

PROCEEDINGS OF SPIE

[SPIDigitalLibrary.org/conference-proceedings-of-spie](https://spiedigitallibrary.org/conference-proceedings-of-spie)

Front Matter: Volume 7452

, "Front Matter: Volume 7452," Proc. SPIE 7452, Earth Observing Systems XIV, 745201 (24 September 2009); doi: 10.1117/12.845513

SPIE.

Event: SPIE Optical Engineering + Applications, 2009, San Diego, California, United States

PROCEEDINGS OF SPIE

Earth Observing Systems XIV

James J. Butler
Xiaoxiong Xiong
Xingfa Gu
Editors

3–5 August 2009
San Diego, California, United States

Sponsored and Published by
SPIE

Volume 7452

Proceedings of SPIE, 0277-786X, v. 7452

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

The papers included 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. The papers published in these proceedings 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 this book:

Author(s), "Title of Paper," in *Earth Observing Systems XIV*, edited by James J. Butler, Xiaoxiong Xiong, Xingfa Gu, Proceedings of SPIE Vol. 7452 (SPIE, Bellingham, WA, 2009) Article CID Number.

ISSN 0277-786X

ISBN 9780819477422

Published by

SPIE

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

Telephone +1 360 676 3290 (Pacific Time) · Fax +1 360 647 1445

SPIE.org

Copyright © 2009, Society of Photo-Optical Instrumentation Engineers

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 copying fees. The Transactional Reporting Service base fee for this volume is \$18.00 per article (or portion thereof), which should be paid directly to the Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, MA 01923. Payment may also be made electronically through CCC Online 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. The CCC fee code is 0277-786X/09/\$18.00.

Printed in the United States of America.

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

The logo for SPIE Digital Library features the word "SPIE" in a bold, sans-serif font above the words "Digital Library" in a similar font. To the right of the text is a stylized graphic consisting of three vertical bars of varying heights, with the top bar being the tallest and the two shorter bars on either side.

SPIDigitalLibrary.org

Paper Numbering: Proceedings of SPIE follow an e-First publication model, with papers published first online and then in print and on CD-ROM. Papers are published as they are submitted and meet publication criteria. A unique, consistent, permanent citation identifier (CID) number is assigned to each article at the time of the first publication. Utilization of CIDs allows articles to be fully citable as soon they are published online, and connects the same identifier to all online, print, and electronic versions of the publication. SPIE uses a six-digit CID article numbering system in which:

- The first four 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. The complete citation is used on the first page, and an abbreviated version on subsequent pages. Numbers in the index correspond to the last two digits of the six-digit CID number.

Contents

ix *Conference Committee*

SESSION 1 PRELAUNCH CALIBRATION

- 7452 03 **Spectral features: how to reduce them** [7452-02]
H. van Brug, D. ten Bloemendal, B. de Goeij, TNO Science and Industry (Netherlands);
R. Vink, L. Maresi, ESA ESTEC (Netherlands)
- 7452 04 **The extension of the NIST BRDF scale from 1100 nm to 2500 nm** [7452-03]
H. W. Yoon, D. W. Allen, G. P. Eppeldauer, B. K. Tsai, National Institute of Standards and
Technology (United States)
- 7452 05 **Progress in BRDF calibration measurements in the SWIR** [7452-04]
G. T. Georgiev, Sigma Space (United States); J. J. Butler, NASA Goddard Space Flight Ctr.
(United States)
- 7452 06 **Development of a filter radiometer monitor system for integrating sphere sources** [7452-05]
L. Ding, M. G. Kowalewski, J. W. Cooper, G. R. Smith, Science Systems and Applications, Inc.
(United States); J. J. Butler, NASA Goddard Space Flight Ctr. (United States)

SESSION 2 NPOESS PREPARATORY PROJECT

- 7452 07 **Radiometric calibration of the OMPS instruments for NPOESS** [7452-06]
S. C. Bennett, Ball Aerospace & Technologies Corp. (United States)
- 7452 08 **Radiometric calibration of 100-cm sphere integrating source for Visible/Infrared
Imager/Radiometer Suite (VIIRS)** [7452-07]
E. D. Kim, R. Menzel, J. R. Moore, Raytheon Space & Airborne Systems (United States)
- 7452 09 **VIIRS polarization testing** [7452-08]
E. Waluschka, NASA Goddard Space Flight Ctr. (United States)
- 7452 0A **A VIIRS ocean data simulator** [7452-09]
W. D. Robinson, F. S. Patt, Science Applications International Corp. (United States);
B. A. Franz, NASA Goddard Space Flight Ctr. (United States); K. R. Turpie, Science
Applications International Corp. (United States); C. R. McClain, NASA Goddard Space Flight
Ctr. (United States)

SESSION 3 NEW MISSIONS

- 7452 0C **Desert test site uniformity analysis** [7452-11]
D. X. Kerola, Skillstorm Government Integrated Services (United States); C. J. Bruegge, Jet
Propulsion Lab. (United States)

- 7452 0D **SENTINEL-2 image quality and level 1 processing** [7452-12]
A. Meygret, Ctr. National d'Études Spatiales (France) and ESA ESTEC (Netherlands); S. Baillarin, Ctr. National d'Études Spatiales (France) and ESA ESRIN (Italy); F. Gascon, ESA ESTEC (Netherlands); E. Hillairet, Magellium (France); C. Dechoz, S. Lacherade, Ctr. National d'Études Spatiales (France); P. Martimort, F. Spoto, ESA ESTEC (Netherlands); P. Henry, Ctr. National d'Études Spatiales (France); R. Duca, ESA ESRIN (Italy)
- 7452 0E **Status of the optical payload and processor development of ESA's Sentinel 3 mission** [7452-13]
J. Nieke, J. Frerick, J. Stroede, C. Mavrocordatos, B. Berruti, ESA ESTEC (Netherlands)
- 7452 0F **In-orbit imaging and radiometric performance prediction for flight model Geostationary Ocean Color Imager** [7452-14]
S. Jeong, Y. Jeong, D. Ryu, Yonsei Univ. (Korea, Republic of); S. Kim, Korea Aerospace Research Institute (Korea, Republic of); S. Cho, Korea Ocean Research & Development Institute (Korea, Republic of); J. Hong, I&A Technology (Korea, Republic of); S.-W. Kim, Yonsei Univ. (Korea, Republic of); H. S. Youn, Korea Aerospace Research Institute (Korea, Republic of)

SESSION 4 EARTH OBSERVING SYSTEM SENSORS I

- 7452 0G **Improving weather and climate prediction with the AIRS on Aqua** [7452-15]
T. S. Pagano, Jet Propulsion Lab. (United States)
- 7452 0H **Spectral calibration in hyperspectral sounders** [7452-16]
E. M. Manning, H. H. Aumann, R. G. Deen, Y. Jiang, Jet Propulsion Lab. (United States); L. L. Strow, S. E. Hannon, Univ. of Maryland, Baltimore County (United States)
- 7452 0I **Sensor performance of Clouds and the Earth's Radiant Energy System (CERES) instruments aboard EOS Terra and Aqua spacecraft based on post-launch calibration studies** [7452-17]
S. Thomas, Science Systems and Applications, Inc. (United States); K. J. Priestley, NASA Langley Research Ctr. (United States); P. C. Hess, R. S. Wilson, Science Systems and Applications, Inc. (United States); M. A. Avery, NASA Langley Research Ctr. (United States); D. R. Walikainen, Z. P. Szewczyk, D. L. Cooper, M. Shankar, Science Systems and Applications, Inc. (United States)
- 7452 0J **On-orbit solar calibrations using the Aqua Clouds and Earth's Radiant Energy System (CERES) in-flight calibration system** [7452-18]
R. S. Wilson, Science Systems and Applications, Inc. (United States); K. J. Priestley, NASA Langley Research Ctr. (United States); S. Thomas, P. Hess, Science Systems and Applications, Inc. (United States)

SESSION 5 EARTH OBSERVING SYSTEM SENSORS II

- 7452 0K **MODIS solar reflective calibration traceability** [7452-19]
X. Xiong, J. Butler, NASA Goddard Space Flight Ctr. (United States)
- 7452 0L **Trends in MODIS geolocation error analysis** [7452-20]
R. E. Wolfe, NASA Goddard Space Flight Ctr. (United States); M. Nishihama, NASA Goddard Space Flight Ctr. (United States) and Sigma Space Corp. (United States)

7452 0M **On-orbit operation and performance of MODIS blackbody** [7452-21]
X. Xiong, NASA Goddard Space Flight Ctr. (United States); T. Chang, Science Systems and Applications, Inc. (United States); W. Barnes, Univ. of Maryland, Baltimore County (United States)

7452 0N **Detector dependency of MODIS polarization sensitivity derived from on-orbit characterization** [7452-22]
G. Meister, Futuretech Corp. (United States); B. A. Franz, NASA Goddard Space Flight Ctr. (United States); E. J. Kwiatkowska, ESA ESTEC (Netherlands); R. E. Eplee, SAIC (United States); C. R. McClain, NASA Goddard Space Flight Ctr. (United States)

SESSION 6 SENSORS, TECHNOLOGIES, AND MEASUREMENT TECHNIQUES

7452 0O **Staggered arrays for high resolution earth observing systems** [7452-23]
C. Latry, J.-M. Delvit, Ctr. National d'Études Spatiales (France)

7452 0P **Transmittance measurement of a heliostat facility used in the preflight radiometric calibration of Earth-observing sensors** [7452-24]
J. Czaplá-Myers, College of Optical Sciences, The Univ. of Arizona (United States); K. Thome, NASA Goddard Space Flight Ctr. (United States); N. Anderson, J. McCorkel, N. Leisso, College of Optical Sciences, The Univ. of Arizona (United States); W. Good, S. Collins, Ball Aerospace & Technologies Corp. (United States)

7452 0Q **Remote sensing capabilities of the Airborne Compact Atmospheric Mapper** [7452-27]
M. G. Kowalewski, Science Systems and Applications, Inc. (United States); S. J. Janz, NASA Goddard Space Flight Ctr. (United States)

7452 0R **A sampling technique in the star-based monitoring of GOES imager visible-channel responsivities** [7452-28]
I.-L. Chang, C. Dean, Perot Systems Corp. (United States); M. Weinreb, Riverside Technology, Inc. (United States); X. Wu, National Oceanic and Atmospheric Administration (United States)

SESSION 7 LAND REMOTE SENSING

7452 0S **Landsat-7 and Landsat-5 thermal band calibration updates** [7452-29]
J. A. Barsi, B. L. Markham, NASA Goddard Space Flight Ctr. (United States); J. R. Schott, Rochester Institute of Technology (United States); S. J. Hook, Jet Propulsion Lab. (United States); N. G. Raqueno, Rochester Institute of Technology (United States)

7452 0T **Performance results for the Landsat OLI spectral filters** [7452-30]
J. W. Figoski, N. Zaun, Ball Aerospace & Technologies Corp. (United States); T. Mooney, Barr Associates, Inc. (United States)

7452 0U **The increased potential for the Landsat Data Continuity Mission to contribute to case 2 water quality studies** [7452-31]
A. Gerace, J. Schott, Rochester Institute of Technology (United States)

SESSION 8 CROSS-CALIBRATION

- 7452 0X **The cross calibration of SeaWiFS and MODIS using on-orbit observations of the Moon** [7452-35]
R. E. Eplee, Jr., Science Applications International Corp. (United States); X. Xiong, NASA Goddard Space Flight Ctr. (United States); J.-Q. Sun, Science Systems and Applications, Inc. (United States); G. Meister, Futuretech Corp. (United States); C. R. McClain, NASA Goddard Space Flight Ctr. (United States)
- 7452 0Y **Characterization of MODIS and SeaWiFS solar diffuser on-orbit degradation** [7452-36]
X. Xiong, NASA Goddard Space Flight Ctr. (United States); R. E. Eplee, Jr., Science Applications International Corp. (United States); J. Sun, Science Systems and Applications, Inc. (United States); F. S. Patt, Science Applications International Corp. (United States); A. Angal, Science Systems and Applications, Inc. (United States); C. R. McClain, NASA Goddard Space Flight Ctr. (United States)
- 7452 10 **Radiometric characterization of hyperspectral imagers using multispectral sensors** [7452-38]
J. McCorkel, College of Optical Sciences, The Univ. of Arizona (United States); K. Thome, NASA Goddard Space Flight Ctr. (United States); N. Leisso, N. Anderson, J. Czapla-Myers, College of Optical Sciences, The Univ. of Arizona (United States)

SESSION 9 EARTH OBSERVATION SYSTEMS AND APPLICATIONS IN CHINA

- 7452 11 **Earth observations and their applications in China (Invited Paper)** [7452-46]
X. Gu, Institute of Remote Sensing Applications (China); B. Song, Defense Industry Program Evaluation Ctr. of SASTIND (China); J. Wang, X. Zhou, Institute of Remote Sensing Applications (China)
- 7452 13 **The microwave sensor status and future developing plan of China meteorological satellites** [7452-48]
H. Yang, N. Lu, Z. Ge, H. Yin, China Meteorological Administration (China)

POSTER SESSION

- 7452 16 **An enhanced vegetation cover method for automatic generation of land surface emissivity maps** [7452-39]
E. Caselles, Univ. Politècnica de València (Spain) and Univ. de València (Spain); F. J. Abad, Univ. Politècnica de València (Spain); E. Valor, J. M. Galve, V. Caselles, Univ. de València (Spain)
- 7452 17 **Characterization of MODIS SD screen vignetting function using observations from spacecraft yaw maneuvers** [7452-40]
Z. Wang, Science Systems and Applications, Inc. (United States); X. Xiong, NASA Goddard Space Flight Ctr. (United States)
- 7452 18 **MODIS solar diffuser stability monitor: function and applications** [7452-41]
H. Chen, Science Systems and Applications, Inc. (United States); X. Xiong, NASA Goddard Space Flight Ctr. (United States)

- 7452 19 **Time-dependent response versus scan angle for MODIS reflective solar bands** [7452-43]
J. Sun, Science Systems and Applications, Inc. (United States); X. Xiong, NASA Goddard Space Flight Ctr. (United States); H. Chen, A. Angal, Science Systems and Applications, Inc. (United States); X. Geng, SAIC (United States); A. Wu, Science Systems and Applications, Inc. (United States)
- 7452 1A **Long-term monitoring of radiometer sensitivity for radiometric comparisons among optical laboratories** [7452-44]
G. Meister, Futuretech Corp. (United States); G. S. Fargion, San Diego State Univ. (United States); C. R. McClain, NASA Goddard Space Flight Ctr. (United States)

Author Index

Conference Committee

Program Track Chair

Allen H.-L. Huang, University of Wisconsin, Madison (United States)

Conference Chairs

James J. Butler, NASA Goddard Space Flight Center (United States)
Xiaoxiong Xiong, NASA Goddard Space Flight Center (United States)

Cochair

Xingfa Gu, Institute of Remote Sensing Applications (China)

Program Committee

Philip E. Ardanuy, Raytheon Intelligence & Information Systems (United States)
Robert A. Barnes, NASA Goddard Space Flight Center (United States)
and Science Applications International Corporation (United States)
Jeffrey S. Czapla-Myers, College of Optical Sciences, The University of Arizona (United States)
Armin W. Doerry, Sandia National Laboratories (United States)
Thomas S. Pagano, Jet Propulsion Laboratory (United States)
Carl F. Schueler, Orbital Sciences Corporation (United States)

Session Chairs

- 1 Prelaunch Calibration
Xiaoxiong Xiong, NASA Goddard Space Flight Center (United States)
- 2 NPOESS Preparatory Project
Kurtis J. Thome, NASA Goddard Space Flight Center (United States)
- 3 New Missions
Armin W. Doerry, Sandia National Laboratories (United States)
- 4 Earth Observing System Sensors I
Robert A. Barnes, NASA Goddard Space Flight Center (United States)
and Science Applications International Corporation (United States)

- 5 Earth Observing System Sensors II
Robert A. Barnes, NASA Goddard Space Flight Center (United States)
and Science Applications International Corporation (United States)
- 6 Sensors, Technologies, and Measurement Techniques
Denis A. Elliott, Jet Propulsion Laboratory (United States)
- 7 Land Remote Sensing
Jeffrey S. Czapla-Myers, College of Optical Sciences, The University of
Arizona (United States)
- 8 Cross-calibration
Philip E. Ardanuy, Raytheon Intelligence & Information Systems (United
States)
- 9 Earth Observation Systems and Applications in China
Xingfa Gu, Institute of Remote Sensing Applications (China)