, T., Hur, J., **Chow, A. T. S.**, Leung, K. M. Y., & Wu, F. (2024). Wildfire-Derived Pyrogenic Organic Matter Posing Overlooked Emerging Risks to Aquatic Ecosystems. Environmental Science & Technology, 58(26), 11209-11212.

Mo, X., Du, P., Chan, T. W. D., Shaw, P. C., & **Chow, A. T. S.** (2024). Fostering Adequate Data Reporting of Fourier Transform Ion Cyclotron Resonance Mass Spectrometry-Based Environmental Studies. ACS Es&t Water, 4(7), 2779-2781.

Bruce, T. J., Trettin, C. C., Noel, Z. A., **Chow, A. T.**, Warden, K., Roghair, C., & Farmer, T. M. (2024). A case study of epizootic ulcerative syndrome (EUS) caused by Aphanomyces invadans in eastern mosquitofish (Gambusia holbrooki) from the headwaters of Charleston Harbor, South Carolina. Journal of Fish Diseases, 47(3), e13895.

Allais, L., **Thibodeau, B.**, Khan, N. S., Crowe, S. A., Cannicci, S., & Not, C. (2024). Salinity, mineralogy, porosity, and hydrodynamics as drivers of carbon burial in urban mangroves from a megacity. Science of The Total Environment, 912, 168955.

Cybulski, J. D., Duprey, N. N., **Thibodeau, B.**, Yasuhara, M., Geeraert, N., Leonard, N., ... & Baker, D. M. (2023). Coral carbonate-bound isotopes reveal monsoonal influence on nitrogen sources in Southeastern China's Greater Bay Area from the mid-Holocene until the Anthropocene. Marine Pollution Bulletin, 197, 11575.

Thibodeau, B., Allais, L., Agusto, L. E., So, M. W. K., & Cannicci, S. (2023). Isotopes of amino acids give novel insights on nitrogen sources partitioning and trophic position of invertebrates in a subtropical mangrove. Ecological Indicators, 150, 110261.Harbor, South Carolina. Journal of Fish Diseases, 47(3), e13895.

Du, P., Tang, K., Yang, B., Mo, X., & Wang, J. (2024). Reassessing the quantum yield and reactivity of triplet-state dissolved organic matter via global kinetic modeling. Environmental Science & Technology, 58(13), 5856-5865.

Du, P., Liu, W., Zhang, Q., Zhang, P., He, C., Shi, Q., ... & Wang, J. (2023). Transformation of dissolved organic matter during UV/peracetic acid treatment. Water Research, 232, 119676.

Du, P., Chen, G., Zhang, P., Yang, B., & Wang, J. (2023). Photo-transformation of wastewater effluent organic matter reduces the formation potential and toxicity of chlorinated disinfection byproducts. Ecotoxicology and Environmental Safety, 265, 115515.

Ku, P., **Tsui, M. T. K.**, Uzun, H., Chen, H., Dahlgren, R. A., Hoang, T. C., ... & **Chow, A. T. S**. (2024). Dominance of Particulate Mercury in Stream Transport and Rapid Watershed Recovery from Wildfires in Northern California, USA. Environmental Science & Technology, 58(50), 22159-22169.

Stinson, I., Li, H. H., **Tsui, M. T. K.**, Ku, P., Ulus, Y., Cheng, Z., & Lam, H. M. (2024). Tree foliage as a net accumulator of highly toxic methylmercury. Scientific Reports, 14(1), 1757.

Tsui, M. T. K., Kwon, S. Y., Li, M. L., & Bishop, K. (2023). Revisiting the relationship between mercury emission and bioaccumulation. Eco-Environment & Health, 2(1), 1.

Feng, X., Xing, P., Tao, Y., Wang, X., Wu, Q. L., Liu, Y., & **Luo, H.** (2024). Functional traits and adaptation of lake microbiomes on the Tibetan Plateau. Microbiome, 12(1), 264.

Liao, T., Wang, S., Zhang, H., Stüeken, E. E., & **Luo, H.** (2024). Dating ammonia-oxidizing bacteria with abundant eukaryotic fossils. Molecular Biology and Evolution, 41(5), msae096.

Zhang, H., Hellweger, F. L., & **Luo, H.** (2024). Genome reduction occurred in early Prochlorococcus with an unusually low effective population size. The ISME Journal, 18(1), wrad035.

Zhai, S., Jacob, D. J., Franco, B., Clarisse, L., Coheur, P., Shah, V., ... & Liao, H. (2024). Trans-pacific transport of Asian peroxyacetyl nitrate (PAN) observed from satellite: implications for ozone. Environmental science & technology, 58(22), 9760-9769.

Zhai, S., Jacob, D. J., Pendergrass, D. C., Colombi, N. K., Shah, V., Yang, L. H., ... & Liao, H. (2023). Coarse particulate matter air quality in East Asia: implications for fine particulate nitrate. Atmospheric Chemistry and Physics, 23(7), 4271-4281.

Zhai, S., Jacob, D. J., Wang, X., Liu, Z., Wen, T., Shah, V., ... & Liao, H. (2021). Control of particulate nitrate air pollution in China. Nature Geoscience, 14(6), 389-395.

Xu, R., Chen, Y., Ng, S. I. M., Zhang, Z., Gold, A., Turpin, B. J., ... & **Chan, M. N.** (2024). Formation of Inorganic Sulfate and Volatile Nonsulfated Products from Heterogeneous Hydroxyl Radical Oxidation of 2-Methyltetrol Sulfate Aerosols: Mechanisms and Atmospheric Implications. Environmental Science & Technology Letters, 11(9), 968-974.

Ng, S. I. M., & **Chan, M. N.** (2023). Beyond the formation: unveiling the atmospheric transformation of organosulfates via heterogeneous OH oxidation. Chemical Communications, 59(94), 13919-13938.

Lai, D., Wong, Y. K., Xu, R., Xing, S., Ng, S. I. M., Kong, L., ... & **Chan, M. N.** (2023). Significant Conversion of Organic Sulfur from Hydroxymethanesulfonate to Inorganic Sulfate and Peroxydisulfate Ions upon Heterogeneous OH Oxidation. Environmental Science & Technology Letters, 10(9), 773-778.

Hu, C., **Tam, C. Y.**, Li, Z., Chen, J., Chow, T. N., Li, Y., ... & Yang, Z. L. (2024). Impacts of urban heat and surface roughness on landfalling tropical cyclone intensity: A case study based on TC Victor (1997) in coastal South China. Journal of Geophysical Research: Atmospheres, 129(23), e2024JD040915.

Zheng, Y., **Tam, C. Y.**, & Collins, M. (2024). Reduced Indian Ocean Dipole Asymmetry and Increased Extreme Negative Events under Future Greenhouse Warming. Journal of Climate, 37(21), 5507-5523.

Chow, T. N., **Tam, C. Y.,** Chen, J., & Hu, C. (2024). Effects of background synoptic environment in controlling South China Sea tropical cyclone intensity and size changes in pseudo–global warming experiments. Journal of Climate, 37(5), 1811-1832.

Ismaeel, A., **Tai, A. P**., Santos, E. G., Maraia, H., Aalto, I., Altman, J., ... & Maeda, E. E. (2024). Patterns of tropical forest understory temperatures. Nature communications, 15(1), 549.

Bhattarai, H., Tai, A. P., Martin, M. V., & Yung, D. H. (2024). Impacts of changes in climate, land use, and emissions on global ozone air quality by mid-21st century following selected Shared Socioeconomic Pathways. Science of the Total Environment, 906, 167759.

Tai, A. P., Yung, D. H., & Lam, T. (2024). Terrestrial Ecosystem Model in R (TEMIR) version 1.0: simulating ecophysiological responses of vegetation to atmospheric chemical and meteorological changes. Geoscientific Model Development, 17(9), 3733-3764.

Crozier, J., Karlstrom, L., Montgomery-Brown, E., Angarita, M., Cayol, V., Bato, M. G., ... & **Zhan, Y.** (2023). Understanding the drivers of volcano deformation through geodetic model verification and validation. Bulletin of Volcanology, 85(12), 74.

Ni, P., **Zhan, Y.**, Chabot, N. L., Ryan, C. J., Zhu, K., Nie, N. X., ... & Shahar, A. (2024). Copper isotope fractionation during asteroid core solidification. Geochemical Perspectives Letters, 31, 49-53.

Shreve, T., **Zhan, Y.**, Le Mével, H., Roman, D., & Moussallam, Y. (2023). Two distinct magma storage regions at Ambrym volcano detected by satellite geodesy. Geophysical Research Letters, 50(15), e2023GL102925.

Ran, J., **Liu, L.**, Zhang, G., Shum, C. K., Qiu, J., Hu, R., ... & Zhong, Y. (2024). Contrasting lake changes in Tibet revealed by recent multi-modal satellite observations. Science of the Total Environment, 908, 168342.

Hu, Y., **Liu, L.**, Huang, L., Zhao, L., Wu, T., Wang, X., & Cai, J. (2023). Mapping and characterizing rock glaciers in the arid Western Kunlun Mountains supported by InSAR and deep learning. Journal of Geophysical Research: Earth Surface, 128(9), e2023JF007206.

Hu, Y., Harrison, S., **Liu, L.,** & Wood, J. L. (2023). Modelling rock glacier ice content based on InSAR-derived velocity, Khumbu and Lhotse valleys, Nepal. The Cryosphere, 17(6), 2305-2321.

Song, J., **Yang, H.**, & Yao, H. (2024). High resolution seismicity and ground motion variability across the highly locked southern Anninghe fault with dense seismic arrays and machine learning techniques. Journal of Geophysical Research: Solid Earth, 129(9), e2024JB029479.

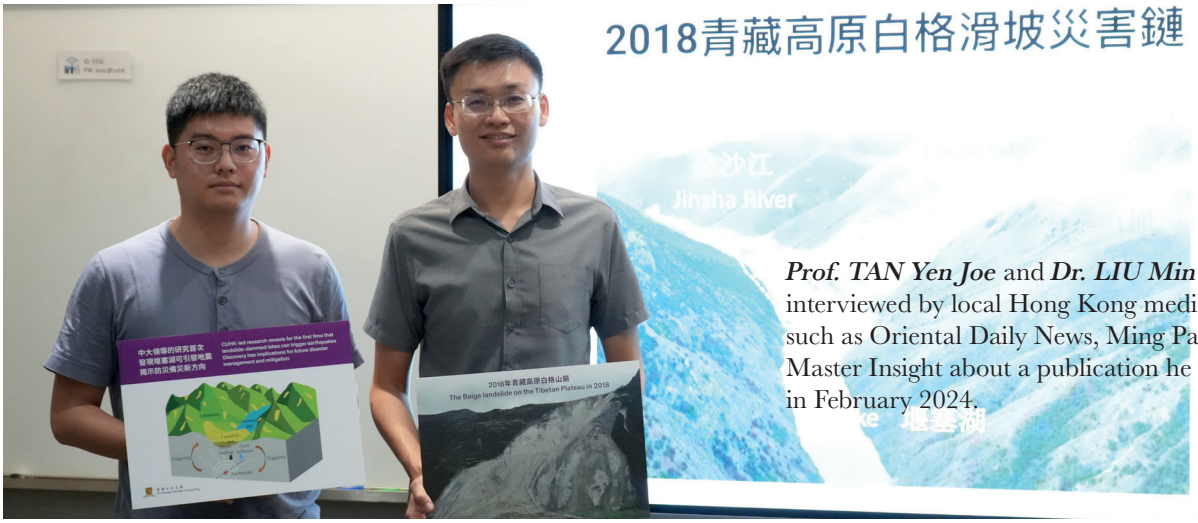
Yang, Y., **Yang, H.**, & Zi, J. (2023). Stress transfer outpaces injection-induced aseismic slip and triggers seismicity. Scientific reports, 13(1), 16626.

Chan, Y. P. B., **Yao, S.**, & **Yang, H.** (2023). Impact of hypocenter location on rupture extent and ground motion: A case study of southern cascadia. Journal of Geophysical Research: Solid Earth, 128(8), e2023JB026371.

Zhang, Z., **Liu, M.**, **Tan, Y. J.**, Walter, F., He, S., Chmiel, M., & Su, J. (2024). Landslide hazard cascades can trigger earthquakes. Nature communications, 15(1), 2878.

Zhong, Y., & **Tan, Y. J.** (2024). Deep learning based phase picking for volcano tectonic and long period earthquakes. Geophysical Research Letters, 51(12), e2024GL108438.

Liu, M., Tan, Y. J., Lei, X., Li, H., Zhang, Y., & Wang, W. (2024). Intersection between tectonic faults and magmatic systems promotes swarms with large-magnitude earthquakes around the Tengchong volcanic field, southeastern Tibetan Plateau. Geology, 52(4), 302-307.



Prof. TAN Yen Joe and ***Dr. LIU Min*** was interviewed by local Hong Kong media outlets such as Oriental Daily News, Ming Pao, and Master Insight about a publication he released in February 2024.

Events and Activities

Faculty Gatherings

—— *Promotion and Welcome Dinner*

On 4 September, 2023, a dinner was held to celebrate the promotions of several teachers and welcome new staff members.

The dinner was a great success, providing an opportunity for faculty to connect, celebrate achievements, and strengthen relationships within the department.

—— *Science Faculty 60th Anniversary Banquet*

It was destined to be a night to be remembered, when 400 invited guests, alumni, students, staff, and friends of the Faculty of Science gathered at Convention Hall of the Hong Kong Convention and Exhibition Centre to celebrate the Faculty's diamond jubilee on 16 September 2023. It was especially meaningful to invite the former Deans and former Interim Dean to take a stand, as together, they represent more than half a century of history at the Faculty of Science.

—— *Reunion Lunch*

On 2 February, 2024, a reunion lunch was held to strengthen camaraderie among staff. The event took place at the Gastronomy Club on the 5th floor of the Cheng Yu Tung Building.

The gathering brought together EESC teachers and general office staff for a shared meal, fostering connections and appreciation within the community. It was a wonderful opportunity to celebrate the contributions of all staff members and enhance the sense of belonging within the department. The event was a success, marked by warmth and good company.

Community Outreach

—— *CUHK University Taster Fair*

On 13 April 2024, the Programme Taster Fair was held at CUHK, welcoming F.4 and F.5 students for a fun-filled day of exploration. The programme featured a wide range of topics, including "***Is our Environment Seriously Polluted?***" by Prof. TSUI Tsz Ki Martin, and "***Why can't I Keep Fish Alive at Home?***" by Prof. CHOW Tat Shing Alex.

The exhibition effectively highlighted our EESC programmes and enhanced students' understanding of the potential pathways for further studies.

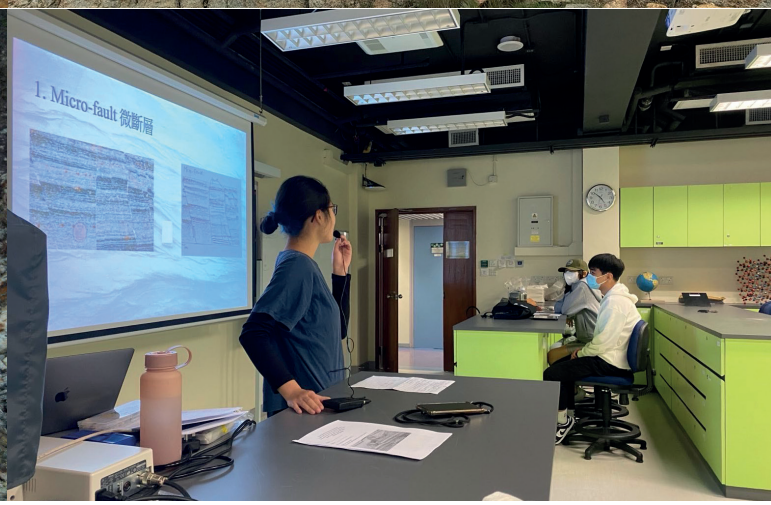
—— *The Second Hong Kong Inter-Secondary School Geology Quest*

The second Hong Kong Secondary School Geology Quest, co-organised by Hong Kong Discovery and the Geological Society of Hong Kong, was successfully concluded on 30 November, 2024! This event aims to promote geological and geographical education among secondary school students, and as a co-organising unit, EESC provided professional knowledge and support to both the students and the event.

Our Geoscience Ambassadors (GA) actively participated in this event, offering guidance and assistance to all participants. We are honoured to contribute to the community and support students in their growth in Earth and Environmental Sciences.

This five-month-long event included academic lectures, professional sharing, museum visits, geological field investigations, and a quiz competition. Its purpose was to promote geological and geographical knowledge in Hong Kong, encourage students to engage in self-directed learning, to tackle academic challenges, and to cultivate critical thinking.

We are thrilled to see 49 teams from 42 secondary schools participating in this event! During the award ceremony and closing ceremony on 30 November, we felt the enthusiasm and hard work of every participant. Our participation was also shared with the public at RTHK.



—— *The Secondary School Geology Pilot Programme (SSGPP) 2024*

The Secondary School Geology Pilot Programme (SSGPP) 2024 was successfully held for secondary school students (S3 - S6). The programme consisted of two workshops and two field trips for participants to explore the fascinating areas of Earth and Environmental Sciences at CUHK.

Together with the Geoscience Ambassadors, the students shared their knowledge of Hong Kong's geology through interactive sessions and immersive experiences at geological sites.

—— *Science of Rotation and Natural Phenomena on Earth Workshop*

Our programme, in collaboration with the Hong Kong Science Museum, hosted a workshop on the "Science of Rotation and Natural Phenomena on Earth" for children in Primary 4 and above.

The three-hour workshop, held on 2 April, 2023, explored how the Earth's rotation and solar radiation influence the planet's climate and air motion.

Participants gained a deeper understanding of these scientific concepts through interactive activities and demonstrations at the Hong Kong Science Museum's laboratory.

The Geological Society of London Hong Kong Regional Group Annual Dinner

On 22 March, 2024, the Geological Society of London Hong Kong Regional Group hosted a valuable networking event that connected our students with industry professionals and alumni. The event was attended by 4 staff members and 10 students, who were financially subsidised by the generous support of ASA Building Materials (HK) Limited.

Throughout the event, the attendees engaged in great interactions with representatives from geotechnical and geo-environmental companies, as well as government parties such as the Geotechnical Engineering Office, Hong Kong Geopark, and the Hong Kong Science Museum. As a result of these productive discussions, numerous internship offers were extended to our participating students, providing them with invaluable real-world experience. The event also facilitated a nice gathering with our ESSC alumni, who had the opportunity to reconnect with current students and staff.

Alumni

The alumni of our department excel in fields like academia, environmental consulting, and even aviation.

Their achievements reflect the impact of EES's interdisciplinary training and curiosity-driven approach.

We are proud to celebrate their successes and their continued connection to the department.

Alumni Messages and Advice to Students

Earth System Science Programme (ESSC) (2020)
Earth and Atmospheric Sciences (EASC, M.Phil) (2022)

CHAN Yuk Po Bowie

Scientific Officer at the Hong Kong Observatory

Miss CHAN Yuk Po Bowie pursued a M.Phil and then worked as a research assistant under Prof. YANG's supervision, spending a total of around 7 years at CUHK.

"The department is very supportive, and provides a wide range of opportunities, from research to internships and even some creative projects. Hence it is a great chance to explore different areas and figure out where your passion lies. While fulfilling your core requirements, consider branching out and delving into subjects that pique your curiosity. The knowledge and skills you gain from these interdisciplinary experiences can open up more possibilities for your future. Wishing you all the best in your academic and personal pursuits!

Earth System Science Programme (ESSC) (2024)

CHANG Hiu Lun

Graduate Consultant at Arup
(specialises in environmental impact assessment and consulting)

During his study, he had built interest in Climate Science, Urban Climatology, as well as Science Communication. His one-year placement at Hong Kong Observatory extended his interest in Instrumentation and Weather Forecasting. His final year project in ESSC was to investigate climate change in Hong Kong, and also the feasibility of weather chart interpretation for weather regime classification using machine learning.

"Time's always moving, we can't slow the hands;
Won't last forever, so take every chance;
Live the moment and love the memory!
(Love the Memory, From Hong Kong Disneyland Resort "Momentous" Nighttime Spectacular)

Earth System Science Programme (ESSC) (2021)

WONG Tat Chi

MSc in Atmospheric and Climate Science Student at ETH Zurich

His final year project in ESSC was to examine the climate and air quality regulating services by Hong Kong vegetation using TEMIR and was supervised by Prof. TAI Pui Kuen Amos.

After graduation, he took up the position of Computational Scientist (CS) in Clustertech Limited from 2021 to 2023. His responsibility was to perform computational experiments to improve the capability of the numerical weather prediction (NWP) model. From there he gained experiences in coding and numerical modelling, as well as the ability to work on Linux platform. Python was the most used language during his work. He also learned to use shell scripts and slurm to schedule computational jobs on supercomputer nodes.

“If you already know what you want to do in the future, just follow the path! But if you are like me who is still unsure about what to do even in the year of graduation, I would encourage you to try out different possibilities. In my final semester in CUHK, I applied for the CS position just because it looks really related to our program. I couldn't tell if I would like it or not simply from the job description. After taking up the position, I surprisingly found out that I really like the technical aspect of NWP models. At the same time, I found out that working as a 9-6 employee sometimes feels boring to me, especially when the tasks become repetitive at times. This experience is really important to me as I could understand myself better and I can then refine my career path according to my likes and dislikes. Life is a journey of growth and self-discovery. Just take your time to find out what suits you the most!

Earth System Science Programme (ESSC) (2025)

WONG Kwong Lung

Airline Cadet Pilot

He took 2 gaps years to take part in an one-year placement at Hong Kong Observatory to investigate AI aircraft icing prediction and another cadet pilot programme sponsored by a local airline. Now he is a Cadet Pilot in training overseas.

“Choose your own struggles in life.

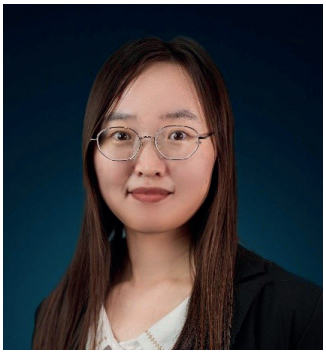
Earth System Science Programme (ESSC) (2023)

NG Tsan Fung

Graduate Environmental Consultant at AECOM

During his third year of study, he had the opportunity to intern at Hong Kong Observatory, where he focused on using machine learning to improve weather observations. This experience deepened his passionate in meteorology and became an atmospheric ambassador when he returned to campus. His final year project in ESSC was to investigate time series patterns in air pollution, which directly relates to his current role as an environmental consultant.

“Looking back, I realize how lucky I was in university. I found many chances to learn and grow, both in and out of class. Keep your mind open and stay curious. Make the most of every opportunity. Your efforts now will shape your future.



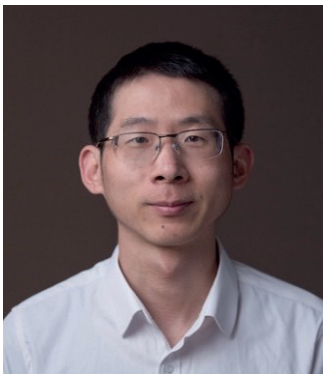
Earth and Atmospheric Sciences (EASC, Ph.D.) (2020)

ZHU Gaohua

Research Professor at Institute of Oceanology, Chinese Academy of Science, The Chinese University of Hong Kong (CUHK)

After receiving her PhD degree, she worked as a Postdoctoral Researcher at CUHK from August 2020 to July 2021, and Research Assistant at CUHK from July 2021 to April 2022.

“Congratulations! You will meet both great people and amazing opportunities in EESC, but also a time of challenges. Regardless, you are always learning and growing, so keep positive and persistent. Enjoy your time and hope you have wonderful experiences in EASC, CUHK.



Earth and Atmospheric Sciences (EASC, Ph.D.) (2019)

HUANG Lingcao

Research Assistant Professor at the Institute of Space and Earth Information Science, The Chinese University of Hong Kong

After receiving his PhD degree, he traveled to different places including Hong Kong, the USA, and Canada for Postdocs before re-joining CUHK in August 2023.

“Though the path ahead may not always be clear, remain true to yourself, make the most of your university experience, and trust that your passions and values will guide you to meaningful work.

Acknowledgments

Sponsors and Supporters

Special thanks to all non-academic supporters.

—— *Private Companies*

- AECOM Asia Company Ltd.
- Atkins China Ltd.
- Aurecon Hong Kong Limited.
- ClusterTech Ltd.
- CM WONG & Associates Ltd.
- DrilTech.
- EGS (Asia) Limited.
- FoodCycle+.
- Fugro Geotechnical Services Ltd.
- Gammon Construction Limited.
- GeoRisk Solutions Limited.
- Geotechnics & Concrete Engineering (Hong Kong) Ltd.
- Gold Mountains Asset Management Ltd.
- Halcrow.
- Kadoorie Farm and Botanic Garden (KFBG).
- LAMS Environment Services.
- LAMS Geotechnics Limited.
- Meinhardt (Hong Kong) Ltd.
- Mott MacDonald.
- Ove Arup & Partners Hong Kong Ltd.
- Sigma Mascot (HK) Limited.
- Tysan Foundation Building Limited.
- Tysan Foundation Geotechnical Limited.
- Tysan Foundation Limited.
- Vibro (H.K.) Limited.
- WSP Asia Limited.

—— *Government Departments*

- Agriculture, Fisheries and Conservation Department of Hong Kong (AFCD).
- Civil Engineering and Development Department, Geotechnical Engineering Office (GEO).
- Drainage Services Department (DSD).
- Environmental Protection Department (EPD).
- Hong Kong Observatory (HKO).
- Leisure and Cultural Services Department (Hong Kong Science Museum).
- Leisure and Cultural Services Department. (Hong Kong Space Museum).
- Water Supplies Department (WSD).

—— *Professional Societies*

- Gemmological Association of Hong Kong.
- Geological Society of Hong Kong (GSHK).
- Geological Society of Hong Kong (GSHK), Professional Branch.
- HK Meteorological society.
- HKIQEP.
- Hong Kong Construction Association.
- Mineral Society of Hong Kong.

—— *NGOs*

- Friends of the Earth (HK).
- International Chamber of Sustainable Development
- Small-to-Medium Enterprise Sustainability Society

Supporting Staff

Special thanks to our supporting staff, who play a vital role in the success of our department.

Ms. CHEUK Wing Yu Sally
Executive Officer

Ms. LEUNG Hoi Yi Jiffy
General Clerk

Miss CHAN Pui Fun Joyce
General Clerk

Miss LAU Hei Tung Joanne
Project Coordinator

Mr. CHOI Kwun Chung Eric
Technician

Ms. LI Ka Wai Nico
Technician

Credits

Special thanks to all contributors that made Yearbook 2023-2024 possible.

—— Student helper on the yearbook project, Miss YIP Pui In

A sincere thank you to Miss YIP Pui In for your invaluable support as our student helper. Your dedication, efficiency, and behind-the-scenes efforts ensured that this yearbook came together seamlessly. From coordinating tasks to assisting with countless details, your hard work has been instrumental in making this project a success. We truly appreciate your contribution!

—— Photographers

A heartfelt thank you to ALL our talented photographers, whose keen eye and dedication brought life to every page of this yearbook. Your ability to capture the spirit and essence of our department's events, landscapes, and people is truly remarkable. Your work ensures that these cherished moments will be remembered for years to come.

Thank You Notes from the Editor

As the editor of this year's Earth and Environmental Sciences yearbook, I am truly honored to have had the opportunity to document the incredible memories, achievements, and journeys of our department. This yearbook represents the hard work, passion, and camaraderie of our community, and it wouldn't have been possible without the support and dedication of everyone involved. Thank you for allowing me to be part of this meaningful project.

—— *Dr. ZHANG Li*

2023

DEPARTMENT OF
EARTH AND ENVIRONMENTAL SCIENCES
THE CHINESE UNIVERSITY OF HONG KONG
香港中文大學 地球與環境科學系

Room 303, 3/F, Mong Man Wai Building, The Chinese University of Hong Kong, Shatin, N.T., Hong Kong

(852) 3943-9323 | (852) 3943-9624

earth@cuhk.edu.hk

https://www.ees.cuhk.edu.hk/

@cuhk_ees