IconSpace®

9th International Conference on Space Science and Communication (IconSpace 2025)

PROGRAMME BOOK

23-25 SEPTEMBER 2025

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SPACE SCIENCE & TECHNOLOGY FOR A RESILIENT FUTURE

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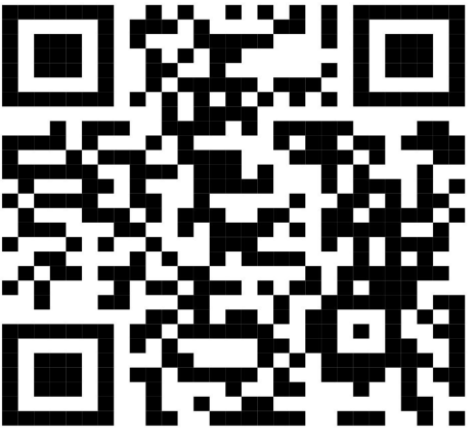

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CONFERENCE BACKGROUND

The 9th International Conference on Space Science and Communication (IconSpace 2025) will be held in 2025 with the theme "Space Science & Technology for a Resilient Future." The objective of IconSpace is to provide a platform for researchers, scientists, academicians, and industry professionals to share, discuss, and explore research and findings in space science, technology, and governance.

The inaugural IconSpace was organised in 2009, and since then, it has been successfully held biennially at various locations across Malaysia. Over the years, space science and technology have become increasingly vital to the sustainable development of natural resources, telecommunications, and meteorology. With growing participation in the past eight conferences, the Space Science Centre (ANGKASA), Universiti Kebangsaan Malaysia (UKM), is honoured to host the 9th edition of IconSpace.

Each edition has featured themes aligned with emerging technological advancements, as follows:

- IconSpace 2011: Towards Exploring the Equatorial Phenomena
- IconSpace 2013: Facing the Challenges of the Solar Maximum
- IconSpace 2015: Space Technology for Humanity
- IconSpace 2017: Space Science for Sustainability
- IconSpace 2019: Advancing Space Science for Societal Sustainability
- IconSpace 2021: Space Science and Communication System for Sustainability
- IconSpace 2023: Advanced Space Technology: Accelerating Global Agenda

Conference proceedings from past events have been published by well-recognised publishers such as IEEE, Springer Nature, and the Journal of Physics: Conference Series. For IconSpace 2025, accepted papers will be published in one of the following outlets:

- Springer Proceedings in Physics (indexed by Scopus)
- Jurnal Kejuruteraan (indexed by Scopus, ESCI–WOS)

2025 International Conference on Space Science and Communication (IconSpace 2025) took place September 23-25, 2025 in Melaka, Malaysia.

FOREWORD BY DIRECTOR OF INSTITUTE OF CLIMATE CHANGE, UNIVERSITI KEBANGSAAN MALAYSIA

Assalamualaikum warahmatullahi wabarakatuh, Peace be Upon You.

Dear Esteemed Guests, Presenters, and Participants,

On behalf of the Institute of Climate Change (IPI), Universiti Kebangsaan Malaysia (UKM), I am delighted to welcome all of you to the 9th International Conference on Space Science and Communication (IconSpace 2025).

It is a great honour for IPI to host this long-standing conference series, which has grown over the past 16 years into a respected platform for advancing research, innovation and dialogue in space science and communication. We are heartened by the continued support from universities, research centers, space agencies, and industries around the world that have once again come together to share knowledge and forge new collaborations.

I encourage you to make the most of this opportunity to listen, connect and contribute actively to the rich exchange of ideas that defines IconSpace. I am confident that the insights exchanged and the partnerships formed throughout this conference will spark innovative solutions and lead to impactful research outcomes.

My sincere congratulations to the organizing committee for their tireless efforts in making IconSpace 2025 a reality. I would also like to extend heartfelt thanks to our keynote and invited speakers, reviewers, International Advisory Committee and sponsors for their valuable contributions.

Wishing you all a productive, engaging, and memorable conference. May your time at IconSpace 2025 be filled with meaningful discussions, new insights, and enduring connections. Thank you.

Associate Professor Dr. Zaini Sakawi
Director
Institute of Climate Change (IPI)
Universiti Kebangsaan Malaysia

FOREWORD BY GENERAL CHAIR OF ICONSPACE 2025

Welcome to the 9th International Conference on Space Science and Communication (IconSpace 2025), proudly organized by the Space Science Centre (ANGKASA) under the Institute of Climate Change (IPI), Universiti Kebangsaan Malaysia (UKM).

Now in its ninth edition, IconSpace continues to serve as a platform for researchers, academicians, and industry experts to connect, collaborate and advance knowledge in the fields of space science and communication. With this year's theme, "Space Science & Technology for a Resilient Future", we aim to foster discussions and innovations that support sustainability and resilience through space technologies.

The technical program for IconSpace 2025 features five keynote speakers, eight invited talks, and contributed papers from a diverse range of countries, including Japan, Thailand, China, Indonesia, Pakistan, Bangladesh, the Philippines, Malaysia, India, the United States, Nigeria, Egypt, the United Arab Emirates, Portugal, Germany, and Taiwan. These contributions cover key thematic areas such as Space Sciences, Atmospheric and Magnetospheric Sciences, Remote Sensing and Applications, as well as Satellite and Communication Technology.

We are pleased to announce that the proceedings of IconSpace 2025 will be considered to be published in the Springer Proceedings in Physics Book Series, which is indexed in Scopus, thereby further enhancing the visibility and impact of the research presented here. In addition, we also accept submissions written in Bahasa Melayu, limited to extended abstracts only. High-quality Bahasa Melayu papers presented at the conference will be considered for publication in Jurnal Kejuruteraan, a peer-reviewed journal indexed by Web of Science (ESCI), Scopus and MyCITE.

I would like to express my deepest gratitude to the International Advisory Committee (IAC), paper reviewers, distinguished keynote and invited speakers. Thank you also to the committee who have worked tirelessly behind the scenes. Their dedication and commitment have been instrumental in making this conference a success. We would also like to thank our sponsors for their contribution. To all authors and participants, thank you for your valuable participation. Your research, ideas, and presence are what make IconSpace a vibrant and engaging forum for knowledge sharing, learning, and future collaboration. We hope you have a fruitful and memorable experience at IconSpace 2025.

Prof. Dr. Mohamad Tariqul Islam
General Chair
9th International Conference on
Space Science and Communication (IconSpace 2025)

FOREWORD BY CHAIR OF TECHNICAL PROGRAM COMMITTEE

Welcome to the 9th International Conference on Space Science and Communication (IconSpace 2025). As the Technical Program Chair, I am honored to be a part of this esteemed gathering organized by the Space Science Centre (ANGKASA) under the Institute of Climate Change, UKM.

With the theme *"Space Science & Technology for a Resilient Future"*, IconSpace 2025 explores the frontiers of space science and communication while emphasizing practical applications that benefit society. The program features five keynote speakers from Japan, China, and Malaysia's industry, together with eight invited speakers from academia and industry representing China, Japan, Malaysia, and the Philippines. Session tracks span Space Sciences, Atmospheric and Magnetospheric Sciences, Remote Sensing and Applications, and Satellite and Communication Technology, offering a comprehensive view of the field.

This year, a total of 87 papers were submitted for review, and 65 were accepted after the peer-review process. A unique feature of IconSpace 2025 is the dedicated session in Bahasa Melayu, hosted by Universiti Kebangsaan Malaysia, which sets it apart from other international conferences. The strong support of both international and local reviewers has ensured a high-quality and innovative program. Selected English-written papers will feature in the renowned Book Series Springer Proceedings in Physics, indexed by Scopus. Meanwhile, Bahasa Melayu papers are set for consideration by Jurnal Kejuruteraan, indexed by Scopus and ESCI-WoS.

I extend my heartfelt thanks to our hardworking organising committee. Their unwavering dedication guarantees that we can continue to provide this essential forum for scientific study and debate.

IconSpace 2025 brings together a global community of researchers, professionals, and visionaries. Your participation empowers us to advance space science for societal benefit. I am looking forward to the insights and ideas that will arise from our knowledge exchange during this conference.

Thank you and enjoy the conference!

Sincerely,
Assoc. Prof. Dr. Mohd Fais Mansor
Chair of Technical Program Committee (TPC)
9th International Conference on
Space Science and Communication (IconSpace 2025)

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KEYNOTE SPEAKER 1

Prof. Naoki Shinohara
Research Institute for Sustainable Humanosphere (RISH),
Kyoto University, Japan

09:00 – 09:45,
23 September 2025
Ballroom II

Recent Progress of Space-Based Solar Power and Related Wireless Power Transfer Technology

ABSTRACT

The Space Based Solar Power (SBSP) is a satellite with huge solar cells and a wireless power transfer (WPT) system as one of the hopeful future space technologies and a CO2-free stable power station for the humanosphere (human + earch(sphare). Recently, there are some ongoing R&D project for the SBSP in the world. In Japan, we have a continuous national R&D SBSP project mainly focused on the WPT from 2009. In the next, we will launch a WPT satellite in a 450km orbit to transmit the electricity from the satellite to the Earth by microwaves with accurate beam control. In this talk, I introduce the recent progress of the Space Based Solar Power and Related Wireless Power Transfer Technology.

Biography: Naoki Shinohara received the B.E. degree in electronic engineering, the M.E. and Ph.D (Eng.) degrees in electrical engineering from Kyoto University, Japan, in 1991, 1993 and 1996, respectively. He was a research associate at Kyoto University since 1996. Since 2010, he has been a professor at Kyoto University. He has been engaged in research on Solar Power Station/Satellite and Microwave Power Transmission systems. He is a Fellow of IEEE and URSI, IEEE MTT-S elected AdCom member (2022-2027), IEEE MTT-S Technical Committee 25 (Wireless Power Transfer and Conversion) former chair and member, IEEE MTT-S Standard Committee chair, IEEE MTT-S MGA (Member Geographic Activities) Region 10 regional coordinator, IEEE WPT Initiative member, IEEE Wireless Power Transfer Conference & Expo founder and

Steering committee member, URSI commission D (Electronics and Photonics) former chair, the first chair and technical committee member on IEICE Wireless Power Transfer in Japan, Japan Society of Electromagnetic Wave Energy Applications former president and adviser, Space Solar Power Systems Society president, and was IEEE MTT-S Distinguish Microwave Lecturer (2016-18). He was the recipient of the 2023 IEEE Journal of Microwaves Best Paper Award, the 2022 Award of Minister of Education, Culture, Sports, Science and Technology in Japan, and the 2023 IEICE Achievement Award in Japan. His supervised students were the recipient of 100 awards from 2011 to 2024. He has been the author of over 140 reviewed journal papers, over 110 keynotes and invited speakers in international conferences, and over 100 other invited speakers including 55 DMLs. He has collaborated with over 150 companies for the WPT and microwave applications in 30 years. He is the co-inventor of 35 patents and 20 submitting patents. He has worked to harmonize the academia and industry of the WPT. He has organised the Wireless Power Transfer Consortium for Practical Applications (WiPoT), and Wireless Power Management Consortium (WPMc) in Japan as a chair from 2013 with over 40 companies to establish the WPT market and to encourage the WPT business. His books are “Wireless Power Transfer via Radiowaves” (ISTE Ltd. and John Wiley & Sons, Inc., 2014), “Recent Wireless Power Transfer Technologies Via Radio Waves (ed.)”, (River Publishers, 2018), “Far-Field Wireless Power Transfer and Energy Harvesting”, (Artech House, 2022), “Theory and Technology of Wireless Power Transfer: Inductive, Radio, Optical, and Supersonic Power Transfer” (CRC Press, 2024), and “Wireless Power Transfer: Theory, Technology, and Applications (2nd Edition) (ed.)” (IET, 2018 and 2014), and some English, Japanese, and Chinese translated textbooks of WPT.

KEYNOTE SPEAKER 2

Prof. Haoyu Lu
School of Space and Earth Sciences,
Beihang University, China

09:45 – 10:30,
23 September 2025
Ballroom II

Numerical Simulation of Interaction between the Solar Wind and Mars

ABSTRACT

The Martian space environment is crucial for understanding the evolution and habitability of terrestrial planets. To investigate the global magnetic field structure, plasma distribution, and transport characteristics resulting from the interaction between the solar wind and Mars, we have developed a global, multi-scale, multi-layer, and self-consistent numerical model. This model incorporates four ionospheric species, accounts for chemical reactions among the species, and includes small-scale ion kinetic effects. Using this model, we study the physical properties of Mars' induced magnetosphere and ionosphere, as well as the plasma distribution and ion transport characteristics under solar wind interaction. Furthermore, we explore how variations in solar wind dynamic pressure influence these physical properties and the ion escape mechanisms at Mars.

Biography: Dr. Haoyu Lu is a Professor at the School of Space and Environment at Beihang University, China, and a Visiting Professor at Lancaster University, UK. His research interests focus on the structure and dynamics of planetary magnetospheres, plasma interactions with planetary bodies, and the magnetic properties of planetary bodies within the solar system. Over the course of his career, Dr. Lu has authored and co-authored 50 peer-reviewed journal papers.

His work explores the intricate interactions between solar winds and planetary atmospheres, with particular emphasis on the magnetospheres of Mars, Venus, and other celestial bodies. His research has contributed significantly to the understanding of planetary magnetic fields and their role in space weather phenomena.

KEYNOTE SPEAKER 3

Prof. Kefei Zhang
School of Environment Science and Spatial Informatics, China University of Mining and Technology

11:00 – 11:45,
23 September 2025
Ballroom II

Geospatial for Space Mining – Quest the Frontier of Deep Space Economy from a Chinese Perspective

ABSTRACT

Space resources exploitation and utilization (SREU) is a new territory of global competition that has attracted significant international interest and investment over the past decade. The US Space Act in 2015 was a tipping point that spurred the development of promising space technologies and accelerated their infusion into commercial applications. The primary purpose of extra-terrestrial mining (aka space mining) is to search for minerals, elements and water from asteroids and minor planets that are close to the Earth.

This presentation will first provide an overview of our 10-year effort in space mining, including its background/rationale, the disciplines involved, major research conducted, notable achievements, as well as challenges and opportunities from scientific, technological, and engineering perspectives, alongside the development roadmap etc. The Research Centre of Space Mining, as a dedicated catalyst for SREU, was officially established in 2018 by CUMT to lead relevant activities in China, which is regarded as the world's first of its kind. The aims/objectives along with its mission statements will be outlined.

It is our opinion that the integration of mining and geospatial technologies is a "must" in the early stages of space endeavor of resources exploration and utilization. The current status of space mining from a geodetic perspective and the potential targets of space resources exploration are presented. Based on the current level of scientific and technological development and the potential value of known space resources, we argue that mining the near-Earth asteroids as the first step is inevitable and will

be one of the major trends in space resources exploration and an important part of the space economy. The priorities of space mining are identified, which includes but not limited to space resources exploitation, the design and manufacture of space intelligent robots, development of a comprehensive geometrical and physical situational awareness capability for the targeted celestial bodies of interest, prospecting and mining of space resources, and the safety and in-situ utilization of space resources. Finally, we will present a visionary roadmap of SREU from a Chinese perspective aimed at fostering interaction, exchange and discussion among international experts who share the same interest and passion.

Biography: Kefei Zhang, is a Distinguished Professor and Director of the Institute of Resources and Environment at China University of Mining and Technology, Chair Professor of Shandong University of Science and Technology and Honorary Professor of RMIT University in Australia. He is a Fellow of the International Association of Geodesy and the Chinese Society for Geodesy Photogrammetry and Cartography and served as 2008 President of the International Association of Chinese Professionals in Global Navigation Satellite Systems.

He has authored over 550 articles, holds 50 patents and received 50+ prestigious awards/recognitions alongside 60+ large competitive research grants in Europe, Australia and China. He has supervised over 120 HDR students and post-doctoral researchers in the past 30 years. As a frequent presenter, he has delivered 150+ invited/keynote speeches in a variety of international events.

His research spans GPS/GNSS; atmospheric modelling; weather and climate change; space resources exploitation and utilisation; people mobility and object tracking; platform technologies for holographic sensing and situational awareness.

Characterised with inter-/intra-disciplinary integration, scientific and technological originality and world-frontier topical approaches, his work is committed to addressing critical challenges of great national and global significance and providing innovative solutions with significant scientific, technological, and societal benefits.

KEYNOTE SPEAKER 4

Dr. Takuya Tsugawa
Director, Space Environment Laboratory,
National Institute of Information and
Communications Technology (NICT),
Japan

09:00 – 09:45,
24 September 2025
Ballroom II

Operations and Research on Space Weather Forecast in Japan

ABSTRACT

Explosive phenomena on the solar surface, such as solar flares, can disturb the space environment around Earth. Depending on the scale of these disturbances, they may affect critical infrastructure such as telecommunications and broadcasting, space system operations, aircraft navigation, satellite positioning system, and power systems. These variations in the space environment are referred to as space weather. To minimize the impact of space weather, the National Institute of Information and Communications Technology (NICT) has been conducting space weather forecasts in Japan since 1988, providing information via its website and email on the current state of space weather, 24-hour forecasts, and space weather events such as solar flares. NICT is also engaged in research and development to enhance real-time monitoring and forecasting technologies and to provide information aligned with user needs.

On the international stage, NICT has been a member of the International Space Environment Service (ISES) since its establishment in 1996, and has served as its Chair since 2023. Since 2019, NICT has also been operating as one of the ICAO Global Space Weather Centres, providing 24/7 space weather information for aviation users. Additionally, NICT contributes to international conferences such as those organized by the Asia-Oceania Space Weather Alliance (AOSWA).

In terms of research and development, NICT is advancing research and development of space weather monitoring systems using ground-based observation networks and satellite data, and forecasting systems using numerical simulation, data assimilation and AI models. Recent efforts include the development of high-energy particle sensors to be installed on Himawari-10, Japan's next geostationary meteorological satellite scheduled for operation in 2029. In relation to ionospheric research in Southeast Asia and Japan, NICT has developed an Equatorial Plasma Bubble (EPB) Alert System using observation data from the SEALION project.

To better meet user needs, NICT launched a new space weather event alert in June 2025, based on criteria that consider social impact. At the same time, NICT published the Space Weather Information Utilization Guidelines, which provide users with guidance on how to respond to space weather phenomena.

This presentation introduces the latest efforts in space weather forecast operations and researches in Japan.

Biography: Dr. Takuya Tsugawa is the Director of the Space Environment Laboratory at the Radio Propagation Research Center, National Institute of Information and Communications Technology (NICT), Japan. He earned his Ph.D. from Kyoto University in 2004 and held JSPS Research Fellow positions at Nagoya University in 2004 and Massachusetts Institute of Technology (MIT) in 2006. He joined NICT in 2007 as a Senior Researcher and has been in his current position since 2021. His work focuses on research, development, and operational activities in space weather forecasting. Dr. Tsugawa is a member of the Japan Geoscience Union (JpGU) and the Society of Geomagnetism and Earth, Planetary and Space Science (SGEPSS).

KEYNOTE SPEAKER 5

Ts. Dr. Ahmad Khalid Md Khairi
Chief Technology & Innovation Officer,
Group Technology & Innovation,
Uzma Berhad, Malaysia

09:45 – 10:30,
24 September 2025
Ballroom II

Smart Monitoring of Solar Infrastructure via AI Deep Learning and Geospatial Visualization using LEO Satellite UzmaSAT-1

ABSTRACT

The growth of solar energy in Malaysia under NETR (National Energy Transition Roadmap) has heightened the need for efficient and automated progress tracking of large scale solar plant development. Project Solaris – smart monitoring progress report presents a deep learning-based solution that utilizes LEO satellite imagery from UzmaSAT-1 and Convolutional Neural Networks (CNNs) to identify and monitor solar panel installations. The system integrates machine learning operations (MLOps) for automated model deployment and PowerBI for intuitive visualization on a web-geo platform. By processing high-resolution images, the platform calculates key metrics such as completion rates and panel counts, offering real-time insights to stakeholders. Among tested models, InceptionV3 achieved the highest performance with a validation accuracy of 94% and F1 score of 0.95. This approach significantly reduces manual reporting efforts, enhances data accuracy, and supports faster, more informed decision-making in solar plant project management.

Biography:Ahmad Khalid Md Khairi began his career as an electronic engineer in Penang after graduating with a bachelor's degree in electrical engineering from the University of Pennsylvania in 1995. He then worked at several multinational companies such as Motorola, Hewlett-Packard, Agilent, and Broadcom while continuing his higher education in

management at the master's and doctoral levels at Universiti Utara Malaysia.

Later, he joined an agency under the Ministry of Science and Innovation (MOSTI), MIMOS Berhad, as a senior manager of technology ventures and commercialization in 2010, and subsequently joined the publicly listed company Uzma Berhad in 2018 as the Chief Executive Officer of the Renewable Energy Division before becoming the Chief Technology and Innovation Officer. Under his tenure as CEO of the Renewable Energy Division, Uzma managed to secure its first Large Scale Solar project and other solar rooftop projects with a capacity of over 100MWdc. Currently, his role focuses on aligning technology and innovation with business strategy, ensuring that both areas contribute to the company's transformation from an oil and gas services entity to an energy, digitalization and space technology company

INVITED SPEAKER

Prof. Dr. Masaharu Takahashi
Chiba University, Japan

14:30 – 15:00,
23 September 2025
Ballroom II

Analysis of Wave Propagation Characteristics in Hollow Cylindrical Concrete Structures Immersed in Seawater

ABSTRACT

As part of a fundamental study on undersea communication, we explore a system that enables data transmission between undersea drones and land stations or satellites. This system utilizes the foundation of an offshore wind turbine as a transmission line to facilitate signal propagation. Consequently, this report examines the propagation characteristics of an annular concrete pillar across various frequencies. By analyzing its transmission properties, we aim to assess its potential effectiveness as a communication pathway in marine environments.

Keywords: Seawater, Radio wave propagation, Hollow cylindrical concrete, FDTD method

INVITED SPEAKER

Ts. Farahana Kamarudin
Agensi Angkasa Malaysia (MYSA), Malaysia

14:30 – 15:00,
23 September 2025
Room:CM II

Monitoring the Impacts of Active Region 3664: A G5-Class Geomagnetic Storm Event Observed from Malaysia in May 2024

ABSTRACT

Space weather, driven by solar activity such as solar flares and coronal mass ejections (CMEs), can cause significant disturbances to the Earth's magnetosphere, impacting technological systems including satellites, communication networks, and power grids. This study investigates the geomagnetic impacts of Active Region 3664 (AR3664), a highly active sunspot group that emerged in early May 2024. Using ground-based instruments operated in Malaysia—specifically, the Langkawi National Observatory (LNO), CALLISTO solar radio spectrometer at Selangor, and Magnetic Data Acquisition System (MAGDAS) from several location, the research documents the evolution of AR3664 and the subsequent geomagnetic storm that occurred on 10–11 May 2024. The storm, triggered by intense Xclass flares and CME-driven shocks, was classified as a G5-class event and was associated with Dst index values reaching –412 nT and AE index exceeding 1000 nT. MAGDAS data across equatorial latitudes revealed substantial variations in the Earth's magnetic field components, particularly the Z and H components. Notably, auroras were observed unusually far south, including across central Japan. Although the strongest geomagnetic perturbations in Malaysia reached up to –845.09 nT, no major operational disruptions were recorded. These findings highlight the critical importance of continuous solar monitoring and regional preparedness, especially as Solar Cycle 25 approaches its peak. The study emphasizes the role of Malaysia's space weather infrastructure in contributing to international observation networks and enhancing national resilience against future space weather threats.

INVITED SPEAKER

Dr. Dongsheng Zhao
China University of Mining and Technology, China

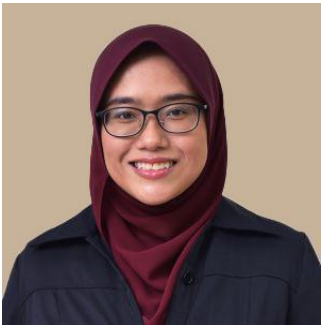
14:30 – 15:00,
23 September 2025
Room:CM III

Extracting GNSS Ionospheric Scintillation Factor from Multi-Sampling Interval Geodetic Receiver Data

ABSTRACT

As the 25th solar cycle peak approaches, the increasingly active ionosphere leads to frequent GNSS signal ionospheric scintillations, posing a significant threat to GNSS satellite stability and high-precision positioning services. Accurate monitoring and modeling are crucial for mitigating GNSS scintillation interference. However, the existing specialized equipment for scintillation (ionospheric scintillation monitoring receivers) is sparsely distributed and has limited coverage, making it challenging to meet the demand for wide-area scintillation monitoring. In contrast, geodetic receivers are widely distributed and serve as a valuable complement to ionospheric scintillation monitoring research. However, the current GNSS geodetic reference station network has inconsistent receiver sampling intervals, and low sampling rates can interfere with the accuracy of extracting ionospheric scintillation factors. Therefore, this paper proposes a GNSS ionospheric scintillation factor extraction method applicable to multi-sampling interval geodetic receiver data. The aim is to utilize the widely and relatively densely distributed GNSS geodetic reference station network for ionospheric scintillation monitoring research, enabling high-precision monitoring of ionospheric scintillations on a global scale.

INVITED SPEAKER



Assoc. Prof. Ts. Dr. Nurul Shazana Abdul Hamid
Universiti Kebangsaan Malaysia (UKM), Malaysia

11:00 – 11:30,
24 September 2025
Room:CM II

Pengaruh Fenomena Gerhana Matahari Penuh Terhadap Pengionan Ionosfera Berdasarkan Data TEC dan Medan Geomagnet

ABSTRACT

Gerhana matahari merupakan fenomena Astronomi yang berlaku apabila Bulan berada di antara Matahari dan Bumi, lalu menyekat sinaran suria daripada mencapai atmosfera atas Bumi. Keadaan ini menyebabkan pengurangan mendadak sinaran ultraungu dan sinar-X, sekali gus mempengaruhi tahap pengionan di lapisan ionosfera. Kajian ini meneliti kesan peristiwa gerhana matahari penuh terhadap pengionan di lapisan ionosfera Bumi, dengan memberi tumpuan kepada analisis variasi medan geomagnet dan jumlah kandungan elektron (Total Electron Content, TEC) berdasarkan beberapa peristiwa yang berlaku antara tahun 2000 hingga 2024. Maklumat berkaitan tarikh, tempoh, dan laluan gerhana diperoleh daripada sumber astronomi rasmi. Data medan geomagnet dikumpulkan daripada stesen magnetometer dasar melalui platform SuperMAG dan INTERMAGNET, manakala data TEC diperoleh daripada stesen GPS melalui rangkaian International GNSS Service (IGS). Analisis dijalankan dengan membandingkan variasi medan geomagnet dan TEC pada hari gerhana dengan data pada hari senyap, iaitu hari tanpa gangguan ribut geomagnet. Hasil kajian menunjukkan penurunan yang konsisten dalam kedua-dua set data semasa gerhana matahari penuh, dengan nilai TEC mengalami penurunan yang lebih ketara berbanding data medan geomagnet. Sementara itu, perubahan kecil dalam variasi medan geomagnet yang diperhatikan adalah dipercayai berkait dengan perubahan arus ionosfera akibat pengurangan tahap pengionan. Akhir sekali, didapati tiga faktor utama boleh menjejaskan keupayaan data

medan geomagnet dan TEC untuk mengesan sebarang variasi akibat gerhana, iaitu kehadiran ribut geomagnet, jarak stesen daripada laluan gerhana penuh, dan altitud Matahari sewaktu gerhana matahari berlaku. Kajian ini memberi gambaran tentang kesan fenomena astronomi seperti gerhana matahari terhadap persekitaran ruang angkasa berhampiran Bumi.

Kata Kunci: Gerhana Matahari, Ionosfera, Medan Geomagnet, Jumlah Kandungan Elektron

INVITED SPEAKER

Sr. Dr. Syed Ahmad Fadhli Syed Abdul Rahman
Department of Survey and Mapping Malaysia (JUPEM), Malaysia

11:00 – 11:30, 24 September 2025
Room:CM III

Augmenting Urban Terrain Surfaces Through LiDAR and 3D Model Integration

ABSTRACT

As cities face increasing exposure to hydrometeorological hazards, the need for accurate spatial models becomes critical. Urban flood simulations, climate impact assessments, and infrastructure planning all rely on precise representations of terrain and built environments. Remote sensing and GIS technologies offer powerful tools to construct such models, but their full potential remains underutilized in many urban applications. However, many existing approaches treat terrain and building geometry as separate entities, resulting in inconsistencies that limit the reliability of spatial analysis resulting in inconsistencies such as floating or submerged buildings. These distortions compromise the accuracy of simulations and undermine the effectiveness of decision-support tools in disaster risk management. This presentation aims to present a generalizable, multidimensional framework for integrating terrain and building data using remote sensing and GIS. The goal is to produce structurally coherent urban models that improve simulation accuracy and analytical reliability in flood and hydrological risk modelling. The proposed framework combines airborne LiDAR, orthophotos, and 3D building models within a GIS environment. Key methods include morphometric terrain analysis, overlay interpolation, and node-based geometry correction along building perimeters. These techniques harmonize surface discontinuities and enhance elevation realism. Validation processes involve both statistical error analysis and visual cross-sectional comparisons. Integrated terrain-

building models demonstrate significant improvements in accuracy and spatial coherence. By adjusting building base geometries and refining interpolation techniques, terrain surfaces show reduced elevation errors and enhanced alignment with physical structures. These improvements directly benefit hydrological modelling by reducing artificial elevation artifacts, particularly in flood-prone areas. This multidimensional integration framework contributes to a more reliable foundation for urban disaster modelling. By bridging the gap between terrain and structure, it supports more realistic simulations, informs better planning decisions, and strengthens the spatial backbone of smart city and digital twin initiatives. The approach is scalable, adaptable to various urban contexts, and suitable for future integration with AI and IoT-driven systems.

INVITED SPEAKER

Prof. Dr. Kunio Sakakibara
Nagoya Institute of Technology, Japan

14:30 – 15:00,
24 September 2025
Ballroom II

Multibeam Phased Lens Array Antennas for Future Space Applications in Sub-Terahertz Band

ABSTRACT

According to Friis' transmission equation, terahertz waves are considered difficult to propagate over long distances due to their short wavelength. However, if the physical area of the antenna remains constant, higher frequencies result in a larger aperture area relative to the wavelength, increasing the gain and thus the received power. Reflector antennas and lens antennas can achieve high-efficiency, high-gain antennas even at high frequencies due to minimal feed losses. Multi-beam antennas using reflector antennas are employed in space applications for covering wireless service areas. We are developing multi-beam phased lens array antennas in the terahertz band to independently control the direction of multiple beams for future high-capacity wireless communication. This report presents the results of our development.

INVITED SPEAKER

Dr. Ernest P.Macalalad
Philippine Space Agency,
Philippines

14:30 – 15:00,
24 September 2025
Room:CM II

Recent Advances in Low-Latitude Ionospheric Research over the Philippines

ABSTRACT

With its proximity to the geomagnetic equator, the Philippines experiences dynamic ionospheric conditions that can disrupt satellite communication, navigation, and timing systems. The observations presented here provide a comprehensive view of ionospheric behavior over the past decade, particularly under the influence of geomagnetic storms and solar activity. Using ground-based GNSS receivers distributed across the country, variations in Total Electron Content (TEC) have been tracked and analyzed, capturing key phenomena such as plasma depletions, equatorial plasma bubbles (EPBs), and ionospheric scintillation. Significant space weather events-including the St. Patrick's Day geomagnetic storm in March 2015 and the May 2024 disturbance-highlighted the region's vulnerability to large-scale ionospheric fluctuations.To visualize these disturbances more effectively, two-dimensional TEC maps were generated using Kriging interpolation from GNSS ionospheric pierce points. These maps reveal the structure and spatial distribution of ionospheric irregularities, enhancing our ability to detect localized features that are often invisible through single-station observations. The presentation also covers the effects of intense solar phenomena, such as the X7.13-class solar flare of February 2014, which caused low-latitude geomagnetic disturbances and TEC enhancements. Seasonal and diurnal patterns of TEC variation are shown to align with equinoctial conditions and solar cycle phases, while the rate of TEC change (ROTI) serves as a reliable indicator for identifying scintillation

events.Together, these results demonstrate how far the Philippine space weather community has come in understanding and monitoring ionospheric behavior. The progress reflected in this work contributes to regional space weather awareness, supports the protection of space-based infrastructure, and strengthens the foundation for future space environment applications. As reliance on satellite services continues to grow, sustained efforts to monitor and respond to space weather impacts remain a national and regional priority.

INVITED SPEAKER

Prof. Yong Cun Zhang
National Space Science Center (NSSC)
Chinese Academy of Sciences (CAS),
China

14:30 – 15:00,
24 September 2025
Room:CM III

Modulation of the TEC in the Midlatitude Region by ULF Waves: Preliminary Conjunctional Observations Between LFWR and GNSS in the Chinese Meridian Project

ABSTRACT

Previous research has established that in geospace, the total electron content (TEC) in the ionosphere can be modulated efficiently by ultralow frequency (ULF) waves in high-latitude regions. However, the correlations between TEC variations and ULF waves in middle-latitude and low-latitude regions remain inadequately explored. In this study, using ground-based magnetometer data from the Chinese Meridian Project, we identified UL wave events within Pc4 frequency bands in the midlatitude region. During the period from July 1 and December 30, 2023, we identified 438 distinct ULF wave events in the Pc4 band, thereby creating a comprehensive ULF wave database. Statistical analysis indicated that Pc4-band ULF wave events predominantly occurred on the dusk side in midlatitude regions. Notably, on August 24, 2023, simultaneous observations of geomagnetic disturbances and TEC disturbances at the similar frequency were recorded, suggesting a potential correlation between Pc4 ULF waves and TEC variations at midlatitudes. Through quantitative analysis, we determined that a high coherence was observed between TEC and magnetic field pulsations in the Pc4 band during this event. Thus, we infer that ionospheric TEC variations were possibly triggered by Pc4 ULF waves. This result provides direct observational evidence of the modulation of the TEC by Pc4 ULF waves in the midlatitude region. These findings broaden our understanding of the coupling between the magnetosphere and ionosphere in midlatitude regions.

CONFERENCE SCHEDULE

22 September 2025 (Monday)

Time (MYT)	Event
20:30– 22:00	Early Registration
	Room:CM IV

DAY 1
23 September 2025 (Tuesday)

Time (MYT)	Event
07:30 – 08:30	Arrival of Guest and Registration *Room:Ballroom II*
08:30 – 08:45	**Welcoming Speech by Director of the Institute of Climate Change (IPI), Universiti Kebangsaan Malaysia** Assoc. Prof. Dr. Zaini Sakawi *Room:Ballroom II*
08:45 – 09:00	**Officiating Speech by Vice-Chancellor of Universiti Kebangsaan Malaysia** YBhg. Prof. Dr. Sufian Jusoh *Room:Ballroom II*
09:00 – 09:45	**Keynote Speaker 1: Prof. Naoki Shinohara** Research Institute for Sustainable Humanosphere (RISH), Kyoto University, Japan **Title: Recent Progress of Space-Based Solar Power and Related Wireless Power Transfer Technology** Chairperson: Prof. Ir. Dr. Mandeep Singh Jit Singh *Room:Ballroom II*
09:45 – 10:30	**Keynote Speaker 2: Prof. Haoyu Lu** School of Space and Environment, Beihang University, China **Title: Numerical Simulation of Interaction between the Solar Wind and Mars** Chairperson: Dr. Teh Wai Leong *Room:Ballroom II*

<table>
<tr><td>10:30 – 11:00</td><td colspan="3">Group Photo and Tea Break
Room:Foyer</td></tr>
<tr><td>11:00 – 11:45</td><td colspan="3">Keynote Speaker 3: Prof. Kefei Zhang
School of Environment Science and Spatial Informatics, China University of Mining and Technology

Title: Geospatial for Space Mining – Quest the Frontier of Deep Space Economy from a Chinese Perspective

Chairperson: Prof. Ir. Dr. Mardina Abdullah

Room:Ballroom II</td></tr>
<tr><td>12:00 – 13:00</td><td colspan="3">Social Networking Session</td></tr>
<tr><td>13:00 – 14:30</td><td colspan="3">Lunch Break
Room: Courtyard Cafe</td></tr>
<tr><td rowspan="3">14:30 – 16:30</td><td colspan="3">Parallel Session 1</td></tr>
<tr><td>Satellite and Communication Technology 1 (SCT 1)</td><td>Atmospheric and Magnetospheric Sciences 1 (AMS 1)</td><td>Remote Sensing and Applications 1 (RSA 1)</td></tr>
<tr><td>Room:Ballroom II</td><td>Room:CM II</td><td>Room:CM III</td></tr>
<tr><td></td><td>Invited Speaker:

Prof. Dr. Masaharu Takahashi
Chiba University, Japan</td><td>Invited Speaker:

Ts. Farahana Kamarudin
Agensi Angkasa Malaysia (MYSA), Malaysia</td><td>Invited Speaker:

Dr. Dongsheng Zhao
China University of Mining and Technology, China</td></tr>
<tr><td>16:30 – 17:30</td><td colspan="3">Tea Break</td></tr>
<tr><td>20:00 – 22.30</td><td colspan="3">Conference Dinner
Ballroom I</td></tr>
</table>

DAY 2
24 September 2025 (Wednesday)

<table>
<tr><th>Time (MYT)</th><th colspan="3">Event</th></tr>
<tr><td rowspan="2">09:00 –09:45</td><td colspan="3">Keynote Speaker 4: Dr. Takuya Tsugawa

Director, Space Environment Laboratory,
National Institute of Information and Communications Technology (NICT), Japan

Title: Operations and Research on Space Weather Forecast in Japan

Chairperson: Assoc. Prof. Ts. Dr. Nurul Shazana Abdul Hamid</td></tr>
<tr><td colspan="3">Room:Ballroom II</td></tr>
<tr><td rowspan="2">09:45 – 10:30</td><td colspan="3">Keynote Speaker 5: Ts. Dr. Ahmad Khalid Md Khairi
Chief Technology & Innovation Officer,
Group Technology & Innovation, Uzma Berhad, Malaysia

Title: Smart Monitoring of Solar Infrastructure via AI Deep Learning and Geospatial Visualization using LEO Satellite UzmaSAT-1

Chairperson: Assoc. Prof. Dr. Mohd Fais Mansor</td></tr>
<tr><td colspan="3">Room:Ballroom II</td></tr>
<tr><td>10:30 – 11:00</td><td colspan="3">Tea Break
Room:Foyer</td></tr>
<tr><td rowspan="4">11:00 – 13:00</td><td colspan="3">Parallel Session 2</td></tr>
<tr><td>Satellite and Communication Technology 2 (SCT 2)</td><td>Bahasa Melayu (Special)</td><td>Remote Sensing and Applications 2 (RSA 2)</td></tr>
<tr><td>Room:Ballroom II</td><td>Room:CM II</td><td>Room:CM III</td></tr>
<tr><td></td><td>Invited Speaker:

Assoc. Prof. Ts. Dr. Nurul Shazana Abdul Hamid
Universiti Kebangsaan Malaysia (UKM), Malaysia</td><td>Invited Speaker:

Sr. Dr. Syed Ahmad Fadhli Syed Abdul Rahman
Department of Survey and Mapping Malaysia (JUPEM), Malaysia</td></tr>
</table>

<table>
<tr><td>13:00 – 14:30</td><td colspan="3">Lunch Break
Room: Courtyard Cafe</td></tr>
<tr><td rowspan="4">14:30 – 17:00</td><td colspan="3">Parallel Session 3</td></tr>
<tr><td>Satellite and Communication Technology 3 (SCT 3)</td><td>Atmospheric and Magnetospheric Sciences 2 (AMS 2) & Satellite and Communication Technology 4 (SCT 4)</td><td>Space Science (SS)</td></tr>
<tr><td>Room:Ballroom II</td><td>Room:CM II</td><td>Room:CM III</td></tr>
<tr><td>Invited Speaker:

Prof. Dr. Kunio Sakakibara
Nagoya Institute of Technology, Japan</td><td>Invited Speaker:

Dr. Ernest P. Macalalad
Philippine Space Agency, Philippines</td><td>Invited Speaker:

Prof. Yong Cun Zhang
National Space Science Center (NSSC) Chinese Academy of Sciences (CAS), China</td></tr>
<tr><td>17:00 – 17:00</td><td colspan="3">Tea Break
Room:Foyer</td></tr>
</table>

DAY 3

25 September 2025 (Thursday)

Time (MYT)	Event
08:30 – 12:30	Working Group Meeting (by invitation)
End of Conference	

TECHNICAL PROGRAMME

Parallel Session 1

Tuesday, 23 September 2025
Time:14:30-16:30

Track **:Satellite and Communication Technology 1 (SCT1)**
Venue :Ballroom II
Session Chair :Prof. Ir. Dr. Mandeep Singh Jit Singh
(Universiti Kebangsaan Malaysia, Malaysia)

Invited Speaker **14:30-15:00**	**Analysis of Wave Propagation Characteristics in Hollow Cylindrical Concrete Structures Immersed in Seawater** *Masaharu Takahashi and Kaito Ishikawa (Chiba University, Japan); Nozomu Ishii (Niigata University, Japan); Qiaowei Yuan (Tohoku Institute of Technology, Japan); Qiang Chen (Tohoku University, Japan); Hiroshi Yoshida (JAMSTEC & IACE, Japan)*
Time: 15:00 **Rotationally Symmetric Square R-Shaped Metamaterial Absorber for High-Frequency 5G Applications** *Md. Ismail Hossen and Saif Hannan (International Islamic University Chittagong (IIUC), Bangladesh); Mohd Hafiz Baharuddin (Universiti Kebangsaan Malaysia, Malaysia); Shihabun Sakib (Institute of Climate Change, Universiti Kebangsaan Malaysia, Malaysia); Md. Moniruzzaman (International University of Business Agriculture and Technology, Bangladesh)*	
Time: 15:15 **Square Shield Resonator Metamaterial Absorber for RF Energy Harvesting and Satellite Communication Applications** *Md. Jafrul Hasan, Md. Ismail Hossen and Saif Hannan (International Islamic University Chittagong (IIUC), Bangladesh); Md Shakhawat Hossen and Norbahiah Misran (Universiti Kebangsaan Malaysia, Malaysia); Md. Moniruzzaman (International University of Business Agriculture and Technology, Bangladesh)*	
Time: 15:30 **Circular Symmetric Split-Ring Structure Shaped Metamaterial Absorber for X and Ku Band Applications** *Mohammd Mohi Uddin and Saif Hannan (International Islamic University Chittagong (IIUC), Bangladesh); Badariah Bais (Universiti Kebangsaan Malaysia, Malaysia); Md. Rashedul Islam (Pabna University of Science and Technology, Bangladesh)*	
Time: 15:45 **A Compact Multi-Resonant Metamaterial Absorber with Broadband Polarization-Insensitive Performance for C/X-Band Applications** *Md Mujahid Hossain and Saif Hannan (International Islamic University Chittagong (IIUC), Bangladesh); Badariah Bais and Md. Abir Hossain (Universiti Kebangsaan Malaysia, Malaysia)*	

Time: 16:00 **Design and Characterization of a Multilayered Metamaterial Sensor for C-Band Liquid Detection** *Muhammad Amir Khalil and Hin Yong Wong (Multimedia University, Malaysia); Mohammad Tariqul Islam (Universiti Kebangsaan Malaysia, Malaysia); Shabiul Islam (Multimedia University (MMU), Malaysia)*
Time: 16:15 **Evaluation of a Shaped Sub-Reflector Performance Used for a Spherical Reflector Antenna** *Norazah Abdullah (Universiti Teknologi Malaysia, Malaysia); Ayuni Afiqah Arjunaidi and Yoshihide Yamada (Malaysia-Japan International Institute of Technology, Universiti Teknologi Malaysia, Malaysia); Kamilia Kamardin (Universiti Teknologi Malaysia, Malaysia); Hiroshi Hashiguchi and Naobumi Michishita (National Defense Academy, Japan)*

Track :**Atmospheric and Magnetospheric Sciences 1 (AMS1)**
Venue :CM II
Session Chair :Dr. Idahwati Sarudin
(Universiti Sains Malaysia, Malaysia)

Invited Speaker **14:30-15:00**	**Monitoring the Impacts of Active Region 3664: a G5-Class Geomagnetic Storm Event Observed from Malaysia in May 2024** *Farahana Kamarudin (Malaysian Space Agency, Malaysia); Nurul Shazana Abdul Hamid (Universiti Kebangsaan Malaysia, Malaysia); Roslan Umar (Universiti Sultan Zainal Abidin (UniSZA), Malaysia); Muhammad Asraf Hairuddin (Universiti Teknologi MARA, Malaysia); Akimasa Yoshikawa (Kyushu University, Japan); Mohammad Redzuan Tahar and Zulia Kurnia Dewi Nurlisman (Malaysian Space Agency, Malaysia)*
Time: 15:00 **Deep Learning Recurrent Neural Network for Low-Latitude Geomagnetically Induced Current Prediction with Imputation and Rare-Event Detection** *Aznilinda Zainuddin, Muhammad Asraf Hairuddin and Zatul Iffah Abd Latiff (Faculty of Electrical Engineering, Universiti Teknologi MARA, Johor Branch, 81750 Masai, Johor); MHuzaimy Bin Jusoh and Ihsan M. Yassin (Faculty of Electrical Engineering, Universiti Teknologi MARA, 40000 Shah Alam, Selangor)*	
Time: 15:15 **Comparative Analysis of Machine Learning Algorithms for Classifying Geomagnetic Storm Severity Using the SYM-H Index** *Zatul Iffah Abd Latiff (Universiti Teknologi MARA, Malaysia); Muhammad Asraf Hairuddin (Universiti Teknolog MARA, Malaysia); Aznilinda Zainuddin (Universiti Teknologi MARA Johor Branch, Malaysia); Nur Dalila Khirul Ashar (Universiti Teknologi Mara, Malaysia); Mohamad Huzaimy Jusoh (Universiti Teknologi Mara Malaysia, Malaysia)*	
Time: 15:30 **Preferential Orientation of Planar Magnetic Structures in the Sheath of Interplanetary Coronal Mass Ejections: Preliminary Results** *Wai-Leong Teh (Universiti Kebangsaan Malaysia, Malaysia)*	

Time: 15:45 **Comparison of Meteorological Data from Principal Stations and Automated Weather Stations (AWS) in Malaysia: a Case Study Approach** *Ahmad Yusof Abdo Jamal (Universiti Kebangsaan Malaysia, Malaysia); Nurul Shazana Abdul Hamid (Universiti Kebangsaan Malaysia, Malaysia); Idahwati Sarudin (School of Physics, Universiti Sains Malaysia, Malaysia); Zamira Zamzuri and Ester Salimun (Universiti Kebangsaan Malaysia, Malaysia); Zaridah Mohamed Jalal (Research & Technical Development Division, Malaysian Meteorological Department, Malaysia)*
Time: 16:00 **Comparative Analysis of Ionospheric Disturbance Dynamo Effects at Malaysian Stations During the May 2024 Geomagnetic Storm** *Raja Adibah Raja Halim Shah (Universiti Kebangsaan Malaysia, Malaysia); Nurul Shazana Abdul Hamid (Universiti Kebangsaan Malaysia, Malaysia); Mardina Abdullah and Adlyka Annuar (Universiti Kebangsaan Malaysia, Malaysia); Idahwati Sarudin (School of Physics, Universiti Sains Malaysia, Malaysia); Khairul Adib Yusof (Universiti Putra Malaysia, Malaysia); Farahana Kamarudin (Malaysian Space Agency, Malaysia); Muhammad Asraf Hairuddin (Universiti Teknologi MARA, Malaysia); Roslan Umar (Universiti Sultan Zainal Abidin (UniSZA), Malaysia); Akimasa Yoshikawa (Kyushu University, Japan)*
Time: 16:15 **Statistical Assesment of Polarization Ratio Analysis for ULF Geomagnetic Anomalies as Prospective Earthquake Precursors** *Muhammad Nur Syaiful Afrizal and Khairul Adib Yusof (Universiti Putra Malaysia, Malaysia); Nurul Shazana Abdul Hamid (Universiti Kebangsaan Malaysia, Malaysia)*

Track **:Remote Sensing and Applications 1 (RSA 1)**
Venue :CM III
Session Chair :Gs. Dr. Ricky Anak Kemarau
(Universiti Kebangsaan Malaysia, Malaysia)

Invited Speaker **14:30-15:00**	**Extracting GNSS Ionospheric Scintillation Factor from Multi-Sampling Interval Geodetic Receiver Data** *Dongsheng Zhao and Kefei Zhang (China University of Mining and Technology, China)*
Time: 15:00 **Monitoring the Monsoonal Variability of Water Surface Elevation in Malaysian Reservoirs Using Sentinel-3 SAR Altimetry** *Mohd Adha Abdul Majid (Universiti Teknologi Malaysia, Malaysia & Malaysian Space Agency (MYSA), Malaysia); Nurul Hazrina Idris and Mohd. Nadzri Md. Reba (Universiti Teknologi Malaysia, Malaysia)*	
Time: 15:15 **Deep Learning-Based Multi-Source Fusion for Cloud-to-Ground Lightning Classification Using CAPPI Radar and Electric Field Data** *Xian Gie Cheah (Universiti Teknikal Malaysia Melaka (UTeM), Malaysia); Mawarni Mohamed Yunus (Universiti Teknikal Malaysia Melaka, Malaysia); Antony Sumardi (Universiti Teknikal Malaysia Melaka & Centre of Technology for Disaster Risk Reduction, Malaysia); Nor Azlan Mohd Aris and Harry Sucitra Roslan (Universiti Teknikal Malaysia Melaka, Malaysia); Ahmad Rifhan Salman (Universiti Teknikal Malaysia Melaka & Centre of Technology for Disaster Risk Reduction, Malaysia); Nur Zahin (Universiti Teknikal Malaysia Melaka, Malaysia); Mohd Riduan Ahmad (Universiti Teknikal Malaysia Melaka & Centre of Technology for Disaster Risk*	

Reduction, Malaysia); Nor Hadizah Mohd Khalid (Malaysian Meteorological Department, Malaysia)
Time: 15:30 **Forest Fire Detection from Satellite Imagery Using Deep Learning: a Comparative Analysis of ResNet50, EfficientNet-B0, and DenseNet121** *Noor Nadia Azmah Hamsha, Tuan Nurul Azlin Tuan Mud, Nurul Huda Abd Rahman and Norashikin MThamrin (Universiti Teknologi MARA, Malaysia); Khairul Khaizi Mohd Shariff (Universiti Teknologi MARA, Malaysia & Microwave Research Institute, Malaysia); Azhar Mohd Ibrahim (International Islamic University Malaysia, Malaysia); Muhammad Hasif Bin Azami (Universiti Teknologi MARA, Malaysia)*
Time: 15:45 **Carbon Sequestration Capacity, Species Diversity and Community Structure: Indicators of Resilient Mangrove Ecosystem in Tagkawayan, Quezon, Philippines** *Cheryl Lyn C. Ayuste (Rizal Technological University, Philippines); Richard E. Nepomuceno (Southern Luzon State University, Philippines)*
Time: 16:00 **Integrated Deep Learning Approach for Phase Picking, HypoDD, and Gravity for Accurate Epicenter Mapping** *Fitri Afiadi (Indonesia University, Indonesia & Indonesia's Agency for Meteorological Climatological and Geophysics Region II, Indonesia)*
Time: 16:15 **Monitoring Light Pollution Trends Using VIIRS Nighttime Light Data and Its Implications for Astrotourism Potential in Johor, Malaysia** *Khairunnisa Mohd Fuzi and Aimi Musa (Universiti Teknologi Malaysia, Malaysia)*

Parallel Session 2

Wednesday, 24 September 2025
Time:11:00-13:00

Track **:Satellite and Communication Technology 2 (SCT2)**
Venue :Ballroom II
Session Chair : Dr. Samir Salem Al-Bawri
(Universiti Kebangsaan Malaysia, Malaysia)

Time: 11:00
Design and Analysis of a Gear-Ring Resonator Based Metamaterial Absorber for Ku/K-Band Applications
Samir Salem Al-Bawri (Universiti Kebangsaan Malaysia (UKM), Malaysia); Md. Moniruzzaman and Murad Kabir Nipun (International University of Business Agriculture and Technology, Bangladesh); Mandeep Singh (UKM, Malaysia); Mohammad Tariqul Islam (Universiti Kebangsaan Malaysia, Malaysia); M Muklasur R Opu (University of Alabama at Birmingham, USA); Abdul Halim Lokman (Advanced Communication Engineering (ACE) CoE, Malaysia); Md. Mhedi Hasan (Comilla University, Bangladesh)

Time: 11:15
Hybrid 4-Element Array Antenna with Parasitic and U-Shaped DGS for Enhanced 5G V2X Performance
Syaiful Anas Suhaimi (Universiti Kebangsaan Malaysia & Space Science Centre, Malaysia); Samir Salem Al-Bawri (Universiti Kebangsaan Malaysia (UKM), Malaysia); Mandeep Singh (UKM, Malaysia); Mohammad Tariqul Islam (Universiti Kebangsaan Malaysia, Malaysia)

Time: 11:30
Compact MIMO Antenna for C/X/K/Ku-Band Satellite Communication Applications
Nishan Das and Mirajul Islam (University of Chittagong, Bangladesh); Touhidul Alam (Space Science Centre, Institute of Climate Change, Universiti Kebangsaan Malaysia, Malaysia); Mohammad Tariqul Islam (Universiti Kebangsaan Malaysia, Malaysia); Rezaul Azim (University of Chittagong, Bangladesh); Md. Zulfiker Mahmud (Jagannath University, Bangladesh)

Time: 11:45
Optimizing Transformer Performance: GSM-Based Oil Temperature Monitoring and Control
Touhidul Alam (Space Science Centre, Institute of Climate Change, Universiti Kebangsaan Malaysia, Malaysia); Md Jiabul Hoque (International Islamic University Chittagong (IIUC), Bangladesh); Mohammad Lutful Hakim (Universiti Kebangsaan Malaysia, Malaysia); Md. Moniruzzaman (International University of Business Agriculture and Technology, Bangladesh); Md Golam Rabbani (Universiti kebangsaan Malaysia, Malaysia); Roszaini Roslan (Universiti Kebangsaan Malaysia, Malaysia)

Time: 12:00
Symmetrical Hilbert Shape Frequency Selective Surface for Electromagnetic Interference Wave Shielding Applica-Tions
Mohammad Lutful Hakim (Universiti Kebangsaan Malaysia, Malaysia); Md. Uddin (International Islamic University Chittagong, Bnagladesh, Bangladesh); Md Bakey Billa (Universiti Kebangsaan Malaysia, Malaysia); Md. Ismail Hossen (International Islamic University Chittagong (IIUC), Bangladesh); Touhidul Alam (Space Science Centre, Institute of Climate Change, Universiti Kebangsaan Malaysia, Malaysia); Arman Siddique and Mashrafi Nahian (International Islamic University Chittagong, Bangladesh)

Time: 12:15 **The Accumulative Boresight Pointing Error in Parabolic Antenna of CoTM System Due to Mechanical Misalignments** *Raja Afrasiab Khan (National University Sciences & Technology (NUST), Pakistan); Muhammad Amin (Institute of Space Technology, Islamabad, Pakistan)*

Track **:Bahasa Melayu (Special)**
Venue :CM II
Session Chair :Prof. Ir. Dr. Mardina Abdullah
(Universiti Kebangsaan Malaysia, Malaysia)

Invited Speaker **11:00-11:30**	**Pengaruh Fenomena Gerhana Matahari Penuh Terhadap Pengionan Ionosfera Berdasarkan Data TEC Dan Medan Geomagnet** *Nurul Shazana Abdul Hamid (Universiti Kebangsaan Malaysia, Malaysia); Choo Jin Yao Bryan and Siti Aminah Bahari (Universiti Kebangsaan Malaysia, Malaysia); Idahwati Sarudin (School of Physics, Universiti Sains Malaysia, Malaysia)*
Time: 11:30 **Pemetaan ROTI Bagi Mengesan Impak Letusan Gunung Berapi Hunga Tonga-Hunga Ha'apai Ke Atas Lapisan Ionosfera di Malaysia** *Siti Aminah Bahari (Universiti Kebangsaan Malaysia, Malaysia); Suhaila M Buhari (Universiti Teknologi Malaysia, Malaysia); Mardina Abdullah (Universiti Kebangsaan Malaysia, Malaysia); Nurul Shazana Abdul Hamid (Universiti Kebangsaan Malaysia, Malaysia)*	
Time: 11:45 **Aplikasi Pendekatan Hibrid Dalam Pengesanan Struktur Gelembung Plasma Khatulistiwa Berdasarkan ROTI Keogram** *Idahwati Sarudin (School of Physics, Universiti Sains Malaysia, Malaysia); Mohamad Haniff Junos (Universiti Sains Malaysia, Malaysia); Nurul Shazana Abdul Hamid (Universiti Kebangsaan Malaysia, Malaysia); Mardina Abdullah (Universiti Kebangsaan Malaysia, Malaysia); Logesh Kumar Selvakumar (Universiti Sains Malaysia, Malaysia)*	
Time: 12:00 **Reka Bentuk Unit Metabahan Boleh Laras Dengan Ketelusan Dan Kebolehtelapan Negatif Untuk Aplikasi 5G** *Nurul Adawiah (UKM, Malaysia); Norsuzlin Mohd Sahar (Universiti Kebangsaan Malaysia, Malaysia); Samir Salem Al-Bawri (Universiti Kebangsaan Malaysia (UKM), Malaysia); Mohammad Tariqul Islam (Universiti Kebangsaan Malaysia, Malaysia)*	
Time: 12:15 **Pembangunan Struktur Bahan Meta Auxetik Berinspirasikan Origami** *Nur Fatin Mohamad Razali, Norsuzlin Mohd Sahar and Mohammad Tariqul Islam (Universiti Kebangsaan Malaysia, Malaysia)*	
Time: 12:30 **Smart in-Ear PPG-Based System for Arrhythmia Detection: Potential Applications in Space Exploration (Sistem Pintar Berasaskan Fotopletismografi Dalam Telinga Untuk Pengesanan Aritmia: Potensi Aplikas** *Khalida Azudin, Kok Beng Gan and Rosmina Jaafar (Universiti Kebangsaan Malaysia, Malaysia); Mohd Hasni Ja'afar (Hospital Canselor Tuanku Muhriz, Universiti Kebangsaan Malaysia, Malaysia); Mohd Shawal Faizal Mohamad (Universiti Kebangsaan Malaysia, Malaysia)*	

Track :**Remote Sensing and Applications 2 (RSA 2)**
Venue :CM III
Session Chair :Ts. Dr. Wan Shafrina Wan Mohd Jaafar
(Universiti Kebangsaan Malaysia, Malaysia)

Invited Speaker **11:00-11:30**	**Augmenting Urban Terrain Surfaces Through LiDAR and 3D Model Integration** *Syed Ahmad Fadhli Syed Abdul Rahman (Department of Survey and Mapping Malaysia (JUPEM)); Khairul Nizam Abdul Maulud (University of National Malaysia, Malaysia)*
Time: 11:30 **Improved PM2.5 Estimation in Thailand Using AOD and Multi-Source Data: a Comparison of Linear and Polynomial Models** *Kritthanit Malathong (School of Engineering King Mongkut Institute of Technology Ladkrabang, Thailand)*	
Time: 11:45 **Five-Year Land Cover Change Analytics in Highland Ecosystems Using Google Earth Engine: a Case Study from Cameron Highlands, Malaysia** *Ricky Anak Kemarau (Universiti Kebangsaan Malaysia, Malaysia); Siti Norliyana Harun (Universiti Kebangsaan Malaysia & Institute of Climate Change, Malaysia); Marlia Mohd Hanafiah and Noorashikin Md Noor (Universiti Kebangsaan Malaysia, Malaysia)*	
Time: 12:00 **Exploring the Correlation Between Land Surface Temperature and Landuse/Landcover Dynamics Through Spectral Indices Using Google Earth Engine and Remote Sensing** *Syeda Maria Zafar (National University of Malaysia, Pakistan & National University of Sciences & Technology Islamabad, Pakistan); Wan Shafrina Wan Mohd Jaafar (Department of Geographical Sciences, University of Maryland, 2181 Samuel J. LeFrak Hall, 7251 Preinkert Drive, USA); Junaid Aziz Khan and Maheen Siddiqui (National University of Sciences & Technology, Islamabad Pakistan, Pakistan); Muhammad Abdullah Baig (National University of Sciences and Technology, Pakistan); Ashma Waheed (National University of Sciences & Technology, Pakistan); Ricky Anak Kemarau (Universiti Kebangsaan Malaysia, Malaysia)*	
Time: 12:15 **Satellite-Based Mapping of Saltmarshes in the UAE: a Contribution to the Preservation of Overlooked Ecosystem Services** *Amare Gebrie Getaneh, Abhilash Dutta Roy, Shalini King and Pandi Selvam P (Ecoresolve, San Francisco, CA, United States, USA); Vasco Vieira (Universidade do Minho, Portugal); Wan Shafrina Wan Mohd Jaafar (Universiti Kebangsaan Malaysia, Malaysia); Amna Ahmed Abdalla Ali Almansoori (Higher Colleges of Technology, United Arab Emirates); Midhun Mohan (Ecoresolve, San Francisco, CA, United States, USA)*	
Time: 12:30 **A Compact Dual-Band Microstrip Antenna for Wi-Fi and Satellite Applications** *Nurhayati Nurhayati and Akbar Izulhaq (Universitas Negeri Surabaya, Indonesia); Usman Ali (University of Engineering & Technology, Pakistan); Norbahiah Misran (Universiti Kebangsaan Malaysia, Malaysia); Murtini Murtini and Gilang Arya Nur Fauzan (Universitas Negeri Surabaya, Indonesia)*	

Parallel Session 3

Wednesday, 24 September 2025
Time:14:30-17:00

Track **:Satellite and Communication Technology 3 (SCT3)**
Venue :Ballroom II
Session Chair :Dr. Samir Salem Al-Bawri
(Universiti Kebangsaan Malaysia, Malaysia)

Invited Speaker **14:30-15:00**	**Multibeam Phased Lens Array Antennas for Future Space Applications in Sub-Terahertz Band** *Kunio Sakakibara (Nagoya Institute of Technology, Japan)*
Time: 15:00 **Design and Implementation of a Tele-Health-Oriented Android-Based IMU Data Acquisition System for Gait Analysis** *Shujiang Zhang, Md. Mahmudur Rahman, Kok Beng Gan, Huay Woon You and Chang Soon Tony Hii (Universiti Kebangsaan Malaysia, Malaysia); Dandan Wang (Siqi Education Group, China & RunTime Era Culture Media, China)*	
Time: 15:15 **Polarization-Insensitive Symmetric Multiple Split Ring Metamaterial Absorber for Quad-Band Application** *Nadia Reza and Mohammad Rashed Iqbal Faruque (Universiti Kebangsaan Malaysia, Malaysia)*	
Time: 15:30 **Enhanced Photodetection Across a Broad-Spectrum Using Bilayer Graphene/ZnO/Si Heterojunctions for IoT Applications** *Shonak Bansal (Punjab Engineering College Chandigarh, India); Arnav Bansal (Chandigarh University, India); Mohammad Rashed Iqbal Faruque (Universiti Kebangsaan Malaysia, Malaysia); Payal Patial and Anupma Gupta (Chandigarh University, India); Krishna Prakash (PEC University of Technology, India)*	
Time: 15:45 **Design and Performance Analysis of a Geometrical Shape MIMO Antenna for 5G mm-Wave Communication** *Norsuzlin Mohd Sahar (Universiti Kebangsaan Malaysia, Malaysia); Md. Uddin (International Islamic University Chittagong, Bnagladesh, Bangladesh); Md Touhidul Islam (International Islamic University Chittagong (IIUC), Bangladesh); Md Kutub Uddin (Universiti Kebangsaan Malaysia, Malaysia); Md. Ismail Hossen and Ahmed Imtiaz (International Islamic University Chittagong (IIUC), Bangladesh); Mohammad Lutful Hakim (Universiti Kebangsaan Malaysia, Malaysia); Touhidul Alam (Space Science Centre, Institute of Climate Change, Universiti Kebangsaan Malaysia, Malaysia)*	
Time: 16:00 **Study on Compensation of Beam Squint by Frequency Change Using I-Shaped Huygens Metamaterial Elements** *Kazuto Narita and Keizo Cho (Chiba Institute of Technology, Japan)*	

Time: 16:15 **An Efficient Real-Time Framework for Masked and Unmasked Face Recognition Using MobileNetV2** *Touhidul Alam (Space Science Centre, Institute of Climate Change, Universiti Kebangsaan Malaysia, Malaysia); Md Jiabul Hoque (International Islamic University Chittagong (IIUC), Bangladesh); Mohammad Lutful Hakim (Universiti Kebangsaan Malaysia, Malaysia); Helal Uddin and Muhaiminul Islam Sakib (International Islamic University Chittagong (IIUC), Bangladesh); Md Mohiuddin Soliman (Universiti Kebangsaan Malaysia, Malaysia); Mandeep Singh (UKM, Malaysia)*
Time: 16:30 **Planer Frequency-Dispersive Phase Shifter for Base Station Antennas** *Fumiya Mizokoshi and Keizo Cho (Chiba Institute of Technology, Japan)*

Track :**Atmospheric and Magnetospheric Sciences 2 (AMS 2) & Satellite and Communication Technology 4 (SCT 4)**
Venue :CM II
Session Chair :Dr. Sabirin Abdullah
(Universiti Kebangsaan Malaysia, Malaysia)

Invited Speaker **14:30-15:00**	**Recent Advances in Low-Latitude Ionospheric Research over the Philippines** *Ernest P Macalalad (Philippine Space Agency, Philippines)*
Time: 15:00 **CNN-LSTM for Classifying Pi2 Pulsation Occurrences from Raw Geomagnetic Data** *M 'Aqil Syahiran Izham, Khairul Adib Yusof and Syamsiah Mashohor (Universiti Putra Malaysia, Malaysia); Kasyful Qaedi (Universiti Kebangsaan Malaysia, Malaysia & Institute of Climate Change, Malaysia)*	
Time: 15:15 **How Many Loops are Too Many? Optimizing Antenna Design for SID Monitors** *Darren Jia Le Ang (Universiti Teknologi Malaysia & Science, Malaysia); Suhaila M Buhari (Universiti Teknologi Malaysia, Malaysia); Mardina Abdullah and Siti Aminah Bahari (Universiti Kebangsaan Malaysia, Malaysia)*	
Time: 15:30 **Observation of Equatorial Plasma Bubbles Using Geostationary Beidou Satellites and All-Sky Imager** *Ernest P Macalalad and Wynn Dunn Gil D. Improso (Philippine Space Agency, Philippines); Tung - Yuan Hsiao (National Tsing Hua University, Taiwan)*	
Time: 15:45 **The Relationship of the EEJ Current on a Buried Gas Pipeline Impressed Current Cathodic Protection System** *Maizura M.Sani (Universiti Teknologi Mara, Malaysia)*	

Time: 16:00 **Train Localization Using GNSS - an Introduction of Concept Study for Malaysian Railway System** *Karthigesu Nagarajoo (University Tun Hussein Onn Malaysia, Malaysia); Jasbinder Singh Kehar Singh (R2P, Malaysia)*
Time: 16:15 **Preliminary HF Analysis in Peninsular Malaysia Using SDR Dongle as Data Logger** *Johari Talib (Universiti Kebangsaan Malaysia & Space Science Center, Malaysia); Sabirin Abdullah (Universiti Kebangsaan Malaysia (UKM), Malaysia)*
Time: 16:30 **Intersecting M-Form Connected Split-Ring Resonator Multiband Metamaterial Absorber for C, X and Ku Band Communication Applications** *Norsuzlin Mohd Sahar and Mohammad Lutful Hakim (Universiti Kebangsaan Malaysia, Malaysia); Mohammed Faysal (Chittagong University of Engineering & Technology Chittagong, Malaysia); Mandeep Singh (UKM, Malaysia); Md Kutub Uddin (Universiti Kebangsaan Malaysia, Malaysia)*

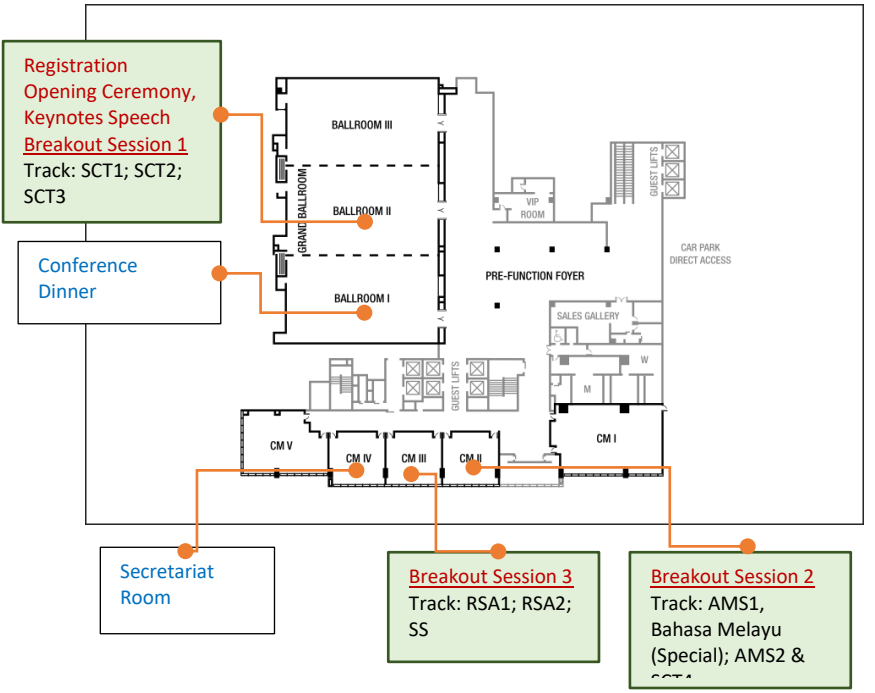
Track **:Space Science (SS)**
Venue :CM III
Session Chair : Dr. Teh Wai Leong
(Universiti Kebangsaan Malaysia, Malaysia)

Invited Speaker **14:30-15:00**	**Modulation of the TEC in the Midlatitude Region by ULF Waves: Preliminary Conjunctional Observations Between LFWR and GNSS in the Chinese Meridian Project** *Yongcun Zhang, (National Space Science Center (NSSC) of Chinese Academy of Sciences (CAS), China)*
Time: 15:00 **Fostering Climate Resilience in Islamic Education: An Eco-Theological Arts-Based Counseling Intervention** *Siti Kulsum (Universitas Pendidikan Indonesia, Indonesia & MAN 2 Bandung, Indonesia); Muhammad Solehuddin (Universitas Pendidikan Indonesia, Indonesia); Ilham Khairi Siregar (Universitas Negeri Gorontalo, Indonesia); Ahman Ahman and Eka Sakti Yudha (Universitas Pendidikan Indonesia, Indonesia)*	
Time: 15:15 **Modelling the Faint Young Sun's Radiance on Primordial Earth's Atmosphere and Surface** *Kar Sin Loo (Universiti Kebangsaan Malaysia, Malaysia); John Soo (Universiti Sains Malaysia, Malaysia); Iva Vilovic (Leibniz-Institut für Astrophysik Potsdam, Germany); Kuhan Chandru (Universiti Kebangsaan Malaysia, Malaysia)*	
Time: 15:30 **Exploring Astronomy Education in the Philippines: A Research Agenda** *Ryan Manuel D Guido (Rizal Technological University, Philippines & Center for Astronomy Research and Development, Philippines); Ruby-Ann B Dela Cruz (Rizal Technological University, Philippines); Antriman Orleans (Philippine Normal University & De La Salle University, Philippines)*	

Time: 15:45 **Assessing Visibility and Positional Accuracy in Young Crescent Moon Observations for Islamic Calendar Applications** *Othman Zainon (Universiti Teknologi Malaysia, Malaysia)*
Time: 16:00 **Uncovering Hub Genes in Short Duration Spaceflight** *Mervin June B. Gasatan, Wynn Dunn Gil D. Improso and Ernest P Macalalad (Philippine Space Agency, Philippines)*
Time: 16:15 **Spaceflight Analog Hypergravity Impact on Germination of Mung Bean (Vigna Radiata (L.)) Under Salinity Stress** *Ellise Angela R Gamana, Danielle Camille P Canillo, Mervin June B. Gasatan, Wynn Dunn Gil D. Improso and Ernest P Macalalad (Philippine Space Agency, Philippines)*
Time: 16:30 **Design of Low-Cost Random Positioning Machine (RPM) for Microgravity Applications** *Sonny Y Cac, Jr, Wynn Dunn Gil D. Improso, Danielle Camille P Canillo, Adam Jefferson Ramones and Ernest P Macalalad (Philippine Space Agency, Philippines)*
Time: 16:45 **Microstrip Array Antenna with ITERA Emblem Shaped Patch for Radio Telescope Feeder** *El Nissi Hamasiah, Radial Anwar and Unang Sunarya (Telkom University, Indonesia); Ridlo Wibowo (Institut Teknologi Sumatera, Indonesia); Adhitya Oktaviandra (ITERA Lampung Astronomical Observatory (OAIL), Indonesia); Zuhanis Mansor (University of Kuala Lumpur British Malaysian Institute (UniKl-BMI), Malaysia)*

CONFERENCE FLOOR PLAN

IconSpace 2025 will be held at Level 7, Courtyard by Marriott, Melaka. The following diagram shows the floor plan for participants' reference



Lunch will be served at Courtyard Café, Ground Floor.

ACKNOWLEDGEMENTS

MICROWAVE TECHNOLOGY RESEARCH GROUP (MTRG)

SPACE SCIENCE & TECHNOLOGY RESEARCH GROUP (STA*)

UKM GEOSPATIAL TECHNOLOGY AND APPLICATIONS RESEARCH GROUP (GEO-TAG)

EARTH AND SPACE SCIENCE STUDENTS ASSOCIATION (ESSA)

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