

PROCEEDINGS OF SPIE

Earth Observing Systems XXVIII

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

22–24 August 2023
San Diego, California, United States

Sponsored and Published by
SPIE

Volume 12685

Proceedings of SPIE 0277-786X, V. 12685

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

Earth Observing Systems XXVIII, edited by Xiaoxiong (Jack) Xiong, Xingfa Gu,
Jeffrey S. Czapla-Myers, Proc. of SPIE Vol. 12685, 1268501
© 2023 SPIE · 0277-786X · doi: 10.1117/12.3012891

Proc. of SPIE Vol. 12685 1268501-1

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 XXVIII*, edited by Xiaoxiong (Jack) Xiong, Xingfa Gu, Jeffrey S. Czaplak-Myers, Proc. of SPIE 12685, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

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

ISBN: 9781510665842
ISBN: 9781510665859 (electronic)

Published by

SPIE

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

Telephone +1 360 676 3290 (Pacific Time)

SPIE.org

Copyright © 2023 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

- 12685 02 **Geostationary littoral imaging and monitoring radiometer (GLIMR): instrument capability and overview** [12685-1]
- 12685 03 **Compact Jones calibration source for next generation Earth observation imaging satellites in the VNIR, SWIR, and MWIR: the improved radiometric calibration of imaging systems (IRIS) high-performance integrated flat illuminator (HIFI)** [12685-2]
- 12685 04 **Design of an ultra-portable field-capable short wave infrared transfer radiometer supporting Earth observing sensor calibration** [12685-3]
- 12685 05 **Corrected recursive equations for vane aperture sizes and locations in one- and two-stage stray light baffle systems** [12685-4]
- 12685 07 **CLARREO Pathfinder as a SI-traceable reference for satellite intercalibration** [12685-6]

PRELAUNCH CALIBRATION

- 12685 08 **JPSS J2 Spectralon performance pre-launch** [12685-7]
- 12685 09 **Prelaunch radiometric calibration of the thermal response of the PACE Ocean Color Instrument** [12685-8]
- 12685 0A **Spectral and radiometric performance of the Goddard laser for absolute measurement of radiance** [12685-9]
- 12685 0B **GSFC Calibration Laboratory capabilities and future plans overview** [12685-10]

POLARIZATION IN EARTH REMOTE SENSING I: JOINT SESSION WITH CONFERENCES 12685 AND 12690

- 12685 0C **PACE OCI polarization sensitivity based on pre-launch testing** [12685-11]
- 12685 0D **Cloud thermodynamic phase retrievals with a low-cost, division-of-focal-plane polarization camera** [12685-12]

GOES MISSIONS

- 12685 OH **Comparison of ABI INR using the operational and GRATDAT-generated L1B images** [12685-16]
- 12685 OI **Improving IPATS channel-to-channel registration assessment** [12685-17]

AIRS, MODIS, AND LANDSAT I

- 12685 OK **Updates to the radiometric calibration of the Atmospheric Infrared Sounder (AIRS)** [12685-19]
- 12685 OL **20 years of atmospheric infrared sounder (AIRS) data: status, climate trends, and future data continuity** [12685-20]
- 12685 ON **An empirical solution for the AIRS scene mirror contamination from adjacent footprints** [12685-22]

AIRS, MODIS, AND LANDSAT II

- 12685 OO **Impact of satellite orbit drift on MODIS Earth scene observations used in calibration of the reflective solar bands** [12685-24]
- 12685 OP **An update on the MODIS thermal emissive bands on-orbit performance** [12685-25]
- 12685 OQ **Landsat 8 decade of on-orbit operation summary of events and current state** [12685-26]
- 12685 OR **Ten years of Landsat 8 product calibration** [12685-27]

DATA PROCESSING AND ANALYTICAL TECHNIQUES

- 12685 OS **Nighttime imagery: Can Zipf's law identify urban systems?** [12685-28]
- 12685 OU **Burn severity assessment with different remote sensing products for wildfire damage analysis** [12685-30]
- 12685 OV **The comparison of ARIMA and LSTM in forecasting of long-term surface movements derived from PSINSAR** [12685-31]

SNPP AND JPSS MISSIONS

- 12685 OY **Early mission performance of NOAA-21 VIIRS reflective solar bands** [12685-34]

- 12685 0Z **Preliminary assessment of the NOAA-21 VIIRS on-orbit reflective solar band calibration and performance** [12685-35]
- 12685 11 **Evaluation of NOAA-21 VIIRS thermal emissive bands early on-orbit calibration performance** [12685-37]
- 12685 12 **JPSS-2/NOAA-21 VIIRS early on-orbit geometric performance** [12685-38]
- 12685 13 **Evaluation and correction of NOAA-21 VIIRS day night band stray light and comparison with SNPP and NOAA-20** [12685-39]

VICARIOUS CALIBRATION

- 12685 14 **Radiance-based and reflectance-based retrievals of surface reflectance for vicarious calibration** [12685-40]
- 12685 15 **Intercomparison of Landsat OLI and Terra ASTER solar reflective calibrations using the Radiometric Calibration Network data from Railroad Valley, Nevada** [12685-41]
- 12685 16 **Twenty years of the clouds and the Earth's radiant energy system (CERES) calibration/validation data on Terra and Aqua** [12685-42]
- 12685 17 **Estimating bidirectional reflectance and monitoring stability of SNPP-VIIRS reflective solar bands using a deep neural network** [12685-43]
- 12685 18 **The impact of pixel size on the characterization of deep convective clouds for calibration** [12685-44]
- 12685 19 **Improved characterization of Libya-4 and Dome-C for consistent radiometric scaling between VIIRS sensors** [12685-45]

POSTER SESSION

- 12685 1A **Retrieval of atmospheric variables using geostationary satellite image over East Asia** [12685-46]
- 12685 1B **Evaluating commercial tablet screens for use as portable spectral radiance calibration assessment sources, specifically in support of field-deployed ground viewing radiometers** [12685-50]
- 12685 1C **Using Dome Concordia to characterize the long-term stability of VIIRS thermal emissive bands** [12685-51]
- 12685 1D **Using scattered light from nadir port to aid the Terra and Aqua MODIS reflective solar band calibration** [12685-52]

- 12685 1E **Aqua MODIS TEB crosstalk correction improvement and image quality enhancement**
[12685-53]
- 12685 1F **The JPSS-3 VIIRS version 2 at-launch relative spectral response characterization** [12685-54]

Conference Committee

Program Track Chairs

Alexander M. J. van Eijk, TNO Defence, Security, and Safety
(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
Univ. of Arizona (United States)

Conference Program Committee

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

Armin Doerry, Sandia National Laboratories (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 Intelligence and Space (United States)

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

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

