

PROCEEDINGS OF SPIE

# ***Remote Sensing of the Ocean, Sea Ice, Coastal Waters, and Large Water Regions 2018***

**Charles R. Bostater Jr.**  
**Stelios P. Mertikas**  
**Xavier Neyt**  
*Editors*

**10–12 September 2018**  
**Berlin, Germany**

*Sponsored by*  
SPIE

*Cooperating Organisations*  
European Optical Society  
European Association of Remote Sensing Companies (Belgium)  
CENSIS—Innovation Centre for Sensor and Imaging Systems (United Kingdom)  
ISPRS—International Society for Photogrammetry and Remote Sensing  
EARSeL—European Association of Remote Sensing Laboratories (Germany)  
Remote Sensing & Photogrammetry Society (United Kingdom)

*Published by*  
SPIE

**Volume 10784**

Proceedings of SPIE 0277-786X, V. 10784

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 SPIEDigitalLibrary.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 Ocean, Sea Ice, Coastal Waters, and Large Water Regions 2018*, edited by Charles R. Bostater Jr., Stelios P. Mertikas, Xavier Neyt, Proceedings of SPIE Vol. 10784 (SPIE, Bellingham, WA, 2018) Seven-digit Article CID Number.

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510621510

ISBN: 9781510621527 (electronic)

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 © 2018, 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/18/\$18.00.

Printed in the United States of America Vm7 i ffUb '5ggc WJUH/gz-bWZi bXYf'JW bgY 'Zca 'GD-9.

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

**SPIE. DIGITAL  
LIBRARY**

SPIEDigitalLibrary.org

---

**Paper Numbering:** *Proceedings of SPIE* follow an e-First publication model. A unique citation identifier (CID) number is assigned to each article 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	<i>Authors</i>
ix	<i>Conference Committee</i>
xi	<i>Introduction</i>

---

## SESSION 1 COASTAL CHLOROPHYLL SENSING

---

10784 02	Evaluation and comparison of JPSS VIIRS neural network retrievals of harmful algal blooms with other retrieval algorithms, validated against in-situ radiometric and sample measurements in the West Florida Shelf, and examination of impacts of atmospheric corrections, temporal variations and complex in-shore waters (Invited Paper) [10784-1]
10784 04	Vortex structures in the Southeastern Baltic Sea: satellite observations and concurrent measurements [10784-3]

---

## SESSION 2 BATHYMETRIC SENSING

---

10784 07	Satellite derived bathymetry for Arctic charting: a review of sensors and techniques for operational implementation within the Canadian Hydrographic Service (Invited Paper) [10784-6]
10784 08	Coastal water bathymetry retrieval using high-resolution remote sensing data [10784-7]
10784 0A	Finding model parameters for the system waveform of a full-wave lidar: a pragmatic solution [10784-44]
10784 0B	Influence of bottom depths and bottom types on water surface reflectance [10784-45]

---

## SESSION 3 HYPERSPECTRAL AND OPTICAL SENSING

---

10784 0C	Analysis of water-in-oil emulsion hyperspectral signature: contribution of pool experiment (Invited Paper) [10784-11]
10784 0D	Compressed UAV sensing for flood monitoring by solving the continuous travelling salesman problem over hyperspectral maps [10784-12]
10784 0E	Hyperspectral in-situ attenuation depths and their relation to satellite imagery in two southeastern US estuaries (10784-13)
10784 0F	Inherent optical properties retrieval from deep waters using Multi Verse Optimizer [10784-14]

---

**SESSION 4      MICROWAVE AND RADAR SENSING**

---

- 10784 OK      **A stochastic model for oil spill detection in marine environment with SAR data [10784-18]**
- 10784 OL      **Remote sensing of evolution of oil spills on the water surface [10784-19]**

---

**SESSION 5      PHYSICAL AND OPTICAL OCEANOGRAPHIC SENSING**

---

- 10784 ON      **Satellite based estimation of water-mass formation areas and extents (Invited Paper) (Best Student Paper Award) [10784-20]**
- 10784 OO      **Influence of ocean surface waves and air bubbles on the polarization characteristics of spaceborne oceanographic lidar returns [10784-21]**
- 10784 OP      **Particularities of radar backscattering associated with wave breaking on the sea surface [10784-22]**

---

**SESSION 6      EARTH SYSTEMS SENSING**

---

- 10784 OQ      **Abnormal upwelling off the southeast of Vietnam in summer 2016 (Invited Paper) [10784-24]**
- 10784 OV      **Multiresolution earth remote sensing approach (Invited Paper) [10784-46]**

---

**POSTER SESSION**

---

- 10784 OY      **Satellite remote sensing of submesoscale fronts in inner seas [10784-31]**
- 10784 10      **Directional variations in parallel polarized water-leaving radiance for suspended particulate matters in coastal waters based on radiative transfer simulation [10784-33]**
- 10784 11      **Polarization characteristics of underwater, upwelling radiance of suspended particulate matters in turbid waters based on radiative transfer simulation [10784-34]**
- 10784 12      **Remote sensing of near surface layer of the ocean [10784-35]**
- 10784 13      **Phytoplankton initiation bloom magnitude in Algerian continental shelf waters using 11 years of ocean color observations [10784-36]**
- 10784 14      **Validation of a green-red quasi-analytical algorithm for inherent optical properties in East China Sea [10784-37]**
- 10784 15      **A new algorithm based on phytoplankton absorption coefficient for red tide monitoring in the East China Sea [10784-38]**

- 10784 16      **Simulation and analysis of UV-A radiance reaching the passive satellite sensors over case-I and case-II waters [10784-39]**
- 10784 17      **Seasonal variability of remote sensing reflectance of the Gorky reservoir [10784-40]**
- 10784 18      **Underwater sky image as a tool for estimating some inherent optical properties of eutrophic water [10784-41]**
- 10784 19      **Comparison of Sentinel-2 and Landsat-8 OLI satellite images vs. high spatial resolution images (MIVIS and WorldView-2) for mapping *Posidonia oceanica* meadows [10784-42]**
- 10784 1A      **Lidar measurements spatial variability of optical properties of water in eutrophic reservoirs [10784-43]**