Workshop on "Automatization and Standardization of Volcano Seismic Data Processing Workflows" 17 – 21 November 2025

Day 1 – Monday, 17 November 2025 - *ASE Lab / Lecture 3 (N1.1-B2-01D)*

Advanced Monitoring Technologies & Regional Case Studies

Time	Session	Speaker
09:00 – 09:10	Welcome & Opening Remarks	Benoit Taisne/Christina Widiwijayanti
09:10 – 09:45	Participant Introductions & Expectations	All participants
09:45 – 10:00	Workshop Overview	Christina Widiwijayanti
10:00 – 10:30	***Coffee / Tea Break***	
10:30 – 10:50	The Use of Seismic Nodes and DAS for Monitoring Volcanoes	Mike Kendall
10:50 – 11:10	Recent Advances in the Use of Infrasound for Real-Time Volcano Monitoring	Silvio De Angelis
11:10 – 11:30	Complete Imaging of Transcrustal Magmatic Systems with TomoATT, SurfATT, and PmPNet	Tong Ping
11:30 – 12:00	***Interactive Activity***	
12:00 – 13:30	***Lunch Break***	
13:30 – 13:50	Seismic Unrest at Mount Slamet: Signals of Magma Movement Beyond the Expected Eruption Interval	Novianti Indrastuti
13:50 – 14:10	Volcanic Unrest at Taupō, New Zealand, 2022–23	Steve Sherburn
14:10 – 14:30	Mitigating Hazards at Lewotobi Volcano: Lessons from Successful and Limited Monitoring Efforts	Ahmad Basuki
14:30 – 14:50	Significant Volcanic Seismic Signals Across Philippine Volcanoes: Observations and Monitoring Approaches	Christian Joseph Clarito
14:50 – 15:15	***Coffee / Tea Break***	
15:15 – 16:00	**Breakout session:** Lessons from Case Studies – Mapping Unrest Scenarios to Monitoring Objectives	All participants
16:00 – 16:30	***Group game***	
16:30 – 17:00	***Technical Setup:*** Python + ObsPy Installation & Data Check	NRFi facilitators

Day 2 – Tuesday, 18 November 2025 - *ASE Lab / Lecture 2 (N1.1-B2-01C)*

Automated Analysis in Volcano Seismology

Time	Session	Speaker
09:00 – 09:20	***Game***	
09:20 – 09:40	Unsupervised Classification and Displacement Estimation of Very-Long-Period Seismic Signals at Mount Marapi	Tania Espinosa-Ortega
09:40 – 10:00	Classification of Volcano-Seismic Events Using K-means Clustering and Dynamic Time Warping	Eisuke Fujita
10:00 – 10:30	***Coffee/Tea Break***	
10:30 – 10:50	Machine Learning Identifies Precursory Long-Period Earthquake Signals Preceding Phreatic Eruptions at Marapi Volcano, Indonesia	Feng Mingye
10:50 – 11:10	Forecasting an Impending Eruption by Extracting Features of Seismic Waveforms	Yosuke Aoki
11:10 – 11:30	VOISS-Net + TREMCAT: A Streamlined Approach to Detect, Characterize, and Catalog Volcanic Tremor	Darren Tan
11:30 – 12:15	***Hands-On Tutorial:*** Running VOISS-Net	Darren Tan
12:15 – 13:45	***Lunch Break***	
13:45 – 14:45	***Discussion and Q&A:*** Integrating AI/ML in Real-Time Volcano Monitoring	All participants
14:45 – 15:15	***Group game***	
15:15 – 15:45	***Coffee / Tea Break***	
15:45 – 16:15	Intro on FDSN compliant format for seismic waveform data & seismic station metadata	Christina Widiwijayanti
16:15 – 17:00	***Exercise:*** Preparing Metadata, Waveform Preconditioning	NRFi facilitators

Day 3 – Wednesday, 19 November 2025 - *ASE 3D Viz Laboratory Room (N2-B1C-16C)*

Workflow Automation & Integration with WOVOdat

Time	Session	Speaker
09:00 – 09:30	Towards a Standardised Model of Volcano–Seismic Unrest & NRFi Project Overview	Benoit Taisne
09:30 – 09:50	Volcanic Earthquake Detection and Classification	Andika Bayu Aji
09:50 – 10:15	***Coffee/Tea Break***	
10:15 – 11:15	***Hands-On Tutorial:*** Running VEQTOR for Event Detection, & Cataloguing	Andika Bayu Aji
11:15 – 12:00	Feature Extraction Workflows	Andika Bayu Aji
12:00 – 13:30	***Lunch Break***	
13:30 – 14:15	Workflow Automation in Seismic Data Processing and Integration with WOVOdat	Christina Widiwijayanti
14:15 – 15:00	***Breakout session:*** Working on Metadata Standards and Interoperability	All participants
15:00 – 15:30	***Coffee/Tea Break***	
15:30 – 16:00	Using WOVOdat: What's in there, and how can we use WOVOdat for eruption onset forecasting (an example on Miyakejima, Japan)	Julie de Groote
16:00 – 17:00	***Group Design Challenge***	

Day 4 – Thursday, 20 November 2025 - *ASE 3D Viz Laboratory Room (N2-B1C-16C)*

Data Management & Observatory Integration

Time	Session	Speaker
09:00 – 09:20	***Game***	
09:20 – 09:40	Volcano Research Promotion in Japan: VHRP and JVDN	Tomofumi Kozono
09:40 – 10:00	Seismic Data Management at Earth Sciences New Zealand, Trying to Cater for Volcano Requirements	Steve Sherburn
10:00 – 10:30	***Coffee / Tea Break***	
10:30 – 10:50	Monitoring System at Merapi: Digital Transformation, Workflow, and Data Management	Andika Bayu Aji
10:50 – 11:10	From Detection to Database: Standardized Seismic Processing Workflows in Philippine Volcano Observatories	Lois Abigail Jumawan
11:10 – 11:30	Overview of CVGHM' Volcano Monitoring System and Data Management	Ahmad Basuki
11:30 – 12:15	***Breakout session:*** Gaps and Opportunities for Data Standardisation	All participants
12:15 – 13:45	***Lunch Break***	
13:45 – 14:45	***Hands-On Tutorial:*** Time-Series Metrics Using ObsPy	NRFi facilitators
14:45 – 15:15	***Group Game***	
15:15 – 15:45	***Coffee / Tea Break***	
15:45 – 17:00	***Hands-On Tutorial:*** Input metadata & processed data into WOVOdat	NRFi facilitators

Day 5 – Friday, 21 November 2025 - *ASE 3D Viz Laboratory Room (N2-B1C-16C)*

Synthesis, Standardisation, and Next Steps

Time	Session	Speaker/Lead
09:00 – 10:00	***Open Discussion:*** Optimising Seismic Data Products for Crisis Response	All participants
10:00 – 10:30	***Coffee/Tea Break***	
10:30 – 11:00	**Synthesis Session:** Towards a Common Standardised Workflow	NRFi team
11:00 – 11:45	***Action Planning:*** Post-Workshop Commitments, Collaboration & follow-up	All participants
11:45 – 12:00	Closing Remarks & Next Steps	Benoit Taisne
12:00 – 13:30	***Lunch Break***	
13:30 – 17:00	**InVEST workshop "**The Volcano Network Optimisation**"**	Benoit Taisne

Notes for Participants

- Hand over your presentation (in PPT or PDF format file) before the session start, by email to TZWNang@ntu.edu.sg or by USB-drive.
- Presentation Format: Each talk is allocated 15 minutes for presentation followed by 5 minutes for Q&A. Please keep your timing to facilitate smooth transitions between sessions.
- Hands-On Tutorials & Exercises:
  - Conducted individually on participants' laptop.
  - On the 1st day we will help to setup your laptop ready (Conda environment with ObsPy installed).
  - Waveform datasets for tutorials and exercises will be provided, but feel free to bring your own data for exploration.
- Support: NRFi facilitators will assist during setup, tutorials, and exercises.

Venue:

Earth Observatory of Singapore (EOS) – Asian School of the Environment (ASE)
Nanyang Technological University
50 Nanyang Avenue, N2-01b-28b, Singapore 639798

- *Day-1: ASE Lab / Lecture 3 (N1.1-B2-01D)*
- *Day-2: ASE Lab / Lecture 2 (N1.1-B2-01C)*
- *Day-3: ASE 3D Viz Lab (N2-B1C-16C)*
- *Day-4: ASE 3D Viz Lab (N2-B1C-16C)*
- *Day-5: ASE 3D Viz Lab (N2-B1C-16C)*

For any assistant, please contact: +65-91157360 (Christina) or +65-97937320 (Mary)
or email: cwidiwijayanti@ntu.edu.sg or GHLim@ntu.edu.sg

DIRECTION:

The nearest train stations to NTU are Boon Lay (EW27) and Pioneer (EW28) on the East-West Line operated by SMRT Corporation.

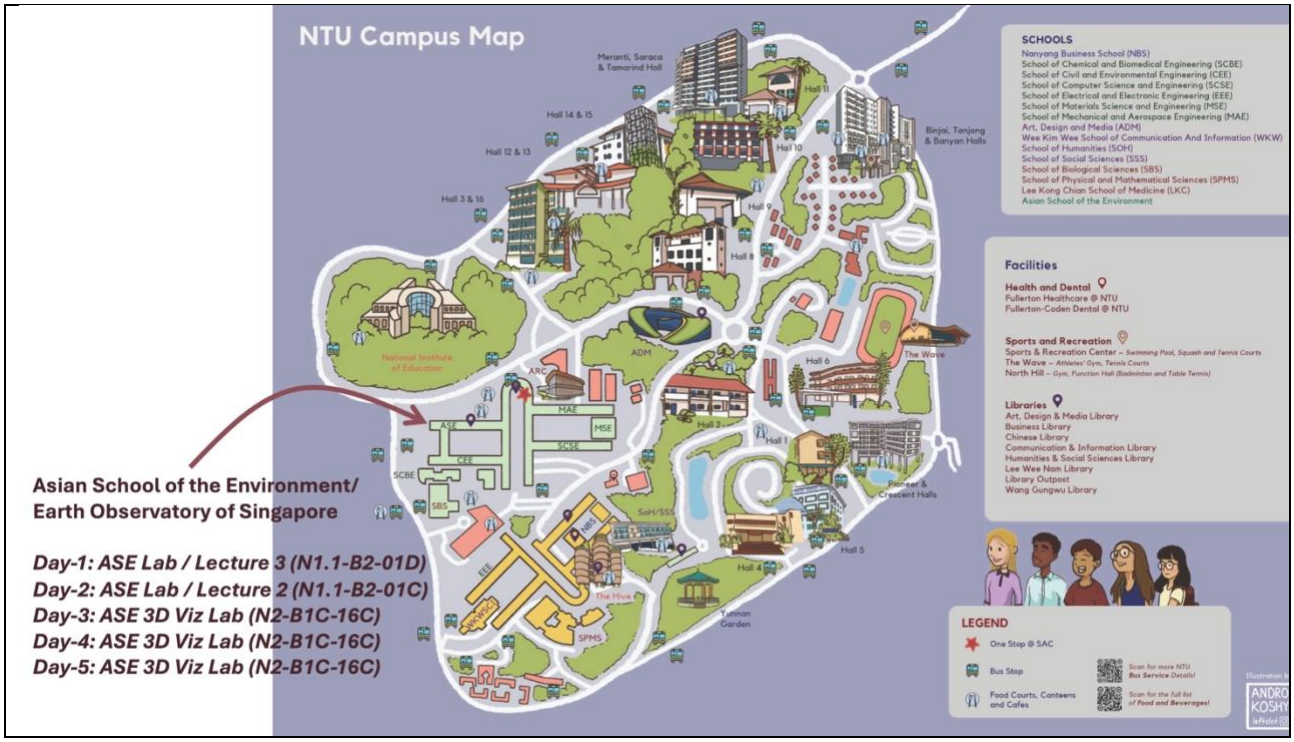
From Boon Lay station, make your way to the adjacent bus interchange. Services 179 & 199 will take you in to NTU.

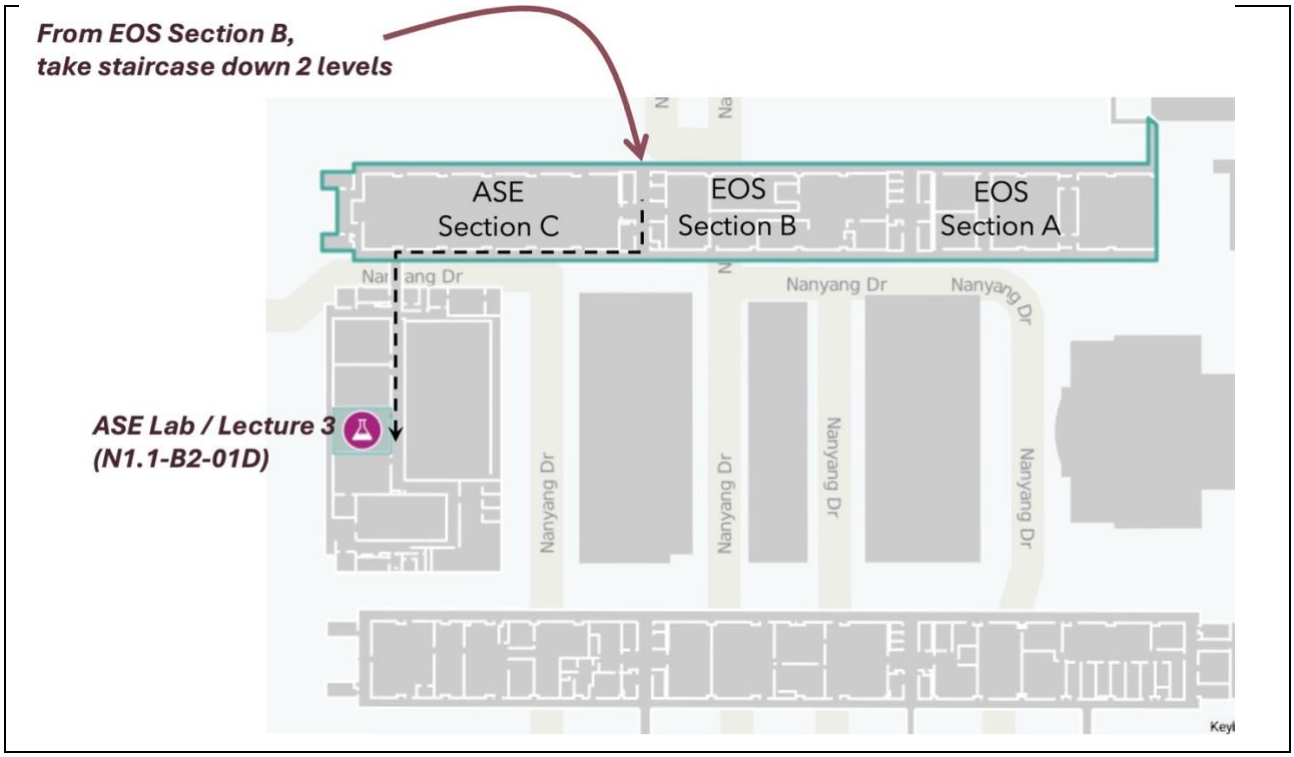
From Pioneer station, hop on bus service 179 at exit A bus stop to NTU. You may also take the Campus Rider at the Pioneer station exit B bus stop.

Bus:

- Both 179 and 199 services depart from Boon Lay Bus Interchange (next to Boon Lay MRT Station) to the University. The services ply from 0600h - 2400h on weekdays and Saturdays, and from 0630h - 0020h on Sundays and Public Holidays.
- 179A provides seasonal weekday morning short trips (from 0730h - 0930h) supplementing Service 179 from Boon Lay Bus Interchange to the University, during the NTU academic term time.
- 179B provides seasonal weekday afternoon and evening short trips (from 1505h - 2000h) from NTU Hall 1 bus stop to Pioneer MRT station exit B bus stop, during the academic term time. More info about the service here.

Alight at bus-stop: Lee Wee Nam library


NTU Campus Map
Asian School of the Environment/
Earth Observatory of Singapore
Day-1: ASE Lab / Lecture 3 (N1.1-B2-01D)
Day-2: ASE Lab / Lecture 2 (N1.1-B2-01C)
Day-3: ASE 3D Viz Lab (N2-B1C-16C)
Day-4: ASE 3D Viz Lab (N2-B1C-16C)
Day-5: ASE 3D Viz Lab (N2-B1C-16C)
SCHOOLS
Facilities
LEGEND


From EOS Section B,
take staircase down 2 levels
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Section C
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Section B
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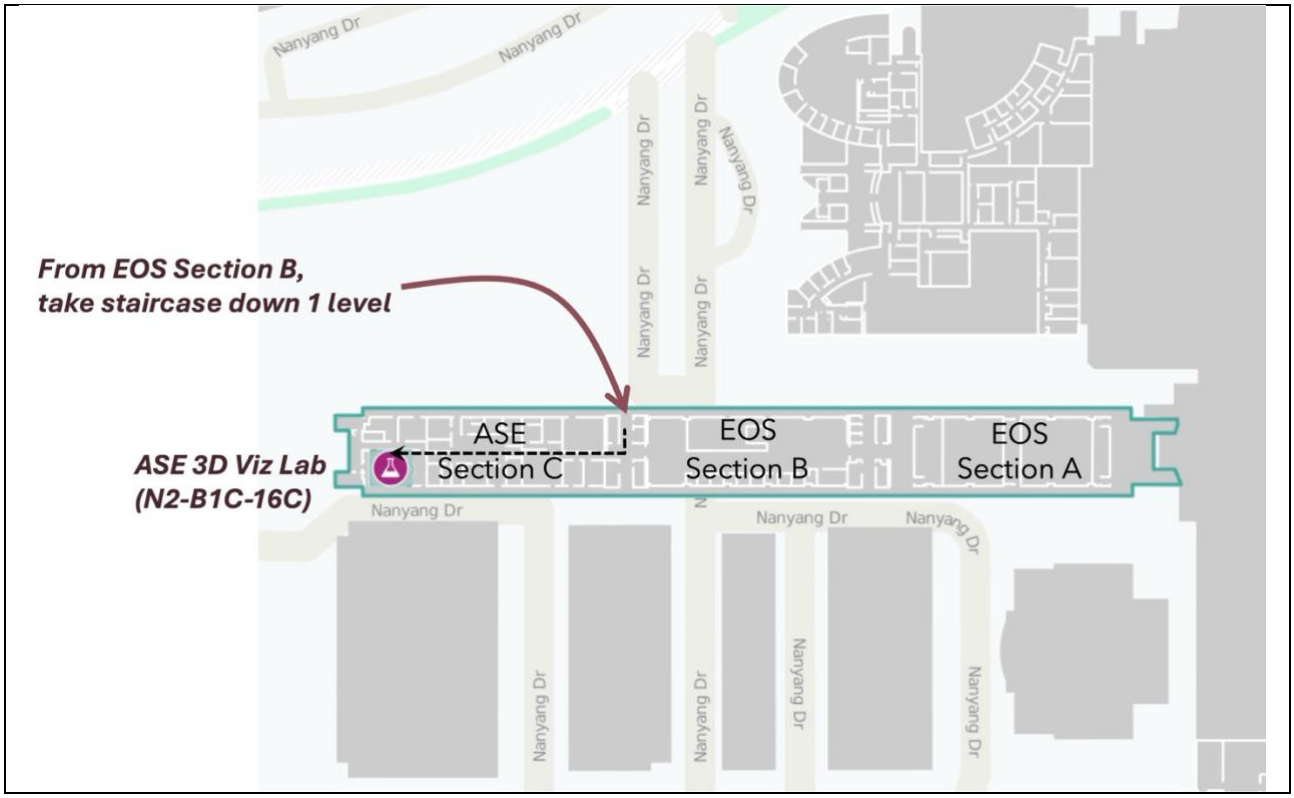
Section A
Nanyang Dr
ASE Lab / Lecture 3
(N1.1-B2-01D)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ASE 3D Viz Lab
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