PROCEEDINGS OF SPIE

International Conference on Remote Sensing, Surveying, and Mapping (RSSM 2024)

Yang Zhao
Editor

12–14 January 2024
Wuhan, China

Sponsored by
Nanjing University of Information Science and Technology (China)

Co-organized by
Shandong Jianzhu University (China)
Xi'an University of Science and Technology (China)
Shandong University of Technology (China)

Supported by
Global Scientific Research Association (China)

Published by
SPIE

Volume 13170

Proceedings of SPIE 0277-786X, V. 13170

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

International Conference on Remote Sensing, Surveying, and Mapping (RSSM 2024),
edited by Yang Zhao, Proc. of SPIE Vol. 13170, 1317001 · © 2024 SPIE
0277-786X · doi: 10.1117/12.3033683

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 *International Conference on Remote Sensing, Surveying, and Mapping (RSSM 2024)*, edited by Yang Zhao, Proc. of SPIE 13170, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

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

ISBN: 9781510680074
ISBN: 9781510680081 (electronic)

Published by
SPIE
P.O. Box 10, Bellingham, Washington 98227-0010 USA
Telephone +1 360 676 3290 (Pacific Time)
SPIE.org
Copyright © 2024 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
SPIEDigitalLibrary.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*
ix *Introduction*

GEOGRAPHIC INFORMATION TECHNOLOGY AND POSITIONING RESEARCH

13170 02 **Public geoinformation-assisted geo-positioning for Chinese commercial satellite imagery** [13170-46]

13170 03 **Analysis of the impact of magnetic prospecting unmanned aerial vehicle route planning on the positioning accuracy of simulated unexploded ordnance** [13170-80]

13170 04 **Research on positioning method of civil airport PAPI system based on AutoCAD drawing** [13170-83]

13170 05 **Geological hazard meteorological risk warning model based on heterogeneous integration machine learning: a case study in Yichang City** [13170-81]

13170 06 **Analysis and on-orbit verification of aiming accuracy for spaceborne SAR** [13170-61]

13170 07 **Spatiotemporal evolution of vegetation in the karst region in southwest China based on the Google Earth Engine platform** [13170-29]

13170 08 **Monitoring and analysis of ground subsidence in Pingxiang City based on SBAS-InSAR technology** [13170-68]

13170 09 **Relative elevation modelling of Linyi district and applications for the study of active faults** [13170-86]

13170 0A **Vector water body type recognition integrating terrain features and spatial relationships** [13170-34]

13170 0B **Analysis of the temporal and spatial characteristics of straw incineration in Hunan province based on multi-source meteorological satellite** [13170-54]

13170 0C **Microwave soil moisture products in North China Plain based on triple collocation method applicability evaluation** [13170-24]

13170 0D **Temporal and spatial evolution analysis of ecosystem service value based on land use in the Jiaodong Economic Circle** [13170-30]

13170 0E **ArcGIS-based assessment of the water conservation capacity in the Hehuang Valley** [13170-43]

13170 0F **Bathymetry prediction in Mariana Trench seabed terrain based on altimetry gravity anomalies and vertical gravity gradients** [13170-89]

13170 0G **Research on the detection method of sensitive information of internet remote sensing image map** [13170-98]

13170 0H **A new radar vegetation index for research in the dry areas** [13170-75]

13170 0I **Remote sensing-based multi-scenario land use change simulation in Hefei, China** [13170-64]

13170 0J **Monitoring technology of near-surface atmospheric carbon dioxide concentration in multiple regions based on unmanned aerial vehicle** [13170-25]

13170 0K **Method for the detection of road bridge pavement crack depth based on acoustic signal analysis** [13170-72]

13170 0L **Landslide susceptibility assessment in Qingyijiang river basin based on different machine learning methods** [13170-50]

13170 0M **Distribution and existing problems of open-pit mining land in China** [13170-31]

SPATIAL INFORMATION MAPPING AND SURVEYING TECHNOLOGY

13170 0N **Sensitivity analysis of carbon dioxide inversion in near-infrared spectra for TanSat-2 satellite** [13170-82]

13170 0O **Influence of flattening point cloud on filtering accuracy** [13170-33]

13170 0P **Thermal control method of high temperature stability for high resolution space camera** [13170-36]

13170 0Q **Color correction of remote sensing images based on style transfer** [13170-66]

13170 0R **AFCE-Net: attention fusion and context enhancement for object detection in remote sensing images** [13170-26]

13170 0S **Evaluation of the applicability of high-resolution temperature real-time products during high-temperature weather in Sichuan, summer 2022** [13170-27]

13170 0T **Bionic eye movement transformer for cross-domain semantic segmentation of high-resolution remote sensing images** [13170-87]

13170 0U **Research on target center elevation extraction method based on photogrammetric point cloud** [13170-52]

13170 0V **Analysis on spatial and temporal changes of land use in Yangzonghai Basin from 2009 to 2019** [13170-58]

13170 0W **Spatial distribution of reed in Baiyangdian Lake from 2016 to 2022 interpreted by remote sensing** [13170-69]

13170 0X **The relationship between urban green belts and blue-green space thermal environment from ecological perspective combined with remote sensing technology** [13170-76]

13170 0Y **Research on optimization of CCSDS compression algorithm based on snapshot mosaic hyperspectral images** [13170-62]

13170 0Z **Mapping the suitable areas for future urbanization in Jiangxi, China** [13170-88]

13170 10 **Semi-supervised oil spill detection of SAR images based on pseudo-labelling** [13170-42]

13170 11 **The impact of scale effects on the relationships between urbanization and landscape metrics** [13170-90]

13170 12 **Quantitative analysis and optimization of urban park cold island in Wuhan's main urban area from the perspective of residents' demand: based on Landsat-8 remote sensing images** [13170-53]

13170 13 **Application of virtual instrument in dynamic resolution detection of aerial camera** [13170-101]

13170 14 **SuperView-1 satellite image-based winter wheat spatial distribution information refined extraction using the fusion of machine learning and deep learning** [13170-63]

13170 15 **Fusion technology for green tide information in the Yellow Sea detected from multi-source satellite images** [13170-84]

REMOTE SENSING SPECIALIZED TECHNOLOGY AND DATA PROCESSING METHOD

13170 16 **Experimental design of decision-level fusion block filtering based on ground imagery and LiDAR point cloud data** [13170-44]

13170 17 **Inversion of soil moisture based on improved change detection method using Sentinel-1A and MODIS time-series data** [13170-21]

13170 18 **Research on the calculation model of mid-infrared reflectivity of vegetation based on VIIRS data** [13170-70]

13170 19 **Mountainous road vector data update method based on matching point pair grouping** [13170-39]

13170 1A **Classification of wetland vegetation in the Yellow River Delta based on the fusion of hyperspectral data** [13170-102]

13170 1B **Soil moisture retrieval in plateau areas based on Sentinel-1 and Landsat-8 remote sensing data** [13170-23]

13170 1C **Comparison and accuracy evaluation of denoising methods for ICESat-2 shallow-sea photon point clouds** [13170-51]

13170 1D **Leg laying zone selection technology for deep sea exploration platform based on gradient and variance of digital elevation model** [13170-74]

13170 1E **Improved target detection algorithm for remote sensing images with YOLOV7** [13170-79]

13170 1F **Design and implementation of IDL-based batch processing for DMCIII aerial image reflectance retrieval** [13170-78]

13170 1G **Application of unmanned aerial vehicle remote sensing technology in completion survey of land increase and decrease connection projects in mountainous area** [13170-77]

13170 1H **Quantitative analysis of ionospheric impact on spaceborne P-band ultra-wideband radar** [13170-35]

13170 1I **SAR ship detection method in complex scenes based on enhanced VarifocalNet** [13170-40]

13170 1J **The spatiotemporal evolution of carbon emissions in China using machine learning methods: evidence from remote sensing data** [13170-49]

13170 1K **High-precision binocular fringe reflectometry based on normal vector consistency** [13170-67]

13170 1L **Design and realization of antennal control system software in telemetry ground station** [13170-57]

13170 1M **Effectiveness evaluation of multi-satellite joint coverage data for large area targets based on cloud prediction information** [13170-73]

13170 1N **Identification of altered minerals in the Yingshan area of Aksu City, Xinjiang, based on the GF-5 hyperspectral data** [13170-59]

13170 1O **Enhancing small object detection in remote sensing imagery with advanced generative adversarial networks** [13170-94]

13170 1P **Identification and risk level prediction of plastic sheds along transmission corridors with improved SegFormer-based high-resolution remote sensing imagery** [13170-56]

13170 1Q **Comparative study of image fusion methods for WorldView-3 data** [13170-28]

Conference Committee

General Conference Chairs

Xudong Tong, Nanjing University of Information Science and Technology (China)
Shuanggen Jin, Henan Polytechnic University (China)

Technical Program Committee Chairs

Dechang Liu, China Association of Remote Sensing Application (China)
Qiangqiang Yuan, Wuhan University (China)

Publication Chairs

Baomin Han, Shandong University of Technology (China)
Yang Zhao, Harbin Institute of Technology (China)

Publicity Chairs

Jiguang Dai, Liaoning Technical University (China)
Qingzhi Zhao, Xi'an University of Science and Technology (China)

Technical Program Committee

Kun Tan, East China Normal University (China)
Fei Meng, Shandong Jianzhu University (China)
Xiangying Li, Northwest University (China)
Zhenhai Li, Shandong University of Science and Technology (China)
Jingxue Wang, Liaoning Technical University (China)
Hao Zhang, China University of Geosciences (China)
Yu Li, Liaoning Technical University (China)
Huan Yu, Chengdu University of Technology (China)
Yuefeng Lu, Shandong University of Technology (China)
Lei Niu, Lanzhou Jiaotong University (China)
Xiaoning Su, Lanzhou Jiaotong University (China)
Shangyu Sun, Liaoning Technical University (China)
Xin Zhang, Harbin Institute of Technology (China)
Tao Zhang, Beijing Institute of Satellite Information Engineering (China)
Jiajia Yuan, Anhui University of Science and Technology (China)
Jin Wang, Shandong University of Science and Technology (China)
Jianhui Cui, Shandong University of Science and Technology (China)
Xiaodong Cui, Shandong University of Science and Technology (China)

Introduction

In the year 2024, which is full of academic flavor and innovative thinking, a much-anticipated event, the Third International Conference on Remote Sensing, Surveying, and Mapping (RSSM 2024), was held via virtual forum in Wuhan, China from January 12th to 14th. The conference brought together experts, scholars, and representatives of research institutions from all over the world to discuss the latest achievements and trends in the field of remote sensing, surveying, and mapping.

During the conference, the participants discussed various topics related to remote sensing, surveying, and mapping, including but not limited to: Deformation and Subsidence Engineering, Urban Spatial Information, Image Digital Processing Technology, Precision Mapping Instruments, and Computer Algorithms and Models for Monitoring Remote Sensing Based Data, and shared their research results and practical experiences.

The conference agenda mainly covered keynote speeches, oral presentations, poster presentations, free discussion, and academic investigation. In the keynote speech, Prof. Shuanggen Jin (Henan Polytechnic University, China), Prof. Lunche Wang (China University of Geosciences, China), and Prof. Weicheng Wu (East China University of Technology, China) delivered their respective speeches, which aroused a warm response from the participants. The participants had in-depth exchanges and discussions and expressed their intention to actively respond to the call to contribute to the global development of remote sensing, surveying, and mapping.

The proceedings are another highlight and an excellent outcome of RSSM 2024. After rigorous review, many excellent academic papers were accepted and included in these proceedings. These contributions cover many research aspects of remote sensing, surveying, and mapping, both theoretical discussions and empirical studies, fully demonstrating the research level and innovative achievements in relevant fields and industries. The publication of the proceedings provides participants and potential readers with valuable academic resources and important references for follow-up research.

We would like to thank all the organizers, speakers, authors and all the staff involved in RSSM 2024 for their dedication and efforts. It is thanks to your hard work and selfless dedication that this conference could be successfully held and achieved fruitful results.

Looking ahead, we expect that RSSM 2024 will continue to play a leading role in the field of remote sensing, surveying, and mapping, and provide a broader academic exchange platform for scholars around the world. At the same time, we also expect that all experts and scholars will continue to conduct in-depth research and exploration of cutting-edge issues in related fields and make greater contributions to promoting the development of remote sensing, surveying, and mapping.

The Committee of RSSM 2024