PROCEEDINGS OF SPIE

International Conference on Remote Sensing, Surveying, and Mapping (RSSM 2023)

Chao Zuo
Editor

6–8 January 2023
Changsha, China

Organized by
Anhui University of Science and Technology (China)
Xi'an University of Science and Technology (China)

Supported by
Beijing Institute of Geology of Nuclear Industry (China)
Global Scientific Research Association (China)

Published by
SPIE

Volume 12710

Proceedings of SPIE 0277-786X, V. 12710

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 2023),
edited by Chao Zuo, Proc. of SPIE Vol. 12710, 1271001
© 2023 SPIE · 0277-786X · doi: 10.1117/12.2688325

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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 2023)*, edited by Chao Zuo, Proc. of SPIE 12710, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

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

ISBN: 9781510666436
ISBN: 9781510666443 (electronic)

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

Remote sensing, surveying and mapping technology have played an important role in many fields, such as global change, ecology, environment, agriculture, forestry, meteorology, human activities and so on, and are highly valued by countries all over the world. Mining data information comprehensively, producing multi-scale remote sensing and mapping products, carrying out scale conversion, analysis and application of authenticity inspection products are the essence of remote sensing and mapping, and the core of science.

In order to bring in the latest progress in theory, technology and application in the field of remote sensing and surveying at home and abroad in recent years, and show the latest achievements, 2023 2nd International Conference on Remote Sensing, Surveying and Mapping (RSSM 2023) was held in Changsha, China on January 6th to 8th, 2023 via virtual form. It was attended by about 60 participants from different countries.

The Conference presented an outstanding program of papers covering the most recent advances in remote sensing, surveying and mapping, including Environmental Remote Sensing, Image Data Processing Technology, Hyperspectral Image Processing, Geodetic Survey, Surveying and Mapping Technology, Engineering Survey, etc. The papers in this Proceedings published by the Society of Photo-Optical Instrumentation Engineers (SPIE) represent a collection of the invited talks.

At this meeting we had a comprehensive overview of this fascinating field and of future scenarios thanks to the participation of leaders of the most important projects. Associate Professor Qingzhi Zhao from Xi'an University of Science and Technology, China performed a keynote speech and shared with us his own research experience and professional view with the report Research on the Key Technologies of GNSS Multi-Dimensional Water Vapor Retrieval. Atmospheric water vapor plays an important role in studies of weather and climate changes, and the global navigation satellite system (GNSS) is one of the main technologies for water vapor retrieval. This report introduced the basic principle of GNSS water vapor retrieval and key techniques of GNSS two-dimensional and three-dimensional water vapor retrieval. In the 2-d water vapor retrieval, a high-time resolution PWV data sets at specific points based on non-measured meteorological parameters was generated, and a high spatial resolution PWV retrieval method was then proposed. In the 3-d water vapor retrieval, a non-uniform symmetrical horizontal grid division method was first proposed for water vapor tomography.

We would like to thank the participants, especially those who contributed speeches, posters, and manuscripts, for making RSSM 2023 such an exciting and memorable conference. We thank the Technical Program Committees for putting together an outstanding program. Finally, we acknowledge the members of SPIE for their tireless efforts in the preparation of this volume, and all our colleagues whose friendly and efficient service contributed to the success of the 2023 Second International Conference on Remote Sensing, Surveying, and Mapping.

Chao Zuo