PROCEEDINGS OF SPIE

Ultraviolet and Visible Ground- and Space-based Measurements, Trace Gases, Aerosols and Effects VI

Jay R. Herman Wei Gao Editors

3 August 2009 San Diego, California, United States

Sponsored and Published by SPIE

Volume 7462

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 *Ultraviolet and Visible Ground- and Space-based Measurements, Trace Gases, Aerosols and Effects VI*, edited by Jay R. Herman, Wei Gao, Proceedings of SPIE Vol. 7462 (SPIE, Bellingham, WA, 2009) Article CID Number.

ISSN 0277-786X ISBN 9780819477521

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.



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

v Conference Committee

wavelength range [7462-11]

UV AND VIS GROUND AND SPACE I SESSION 1 7462 03 MAX-DOAS observations from ground, ship, and research aircraft: maximizing signal-to-noise to measure 'weak' absorbers [7462-04] R. Volkamer, S. Coburn, B. Dix, R. Sinreich, Univ. of Colorado at Boulder (United States) 7462 05 Aerosol column absorption measurements using co-located UV-MFRSR and AERONET CIMEL instruments [7462-06] N. Krotkov, Univ. of Maryland, Baltimore County (United States) and NASA Goddard Space Flight Ctr. (United States); G. Labow, Science Systems and Applications, Inc. (United States); J. Herman, NASA Goddard Space Flight Ctr. (United States); J. Slusser, R. Tree, G. Janson, B. Durham, Colorado State Univ. (United States); T. Eck, Univ. of Maryland, Baltimore County (United States) and NASA Goddard Space Flight Ctr. (United States); B. Holben, NASA Goddard Space Flight Ctr. (United States) **SESSION 2 UV AND VIS GROUND AND SPACE II** 7462 06 Global increases in UVB irradiance from changes in ozone and cloud-aerosol amounts 1979 to 2008 [7462-08] J. R. Herman, NASA Goddard Space Flight Ctr. (United States) 7462 08 Nitrogen detection in the vegetation of prototype constructed wetlands using chlorophyll fluorescence [7462-10] E. Rosero, L. Plazas, E. Solarte, A. Fernández, E. Peña, M. Peña, Univ. del Valle (Colombia) **POSTER SESSION** 7462 0C Aerosol single scattering albedo retrieval with various techniques in the UV and visible

A. Kazantzidis, Aristotle Univ. of Thessaloniki (Greece); N. Krotkov, Univ. of Maryland, Baltimore County (United States); M. Blumthaler, Innsbruck Medical Univ. (Austria); A. Bais, Aristotle Univ. of Thessaloniki (Greece); S. Kazadzis, Finnish Meteorological Institute (Finland) and National Observatory of Athens (Greece); D. Balis, Aristotle Univ. of Thessaloniki

(Greece); R. Schmidhauser, Paul Scherrer Institut (Switzerland); N. Kouremeti, E. Giannakaki, Aristotle Univ. of Thessaloniki (Greece); A. Arola, Finnish Meteorological Institute (Finland)

iii

Ozone monitoring instrument satellite UV irradiance product correction using a global aerosol climatology [7462-12]

A. Arola, Finnish Meteorological Institute (Finland); S. Kazadzis, Finnish Meteorological Institute (Finland) and National Observatory of Athens (Greece); J. Kujanpää, A. Lindfors, Finnish Meteorological Institute (Finland); A. Bais, Aristotle Univ. of Thessaloniki (Greece); A. Webb, Univ. of Manchester (United Kingdom); P. Weihs, Institute of Meteorology (Austria); A. di Sarra, ENEA-Climate Lab. (Italy); T. Koskela, Finnish Meteorological Institute (Finland); M. Janousch, CHI (Czech Republic); J. M. Vilaplana, INTA, Mazagon (Spain); A. M. Sianni, Sapienza Univ. of Rome (Italy); C. Brogniez, LOA-Univ. des Sciences et Technologies de Lille (France)

7462 OF Dissemination of data from the National Science Foundation's UV monitoring network [7462-14]

G. Bernhard, C. R. Booth, J. C. Ehramjian, V. V. Quang, Biospherical Instruments, Inc. (United States)

7462 OG Effects of terrestrial UV radiation on selected outdoor materials: an interdisciplinary approach [7462-15]

A. Heikkilä, Finnish Meteorological Institute (Finland); S. Kazadzis, Aristotle Univ. of Thessaloniki (Greece); O. Tolonen-Kivimäki, O. Meinander, A. Lindfors, K. Lakkala, T. Koskela, J. Kaurola, Finnish Meteorological Institute (Finland); A. Sormanen, P. Kärhä, Helsinki Univ. of Technology (Finland); A. Naula-Iltanen, S. Syrjälä, Tampere Univ. of Technology (Finland); M. Kaunismaa, J. Juhola, T. Ture, Elastopoli Oy (Finland); U. Feister, Deutscher Wetterdienst (Germany); N. Kouremeti, A. Bais, Aristotle Univ. of Thessaloniki (Greece); J. M. Vilaplana, Instituto Nacional de Técnica Aeroespacial (Spain); J. J. Rodriguez, C. Guirado, E. Cuevas, Nacional de Meteorologia Spain (Spain); J. Koskinen, Finnish Meteorological Institute (Finland)

7462 0H Light emitting diode cavity enhanced differential optical absorption spectroscopy (LED-CE-DOAS): a novel technique for monitoring atmospheric trace gases [7462-16] R. M. Thalman, R. M. Volkamer, Univ. of Colorado at Boulder (United States) and Cooperative Institute for Research in Environmental Studies (United States)

7462 01 The CLEO spectrometer system: first results [7462-17]

N. Abuhassan, Univ. of Maryland, Baltimore County (United States); A. Cede, Univ. of Maryland (United States); J. Herman, NASA Goddard Space Flight Ctr. (United States); N. Krotkov, Univ. of Maryland, Baltimore County (United States)

7462 OK A simulation of stratospheric ozone in response to the increased surface CFCs emissions [7462-19]

C. Shi, Nanjing Univ. of Information Science and Technology (China)

7462 OL Losses in the fluorescent tracer used in hydrodynamic modeling of constructed wetlands studied by laser induced fluorescence [7462-20]

L. Plazas, E. Rosero, E. Solarte, J. Sandoval, M. Peña, Univ. del Valle (Colombia)

Author Index

Conference Committee

Conference Chairs

Jay R. Herman, NASA Goddard Space Flight Center (United States) **Wei Gao**, Colorado State University (United States)

Program Track Chair

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

Session Chairs

- UV and VIS Ground and Space IAlexander Cede, University of Maryland (United States)
- UV and VIS Ground and Space II
 Wei Gao, Colorado State University (United States)
 Nickolay A. Krotkov, NASA Goddard Space Flight Center (United States)