



ASE Newsletter

March 2022

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ASIAN SCHOOL OF THE
ENVIRONMENT

The March Newsletter has the second part of the interview series by undergraduate student Terese Teoh, this time featuring Dr Stephen Chua. The MSO interview features Koh Kianhua from the IT team, and the undergraduate students share about their mapathon event.

Staff Turnover and new roles

Welcome to ASE new staff



Dr Rene Dommain joins us as Senior Research Fellow and will be working with Prof David Wardle's team.



Dr Xin Li joins us as Research Fellow and will be working with Prof Simon Redfern's team.



Dr Sanjeev Mishra joins us as Research Fellow on 7 March. He will be working with Assoc Prof Janelle Thompson's team.



Dr Nanette Raczka joins us as Research Fellow. She will be working with Asst Prof Kelly Andersen's team.



Asst Prof Eleanor Slade has joined the research team as Assistant Chair for Research.

Towards new adventures



Wei Kit in Bali with ASE students.

We say thank you, goodbye, and good luck to both of ASE's Lab and field coordinators, **Brian Perttu** and **Lee Wei Kit**. Brian and Anna are heading to New Zealand. Wei Kit has a new position with [Hydroinformatics Institute](#) in Singapore. His last day at ASE is 23 March.

GODLUCKINYOURNEWJOB!



Brian on a volcano.



Awards and Recognition

The Women in Engineering, Science, and Technology (WiEST) Development Grant 2022



Sandra Kolundzija (top) and Anushka Rege

Congratulations to **Anushka Rege** and **Sandra Kolundzija** for being awarded the Women in Engineering, Science, and Technology (WiEST) Development Grant 2022 by Women@NTU and POWERS

“The award aims to encourage early-career engineers, scientists, and technologists to expand their network and continue to persist and innovate in the curiosity-driven world of STEM. Grant awardees will receive a one-time grant of S\$3,000 that will cover conference-related fees (e.g., registration, travel, accommodation, visa) including virtual symposiums, conferences, and seminars, as well as virtual training for career and professional development.”

Anushka, who will be defending her thesis this year, is planning to use the money to attend the [Annual Meeting of the Association for Tropical Biology and Conservation](#) in Colombia.

Sandra will attend International Symposium on [Microbial Ecology \(ISME\) in Lausanne, Switzerland](#) this summer. *“It is my first opportunity to present research at a scientific conference and I am very much looking forward to it!”*, she says.

Interview series with ASE researchers

This is the second part in the interviews series by ASE undergraduate student **Terese Teoh**, exploring the experience of ASE researchers of working in the field of environmental science, with so many ur-

Going back in time to save Singapore

#whyASE — Faculty edition

By Terese Teoh

He cracks open the tin tube that is about as long as me, then lays it out in its full glory. Sediment core, he grins. See the layers? See the roots, shells and dark organic mud? Embedded within is the history of the earth. This is the first time the Marina South core has been opened. I stare, impossibly, at this boundless container of solidified memories. Just like watching a pensieve coming to life.



Pensieve. Image source: <https://harrypotter.fandom.com/wiki/Pensieve>

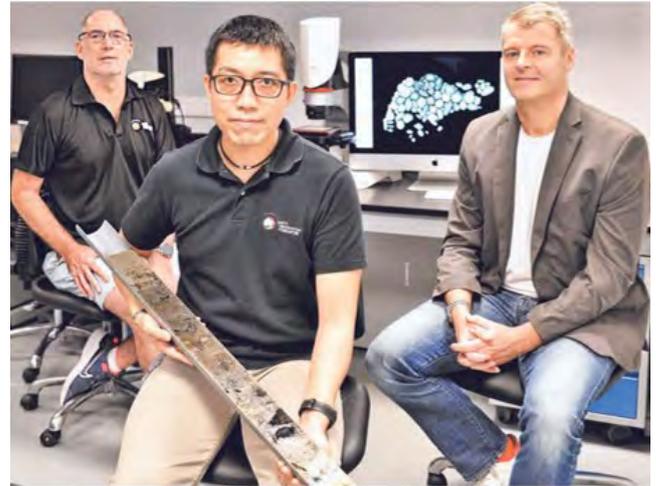
This is all in my head, of course, but he describes the process so vividly I might as well have been there. Dr. Stephen Chua is a geologist who studies paleo-environmental reconstruction. This means he studies the past environment to predict future climatic events. By examining sediment types present in the cores, past sea levels are deduced, and past trends of sea level change are formed.

¹ A pensieve, from the wizarding world of the Harry Potter series, is a stone basin that is used to collect and view memories.

What were sea-level trends like in the past? Were they linear, or were there abrupt fluctuations? Knowing these past trends can provide insight into the science behind the complex relationship between ocean water and land-based ice. This leads to more accurate predictions of local impacts caused by today's sea level rise.

Consequently, better predictions also lead to more strategic adaptation and mitigation responses to sea-level change. For example, a focus on purely hard engineering infrastructure (or conversely, purely natural-based solutions) may not be as wise as compared to a mixed or hybridised solution that includes the two. The thresholds of mangrove survival stands at approximately 6–7mm of sea level rise therefore informs on the most appropriate measure (Saintilan et al., 2020).

An experienced scientist who has been working in environmental science for the length of my lifetime (20 years!), Dr. Chua, now in his forties, first began working at Sungei Buloh in the early 2000s with 5000–6000 year old mangrove peats. Later, in the late 2000s, he moved to working on understanding coastal erosion and morphology of mangrove areas at Pasir Ris.



Dr. Stephen Chua (centre) holding the Marina South core. On his left is Prof. Adam Switzer and on his right Prof. Benjamin Horton. (Photo: The Straits Times)

Furthermore, given the relative scarcity of historical sea level records in Singapore and Southeast Asia, these projects fulfill a critical gap. Reasons for such limited data abound: publications done in local or regional journals may be hidden in an obscure library or small journal, or perhaps publications may be done in local languages that are less easily understood.

Perhaps Dr. Chua learnt about sea level rise the hard way, too. Once, during low tides at Sungei Buloh, he was mapping mudflats when he suddenly realised: he was sinking in it!



Dr. Stephen Chua (left) and then-Honours supervisor Prof. Michael Bird (right) coring at Sungei Buloh in 2002. (Photo: Stephen Chua)

Another challenge Dr. Chua faces in his work is finding the right location to take samples. Poring through lots of geological maps and data, one can still never be completely certain that the location is the right place, and nor is there any guarantee that after the core is taken, one will achieve what one had envisioned. Getting the wrong location can be a costly mistake, particularly when the location for the sample is on restricted areas (which has unfortunately happened before).

Partnering with other overseas universities in the region is also another way of dealing with insufficient location data in Southeast Asia. This entails the sharing of knowledge and expertise between the universities, such as teaching people how to take samples and do analyses.

But gathering all this knowledge is pointless without implementation. Dr. Chua hopes that the engineering and scientific communities can be more integrated, rather than the present norm of separating such respective projects and finances. “It would be great if the engineers (who study scientific applications) and the academics (who study fundamental science) work on the same question,” he says. “Although the gap is getting smaller: engineers should work closely with geoscientists to better understand the environment to achieve societal goals, for example in Environmental Impact Assessments (EIAs).”

“When I first came to EOS, I had thought that sea level was level,” reflects Dr. Chua. “Now I know that the sea level is uneven throughout the world, and that Singapore is affected by local effects such as subsidence... The more you learn, the more you realise you don’t know.”

As I listen to Dr. Chua speak, I wonder how much of the past we still don’t know and how much of the future we will ever be able to know. Will one ever get tired of searching?

But curiosity propels Dr. Chua to keep pondering; to keep weaving the past, present and future together. “I have a feeling the amount of work needed far exceeds my working life,” he says genially. So he continues.



Dr. Stephen Chua storing one of the core segments in the cold room at 4 degrees. (Photo: Stephen Chua)



The JEDI Committee

The ASE/EOS JEDI committee has an active Slack group with materials and chats. Please contact any of the JEDI committee members if you want to know more! Contact info can be found on the: [JEDI web page](#)

JEDI Coffee Break Schedule (over Zoom):

Thu 24 March	11:30 AM – 12:00 pm
Mon 4 April	2:30 PM – 3:00 pm
Thu 21 April	11:30 AM – 12:00 pm
Mon 9 May	2:30 PM – 3:00 pm
Thu 26 May	11:30 AM – 12:00 pm

Join here: <https://ntu-sg.zoom.us/j/92568137191>
Meeting ID: 925 6813 7191, Passcode: 848437

JEDI Workshop Schedule

March 14-18:	<ul style="list-style-type: none"> • Privilege Power Oppression Marginalisation (open to all) • Strategies for Change (undergrad only) 	<ul style="list-style-type: none"> • Tuesday, Mar 15 (2-4 pm) • Tuesday, Mar 15 (6-8 pm)
April 4-8:	<ul style="list-style-type: none"> • Becoming an Ally (undergrad only) • Privilege Power Oppression Marginalisation (faculty only) 	<ul style="list-style-type: none"> • Tuesday, Apr 5 (6-8 pm) • Wednesday, Apr 6 (1-3 pm)
April 11-15:	<ul style="list-style-type: none"> • Supporting Survivors (open to all only) • Privilege Power Oppression Marginalisation (PhD & research) 	<ul style="list-style-type: none"> • Thursday, Apr 14 (10 am - 12 noon) • Thursday, Apr 14 (4-6 pm)
April 18-22:	<ul style="list-style-type: none"> • Practicing Accountability (open to all) • Intro to Restorative Justice (open to all) • Unconscious Bias (faculty only) 	<ul style="list-style-type: none"> • Monday, Apr 18 (2-4 pm) • Monday, Apr 18 (4-6 pm) • Friday, Apr 22 (2-4 pm)

MSO

MSO Interview

In every newsletter we get to know one of the MSO staff better through an interview. This time we catch up with Koh Kianhua, member of the ASE IT team and information technology specialist.

How long have you worked at ASE, and where were you before?

I have worked five years in ASE. Prior to joining ASE, I was working in a market research company doing programming of online survey forms and supporting my colleagues to perform the analysis and visualization of the survey data. I have also taken up roles of application developer and IT System Administrator in other organizations.

You are one of the members on the ASE IT team, what are your main responsibilities?



Koh Kianhua

I am the administrator for the courses that are hosted on the Blackboard LMS. Additionally, I provide support to users on matters pertaining to the IT systems in ASE. I am also the Web-Master for the department.

I believe you were originally employed to work with teaching technology. What are your skills in this area, that teaching staff in ASE turn to you for assistance with?

I was initially hired to administer the new GC0001 module that is currently undergoing some revamp, and is hosted on the Blackboard LMS. My training in IT has equipped me with the necessary knowledge in troubleshooting some of the technical issues encountered by academic staffs and students pertaining to the Blackboard LMS.

Do you have any tips for teaching staff when it comes to Blackboard (or other teaching technology)?

I would advise that faculty members do not upload large video / media files directly onto the course-site (Course Contents) of the Blackboard LMS as these video files take up a lot of space on Blackboard. Instead, they should go to "My Media" on Blackboard LMS to upload the media files onto the Kaltura Media System.

What has been the biggest challenge for you in your work, the pandemic or the migration of the ASE website to the new platform last year?

The COVID-19 pandemic in April 2020 has changed the way that classes are conducted. Many of the courses have been changed from face-to-face to hybrid or a fully online-learning mode. Hence, I have to be familiar with the various online teaching tools such as BB-Collaborate and the creation of narrated video on Powerpoint and the use of Zoom and Teams to support e-learning. The NTU Web Revamp exercise that commenced in September 2020 to April 2021 was a major challenge for me. A lot of content needed to be created, modified and migrated and from the existing SharePoint CMS (Content Management System) to the Sitefinity CMS. I have spent a considerable amount of time on the development of the new website and am glad to have completed the web migration project by April 2021.

What do you like best about your job?

Working from home has become more common since the start of the pandemic in 2020. I am glad that some parts of my job can be done without the need to be physically present at the ASE office. For example, I am able to check and troubleshoot on issues pertaining to NTULearn and the ASE Website anywhere in Singapore as long as I have a connection to the internet.

Finally, what do you like to do in your spare time?

Outside of my work at ASE, I like to watch movies and visit different places of interest (eg: Sentosa, National Museum, Mt Faber) with some of my friends.

I also like to read books and articles on statistical analysis and visualization using R and Python. Recently, I have been reading articles on web scraping using Python, learning design methodology, and educational data-mining.



National Museum of Singapore—a place you might find Kianhua and his friends.



ASE Club — Undergraduate Students

It's good news from the [MOE Graduate Employment Survey](#): 100% employment within 6 months of final examinations for 2021 ASE graduates (91% in full-time permanent employment). Congratulations to the class of 2021!

Mapathon event

Write-up by Sherry Seow, ASE Club Vice-President and director of CIP (Community Involvement Program)

Few weeks ago, the ASEC Community Involvement Project (CIP) subcommittee held our very first Mapathon of the year! Participants teamed up in threes to map buildings in Saint Louis, Senegal which faces schistosomiasis, a widespread water-related epidemic disease. Schistosomiasis is one of the Neglected Tropical Diseases (NTDs) and can cause growth impairment and development in children. Communities under poverty who rely on contaminated water from rivers and water basins are the most affected. Mapping the villages near the Senegal River Valley contributes to the creation of risk maps and the identification of vulnerable communities. During the Mapathon, participants competed to map as many buildings as possible, collectively contributing 4389 buildings. It was a tough fight amongst the 5 teams, with team "poorNdesperate" emerging victorious in the end! But here in ASE, we believe everyone is a winner so all participants walked away with a little token of appreciation for their time and effort :) ASEC would like to thank all who have taken part and we look forward to the next Mapathon!



Left: "Mapathonners" T

Below: The winning team, "poorNdesperate"



PhD Students

Two successful PhD Oral Defences in February



Yang Liudongqing defended her thesis *Atmospheric chemistry of organic aerosols: A Singapore case study on Singapore* 17 February 2022



Ahmad Taufiq defended his thesis *Coral Records Reveal Interannual-to-Centennial Climate Drivers In the Western Pacific Warm Pool* on 21 February.

Congratulations to the
new doctors!

Upcoming PhD Oral Defence



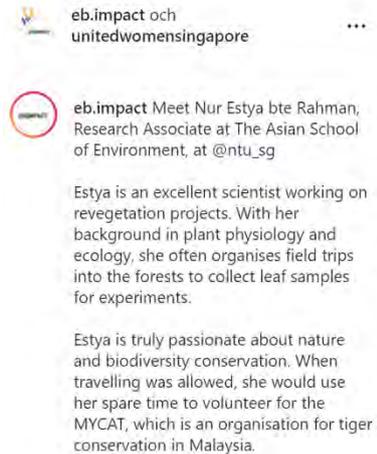
Yap Wenshu will be defending her thesis *Using geomicrobial approach to investigate the geological records of coastal hazards* on 30 March.

Research Fellows

ASE Research Associate Nur Estya Bte Rahman was featured by EB Impact and United Women Singapore for International Day for Women and Girls in Science on Feb 11. The video follows Estya doing her work in the lab and field. Watch the [video here](#)



From the Twitter post:



Recent Publications

The list is not in alphabetical order and does not aim to include all published papers from ASE/EOS, but to give a taste of the incredible diversity of topics we publish on with some recent examples.

Please know that there is no automatic recording of published papers from ASE for this newsletter, nor any selection of which papers to publish. The listing of papers depends entirely on authors notifying Anna (who then adds them to this list). Have a recent publication or outreach item we could include? Please send it to: alagerstroem@ntu.edu.sg



Joyce Ong published on marine fish populations and temperature variability.

P. van der Sleen, P. A. Zuidema, J. Morrongiello, **Jia Lin J. Ong**, R. R. Rykaczewski, W. J. Sydeman, E. Di Lorenzo & B. A. Black (2022) [Interannual temperature variability is a principal driver of low-frequency fluctuations in marine fish populations](#). *Communications Biology*

Andressa V. Mansur, Robert I. McDonald, Burak Güneralp, HyeJin Kim, Jose A. Puppim de Oliveira, Corey T. Callaghan, **Perrine Hamel** et al. (2022) [Nature futures for the urban century: Integrating multiple values into urban management](#). *Environmental Science & Poli-*



Ong Xin Rui published on bees in Singapore. (Image: NParks.)



David Wardle and Steve Yim published on ozone formation and temperature.

Ascher JS, Soh ZWW, Chui SX, Soh EJY, Ho BM, Lee JXQ, Gajanur AR, **Ong XR** (2022). [The bees of Singapore \(Hymenoptera: Apoidea: Anthophila\): First comprehensive country checklist and conservation assessment for a Southeast Asian bee fauna.](#) *The Raffles Bulletin of Zoology*.

Ning, G., **Wardle, D. A.** and **Yim, S. H. Y.** (2022) [Suppression of ozone formation at high temperature in China: from historical observations to future projections.](#) *Geophysical Research Letters*.

Asplund, J., van Zuijlen, K., Roos, R. E., Birkemoe, T., Klanderud, K., Lang, S. I. and **Wardle, D. A.** (2022) [Divergent responses of functional diversity to an elevational gradient for vascular plants, bryophytes and lichens.](#) *Journal of Vegetation Science* 33: e13105.

Lallmant, D., Rabonza, M., Lin, Y. C., Tadepalli, S., Wagenaar, D., Nguyen, M., Choong, J., Liu, C. J. N., Sarica, G. M., Widawati, B. A. M., Balbi, M., Khan, F., Loos, S. & Lim, T. N. (2022). [Shedding light on avoided disasters : measuring the invisible benefits of disaster risk management using probabilistic counterfactual analysis.](#) *UNDRR Global Assessment Report 2022, Early View.*

Recent Outreach from ASE



Dung beetle research on CNA

ASe PhD candidate Ong Xin Rui was interviewed by CNA about her research on Pulau Ubin. “Dung beetles rely primarily on mammal dung for food and nesting resources so they can act as indicators for mammal diversity”, was one of the things she told the reporter. Watch the [video here](#). Read more about it [here](#).

Deploying a seismic network in Indonesia during the pandemic

Karen Lythgoe and collaborators tell the story of how they investigated the Sumatran fault with seismic nodes. The article is published in *Science News by AGU*, read it [here](#).

Striking Out into the Field to Track Slip on the Sumatran Fault

An international team overcame many challenges, including from the COVID-19 pandemic, to deploy a dense seismic network along an understudied fault system that poses hazards to millions in Indonesia.

By Karen Lythgoe, Umar Muksin, Arifullah, Andean Simanjuntak, and Shengji Wei 16 March 2022



The surface trace of the Sumatran fault cuts across the road between the communities of Mane and Tampo in Aceh, Indonesia. Credit: Qibin Shi