PROCEEDINGS OF SPIE

SPIDigitalLibrary.org/conference-proceedings-of-spie

Front Matter: Volume 8891

, "Front Matter: Volume 8891," Proc. SPIE 8891, SAR Image Analysis, Modeling, and Techniques XIII, 889101 (1 November 2013); doi: 10.1117/12.2049572

Event: SPIE Remote Sensing, 2013, Dresden, Germany

PROCEEDINGS OF SPIE

SAR Image Analysis, Modeling, and Techniques XIII

**Claudia Notarnicola
Simonetta Paloscia
Nazzareno Pierdicca**
Editors

**24–26 September 2013
Dresden, Germany**

Sponsored by
SPIE

Cooperating Organisations
European Association of Remote Sensing Companies (Belgium)
Remote Sensing and Photogrammetry Society (United Kingdom)
Deutsche Gesellschaft für Photogrammetrie, Fernerkundung und Geoinformation e.V.
(Germany)
European Optical Society

Published by
SPIE

Volume 8891

Proceedings of SPIE 0277-786X, V. 8891

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

SAR Image Analysis, Modeling, and Techniques XIII, edited by Claudia Notarnicola,
Simonetta Paloscia, Nazzareno Pierdicca, Proc. of SPIE Vol. 8891, 889101
© 2013 SPIE · CCC code: 0277-786X/13/\$18 · doi: 10.1117/12.2049572

Proc. of SPIE Vol. 8891 889101-1

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 *SAR Image Analysis, Modeling, and Techniques XIII*, edited by Claudia Notarnicola, Simonetta Paloscia, Nazzareno Pierdicca, Proceedings of SPIE Vol. 8891 (SPIE, Bellingham, WA, 2013) Article CID Number.

ISSN: 0277-786X

ISBN: 9780819497604

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 © 2013, 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/13/\$18.00.

Printed in the United States of America.

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

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 as 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

vii *Conference Committee*

SAR DATA PROCESSING I: JOINT SESSION WITH CONFERENCES 8891 AND 8892

- 8891 02 **Simulation of imaging effects of very high resolution SAR systems** [8891-1]
H. Anglberger, R. Speck, H. Suess, Deutsches Zentrum für Luft- und Raumfahrt e.V. (Germany)

SAR DATA PROCESSING II: JOINT SESSION WITH CONFERENCES 8891 AND 8892

- 8891 04 **Multi-chromatic analysis of SAR images for target analysis** [8891-4]
F. Bovenga, L'Istituto di Studi sui Sistemi Intelligenti per l'Automazione, CNR (Italy);
D. Derauw, C. Barbier, Univ. de Liège (Belgium); F. M. Rana, A. Refice, N. Veneziani,
L'Istituto di Studi sui Sistemi Intelligenti per l'Automazione, CNR (Italy); R. Vitulli, European
Space Agency, ESTEC (Netherlands)
- 8891 05 **A novel multi-band SAR data technique for fully automatic oil spill detection in the ocean**
[8891-5]
F. Del Frate, D. Latini, A. Taravat, Univ. degli Studi di Roma Tor Vergata (Italy); C. E. Jones,
Jet Propulsion Lab. (United States)

INTERFEROMETRY I

- 8891 06 **Detection of partially coherent scatterers in multidimensional SAR tomography: a
theoretical study** [8891-6]
A. Pauciuolo, Istituto per il Rilevamento Elettromagnetico dell'Ambiente, CNR (Italy);
A. De Maio, Univ. degli Studi di Napoli Federico II (Italy); S. Perna, Istituto per il Rilevamento
Elettromagnetico dell'Ambiente, CNR (Italy) and Univ. degli Studi di Napoli Parthenope
(Italy); D. Reale, G. Fornaro, Istituto per il Rilevamento Elettromagnetico dell'Ambiente,
CNR (Italy)
- 8891 07 **2D phase unwrapping using Markov random field based phase locked loops** [8891-8]
N. D. Cagatay, M. Datcu, Deutsches Zentrum für Luft- und Raumfahrt e.V. (Germany)
- 8891 08 **End-to-end design consideration of a radar altimeter for terrain-aided navigation** [8891-9]
J. Chun, S. Choi, Korea Advanced Institute of Science and Technology (Korea, Republic
of); I. Paek, D. Park, K. Yoo, Samsung Thales Co., Ltd. (Korea, Republic of)

INTERFEROMETRY II

- 8891 0A **An algorithm for phase-offset evaluation in InSAR DEM generation** [8891-11]
S. Perna, Univ. degli Studi di Napoli Parthenope (Italy) and Istituto per il Rilevamento Elettromagnetico dell'Ambiente, CNR (Italy); C. Esposito, Istituto per il Rilevamento Elettromagnetico dell'Ambiente, CNR (Italy) and Univ. degli Studi del Sannio (Italy); R. Lanari, A. Paucillo, Istituto per il Rilevamento Elettromagnetico dell'Ambiente, CNR (Italy); C. Wimmer, OrbiSat de Amazônia (Brazil); P. Berardino, Istituto per il Rilevamento Elettromagnetico dell'Ambiente, CNR (Italy)
- 8891 0B **Decorrelation of L-band and C-band interferometry to volcanic risk prevention** [8891-12]
E. S. Malinverni, Univ. Politecnica delle Marche (Italy); D. T. Sandwell, Univ. of California, San Diego (United States); A. N. Tasseti, L. Cappelletti, Univ. Politecnica delle Marche (Italy)
- 8891 0C **C/X-band SAR interferometry applied to ground monitoring: examples and new potential** [8891-13]
R. Nutricato, D. O. Nitti, Geophysical Applications Processing S.r.l. (Italy); F. Bovenga, A. Refice, J. Wasowski, L'Istituto di Studi sui Sistemi Intelligenti per l'Automazione, CNR (Italy); M. T. Chiaradia, Politecnico di Bari (Italy)
- 8891 0D **Monitoring of infrastructural sites by means of advanced multi-temporal DInSAR methods** [8891-14]
A. Vollrath, F. Zucca, Univ. degli Studi di Pavia (Italy); S. Stramondo, Istituto Nazionale di Geofisica e Vulcanologia (Italy)
- 8891 0E **DEM generation by using COSMO/SkyMed tandem pairs and weather models** [8891-31]
D. O. Nitti, Geophysical Applications Processing S.r.l. (Italy); F. Bovenga, L'Istituto di Studi sui Sistemi Intelligenti per l'Automazione, CNR (Italy); R. Nutricato, F. Intini, Geophysical Applications Processing S.r.l. (Italy); M. T. Chiaradia, Politecnico di Bari (Italy)

RADAR APPLICATIONS IN AGRO-HYDROLOGY: JOINT SESSION WITH CONFERENCES 8887 AND 8891

- 8891 0F **Comparison of three algorithms for the retrieval of soil moisture from ASCAT data in the framework of the round robin exercise** [8891-15]
E. Santi, S. Paloscia, S. Pettinato, Istituto di Fisica Applicata Nello Carrara, CNR (Italy); C. Notarnicola, L. Pasolli, EURAC Research (Italy); M. Callegari, Univ. degli Studi di Pavia (Italy) and EURAC Research (Italy)
- 8891 0G **How far can be SAR considered a tool for mountain hydrology?** [8891-16]
G. Bertoldi, C. Notarnicola, EURAC Research (Italy); S. Della Chiesa, G. Niedrist, EURAC Research (Italy) and Univ. Innsbruck (Austria); L. Pasolli, EURAC Research (Italy); U. Tappeiner, EURAC Research (Italy) and Univ. Innsbruck (Austria)

SAR APPLICATIONS

- 8891 OI **GNSS-R sensor sensitivity to soil moisture and vegetation biomass and comparison with SAR data performance** [8891-18]
S. Paloscia, E. Santi, G. Fontanelli, S. Pettinato, Istituto di Fisica Applicata Nello Carrara, CNR (Italy); A. Egido, M. Caparrini, E. Motte, Starlab (Spain); L. Guerriero, Univ. degli Studi di Roma Tor Vergata (Italy); N. Pierdicca, Univ. degli Studi di Roma La Sapienza (Italy); N. Floury, European Space Agency, ESTEC (Netherlands)
- 8891 OJ **Combining polarimetric and contextual information using autoassociative neural networks** [8891-19]
R. G. Avezano, F. Del Frate, G. Schiavon, Univ. degli Studi di Roma Tor Vergata (Italy)
- 8891 OK **Dealing with flood mapping using SAR data in the presence of wind or heavy precipitation** [8891-20]
N. Pierdicca, Univ. degli Studi di Roma La Sapienza (Italy); L. Pulvirenti, CIMA Research Foundation and Univ. degli Studi di Roma La Sapienza (Italy); M. Chini, Ctr. de Recherche Public - Gabriel Lippmann (Luxembourg)

POSTER SESSION

- 8891 ON **Tomographic SAR inversion by generic log-barrier algorithm: the second order cone programming approach** [8891-7]
F. Biondi, P. Ciotti, Univ. degli Studi dell'Aquila (Italy); N. Pierdicca, Univ. degli Studi di Roma La Sapienza (Italy)
- 8891 OO **Experimental extraction of sub-pixel resolution in RADAR images via amplitude, phase and polarization readouts** [8891-23]
S. Cohen, Z. Zalevsky, Bar-Ilan Univ. (Israel)
- 8891 OP **A new detection method of oil rigs in SAR imagery** [8891-26]
P. Chen, J. Yang, L. Ren, The Second Institute of Oceanography, SOA (China)
- 8891 OR **Radar clutter as an indicator for vegetation classification using a single dual polarimetric TSX-1 image** [8891-28]
M. Hetz, D. G. Blumberg, S. R. Rotman, R. Enbar, A. Benou, Ben-Gurion Univ. of the Negev (Israel)
- 8891 OS **Estimating the surface age of arid-zone alluvial fans using spaceborne radar data** [8891-29]
G. Hetz, Ben-Gurion Univ. of the Negev (Israel) and Geological Survey of Israel (Israel); A. Mushkin, Geological Survey of Israel (Israel); D. G. Blumberg, Ben-Gurion Univ. of the Negev (Israel); G. Baer, Geological Survey of Israel (Israel)

Author Index

Conference Committee

Symposium Chairs

Charles R. Bostater Jr., Florida Institute of Technology (United States)

Symposium Co-chairs

Ulrich Michel, Pädagogische Hochschule Heidelberg (Germany)

Conference Chairs

Claudia Notarnicola, EURAC research (Italy)

Simone Paloscia, Istituto di Fisica Applicata Nello Carrara (Italy)

Nazzareno Pierdicca, Università degli Studi di Roma La Sapienza (Italy)

Conference Program Committee

Richard Bamler, Deutsches Zentrum für Luft- und Raumfahrt e.V.
(Germany)

Fabio Bovenga, Consiglio Nazionale delle Ricerche (Italy)

Fabio Covello, Agenzia Spaziale Italiana (Italy)

Mihai P. Datcu, Deutsches Zentrum für Luft- und Raumfahrt e.V.
(Germany)

Fabio Del Frate, Università degli Studi di Roma Tor Vergata (Italy)

Linda Marchese, INO (Canada)

Antonio Moccia, Università degli Studi di Napoli Federico II (Italy)

Francesco Nirchio, Agenzia Spaziale Italiana (Italy)

Luca Pasolli, EURAC research (Italy)

Luca Pulvirenti, Università degli Studi di Roma La Sapienza (Italy)

Fabio Rocca, Politecnico di Milano (Italy)

Emanuele Santi, Istituto di Fisica Applicata Nello Carrara (Italy)

Stefan Schneiderbauer, EURAC research (Italy)

David Small, Universität of Zürich (Switzerland)

Session Chairs

SAR Data Processing I: Joint Session with Conferences 8891 and 8892

Lorenzo Bruzzone, Università degli Studi di Trento (Italy)

SAR Data Processing II: Joint Session with Conferences 8891 and 8892

Claudia Notarnicola, EURAC research (Italy)

Interferometry I

Fabio Bovenga, Consiglio Nazionale delle Ricerche (Italy)

Interferometry II

Nazzareno Pierdicca, Università degli Studi di Roma La Sapienza (Italy)

Radar Applications in Agro-Hydrology: Joint Session with Conferences
8887 and 8891

Antonino Maltese, Università degli Studi di Palermo (Italy)

Claudia Notarnicola, EURAC research (Italy)

SAR Applications

Emanuele Santi, Istituto di Fisica Applicata Nello Carrara (Italy)