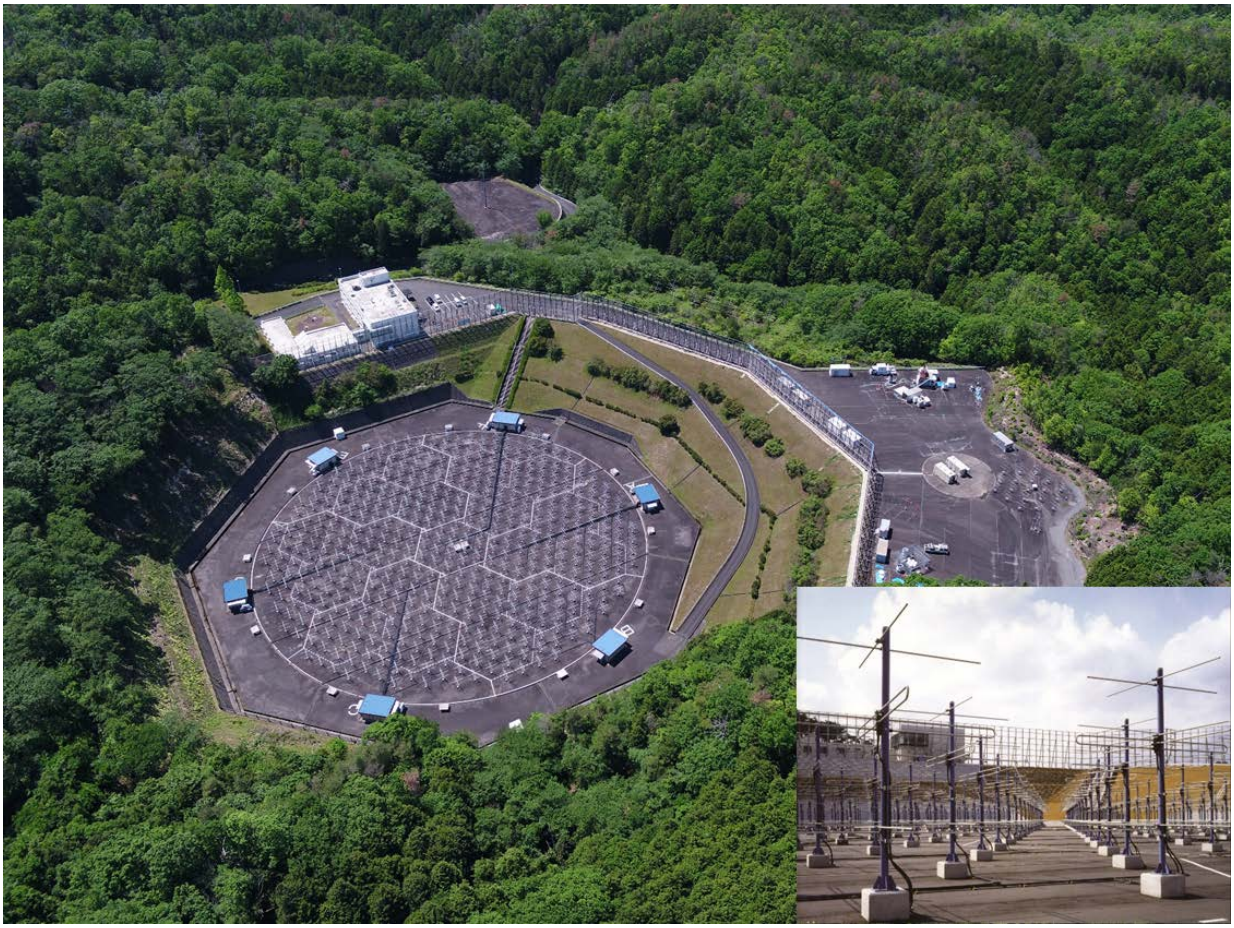
International Symposium on the 40th Anniversary of the MU Radar

November 18-21, 2024
Online & onsite hybrid meeting / Uji Campus, Kyoto University, Kyoto, Japan

URL: http://www.rish.kyoto-u.ac.jp/mu_40th_sympo/



Organized by

RISH 生存圏研究所
Research Institute for Sustainable Humanosphere, Kyoto University

NICT ISEE 公益財団法人 京都大学 教育研究振興財団 KYOTO TRADITION MEETS INNOVATION 日本気象学会 SGEPSS Society of Geomagnetism and Earth, Planetary and Space Sciences

Preface

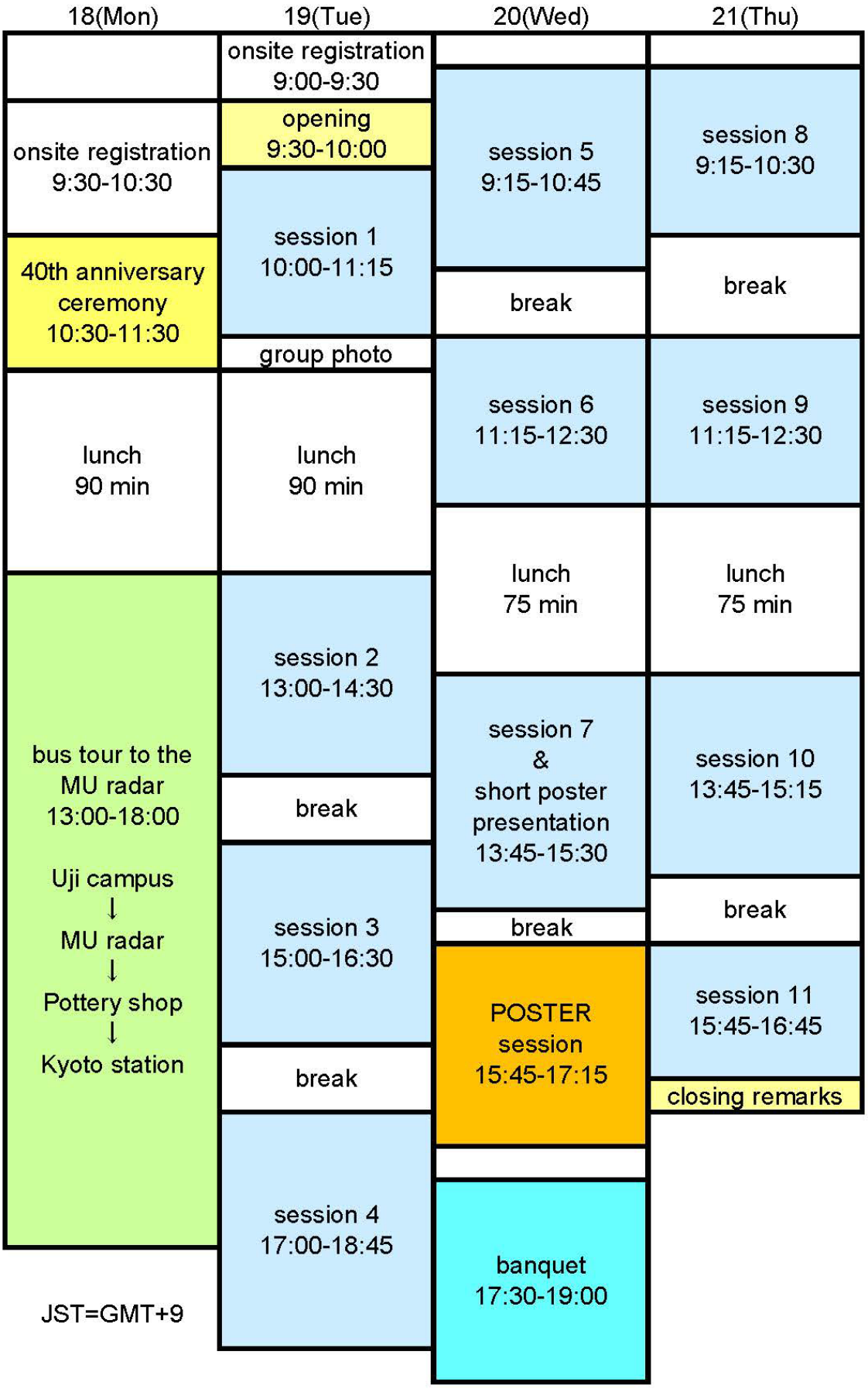
The MU (Middle and Upper atmosphere) radar operated by the Research Institute for Sustainable Humanosphere (RISH), Kyoto University was built in 1984 at Shigaraki in Koka-city, Japan. It is one of the most powerful and versatile VHF radars with an active phased array system consisting of 475 Yagi antennas. It has a monostatic circular antenna array with a diameter of 103 m, which can be divided into 25 independent sub-arrays. The MU radar now forms the core of the Shigaraki MU Observatory. Several other remote sensing instruments have also been developed, including a Rayleigh-Raman lidar, a 1.3-GHz wind profiler radar, and a lower thermosphere profiler radar. Collaborative experiments with the MU radar have been carried out to validate new instruments and to verify the new scientific knowledge provided by these instruments. Since 1984, RISH has conducted many collaborative research programs using the MU radar and associated facilities.

This international symposium is an important part of the 40th anniversary of the MU radar. It aims to review scientific achievements from the MU Observatory and to discuss the ongoing research activities and future plans using the MST/IS radars around the world. The symposium also covers theoretical and modeling studies of the atmosphere from the boundary layer to the ionosphere, and radio applications for atmospheric measurements such as meteorological radar, GNSS meteorology, and GNSS radio occultation.

We are delighted to announce that many attendees will join the International Symposium on the 40th Anniversary of the MU Radar, which will run from November 18 to 21, 2024. In particular, many graduate students and young researchers make oral and poster presentations.

Mamoru Yamamoto
Chair of the International Symposium on the 40th Anniversary of the MU Radar
Director of Research Institute for Sustainable Humanosphere, Kyoto University

Schedule (November 18-21)



International Symposium on the 40th Anniversary of the MU Radar

November 18 (Mon)

01:30UTC(10:30JST)- **Ceremony for the 40th Anniversary of the MU Radar**

Chair: Hiroyuki Hashiguchi

Opening Address

Mamoru Yamamoto
Director, Research Institute for Sustainable Humanosphere, Kyoto University

Address

Norihiro Tokitoh
Vice-President, Kyoto University

Congratulatory Address

Kazuo Shiokawa
President, Scientific Committee on Solar-Terrestrial Physics (SCOSTEP)
President, Society of Geomagnetism and Earth, Planetary and Space Sciences (SGEPSS)

Katsuhiro Nakagawa
Director General, Radio Research Institute, National Institute of Information and Communications Technology (NICT)

Masaki Tsutsumi
Vice Director-General, National Institute of Polar Research (NIPR)

Presentation of the Letters of Appreciation

Naoto Masuda
Corporate Executive Senior General Manager, Electronics and Communication Systems Center, Mitsubishi Electric Corporation

Hiroki Iwanaga
Mayor, Koka City, Shiga Prefecture

Closing Address

Hirotsugu Kojima
Vice Director, Research Institute for Sustainable Humanosphere, Kyoto University

04:00UTC(13:00JST)- **Bus tour to the MU radar**

November 19 (Tue)

00:30UTC(9:30JST)- **Opening Ceremony**

Chair: Tatsuhiro Yokoyama

Opening address and introduction of the MU radar activities

Mamoru Yamamoto

Director of Research Institute for Sustainable Humanosphere (RISH), Kyoto University

Session 1

Chair: Tatsuhiro Yokoyama

O-01 [Onsite]

3-D structures of intense ionospheric disturbances studied by GNSS tomography

Susumu Saito, Taisei Nozaki, and Mamoru Yamamoto

O-02 [Onsite]

Northwestward Extension of Total Electron Content Enhancement and Irregularities Over Japan During a Magnetic Storm on May 2024

Yuichi Otsuka, Kazuo Shiokawa, Atsuki Shibori, Mamoru Yamamoto, Tatsuhiro Yokoyama, Koji Nishimura, Michi Nishioka, and Septi Perwitasari

O-03 [Onsite]

Coordinated observation of sporadic-E layers with sounding rockets and ground-based observations: SEEK, SEEK-2, and RIDE campaigns

Akinori Saito, Takumi Abe, Ayako Matsuoka, Keigo Ishisaka, Yoshifumi Saito, Masato Tagawa, Atsushi Kumamoto, Kumiko Yokota, Hirotsugu Kojima, Satoshi Kurita, Tatsuhiro Yokoyama, Naofumi Murata, Susumu Saito, Toru Takahashi, Michi Nishioka, Satoshi Andoh, Keisuke Hosokawa , Hiroyuki Nakata, Huixin Liu, Masaru Kogure, Takanori Nishiyama, Mitsumu K Ejiri, and Takatoshi Sakazaki

O-04 [Withdraw]

Statistical Study of Equatorial Spread-F Occurrence Observed Over Kototabang, Indonesia, During Decreased Solar Activity of 2005-2008

Ednofri

O-05 [Withdraw]

Assessment of Near-equatorial Ionospheric Responses to Solar and Meteorological Drivers Using VLF Propagation Technique

Ozuem V. Edward, Victor U. J. Nwankwo, and Timothy O. Akinsola

O-06 [Online]

Global Vertical Total Electron Content (VTEC) variation during an intense geomagnetic storm on June 22, 2015

Bhupendra Malvi, and P. K. Purohit

Lunch (~90 min)

04:00UTC(13:00JST)- **Session 2**

Chair: Akinori Saito

O-07 [Onsite]

Development of ionospheric vertical plasma drift model using radar observations in the Indian and Indonesian longitudes

P. PavanChaitanya, A. K. Patra, Y. Otsuka, T. Yokoyama, and M. Yamamoto

O-08 [Onsite]

Lunar tidal wave effects on equatorial ionospheric vertical ExB drift during sudden stratospheric warming

P. PavanChaitanya, A. K. Patra, Y. Otsuka, T. Yokoyama, and M. Yamamoto

O-09 [Online]

Semidiurnal Tidal Influence on the Occurrence of Post-midnight F Region FAI Radar Echoes

S. Sridharan, and S. Meenakshi

O-10 [Onsite]

Lifetime and Zonal Migration of Equatorial Plasma Bubbles based on GNSS Total Electron Content Observation in Indonesia

Prayitno Abadi, Yuichi Otsuka, Ihsan Naufal Muafiry, and Teguh Nugraha Putra

O-11 [Online]

Development of SEALION Equatorial Plasma Bubble Alert and Data Portal

Septi Perwitasari, Michi Nishioka, and Kukkai Kornyanat

O-12 [Online]

Geospace disturbance study enabled by coordinated observations of ground-based networks

Shun-Rong Zhang, and Liwen Ren

Coffee break (~30 min)

06:00UTC(15:00JST)- **Session 3**

Chair: Yuichi Otsuka

O-13 [Online, Video]

Exploring an Extension of Space Situational Awareness in Southeast Asian Region Utilizing EAR Observation Data

Afrizal Bahar, Varuliantor Dear, Asnawi Husin, Agri Faturahman, Jiyo, and Rezy Pradipta

O-14 [Onsite]

Modelling the 3-D structure and dynamics of sporadic E layers

Lihui Qiu, and Huixin Liu*

O-15 [Online, Video]

Multidiagnostic Observation of Ionospheric Irregularities over Indonesia Following the 15 January 2022 Tonga Volcano Eruption

Agri Faturahman, Asnawi Husin, Varuliantor Dear, Sefria Anggarani, Annis Siradj Mardiani, Adi Purwono, Jiyo Harjosuwito, and Rezy Pradipta

O-16 [Onsite]
The spatial features of E region irregularities revealed by all-sky radar
Wenjie Sun, Guozhu Li, and Jianfei Liu

O-17 [Onsite]
The Sanya Incoherent Scatter Radar System
Xinan Yue, Baiqi Ning, and Feng Ding

O-18 [Online, Video]
J-ARGUS: Expanding the observation capabilities to study the equatorial ionosphere
Danny Scipion, Fabiano Rodrigues, Marco Milla, David Hysell, Jorge Chau, and Kenneth Obenberger

Coffee break (~30 min)

08:00UTC(17:00JST)- **Session 4**
Chair: Susumu Saito
O-19 [Online, Video]
Development of 445 MHz wind profiling radar at NARL for meteorological applications
P Yasodha, T Narayana Rao, and A K Patra

O-20 [Onsite]
The Tibetan Plateau (Yangbajing) MST radar system
Yufang Tian, Xin Wang, and Daren Lyu

O-21 [Onsite]
The LARID: capabilities, advantages and limitations for observing low latitude ionosphere
Guozhu Li, Lianhuan Hu, Wenjie Sun, Baiqi Ning, et al.

O-22 [Onsite]
DDMA-MIMO observation with the MU radar
Tomoya Matsuda, Koji Nishimura, and Hiroyuki Hashiguchi

O-23 [Onsite]
Development of MIMO radar using 1.3-GHz atmospheric radar
Hiroyuki Hashiguchi, Yuna Ishii, Koji Nishimura, and Mamoru Yamamoto

O-24 [Online, Video]
Advanced Indian MST Radar with Multi-channel capabilities
M. Durga Rao, P. Kamaraj, K. M. V. Prasad, K. Jayaraj, J. Raghavendra, R. Ashrit, T.N. Rao, and A.K.Patra

O-46 [Onsite]
Ionospheric topside diffusive flux and the formation of summer nighttime ionospheric electron density enhancement over Millstone Hill
Yihui Cai, Xinan Yue, Wenbin Wang, Shun-Rong Zhang, Huixin Liu, and Jiuhou Lei

November 20 (Wed)

00:15UTC(09:15JST)- **Session 5**

Chair: Huixin Liu

O-25 [Online]

Meteor radar of Kazan Federal University and prospects for the development of a local area meteor network

D.V. Korotyshkin, O.N. Sherstyukov, and F.S. Valiullin

O-26 [Online]

Method of determination of meteor velocity by diffraction and comparison of meteor shower velocities based on observations in Kazan with other optical and radar data

D.V. Korotyshkin

O-27 [Withdraw]

Fine Structure of Vertically Propagation of Kelvin Wave “near” Tropopause during Wet and Dry Season Observed by the Equatorial Atmosphere Radar

Eddy Hermawan, Widya Ningrum, Albertus Sulaiman, and Sonni Setiawan

O-28 [Onsite]

Recent observations of atmospheric instabilities from the Indian network of ST/MST radars : Results inferred from NetRAD-ASMA campaign

Siddarth Shankar Das, N. Poddar, M. V. Ratnam, V. Venugopal, A. K. Ghosh, A. Paul, M. Naja, S. Abhilash, S. Bhattacharjee, M. Durga Rao, P. Nandakumar, V. Rakesh, S. K. Das, S. V. Sunikumar, D. S. Raj, N. Das, G. Pandithurai, and K. Raghunath

O-29 [Online]

Characteristics of vertical air motion over central Himalayan region using 206.5 MHz Stratosphere-Troposphere Radar

Nabarun Poddar, Siddarth Shankar Das, Manish Naja, and Samaresh Bhattacharjee

O-30 [Onsite]

Characteristics of the aspect sensitivity and the long-term variation of vertical wind velocity observed with Equatorial Atmosphere Radar

Noersomadi, Tiin Sinatra, Hubert Luce, Toshitaka Tsuda, and Hiroyuki Hashiguchi

Coffee break (~30 min)

02:15UTC(11:15JST)- **Session 6**

Chair: Noersomadi

O-31 [Online]

Investigation of The Turbulence Echo Power Observed by Equatorial Atmosphere Radar (EAR) with The Refractive Index Gradient and the Atmospheric Stability from Hourly Radiosondes with 10 m Vertical Sampling

Tiin Sinatra, Noersomadi, Asif Awaludin, Halimurrahman, Nani Cholianawati, Anis Purwaningsih, Toshitaka Tsuda, Hiroyuki Hashiguchi, and Hubert Luce

O-32 [Online]
Vertical motion of two types of heavy convective rainfall with different depths observed by the MU radar, a vertical pointing X-band radar, and the GPM

Shoichi Shige, Nozomu Toda, Kazumasa Aonashi, Yusuke Goto, Taro Shinoda, Nobuhiro Takahashi, and Hiroyuki Hashiguchi

O-33 [Withdraw]
Bright band observations with an Micro Rain Radar and the MU radar

Toyoshi Shimomai, Yutaro Saiki, and Hiroyuki Hashiguchi

O-34 [Onsite]
Applications of multi-receiver and multi-frequency radar imaging to atmospheric study

Zhen-Xiong You, Hiroyuki Hashiguchi, Mamoru Yamamoto, Yen-Hsyang Chu, Ching-Lun Su, and Chien-Ya Wang

O-35 [Onsite]
Observation of vertical wind profiles in clear air using a C-band solid-state radar

Hiroshi Yamauchi, Takashi Unuma, Akihito Umehara, and Ahoro Adachi

Lunch (~75 min)

04:45UTC(13:45JST)- **Session 7**

Chair: Koji Nishimura

O-36 [Onsite]
Characteristics of Mesoscale Wind Fields in Typhoons observed by the MU Radar

Yoshiaki Shibagaki, Hiroyuki Hashiguchi, Hubert Luce, Masayuki Yamamoto, and Manabu D. Yamanaka

O-37 [Online]
MJO affected Land Sea Breeze Circulation in West Coast of Sumatra

Albert Sulaiman, Wendi Herjupa, Anis Purwaningsih, Eddy Hermawan, Manabu D. Yamanaka, Noersomadi, and H. Hashiguchi

O-38 [Online]
Impact of Southerly Surge on Rainfall Pattern Over Java, Bali, West Nusa Tenggara and East Nusa Tenggara during Asian Winter Monsoon and Its Relationship to MJO Condition

Trismidianto, Didi Satiadi, Wendi Harjupa, Ibnu Fathrio, Risyanto*, Elfira Saufina, Robi Muharsyah, Danang Eko Nuryanto, Fadli Nauval, Dita Fatria Andarini, Anis Purwaningsih, Teguh Harjana, Alfan Sukmana Praja, Adi Witono, Ina Juaeni, and Bambang Suhandi

O-39 [Onsite]
Study of Orography-MJO Interaction and Its Impact on Rainfall Variability in West Sumatra

Didi Satiadi, Anis Purwaningsih*, Wendi Harjupa, Elfira Saufina, Ibnu Fathrio, Trismidianto, Fahmi Rahmatia, Ridho Pratama, Hiroyuki Hashiguchi, and Toyoshi Shimomai

O-40 [Onsite]
AI based WRF-DA modelling of the August 2018 Kerala flood
Kavya Johny, M.G. Manoj, and Ashish Shaji

06:00UTC(15:00JST)- **Short Poster Presentation – Elevator Speech**
Chair: Koji Nishimura
P-01～P-10 (3 minutes each)

Coffee break (~15 min)

Poster Session

06:45UTC(15:45JST)-08:15UTC(17:15JST) Hybrid Space

Banquet

08:30UTC(17:30JST)-10:00UTC(19:00JST) Hybrid Space

November 21 (Thu)

00:15UTC(09:15JST)- **Session 8**

Chair: Ramesh Karanam

O-41 [Onsite]

In-Depth Analysis of Atmospheric Dynamics Leading to Landslide in Kototabang on December 19, 2019: Integrating Satellite and Ground Observations

Fahmi Rahmatia, Anis Purwaningsih, Elfira Saufina, Didi Satiadi, Wendi Harjupa, Ridho Pratama

O-42 [Onsite]

Examination of Atmospheric Dynamics During the Extreme Rainfall Event in West Sumatera on March 7-8, 2024: Roles of MJO, WWB, and Kelvin Waves

Elfira Saufina, Trismidianto, Didi Satiadi, Wendi Harjupa, Risyanto, Anis Purwaningsih, Alfan Sukmana Praja, Ina Juaeni, Adi Witono, Ibnu Fathrio, and Fahmi Rahmatia

O-43 [Onsite]

The Mesoscale Convective Complex Triggered Extreme Rainfall and Devastating Floods in Bangka Belitung on February 8–10, 2016, linked to the Cold Surge, Borneo Vortex, MJO, and Equatorial Waves

Ibnu fathrio, Trismidianto, Didi Satiadi, Risyanto*, Alfan Sukmana Praja, and Anis Purwaningsih

O-44 [Online]

Diurnal and Seasonal Variations of Mesoscale Convective Systems Precipitation and Their Influence on Rainfall Patterns in the Indonesian Maritime Continent

Mukhamad Adib Azka, Nurjanna Joko Trilaksono, and Trismidianto

O-45 [Withdraw]

Estimation of convective Mass-flux from simultaneous measurements of 206.5 MHz wind profiler and X-band radar reflectivity measurements in the Himalayan foothills

Subrata Kumar Das, Adtiya Jaiswal, Abhishek Jha, and Manish Naja

O-46 [Move to Session 4]

Coffee break (~30 min)

02:15UTC(11:15JST)- **Session 9**

Chair: Zhen-Xiong You

O-47 [Onsite]

Unraveling the Complexity of Rain Microphysics in Equatorial Sumatra through GPM Satellite and Equatorial Atmospheric Radar Observations

Ravidho Ramadhan, Marzuki, Helmi Yusnaini, Hiroyuki Hashiguchi, and Mutya Vonnisa

O-48 [Onsite]
Estimation of Vertical Air Motion within Precipitating Clouds Using the Equatorial Atmosphere Radar in Combination with a Boundary Layer Radar

Nozomu Toda, Shoichi Shige, Christopher R Williams, Noriyuki Nishi, and Hiroyuki Hashiguchi

O-49 [Onsite]
Estimation of Raindrop Size Distribution Using Vertical Pointing Observations of Ground-Based X-Band Radar and MU Radar

Yusuke GOTO, Taro SHINODA, Haruya MINDA, Moeto KYUSHIMA, Nozomu TODA, Shoichi SHIGE, and Hiroyuki HASHIGUCHI

O-50 [Onsite]
The capability of the middle atmosphere dynamics and structure observation over the Tibetan Plateau based on the MST radar, lidar and cloud radar systems

Daren Lyu et al.

O-51 [Online, Video]
High and equatorial mesospheric dynamical response to the minor stratospheric warming of 2014/15: Comparison with major SSW events 2005/06 and 2008/09

Lynn Salome Daniel and G.J. Bhagavathiammal

Lunch (~75 min)

04:45UTC(13:45JST)- **Session 10**

Chair: Masashi Kohma

O-52 [Withdraw]
Meteor Radar Investigation of Middle and Upper Atmosphere Dynamics from Tropical to Polar Regions during Sudden Stratospheric warming: A Review

S. Eswaraiah, M.Venkat Ratnam, Kondapalli Niranjan Kumar, Chalachew Kindie Mengist, Gasti Venkata Chalapathi, Yong-Ha Kim, and S. Vijaya Bhaskara Rao

O-53 [Onsite]
Interhemispheric Coupling in the Middle Atmosphere Revealed by High-resolution Observations and Modelling (ICSOM) -Gravity-wave Permitting GCM Study for the Whole Middle Atmosphere-

Kaoru Sato, Haruka Okui, Shingo Watanabe, Dai Koshin, Masashi Kohma, et al.

O-54 [Withdraw]
Variability of low-latitude middle atmosphere during a major sudden stratospheric warming in the southern hemisphere

Amitava Guharay, and Paulo Prado Batista

O-55 [Onsite]
Spectral analysis of atmospheric waves in the upper troposphere-lower stratosphere (UTLS) observed with radiosondes at the Equatorial Atmosphere Radar (EAR) observatory

Anis Purwaningsih, Noersomadi, Toshitaka Tsuda, Nani Cholianawati, Halimurrahman, Tiin Sinatra, Asif Awaludin, and Hubert Luce

O-56 [Online]
Study of Low-Latitude Planetary Wave Dynamics during 2019 Minor Sudden Stratospheric Warming

G. Mitra, A. Guharay, P. P. Batista, and R. A. Buriti

O-57 [Withdraw]
Latitudinal Variation of Solar Diurnal, Semi-diurnal, and Terdiurnal Tides using a network of meteor radars and SD WACCM simulation

Pramitha Maniyatt, and Vikash Rishi Dharan K

Coffee break (~30 min)

06:45UTC(15:45JST)- **Session 11**

Chair: Hubert Luce

O-58 [Online]
Unlocking the Secrets of the Tropical Middle Atmosphere: 30 Years of Indian MST Radar Discoveries and Beyond

M. Venkat Ratnam

O-59 [Onsite]
Revisiting seasonal variations of atmospheric parameters in the lower atmosphere (2-20 km) from MU radar data (1987-2022)

Hubert LUCE, Toshitaka TSUDA, Hiroyuki HASHIGUCHI, and Noriyuki NISHI

O-60 [Onsite]
Cloud Base Height Characteristics based on Ceilometer Measurements in Mountainous areas of Sumatra

Helmi Yusnaini, Marzuki, Hiroyuki Hashiguchi, and Ravidho Ramadhan

O-61 [Onsite]
Meteor radar observations of long-term variabilities in arctic mesosphere and lower thermosphere winds over Esrange (67.9°N, 21.1°E)

K. Ramesh, Nicholas J. Mitchell, Neil P. Hindley, and Tracy Moffat-Griffin

07:45UTC(16:45JST)- **Closing Remarks**

Closing Address

Mamoru Yamamoto
Chair of the International Symposium on the 40th Anniversary of the MU Radar
Director of Research Institute for Sustainable Humanosphere (RISH), Kyoto University

Poster Session (November 20 (Thu) 06:45-08:15UTC(15:45-17:15JST))

P-01 [Online]

Preliminary results on CEJ occurrence in quiet space weather conditions during tropical cyclones “BIJILI” and “AILA”

M Gajalakshmi, and G J Bhagavathiammal

P-02 [Online]

Recent progresses of the MSTID studies from the perspective of satellite observations

Charles Lin, P. K. Rajesh, Min Yang Chou, and Pin Hsuan Cheng

P-03 [Onsite]

Ionospheric Signatures detected by GNSS-TEC and SAR Azimuth Offset during Latest Geomagnetic Storm in 2024: Indonesian Region

Ihsan Naufal Muafiry, Masato Furuya, and Prayitno Abadi

P-04 [Onsite]

The Monitoring of Localize Ionospheric Scintillation and RF Interference by GNSS Network

Tung-Yuan Hsiao

P-05 [Online]

Estimating MLT Winds from Non-Specular Meteor Trails: A Machine Learning Approach with RetinaNet

Armando Castro, and Danny Scipion

P-06 [Online]

African and American Equatorial Ionization Anomaly (EIA) Responses to 2013 SSW Event

O.R. Idolor, A.O. Akala, O. S. Bolaji, and E.O. Oyeyemi

P-07 [Onsite]

On the Atmospheric Solitary Waves Propagation over Bengkalis Island

Ahmad Ripai, Albertus Sulaiman, Husin Alatas, and Noersomadi*

P-08 [Online]

Quantifying the impact of extratropical planetary wave forcing on the QBO disruption in 2015/16 and 2019/20

G. J. BHAGAVATHIAMMAL

P-09 [Onsite]

Observation of Mixed Rossby-Gravity (MRG) Waves as Initiation of MJO Propagation using GNSS-RO Data

Herdiana Sri Wahyuningsih, Nurjanna Joko Trilaksono, and Noersomadi*

P-10 [Onsite]

Numerical simulation of orographic gravity waves observed over Syowa Station

Masashi Kohma, Kaoru Sato, David C. Fritts, and Thomas S. Lund

Organizing Committee

Mamoru Yamamoto (Chair)
Research Institute for Sustainable Humanosphere (RISH), Kyoto University
Hiroyuki Hashiguchi
Research Institute for Sustainable Humanosphere (RISH), Kyoto University
Hubert Luce
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Tatsuhiro Yokoyama
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Koji Nishimura
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