115年 06月 07日

報告人姓名 Name	Yopi Ruben Serhalawan (游平)
會議時間 Date	From____(2026-05-24) To_____(2026-05-29)
會議地點 Location	Makuhari Messe, Chiba, Japan
會議名稱 Name of Conference	JpGU-AGU Joint Meeting 2026
發表論文題目 Title of paper to be presented	Finite Fault Solutions of the 2025 ML 6.4 Dapu Earthquake and Its Aftershock Spatiotemporal Distribution

1、 參加會議經過(About attending the Conference)

The JpGU-AGU Joint Meeting 2026 was held from 24 to 29 May 2026 at Makuhari Messe, Chiba, Japan, in a hybrid format. The meeting was jointly organized by the Japan Geoscience Union (JpGU) and the American Geophysical Union (AGU), under the theme "Transformative Science for Life & Earth." This international conference brought together researchers from various fields of Earth and space sciences, including seismology, geodesy, tectonics, volcanology, atmospheric sciences, oceanography, and planetary sciences.

I attended the conference for the full meeting period and mainly participated in sessions under Solid Earth Sciences, particularly those related to seismology, earthquake source processes, fault structures, seismic tomography, and seismic hazard. My main contribution was an oral presentation in the session "Seismology: General I" under the Solid Earth Sciences section. The presentation was delivered on 25 May 2026 and was titled "Finite Fault Solutions of the 2025 ML 6.4 Dapu Earthquake and Its Aftershock Spatiotemporal Distribution."

The study presented at the conference focused on the 2025 Dapu earthquake in southwestern Taiwan. By integrating TomoDD earthquake relocation, PCNV-based fault-plane extraction, and finite-fault inversion, the study aimed to clarify the main rupture geometry and its relationship with the aftershock distribution. The presentation emphasized that the Dapu sequence reflects a complex multi-fault system, while the mainshock rupture was mainly dominated by an east-dipping fault plane identified from the PCNV analysis.

2、 參加會議總述 (Conference Experience)

Arrival Day: Saturday, 23 May 2026

I arrived in Japan in the afternoon and traveled to Chiba for the conference. After arriving at the hotel in the evening, I completed the check-in process and prepared for the conference activities scheduled for the following day.

Day 1: Sunday, 24 May 2026

Registration and badge collection at Makuhari Messe. I started attending scientific sessions related to seismology, crustal deformation, earthquake physics, and geodetic observations.

Sessions Attended:

● 09:00 AM – 10:30 AM
Session Title: Seismological Advances in the Ocean [S-SS06]
Location: Exhibition Hall Special Setting (6), Exhibition Hall 7&8, Makuhari Messe
Overview: This session focused on recent advances in ocean seismology, including ocean-bottom seismometer observations, pressure gauges, cabled observatories, and fiber-optic sensing. The presentations discussed offshore seismicity, tsunami observation, submarine earthquakes, and low-frequency tremors in subduction zones.

● 10:45 AM – 12:15 PM
Session Title: Seismological Advances in the Ocean [S-SS06, continued]
Location: Exhibition Hall Special Setting (6), Exhibition Hall 7&8, Makuhari Messe
Overview: This session continued with topics related to marine seismology and offshore seismic imaging. The presentations included applications of distributed acoustic sensing, full-waveform inversion, Bayesian 3-D tomography, and seismic velocity structure in offshore earthquake zones.

● 01:45 PM – 03:15 PM
Session Title: Crustal Deformation [S-GD02]
Location: Exhibition Hall Special Setting (6), Exhibition Hall 7&8, Makuhari Messe
Overview: This session discussed crustal deformation observations related to earthquakes, volcanic activity, and plate motion. The topics included InSAR-based finite-source modeling, fault creep detection, fault locking, slip deficit, and the use of geodetic observations to understand seismic hazards.

● 03:30 PM – 05:00 PM
Session Title: Fault Rheology and Earthquake Physics [S-SS12]
Location: Exhibition Hall Special Setting (7), Exhibition Hall 7&8, Makuhari Messe
Overview: This session focused on earthquake source processes, fault rheology, earthquake nucleation, dynamic rupture, and fracture energy. The presentations were useful for understanding the physical mechanisms that control foreshock, mainshock, and aftershock behavior.

● 05:15 PM – 07:00 PM
Poster Sessions: Seismological Advances in the Ocean [S-SS06] and Crustal Deformation [S-GD02]

Location: Poster Hall, Exhibition Hall 7&8, Makuhari Messe
Overview: In the evening, I attended poster sessions related to ocean seismology and crustal deformation. The posters covered topics such as ocean-bottom seismic observations, marine seismic tomography, offshore earthquake processes, GNSS, InSAR, finite-source modeling, fault slip inversion, and deformation monitoring. These poster sessions helped broaden my understanding of how seismic and geodetic datasets can be integrated to study earthquake source processes and fault-zone behavior.

Day 2: Monday, 25 May 2026

Sessions Attended:

● 09:00 AM – 10:30 AM
Session Title: Uncovering Stress Accumulation and Fault Strengthening of Megathrust Earthquakes [S-CG63]
Location: 301A, International Conference Hall, Makuhari Messe
Overview: This session focused on stress accumulation, fault strengthening, and the recovery of fault strength along megathrust source regions. The presentations discussed shallow plate-boundary behavior, fault locking, fault-zone hydrogeology, ocean drilling observations, and the role of geological and geophysical data in understanding large subduction earthquakes.

● 10:45 AM – 12:15 PM
Session Title: Seismology: General I [S-SS05]
Location: Exhibition Hall Special Setting (8), Exhibition Hall 7&8, Makuhari Messe
Overview: This session covered a broad range of seismological studies, including seismic tomography, crustal imaging, velocity structure, and waveform inversion. Several presentations focused on imaging complex tectonic regions, including eastern Indonesia, northern Vietnam, and earthquake rupture zones. The session provided useful insights into how seismic imaging methods can improve the interpretation of subsurface structures and earthquake processes.

● 01:45 PM – 03:15 PM
Session Title: Seismology: General I [S-SS05, continued]
Location: Exhibition Hall Special Setting (8), Exhibition Hall 7&8, Makuhari Messe
Overview: This session continued with topics related to seismic velocity changes, 3-D seismic data analysis, hidden fault geometry, seismic anisotropy, rupture modeling, and radiated energy. The presentations were useful for understanding how seismic observations and numerical approaches can be used to study earthquake source processes and fault structures.

● 03:30 PM – 05:00 PM
Session Title: Seismology: General I [S-SS05, continued]
Location: Exhibition Hall Special Setting (8), Exhibition Hall 7&8, Makuhari Messe
Overview: This session focused on earthquake source properties, including rupture directivity, stress drop, finite-fault solutions, and earthquake prediction. These topics were closely related to my research interest in earthquake rupture processes and finite-fault modeling.

● 04:00 PM – 04:15 PM
My Oral Presentation

Presentation No.: SSS05-14
Title: Finite Fault Solutions of the 2025 ML 6.4 Dapu Earthquake and Its Aftershock Spatiotemporal Distribution
Presenter: Yopi Ruben Serhalawan
Session: Seismology: General I [S-SS05]
Location: Exhibition Hall Special Setting (8), Exhibition Hall 7&8, Makuhari Messe
Overview: I delivered my oral presentation on the 2025 Dapu earthquake sequence in southwestern Taiwan. The presentation discussed the relationship between the mainshock rupture model and the relocated aftershock distribution. The main result showed that the Dapu sequence cannot be explained by a single simple fault plane, but instead reflects a complex multi-fault system around the mainshock source region. The finite-fault modeling results suggest that the main rupture was mainly controlled by an east-dipping fault plane, while nearby west-dipping and other clustered structures were likely activated after the main rupture. During the discussion, the main question was related to the PCNV method and how the relocated aftershock distribution was used to identify candidate fault planes.

● 05:15 PM – 07:00 PM
Poster Sessions
Location: Poster Hall, Exhibition Hall 7&8, Makuhari Messe
Overview: In the evening, I attended several poster sessions related to seismology, seismic hazard, megathrust earthquakes, crustal structure, deep Earth processes, and environmental seismology. These included sessions such as Integrative Seismic and Secondary Hazard/Risk Assessment [S-CG64], Seismology: General I [S-SS05], Uncovering Stress Accumulation and Fault Strengthening of Megathrust Earthquakes [S-CG63], Coupling of Deep Earth and Surface Processes [S-IT20], Crustal Structure [S-SS13], and Environmental Seismology [S-SS11]. The poster sessions provided a good opportunity to explore related studies and broaden my understanding of earthquake source processes, seismic hazard, crustal deformation, and fault-zone behavior.

Day 3: Tuesday, 26 May 2026

Sessions Attended:

● 09:00 AM – 10:30 AM
Session Title: Science of Slow and Fast Earthquakes [S-CG56]
Location: Convention Hall (CH-B), International Conference Hall, Makuhari Messe
Overview: This session focused on the connection between slow and fast earthquakes, including fault slip behavior, plate coupling, fluids, and megathrust earthquake processes. The presentations discussed how geophysical observations, seismic and electromagnetic imaging, and interdisciplinary approaches can improve our understanding of earthquake nucleation and rupture behavior in subduction zones.

● 10:45 AM – 12:15 PM
Session Title: Science of Slow and Fast Earthquakes [S-CG56, continued]
Location: Convention Hall (CH-B), International Conference Hall, Makuhari Messe
Overview: This session continued with topics related to slow slip events, seafloor geodesy, subduction-zone deformation, and the interaction between slow earthquakes and seismogenic zones. The talks were useful for understanding how geodetic and seismological observations can be combined to study different slip modes along plate boundaries.

● 01:45 PM – 03:15 PM
Session Title: Seismicity [S-SS04]
Location: International Conference Room (IC), International Conference Hall, Makuhari Messe
Overview: This session focused on the spatiotemporal characteristics and governing mechanisms of seismicity. The presentations discussed earthquake catalogs, machine-learning-based event detection, hypocenter relocation, and seismicity patterns. These topics were closely related to my research because reliable earthquake catalogs and accurate event locations are important for interpreting aftershock distributions and fault structures.

● 03:30 PM – 05:00 PM
Session Title: Seismicity [S-SS04, continued]
Location: International Conference Room (IC), International Conference Hall, Makuhari Messe
Overview: This session continued with studies on seismic quiescence, activation patterns, fault activity, stress fields, and earthquake sequences. The presentations provided useful examples of how seismicity analysis can be used to investigate earthquake preparation processes, active fault behavior, and regional tectonic conditions.

● 05:15 PM – 07:00 PM
Poster Sessions: Seismicity [S-SS04] and Wave Phenomena in and around Seismology and Solid Earth Sciences [S-SS14]
Location: Poster Hall, Exhibition Hall 7&8, Makuhari Messe
Overview: In the evening, I attended poster sessions related to seismicity and wave phenomena. The Seismicity poster session covered earthquake catalogs, foreshock and aftershock activity, repeating earthquakes, seismicity patterns, and statistical analyses of earthquake occurrence. The Wave Phenomena session focused on seismic waves, ambient noise, seismic interferometry, wave propagation, and related observational and theoretical approaches. These poster sessions broadened my understanding of how seismicity and wavefield analyses can be applied to study earthquake processes and Earth structure.

Day 4: Wednesday, 27 May 2026

Sessions Attended:

● 09:00 AM – 10:30 AM
Session Title: Science of Slow and Fast Earthquakes [S-CG56]
Location: Convention Hall (CH-B), International Conference Hall, Makuhari Messe
Overview: This session focused on slow and fast earthquake processes, including quasi-static deformation, brittle failure, distributed acoustic sensing, and the transition between slow slip and regular earthquakes. The presentations provided useful perspectives on how modern observation methods can capture different types of fault slip and deformation processes.

● 10:45 AM – 12:15 PM
Session Title: Science of Slow and Fast Earthquakes [S-CG56, continued]
Location: Convention Hall (CH-B), International Conference Hall, Makuhari Messe
Overview: This session continued with topics related to slow slip, tremor, volcanic and subduction systems, and geophysical monitoring. The talks highlighted the importance of combining seismological and geodetic observations to understand how slow deformation may interact with earthquake and volcanic processes.

● 01:45 PM – 03:15 PM
Session Title: Science of Slow and Fast Earthquakes [S-CG56, continued]
Location: Convention Hall (CH-B), International Conference Hall, Makuhari Messe
Overview: This session discussed laboratory earthquakes, spectral source scaling, fault slip behavior, and the physical processes that control rupture size and source characteristics. The session was useful for understanding earthquake source processes from both observational and experimental perspectives.

● 03:30 PM – 05:00 PM
Session Title: Science of Slow and Fast Earthquakes [S-CG56, continued]
Location: Convention Hall (CH-B), International Conference Hall, Makuhari Messe
Overview: This session focused on fault-zone strength, repeating earthquakes, rupture dynamics, and numerical modeling of earthquake processes. The presentations provided insights into how fault heterogeneity and frictional properties can influence earthquake recurrence and rupture behavior.

● 05:15 PM – 07:00 PM
Poster Sessions
Location: Poster Hall, Exhibition Hall 7&8, Makuhari Messe
Overview: In the evening, I attended several poster sessions related to slow and fast earthquakes, strong ground motion, crustal fluids, and new methods in seismicity analysis. These included Science of Slow and Fast Earthquakes [S-CG56], Strong Ground Motion and Earthquake Disaster [S-SS16], Crustal Fluids and Deformation [S-CG52], and New Trends in Data Acquisition, Analysis and Interpretation of Seismicity [S-SS07]. The posters covered topics such as slow tremor, postseismic deformation, ground motion, earthquake disaster mitigation, groundwater and crustal strain observations, distributed fiber-optic sensing, seismic interferometry, and AI-based seismicity analysis. These sessions were useful for broadening my understanding of earthquake processes from source physics to observation, monitoring, and hazard-related applications.

Day 5: Thursday, 28 May 2026

Sessions Attended:

● 09:00 AM – 10:30 AM
Session Title: Oceanic Plate as Inputs to Subduction Zone and the Subduction Initiation [S-CG55]
Location: Convention Hall (CH-B), International Conference Hall, Makuhari Messe
Overview: This session focused on the role of oceanic plates as inputs to subduction zones and the processes related to subduction initiation. The presentations discussed oceanic plate evolution, plate bending, fault development, subduction-related magmatism, and the transport of water and carbon into the deep Earth.

● 10:45 AM – 12:15 PM
Session Title: Oceanic Plate as Inputs to Subduction Zone and the Subduction Initiation [S-CG55, continued]
Location: Convention Hall (CH-B), International Conference Hall, Makuhari Messe
Overview: This session continued with topics related to mantle hydration, plate bending, outer-rise faulting, seismic structure, and full-waveform inversion. The talks provided useful

insights into how the physical and chemical properties of incoming oceanic plates influence subduction-zone processes and earthquake-related structures.

● 01:45 PM – 03:15 PM
Session Title: Advancing Earth Science through Fiber Optic Sensing Techniques and Integrated Analysis [S-TT48]
Location: Convention Hall (CH-A), International Conference Hall, Makuhari Messe
Overview: This session focused on the application of fiber-optic sensing techniques, such as Distributed Acoustic Sensing (DAS), for Earth science studies. The presentations discussed high-resolution subsurface imaging, earthquake monitoring, tsunami monitoring, and real-time seismic data processing using fiber-optic cables.

● 03:30 PM – 05:00 PM
Session Title: Advancing Earth Science through Fiber Optic Sensing Techniques and Integrated Analysis [S-TT48, continued]
Location: Convention Hall (CH-A), International Conference Hall, Makuhari Messe
Overview: This session continued with applications of DAS for studying earthquake source processes, micro-to-small earthquakes, and integrated seismic observations. The session was useful for understanding how dense fiber-optic observations can improve earthquake monitoring and provide new perspectives on seismic source processes.

● 05:15 PM – 07:00 PM
Poster Sessions
Location: Poster Hall, Exhibition Hall 7&8, Makuhari Messe
Overview: In the evening, I attended several poster sessions related to subduction zones, fluid-rock interactions, fiber-optic sensing, and megathrust earthquake processes. These included Frontiers in Fluid-Rock Interactions [S-CG57], Oceanic Plate as Inputs to Subduction Zone and the Subduction Initiation [S-CG55], Advancing Earth Science through Fiber Optic Sensing Techniques and Integrated Analysis [S-TT48], and From Precursors to Recovery: Evolving Insights into the 2011 Mw 9.0 Tohoku-oki Earthquake [S-SS09]. The posters covered topics such as fluid circulation, rock deformation, plate bending, mantle hydration, DAS-based monitoring, postseismic deformation, and earthquake-cycle processes. These sessions broadened my understanding of the links between subduction dynamics, seismic observations, and earthquake hazards.

Day 6: Friday, 29 May 2026

Sessions Attended:

● 09:00 AM – 10:30 AM
Session Title: Advancing Earth Science through Fiber Optic Sensing Techniques and Integrated Analysis [S-TT48]
Location: Convention Hall (CH-B), International Conference Hall, Makuhari Messe
Overview: This session focused on the application of fiber-optic sensing techniques, especially Distributed Acoustic Sensing (DAS), for earthquake monitoring and subsurface imaging. The presentations discussed low-frequency earthquake detection, offshore monitoring using submarine cables, and the use of DAS for improving seismic observation in regions where conventional seismic stations are limited.

● 10:45 AM – 12:15 PM
Session Title: Active Faults and Paleoseismology [S-SS10]
Location: Exhibition Hall Special Setting (6), Exhibition Hall 7&8, Makuhari Messe
Overview: This session focused on active faults, paleoseismology, and the use of geological and historical information to understand past earthquakes and future seismic hazards. The presentations included studies on fault geometry, moment tensor inversion, uplift records, historical earthquakes, and seismic hazard assessment.

● 01:45 PM – 03:15 PM
Session Title: Active Faults and Paleoseismology [S-SS10, continued]
Location: Exhibition Hall Special Setting (6), Exhibition Hall 7&8, Makuhari Messe
Overview: This session continued with studies on offshore active faults, high-resolution seismic reflection profiling, borehole stratigraphy, and Holocene fault activity. The talks were useful for understanding how geological and geophysical data can be combined to identify active fault structures and reconstruct past earthquake events.

● 03:30 PM – 05:00 PM
Session Title: Active Faults and Paleoseismology [S-SS10, continued]
Location: Exhibition Hall Special Setting (6), Exhibition Hall 7&8, Makuhari Messe
Overview: This session discussed offshore active faults, seismic reflection surveys, trenching, and fault-related deformation. The presentations provided useful examples of how active fault mapping and paleoseismic investigations contribute to long-term earthquake hazard evaluation.

● 05:15 PM – 07:00 PM
Poster Sessions: Active Faults and Paleoseismology [S-SS10] and Seismology: General II [S-SS15]
Location: Poster Hall, Exhibition Hall 7&8, Makuhari Messe
Overview: In the evening, I attended poster sessions related to active faults, historical earthquakes, paleoseismology, seismic hazard, and general seismology. The posters covered topics such as historical earthquake records, tsunami source characteristics, uplifted marine terraces, active fault deformation, earthquake disaster prevention, and megathrust earthquake hazards. These sessions provided useful perspectives on how historical, geological, and seismological data can be integrated to improve earthquake hazard assessment.

Overall, the final day of the conference provided a useful conclusion to my participation in the JpGU-AGU Joint Meeting 2026. The sessions on fiber-optic sensing, active faults, paleoseismology, and general seismology helped broaden my understanding of modern seismic observation techniques, active fault studies, and long-term earthquake hazard assessment.

3、 建議(Suggestions)

The JpGU-AGU Joint Meeting 2026 was well organized and provided a valuable platform for researchers and students to exchange ideas across different fields of Earth and space sciences. The hybrid format also made the conference more accessible for international participants and allowed broader participation in both oral and poster sessions.

Based on my experience, one suggestion is to improve the technical support for oral presentations. It would be helpful if each presentation room provided a reliable pointer or laser pointer for speakers and ensured that the presentation computer runs smoothly. During my presentation, no pointer was available, and using the mouse as a pointer was difficult because the computer responded slowly. Providing better presentation tools would help speakers explain their slides more clearly.

Another suggestion is to provide more structured opportunities for early-career researchers and graduate students to interact with senior scientists. Although the poster sessions were helpful for direct discussion, additional networking sessions grouped by research field, such as seismology, tectonics, geodesy, and earthquake hazards, would make it easier for students to build academic connections. Overall, the conference was very useful for my academic development.

4、 其他 (Other)

Attending the JpGU-AGU Joint Meeting 2026 was an important academic experience for me. Through this conference, I had the opportunity to present my research on the 2025 Dapu earthquake sequence to an international audience and receive useful feedback, especially regarding the PCNV method and its application to fault-plane identification from relocated aftershock distributions.

The sessions I attended also broadened my understanding of current research directions in seismology and related fields, including earthquake source processes, seismic tomography, active faults, paleoseismology, slow and fast earthquakes, distributed acoustic sensing, crustal deformation, and seismic hazard assessment. These topics are highly relevant to my ongoing PhD research and will help improve my future analysis, manuscript preparation, and dissertation work.

I would like to express my sincere gratitude to CTGS and my advisor, Prof. Po-Fei Chen, for their support and guidance. Their support made it possible for me to attend this international meeting and present my research at the JpGU-AGU Joint Meeting 2026.

Documentations:

1. Photo at Makuhari Messe, Chiba, Japan and Oral presentation in the “Seismology: General I” session [S-SS05]

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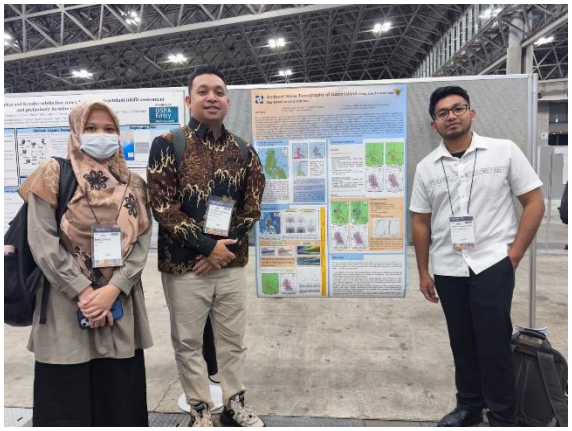
<td>  </td>
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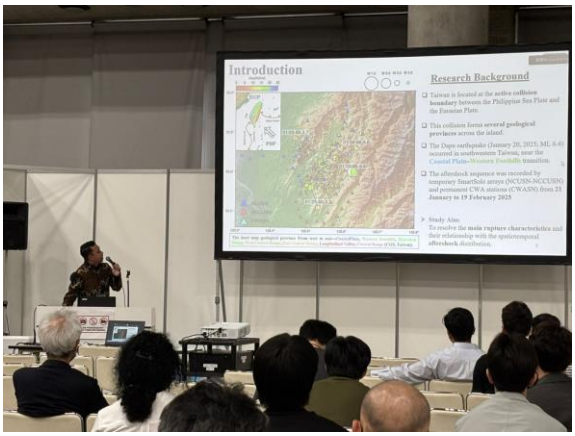
<td> 
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