

PROCEEDINGS OF SPIE

Remote Sensing of the Atmosphere, Clouds, and Precipitation VIII

**Eastwood Im
Song Yang
Cheng-Yung Huang**
Editors

**3–5 December 2024
Kaohsiung, Taiwan**

Sponsored by
TASA—Taiwan Space Agency (Taiwan)

Cosponsored by
SPIE

Cooperating Organization
NSTC—National Science and Technology Council (Taiwan)

Published by
SPIE

Volume 13262

Proceedings of SPIE 0277-786X, V. 13262

SPIE is an international society advancing an interdisciplinary approach to the science and application of light.

The papers in this volume were part of the technical conference cited on the cover and title page. Papers were selected and subject to review by the editors and conference program committee. Some conference presentations may not be available for publication. Additional papers and presentation recordings may be available online in the SPIE Digital Library at SPIDigitalLibrary.org.

The papers reflect the work and thoughts of the authors and are published herein as submitted. The publisher is not responsible for the validity of the information or for any outcomes resulting from reliance thereon.

Please use the following format to cite material from these proceedings:

Author(s), "Title of Paper," in *Remote Sensing of the Atmosphere, Clouds, and Precipitation VIII*, edited by Eastwood Im, Song Yang, Cheng-Yung Huang, Proc. of SPIE 13262, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510682665

ISBN: 9781510682672 (electronic)

Published by

SPIE

P.O. Box 10, Bellingham, Washington 98227-0010 USA

Telephone +1 360 676 3290 (Pacific Time)

SPIE.org

Copyright © 2025 Society of Photo-Optical Instrumentation Engineers (SPIE).

Copying of material in this book for internal or personal use, or for the internal or personal use of specific clients, beyond the fair use provisions granted by the U.S. Copyright Law is authorized by SPIE subject to payment of fees. To obtain permission to use and share articles in this volume, visit Copyright Clearance Center at copyright.com. Other copying for republication, resale, advertising or promotion, or any form of systematic or multiple reproduction of any material in this book is prohibited except with permission in writing from the publisher.

Printed in the United States of America by Curran Associates, Inc., under license from SPIE.

Publication of record for individual papers is online in the SPIE Digital Library.

**SPIE. DIGITAL
LIBRARY**

SPIDigitalLibrary.org

Paper Numbering: A unique citation identifier (CID) number is assigned to each article in the Proceedings of SPIE at the time of publication. Utilization of CIDs allows articles to be fully citable as soon as they are published online, and connects the same identifier to all online and print versions of the publication. SPIE uses a seven-digit CID article numbering system structured as follows:

- The first five digits correspond to the SPIE volume number.
- The last two digits indicate publication order within the volume using a Base 36 numbering system employing both numerals and letters. These two-number sets start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B ... 0Z, followed by 10-1Z, 20-2Z, etc. The CID Number appears on each page of the manuscript.

Contents

- v *Symposium Committee*
- vii *Conference Committee*

SATELLITE REMOTE SENSING OF PRECIPITATION AND CLOUDS

- 13262 02 **EarthCARE/CPR current conditions and preliminary results from scientific views (Invited Paper)** [13262-1]
- 13262 03 **Enhanced precipitation prediction through the integration of gauge observations with satellite-based precipitation prediction models utilizing the Bayesian model averaging (BMA) technique in Kelantan, Malaysia** [13262-3]
- 13262 04 **Quantitatively distinguishing thick and thin clouds** [13262-4]

REMOTE SENSING OF TROPICAL CYCLONES, PRECIPITATION, AND CLOUDS

- 13262 07 **Results from the NASA TROPICS CubeSat constellation mission to advance tropical cyclone research (Invited Paper)** [13262-9]
- 13262 08 **Remote sensing analysis of marine heatwaves and Typhoon Hinnamnor (2022) in the Western Pacific** [13262-10]
- 13262 09 **Radial distribution of deep convective clouds preceding rapid intensification of the tropical cyclones in the western North Pacific** [13262-11]
- 13262 0A **Regional discrepancies in the microphysical attributes of summer season rainfall over Taiwan using GPM DPR** [13262-12]

NEW METEOROLOGICAL SATELLITE MISSIONS AND OBSERVING CONCEPTS

- 13262 0C **Overview of precipitation measuring mission (PMM): the next generation rain mission (Invited Paper)** [13262-14]

STUDIES OF TRACES/AEROSOL/AIR POLLUTION/TURBULENCE AND THEIR IMPACTS

- 13262 0I **Associations between aerosol's deposition and chlorophyll-a distribution based on multisensor satellite observations** [13262-20]
- 13262 0J **The impact of aerosols on the modification of winter raindrop characteristics in Northern Taiwan** [13262-22]

- 13262 OL **Satellite remote sensing of interannual variation in carbon monoxide over Asia** [13262-25]
- 13262 OM **Near-infrared high-energy laser beam propagation through atmospheric boundary layer** [13262-29]

POSTER SESSION

- 13262 OO **Analysis of slant path simulation effect for the all-sky using 1DVAR system** [13262-26]
- 13262 OP **Greenhouse gas measurement using a mobile FTS during ASIA-AQ** [13262-27]
- 13262 OQ **NO₂ validation during the NASA Asia-air quality flight campaign with an experimental portable DOAS (PDOAS) at Kaohsiung** [13262-28]
- 13262 OR **Estimation of PM concentrations in the Philippines using Sentinel-5P and artificial neural network** [13262-30]
- 13262 OT **Investigating the wintertime evolution of the atmospheric boundary layer thermodynamic structure in southern Taiwan** [13262-36]