

## CONFERENCE 13267

# Earth Observing Missions and Sensors: Development, Implementation, and Characterization VI

02 - 03 December 2024 | Room 303B

**Conference Chair(s):** **Xiaoxiong Xiong**, NASA Goddard Space Flight Ctr. (United States); **Toshiyoshi Kimura**, Japan Aerospace Exploration Agency (Japan); **Po-Hsuan Huang**, Taiwan Space Agency (TASA) (Taiwan)

**Conference Co-Chair(s):** **Changyong Cao**, NOAA National Environmental Satellite, Data, and Information Service (United States)

**Program Committee:** **Sachidananda R. Babu**, NASA Earth Science Technology Office (United States); **Holly A. Bender**, Jet Propulsion Lab. (United States); **Jill Chou**, Taiwan Space Agency (TASA) (Taiwan); **Parminder Ghuman**, NASA Earth Science Technology Office (United States); **Philippe Goryl**, ESRIN (Italy); **Jens Nieke**, European Space Research and Technology Ctr. (Netherlands); **Yoshihiko Okamura**, Japan Aerospace Exploration Agency (Japan); **Thomas S. Pagano**, Jet Propulsion Lab. (United States); **Dong-Bin Shin**, Yonsei Univ. (Korea, Republic of); **Kazuhiro Tanaka**, Japan Aerospace Exploration Agency (Japan); **Lihang Zhou**, Ctr. for Satellite Applications and Research (United States)

## Monday 2 December 2024

## OPENING CEREMONY AND PLENARY SESSION

02 December 2024 • 08:45 AM - 12:00 PM | Room 304A

**Chair welcome and introduction**

2 December 2024 • 8:45 AM - 09:00 AM

**Taiwan's space-based remote sensing development and application: from TASA's perspective** (Plenary Presentation)

Presenter(s): Jong-Shinn Wu, Director General, Taiwan Space Agency (TASA) (Taiwan)

2 December 2024 • 09:00 AM - 09:30 AM

**NASA Earth science vision: technology enables science** (Plenary Presentation)

Presenter(s): Upendra N. Singh, NASA Engineering and Safety Ctr., NASA Langley Research Ctr. (United States)

2 December 2024 • 09:30 AM - 09:45 AM

**Enabling technology for Space-based remote sensing for science and exploration** (Plenary Presentation)

Presenter(s): Clayton P. Turner, Associate Administrator (acting), Space Technology Mission Directorate, NASA Headquarters (United States)

2 December 2024 • 09:45 AM - 10:00 AM

10:00 AM - 10:30 AM: Coffee Break

**Integration of vantage points, programs, and approaches for Space-based Earth remote sensing** (Plenary Presentation)

Presenter(s): Jack A. Kaye, Associate Director for Research, Science Mission Directorate/Earth Science Division, NASA Headquarters (United States)

2 December 2024 • 10:30 AM - 11:00 AM

**JAXA's Earth Observation Program: current missions and international cooperation** (Plenary Presentation)

Presenter(s): Futoshi Takiguchi, Vice President, Japan Aerospace Exploration Agency (JAXA) (Japan)

2 December 2024 • 11:00 AM - 11:30 AM

**Past, current, and future of Geostationary Ocean Color Imager (GOCI)** (Plenary Presentation)

Presenter(s): Jongkuk Choi, Principal Researcher (Director), Korea Ocean Satellite Center, Korea Institute of Ocean Science &amp; Technology (KIOST) (Korea, Republic of)

2 December 2024 • 11:30 AM - 12:00 PM

## Lunch Break 12:00 PM - 01:30 PM

## WELCOME AND OPENING REMARKS

02 December 2024 • 01:30 PM - 01:35 PM | Room 303B

**Xiaoxiong Xiong**, NASA Goddard Space Flight Ctr. (United States), **Toshiyoshi Kimura**, Japan Aerospace Exploration Agency (Japan), **Po-Hsuan Huang**, Taiwan Space Agency (TASA) (Taiwan)

## SESSION 1: EXISTING AND NEW MISSIONS I

02 December 2024 • 01:35 PM - 02:55 PM | Room 303B

Session Chair(s): **Xiaoxiong Xiong**, NASA Goddard Space Flight Ctr. (United States); **Toshiyoshi Kimura**, Japan Aerospace Exploration Agency (Japan)

13267-1 • 01:35 PM - 02:05 PM

**Overview of Japanese Earth observation programs** (Invited Paper)Author(s): **Toshiyoshi Kimura**, Japan Aerospace Exploration Agency (Japan)

13267-2 • 02:05 PM - 02:35 PM

**Calibration and validation of NOAA-21: processes, outcomes, and lessons learned** (Invited Paper)Author(s): **Lihang Zhou**, NOAA Ctr. for Satellite Applications and Research (United States)

13267-3 • 02:35 PM - 02:55 PM

**Overview of NISAR L-band SAR Instrument Verification, Calibration, and Validation**Author(s): **Yuhsyen Shen**, Jet Propulsion Lab. (United States)

**Coffee/Tea Break 02:55 PM - 03:20 PM****SESSION 2: EXISTING AND NEW MISSIONS II**

02 December 2024 • 03:20 PM - 04:30 PM | Room 303B

*Session Chair(s):* **Toshiyoshi Kimura**, Japan Aerospace Exploration Agency (Japan); **Po-Hsuan Huang**, Taiwan Space Agency (TASA) (Taiwan)

13267-4 • 03:20 PM - 03:50 PM

**NASA Earth science technology validation in Space using CubeSat and SmallSat platforms** (*Invited Paper*)*Author(s):* **Sachidananda R. Babu, Parminder Ghuman**, NASA Earth Science Technology Office (United States)

13267-5 • 03:50 PM - 04:10 PM

**Overview and pre-flight tests of TANSO-3 onboard GOSAT-GW***Author(s):* **Yoshihiko Okamura, Michito Sakai**, Japan Aerospace Exploration Agency (Japan); **Yasutaka Fujii, Makoto Kamozaawa**, Mitsubishi Electric Corp. (Japan); **Yasushi Kojima**, Japan Aerospace Exploration Agency (Japan)

13267-6 • 04:10 PM - 04:30 PM

**ALOS-4 launch and early orbit operation result***Author(s):* **Yoshihisa Arikawa, Yukihiro Kankaku, Takeshi Motooka, Chihaya Kato**, Japan Aerospace Exploration Agency (Japan)**POSTER SESSION**

02 December 2024 • 04:30 PM - 06:00 PM | Room 304/305 Foyer

Conference attendees are invited to attend the poster session on Monday evening. Come view the posters, ask questions, network and socialize with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to this event.

**Poster Setup:** Monday 12:00 PM - 04:00 PMPoster authors: view [poster presentation guidelines and set-up instructions](#) online.

13267-7 • 04:30 PM - 06:00 PM

**Development of the FORMOSAT image product operation system***Author(s):* **Yen Ling Lee, Minche Hsieh**, Taiwan Space Agency (TASA) (Taiwan)

13267-22 • 04:30 PM - 06:00 PM

**Alignment of reflective collimator with moving theodolites***Author(s):* **Ho-Lin Tsay**, Taiwan Instrument Research Institute, National Applied Research Labs. (Taiwan); **Hui-Jean Kuo, Ming-Fu Chen**, Taiwan Instrument Research Institute (Taiwan)

13267-23 • 04:30 PM - 06:00 PM

**Structural analysis of the optical payload for a remote-sensing low-Earth orbit CubeSat***Author(s):* **Zhentang Zhao, Cheng-Fang Ho, Jun-Cheng Chen, Ming-Fu Chen**, Taiwan Instrument Research Institute (Taiwan); **Yu-Chuan Lin**, National Kaohsiung University of Science and Technology (Taiwan)

13267-24 • 04:30 PM - 06:00 PM

**Development of a lower system noise temperature receiver for future 300-GHz band spaceborne radiometers***Author(s):* **Ryosuke Tamura, Toshiyuki Nishibori, Masatomo Harada**, Japan Aerospace Exploration Agency (Japan)

13267-25 • 04:30 PM - 06:00 PM

**Utilizing satellite remote-sensing and meteorological data to evaluate potential green-power sites inland and offshore of Taiwan***Author(s):* **Chih-Yen Wang**, Ctr. for Space and Remote Sensing Research, National Central Univ. (Taiwan); **Po-Chun Hsu**, Ctr. for Space and Remote Sensing Research, National Central Univ. (Taiwan), Institute of Hydrological and Oceanic Sciences, National Central Univ. (Taiwan)

13267-26 • 04:30 PM - 06:00 PM

**A study of coastal waters at regional validation sites using observations from VIIRS, PACE, and EMIT***Author(s):* **Yan Bai, Annika Means, Wenhui Wang**, Univ. of Maryland, College Park (United States); **Ziao O. Wang**, Univ. of Maryland (United States); **Xi Shao**, Univ. of Maryland, College Park (United States)

13267-27 • 04:30 PM - 06:00 PM

**Optical ground station for applications of high-precision LEO remote sensing and laser communications satellites**

*Author(s):* **Yih-Cherng Yen, Wen-Hsin Chen, Bo-Yan Chen, Bing-Chiao He, Chien-Yi Cheng**, BaseTech Co., Ltd. (Taiwan); **Chen-Joe Fong, Hsin-Chia Lin, Ching-Wei Chen, Liang-Tang Chen, Chen-Tsung Lin**, Taiwan Space Agency (TASA) (Taiwan); **Huan-Shen Chen**, Institute of Imaging and Biomedical Photonics, National Yang Ming Chiao Tung Univ. (Taiwan); **Chia-Hao Chang, Yu-Hsuan Lin**, Institute of Lighting and Energy Photonics, National Yang Ming Chiao Tung Univ. (Taiwan); **Chien-Hsi Lin, Yen-Fu Chen**, Institute of Imaging and Biomedical Photonics, National Yang Ming Chiao Tung Univ. (Taiwan); **Siang-Cheng Zhu, Liang-Chieh Chuang**, Institute of Lighting and Energy Photonics (Taiwan); **Chun-Ting Lin**, Institute of Communications Engineering, National Yang Ming Chiao Tung Univ. (Taiwan)

13267-28 • 04:30 PM - 06:00 PM

**Does the downscaling resolution maximise the applicability of satellite derived soil moisture?**

*Author(s):* **Mohd Nadzri Md Reba, Fong Chi Chan**, Univ. Teknologi Malaysia (Malaysia); **Pui Boon Hean, Aizat Syamim Mustapha**, MIE Industrial Sdn. Bhd. (Malaysia); **M. Shahrul A., M. Shukri Zainal Abidin**, Univ. Teknologi Malaysia (Malaysia)

13267-29 • 04:30 PM - 06:00 PM

**Long short-term memory (LSTM) deep learning-based prediction of sensor performance time series for improved VIIRS reflective solar band calibration**

*Author(s):* **Tung-Chang Liu, Xi Shao**, Univ. of Maryland, College Park (United States); **Taeyoung Choi**, Global Science & Technology, Inc. (United States); **Feng Zhang**, Univ. of Maryland, College Park (United States)

13267-30 • 04:30 PM - 06:00 PM

**Optical performance assessment of an optical payload**

*Author(s):* **Hui-Jean Kuo**, Taiwan Instrument Research Institute (Taiwan)

13267-31 • 04:30 PM - 06:00 PM

**Development of the FORMOSAT-8 planning and scheduling system: system process design for tasking requirements**

*Author(s):* **Pin Yi Lee, Yu Lin Kuo**, Taiwan Space Agency (TASA) (Taiwan)

13267-32 • 04:30 PM - 06:00 PM

**An update to the calibration algorithm of the MODIS PV LWIR bands for Collection 7 to improve long-term records**

*Author(s):* **Carlos L. Pérez Díaz, Hanzhi Lin, Tiejun Chang, Aisheng Wu**, Science Systems and Applications, Inc. (United States); **Xiaoxiong Xiong**, NASA Goddard Space Flight Ctr. (United States)

13267-33 • 04:30 PM - 06:00 PM

**Imager lens design for star sensor in the Faraday Dragon rideshare mission**

*Author(s):* **Sheng-Feng Lin**, Taiwan Space Agency (TASA) (Taiwan)

13267-34 • 04:30 PM - 06:00 PM

**Determination of the best focus position of Formosat-8**

*Author(s):* **Shih-Fang Liao, Tse Li, Shenq-Tsong Chang, Po-Ming Lin, Chun-Chieh Lien, Po-Hsuan Huang**, Taiwan Space Agency (TASA) (Taiwan)

13267-35 • 04:30 PM - 06:00 PM

**Absolute radiometric calibration and time-series analysis using Sentinel-1A**

*Author(s):* **Y.-C. Chou, T.-H. Liao**, National Taipei Univ. of Technology (Taiwan); **Meng-Che Wu, Yu-Lin Tsai**, Taiwan Space Agency (TASA) (Taiwan)

13267-36 • 04:30 PM - 06:00 PM

**Implementation the design for manufacturability of spaceborne telescope for remote sensing instruments in the FORMOSA-8 satellite program**

*Author(s):* **Sheng-Feng Lin**, Taiwan Space Agency (TASA) (Taiwan)

13267-37 • 04:30 PM - 06:00 PM

**Enhanced stray light suppression black treatments process for observational remote sensing telescopes**

*Author(s):* **Chun-Han Chou, Tsung-Ping Lee, Po-Hsuan Huang**, Taiwan Space Agency (TASA) (Taiwan)

13267-38 • 04:30 PM - 06:00 PM

**Advancements in large-aperture optical systems for submeter-resolution remote-sensing satellites: overcoming technical and regulatory challenges**

*Author(s):* **Hsing-Yu Wu, Chang-Shiu Jiang**, Taiwan Space Agency (TASA) (Taiwan)

## Tuesday 3 December 2024

### SESSION 3: POST-LAUNCH CALIBRATION AND VALIDATION I

03 December 2024 • 08:40 AM - 10:10 AM | Room 303B

*Session Chair(s):* **Lihang Zhou**, NOAA Ctr. for Satellite Applications and Research (United States); **Xiaoxiong Xiong**, NASA Goddard Space Flight Ctr. (United States)

13267-8 • 08:40 AM - 09:10 AM

**Long-term on-orbit performance of the Visible-Infrared Imaging Radiometer Suite (VIIRS) on Suomi NPP, NOAA-20, and NOAA-21 in reference to partner missions** (*Invited Paper*)

*Author(s):* **Changyong Cao**, National Environmental Satellite, Data, and Information Service, National Oceanic and Atmospheric Administration (United States); **Slawomir Blonski**, Global Science & Technology, Inc. (United States); **Xi Shao**, **Wenhui Wang**, **Feng Zhang**, Cooperative Institute for Satellite Earth System Studies, Univ. of Maryland, College Park (United States); **Taeyoung Choi**, Global Science & Technology, Inc. (United States); **Yan Bai**, Cooperative Institute for Satellite Earth System Studies, Univ. of Maryland, College Park (United States); **Sirish Uprety**, Cooperative Institute for Satellite Earth System Studies (United States)

13267-9 • 09:10 AM - 09:30 AM

**Validation of NOAA-21 VIIRS TEB response versus scan angle determined from measurements during the spacecraft pitch maneuver**

*Author(s):* **Aisheng Wu**, Science Systems and Applications, Inc. (United States); **Xiaoxiong Xiong**, NASA Goddard Space Flight Ctr. (United States); **Kwofu V. Chiang**, Science Systems and Applications, Inc. (United States)

13267-10 • 09:30 AM - 09:50 AM

**VIIRS thermal emissive bands on-orbit radiometric calibration and performance**

*Author(s):* **Kwofu V. Chiang**, **Amit Angal**, **Sherry Li**, Science Systems and Applications, Inc. (United States); **Xiaoxiong Xiong**, NASA (United States)

13267-11 • 09:50 AM - 10:10 AM

**Inter-comparison of NOAA-21/NOAA-20/S-NPP VIIRS solar reflective bands (RSB) with PACE OCI and JPL EMIT hyperspectral observations**

*Author(s):* **Wenhui Wang**, Univ. of Maryland, College Park (United States); **Changyong Cao**, NOAA Ctr. for Satellite Applications and Research, National Environmental Satellite, Data, and Information Service, National Oceanic and Atmospheric Administration (United States)

### Coffee/Tea Break 10:10 AM - 10:40 AM

### SESSION 4: POST-LAUNCH CALIBRATION AND VALIDATION II

03 December 2024 • 10:40 AM - 12:00 PM | Room 303B

*Session Chair(s):* **Changyong Cao**, NOAA National Environmental Satellite, Data, and Information Service (United States); **Jill Chou**, Taiwan Space Agency (TASA) (Taiwan)

13267-12 • 10:40 AM - 11:00 AM

**Evaluation of GPM DPR rain parameters with north Taiwan disdrometers**

*Author(s):* **Balaji Kumar Seela**, Academia Sinica (Taiwan); **Jayalakshmi Janapati**, **Pay-Liam Lin**, **Chen-Hau Lan**, **Mu-Qun Huang**, National Central Univ. (Taiwan)

13267-13 • 11:00 AM - 11:20 AM

**Tracking MODIS RVS for the reflective solar bands in drifting orbits using SNO with VIIRS**

*Author(s):* **Aisheng Wu**, Science Systems and Applications, Inc. (United States); **Xiaoxiong Xiong**, NASA Goddard Space Flight Ctr. (United States); **Kevin Twedt**, **Xu Geng**, Science Systems and Applications, Inc. (United States)

13267-14 • 11:20 AM - 11:40 AM

**PACE OCI straylight and crosstalk evaluation using Moon**

*Author(s):* **Shihyan Lee**, **Fred Patt**, **Gene Eplee**, **Jeff McIntire**, **Gerhard Meister**, NASA Goddard Space Flight Ctr. (United States)

13267-15 • 11:40 AM - 12:00 PM

**Using the Moon for MODIS and VIIRS thermal emissive bands on-orbit calibration and characterization**

*Author(s):* **Xiaoxiong Xiong**, NASA Goddard Space Flight Ctr. (United States); **Amit Angal**, **Tiejun Chang**, **Truman Wilson**, Science Systems and Applications, Inc. (United States)

### Lunch Break 12:00 PM - 01:30 PM

**SESSION 5: ENABLING TECHNOLOGY AND DATA ANALYSIS**

03 December 2024 • 01:30 PM - 04:20 PM | Room 303B

*Session Chair(s):* **Po-Hsuan Huang**, Taiwan Space Agency (TASA) (Taiwan); **Sachidananda R. Babu**, NASA Earth Science Technology Office (United States)

13267-16 • 01:30 PM - 01:50 PM

**Optical metrology for wide field-of-view remote sensing systems***Author(s):* **Daewook Kim**, Wyant College of Optical Sciences, The Univ. of Arizona (United States)

13267-40 • 01:50 PM - 02:10 PM

**Looking at Earth in the far-IR: 54 years of waiting and the initial results from NASA's PREFIRE mission***Author(s):* **Xianglei Huang**, **Xiuhong Chen**, Univ. of Michigan (United States); **Tristan L'Ecuyer**, Univ. of Wisconsin-Madison (United States); **Brian Drouin**, Caltech (United States), Jet Propulsion Lab. (United States)

13267-17 • 02:10 PM - 02:30 PM

**Design and simulation of plenoptic imaging system on unmanned aerial vehicle for 3D aerial photography***Author(s):* **Chih-Hao Lin**, **Xing-Wei Liu**, **Ming-Fu Chen**, Taiwan Instrument Research Institute (Taiwan)

13267-18 • 02:30 PM - 02:50 PM

**Design and implementation of automatic optical surface defect inspection system of large aperture lenses***Author(s):* **Abraham Mario Tapilouw**, **Yi-Wei Chang**, **Hau-Wei Wang**, Industrial Technology Research Institute (Taiwan); **Kao-Der Chang**, Industrial Technology Research Institute (Taiwan), Institute of Space System Engineering, National Yang Ming Chiao Tung Univ. (Taiwan); **Leh-Rong Chang**, Industrial Technology Research Institute (Taiwan); **Liang-Tang Chen**, **Chia-Ray Chen**, Taiwan Space Agency (TASA) (Taiwan)

Coffee Break • 02:50 PM - 03:20 PM

13267-19 • 03:20 PM - 03:40 PM

**Optical thermal vacuum test for the FORMOSAT-8 optical system assembly***Author(s):* **Yi-Kai Huang**, **Po-Hsuan Huang**, **Chun-Han Chou**, **Po-Ming Lin**, **Shih-Fang Liao**, **Tse Li**, **Tan-Ying Yu**, **Wei-Hsun Cheng**, **Sheng-Feng Lin**, **Yu-Sheng Liu**, **Tsung-Ping Lee**, **Kai-Sheng Chen**, **Chun-Chieh Lien**, **Chih-Chung Yang**, **Hsin-Hung Lin**, Taiwan Space Agency (TASA) (Taiwan)

13267-20 • 03:40 PM - 04:00 PM

**Implementation and investigation of motion simulation and compensation for airborne synthetic aperture radar***Author(s):* **Cheng-Yen Chiang**, **Chih-Chun Wu**, **Wei-Neng Liao**, National Taipei Univ. of Technology (Taiwan); **Meng-Che Wu**, Taiwan Space Agency (TASA) (Taiwan)

13267-21 • 04:00 PM - 04:20 PM

**Analysis of the 2-D spectral supports in SAR spotlight acquisition mode***Author(s):* **Shih-Shuo Tung**, **Yu-Lin Tsai**, Taiwan Space Agency (TASA) (Taiwan)**ASIA-PACIFIC REMOTE SENSING BANQUET**

03 December 2024 • 05:30 PM - 08:00 PM | Galaxy, Jubilee Hall

All registered conference attendees are invited to relax and socialize with your colleagues at the Asia-Pacific Remote Sensing Banquet. We ask that attendees gather at 05:30 PM. Dinner will be served at 06:00 PM. Entertainment provided by the Taiwu Ballads Troupe. Due to venue size restriction, we have limited space for guests of registered attendees to join the banquet. Guest tickets must be [purchased](#).