

PROCEEDINGS OF SPIE

Earth Observing Systems XXIX

Xiaoxiong (Jack) Xiong
Xingfa Gu
Jeffrey S. Czapla-Myers
Editors

20–21 August 2024
San Diego, California, United States

Sponsored and Published by
SPIE

Volume 13143

Proceedings of SPIE 0277-786X, V. 13143

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

Earth Observing Systems XXIX, edited by Xiaoxiong Xiong, Xingfa Gu,
Jeffrey S. Czapla-Myers, Proc. of SPIE Vol. 13143, 1314301
© 2024 SPIE · 0277-786X · doi: 10.1117/12.3053852

Proc. of SPIE Vol. 13143 1314301-1

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 *Earth Observing Systems XXIX*, edited by Xiaoxiong (Jack) Xiong, Xingfa Gu, Jeffrey S. Czaplak-Myers, Proc. of SPIE 13143, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X
ISSN: 1996-756X (electronic)

ISBN: 9781510679467
ISBN: 9781510679474 (electronic)

Published by

SPIE

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

Telephone +1 360 676 3290 (Pacific Time)

SPIE.org

Copyright © 2024 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

vii Conference Committee

NEW INSTRUMENTS AND TECHNOLOGIES

- 13143 03 **The multichannel thermosphere-ionosphere photometer scanner (MTIPS) UV photometer instrument [13143-4]**
- 13143 04 **Instrument polarisation model for the EPS-SG/3MI polarimeter: theoretical assumption and adjustment using on-ground measurements [13143-5]**
- 13143 05 **Tilted-secondary mirror (TSM) for forward motion compensation in high resolution earth observation satellite cameras [13143-6]**

GROUND TESTING EQUIPMENT

- 13143 06 **A vacuum-compatible, spectrally tuneable, flat panel uniform source for testing large aperture earth observation systems [13143-7]**
- 13143 07 **A new solar spectrum source for absolute radiometric calibration of advanced multispectral sensors and hyperspectral imagers [13143-8]**
- 13143 08 **Evaluation and characterization of a laboratory VNIR spectrometer for use in the calibration of field radiometers [13143-9]**
- 13143 09 **GSFC Calibration Laboratory improvement of broadband source calibration through continuous monitoring [13143-10]**

PRE-LAUNCH CALBRATION

- 13143 0A **Prelaunch radiometric calibration of the J4 VIIRS reflective solar bands [13143-11]**
- 13143 0B **Prelaunch radiometric calibration of the J4 VIIRS thermal emissive bands [13143-12]**
- 13143 0C **Prelaunch radiometric calibration of the J4 VIIRS day-night band [13143-13]**
- 13143 0D **JPSS-4 VIIRS prelaunch geometric calibration and characterization status [13143-14]**
- 13143 0E **Prelaunch characterization of VIIRS crosstalk [13143-15]**

POST-LAUNCH CALIBRATION I

- 13143 OF **Quantifying uncertainties in Atmospheric Infrared Sounder (AIRS) spatial response functions** [13143-16]
- 13143 OG **In-flight characterization of the nonlinearity and instrumental noise of the AIRS** [13143-17]
- 13143 OJ **A deep neural network for achieving spectrally consistent and seamless infrared radiance measurements across geostationary satellite domains** [13143-21]

POST-LAUNCH CALIBRATION II

- 13143 OM **PACE OCI on-orbit solar calibration** [13143-24]
- 13143 ON **PACE OCI lunar calibration: initial results** [13143-25]
- 13143 OO **Initial on-orbit spectral calibration of the PACE Ocean Color Instrument** [13143-26]

POST-LAUNCH CALIBRATION III

- 13143 OQ **NOAA-21 VIIRS screen transmittance functions derived from on-orbit calibration data** [13143-29]
- 13143 OR **Entire mission striping and signal dependence assessment for SNPP, NOAA-20, and NOAA-21 VIIRS** [13143-30]
- 13143 OS **Assessment of swath-to-swath registration of GOES-R series ABI full disk data** [13143-31]
- 13143 OT **A NIR spectrometer onboard Uvsq-Sat NG satellite for observing greenhouse gases** [13143-3]

VICARIOUS CALIBRATION I

- 13143 OW **PRISMA calibration based on natural targets** [13143-34]
- 13143 OY **Characterizing vicarious calibration test sites using imaging spectroscopy** [13143-36]

VICARIOUS CALIBRATION II

- 13143 0Z **Mitigating the Saharan PICS natural variability to reduce overlapping sensor intercalibration uncertainties** [13143-37]
- 13143 10 **Seasonal, spectral, and regional characterization of deep convective clouds top-of-atmosphere bidirectional reflectance for improved satellite intercalibration** [13143-38]
- 13143 11 **Deep convective cloud calibration sensitivity studies in support of radiometrically scaling GEO imagers with VIIRS** [13143-39]

POSTER SESSION

- 13143 12 **Evaluation of VIIRS thermal emissive bands inter-sensor consistency using radiative transfer modeling** [13143-41]
- 13143 13 **Combining SAR and AIS to track oil discharge vessels using the improved U-Net** [13143-42]
- 13143 14 **Earth reflectance image striping mitigation for NOAA-20 VIIRS visible and near-infrared bands** [13143-43]
- 13143 15 **The JPSS-4 VIIRS version 2 at-launch relative spectral response characterization** [13143-44]
- 13143 17 **Ultra-portable field-capable short wave infrared transfer radiometers: initial system calibration and characterization** [13143-46]
- 13143 18 **Lunar phase angle impact on Aqua and Terra MODIS PV LWIR crosstalk coefficients calculation** [13143-47]
- 13143 19 **Compact Korsch-type CubeSat telescope for optical remote sensing** [13143-49]
- 13143 1A **Spatiotemporal satellite image fusion using nanosatellite data** [13143-50]

Conference Committee

Program Track Chairs

Alexander M. J. van Eijk, TNO Defence, Safety, and Security
(Netherlands)

Stephen Hammel, Naval Information Warfare Center Pacific
(United States)

Conference Chairs

Xiaoxiong (Jack) Xiong, NASA Goddard Space Flight Center
(United States)

Xingfa Gu, Institute of Remote Sensing and Digital Earth (China)

Jeffrey S. Czapla-Myers, Wyant College of Optical Sciences, The
University of Arizona (United States)

Conference Program Committee

Amit Angal, Science Systems and Applications, Inc. (United States)

Julia A. Barsi, NASA Goddard Space Flight Center (United States)

Armin Doerry, Sandia National Laboratory (United States)

Christopher N. Durell, Labsphere, Inc. (United States)

Bertrand Fougne, EUMETSAT (Germany)

Joel McCorkel, NASA Goddard Space Flight Center (United States)

Vijay Murgai, Raytheon (United States)

Thomas S. Pagano, Jet Propulsion Laboratory (United States)

Jeffery J. Puschell, Northrop Grumman Corporation (United States)

