

# PROCEEDINGS OF SPIE

## ***International Symposium on Spatial Analysis, Spatial-Temporal Data Modeling, and Data Mining***

**Yaolin Liu  
Xinming Tang**  
*Editors*

**13–14 October 2009  
Wuhan, China**

*Organized by*

School of Resource and Environmental Science, Wuhan University (China)  
Key Laboratory of Geographic Information System of the Ministry of Education,  
Wuhan University (China)  
Key Laboratory of Digital Mapping and Land Information Application Engineering, State  
Bureau of Surveying and Mapping, Wuhan University (China)  
Chinese Academy of Surveying and Mapping  
WG II/3 (Spatial Analysis and Data Mining) & WG II/1 (Cognition and Modeling of Space  
and Time) of ISPRS Commission II

*Sponsored by*

Ministry of Education of the People's Republic of China  
Chinese Academy of Sciences  
State Bureau of Surveying and Mapping (China)  
Wuhan University (China)  
Chinese Academy of Surveying and Mapping

*Published by*  
SPIE

**Volume 7492**

Proceedings of SPIE, 0277-786X, v. 7492

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

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 *International Symposium on Spatial Analysis, Spatial-Temporal Data Modeling, and Data Mining*, edited by Yaolin Liu, Xinming Tang, Proceedings of SPIE Vol. 7492 (SPIE, Bellingham, WA, 2009) Article CID Number.

ISSN 0277-786X  
ISBN 9780819478030

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](http://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.

The logo for SPIE Digital Library features the word "SPIE" in a bold, sans-serif font above the words "Digital Library" in a smaller, lighter font. To the right of the text is a stylized graphic consisting of three vertical bars of increasing height, resembling a bar chart or a signal waveform.

[SPIDigitalLibrary.org](http://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 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

## Part One

xxi *Conference Committee*  
xxiii *Introduction*

---

### SESSION 1 APPLICATIONS OF DATA FUSION TO OBJECT RECOGNITION, CLASSIFICATION, AND CHANGE DETECTION

---

- 7492 02 **Study on Land Use Cover Change (LUCC) based on remote sensing and GIS** [7492-106]  
H. Zhang, X. Zhang, Nanchang Univ. (China); N. Shu, Wuhan Univ. (China)
- 7492 03 **Comparison of multivariate statistical analysis and fuzzy recognition algorithm for quantitative mapping soil organic matter content with hyperspectral data** [7492-30]  
J. Wu, Wuhan Univ. (China) and Ministry of Land and Resources (China); Y. Liu, Wuhan Univ. (China); X. Li, Shandong Agricultural Univ. (China); J. Wang, Ministry of Land and Resources (China); D. Chen, Wuhan Univ. (China)
- 7492 04 **Application of multi-temporal DEM data in calculating the Earth's surface deformation** [7492-79]  
Q. Lan, L. Fei, Y. Liu, K. Zhang, Wuhan Univ. (China)
- 7492 05 **Fusion of remote sensing images and GIS data for land use/cover change detection** [7492-151]  
H. Guo, Y. Liu, G. Liu, D. Chen, Z. Lan, D. Liu, Wuhan Univ. (China)
- 7492 06 **Semi-automatic typical collieries extraction based on remotely sensed imagery using active contour models** [7492-140]  
B. Liu, G. Zhang, J. Gong, Wuhan Univ. (China); X. Zhu, Chinese Academy of Surveying and Mapping (China); W. Fei, Wuhan Univ. (China)
- 7492 07 **A data integration index-hierarchy index tree based on urbanization integration system** [7492-256]  
L. Zhao, Central South Univ. (China), National Geomatics Ctr. of China (China), and Honghe Univ. (China); R. Zhao, National Geomatics Ctr. of China (China); J. Zhu, Central South Univ. (China)
- 7492 08 **Watersheds-based segmentation integrated with edge detection** [7492-142]  
H. Yao, J. Gong, W. Jiang, Wuhan Univ. (China)

---

### SESSION 2 SPATIAL-TEMPORAL DATA CAPTURING

---

- 7492 09 **One new method for road data shape change detection** [7492-62]  
L. Tang, Q. Li, F. Xu, X. Chang, Wuhan Univ. (China)

- 7492 0A **Double-line river axis extraction based on Delaunay triangulation** [7492-93]  
H. Li, Chinese Academy of Surveying and Mapping (China) and Liaoning Technical Univ. (China); L. Shi, Chinese Academy of Surveying and Mapping (China)
- 7492 0B **Study of RS data classification based on rough sets and C4.5 algorithm** [7492-245]  
M. Yu, Wuhan Univ. (China) and Fujian Normal Univ. (China); T. Ai, Wuhan Univ. (China)
- 7492 0C **Registration of multi-view point clouds based on nonlinear correction** [7492-101]  
Y. Guan, East China Institute of Technology (China); X. Cheng, G. Shi, Tongji Univ. (China); W. Li, East China Institute of Technology (China)
- 7492 0D **Grassland change in west Northeast China plain from SPOT-VEGETATION time series data analysis** [7492-31]  
F. Huang, P. Wang, Northeast Normal Univ. (China)
- 7492 0E **Automatic detection on LUCC based on SIFT** [7492-251]  
K. Ammala, Y. Liu, J. R. Tai, Wuhan Univ. (China)
- 7492 0F **Some critical issues on airborne LIDAR mapping software in coastal survey** [7492-235]  
X. Chen, China Univ. of Geosciences (China); Z. Lai, China Univ. of Geosciences (China) and Wuhan Univ. (China); W. Li, J. Zhang, China Univ. of Geosciences (China)
- 7492 0G **Application potential of differential SAR interferometry in land subsidence spatial-temporal data capturing** [7492-172]  
Z. Huang, L. Yu, F. Wang, Zhejiang Univ. (China)
- 7492 0H **Application of high-resolution RS image in settlement extraction** [7492-192]  
C. Zeng, Y. Liu, Y. Liu, X. Li, Y. Tang, Wuhan Univ. (China)
- 7492 0I **Using LIDAR data and airborne spectral images for urban land cover classification based on fuzzy set method** [7492-211]  
Z. Lai, China Univ. of Geosciences (China) and Wuhan Univ. (China); S. Shen, Yangtze River Scientific Research Institute (China); X. Chen, X. Liang, J. Zhang, China Univ. of Geosciences (China)
- 7492 0J **Construction of aided design system of land consolidation planning on platform extended graph-element** [7492-277]  
L. Liu, F. Zou, Y. Zhou, Wuhan Univ. (China)
- 7492 0K **Study on the methods of retrieving urban winter LST based on the Landsat TM 6** [7492-129]  
J. Zhao, Liaoning Technical Univ. (China) and The Institute of Remote Sensing Application (China); L. Pei, Liaoning Technical Univ. (China); H. Huang, X. Li, The Institute of Remote Sensing Application (China)
- 7492 0L **A review of remote-sensing-based spatial/temporal information capturing for water resource studies in Poyang Lake** [7492-01]  
G. Wu, Wuhan Univ. (China) and Jiangxi Normal Univ. (China)
- 7492 0M **Feasibility of estimating heavy metal concentrations in water column using hyperspectral data and partial least squares regression** [7492-203]  
Y. Chen, Y. Liu, D. Wang, X. Kong, C. Zeng, Wuhan Univ. (China)

- 7492 ON **Land use classification and evaluation of RS image based on cloud model** [7492-90]  
X. Tang, Wuhan Univ. (China); K. Chen, Guangzhou Urban Planning and Design Survey Research Institute (China); Y. Liu, Wuhan Univ. (China);

---

**SESSION 3 VISUALIZATION OF SPATIAL-TEMPORAL DATA**

---

- 7492 OO **A design of context-sensitive web map service** [7492-94]  
T. Liu, Wuhan Univ. (China) and Lanzhou JiaoTong Univ. (China); J. Tang, Q. Du, Z. Zhao, Wuhan Univ. (China)
- 7492 OP **Spatio-temporal data dynamic visualization based on temporal tree structure** [7492-86]  
H. Wang, Wuhan Univ. (China) and Chinese Academy of Surveying and Mapping (China); Y. Liu, Chinese Academy of Surveying and Mapping (China); X. Tang, Wuhan Univ. (China)
- 7492 OQ **Research on scene organization of process simulation in port 3D GIS** [7492-272]  
J. Ding, W. Jiang, Wuhan Univ. (China)
- 7492 OR **A hybrid 3D spatial access method based on quadtrees and R-trees for globe data** [7492-51]  
J. Gong, S. Ke, Jiangxi Normal Univ. (China); X. Li, Wuhan Univ. (China); S. Qi, Jiangxi Normal Univ. (China)
- 7492 OS **Research on visualization of main tourist areas in Hubei province based on Google Earth** [7492-213]  
Z. Xiao, Y. Liu, J. Liu, Y. Tang, C. Zeng, Wuhan Univ. (China)
- 7492 OT **Spatial information mining and visualization for Qinghai-Tibet Plateau's literature based on GIS** [7492-276]  
X. Wang, Scientific Information Ctr. for Resources and Environment (China) and National Science Library (China); M. Ma, Cold and Arid Regions Environmental and Engineering Research Institute (China)
- 7492 OU **Historical relics visualization by fusing terrestrial laser point-clouds and aerial orthophoto** [7492-176]  
L. Yan, X. Zhao, Wuhan Univ. (China); X. Xiang, Shanghai Municipal Institute of Surveying and Mapping (China); T. D. Lu, East China Institute of Technology (China) and Wuhan Univ. (China); X. F. Yi, Xinjiang Univ. (China) and Wuhan Univ. (China)
- 7492 OV **Visualization of spatial-temporal data based on 3D virtual scene** [7492-237]  
X. Wang, Liaoning Technical Univ. (China) and China Academy of Surveying and Mapping (China); J. Liu, Y. Wang, China Academy of Surveying and Mapping (China); J. Bi, Shandong Agricultural Univ. (China)
- 7492 OW **Virtual-real spatial information visualization registration using affine representations** [7492-24]  
X. Wu, China Univ. of Geosciences (China); F. Ren, Q. Du, Wuhan Univ. (China)
- 7492 OX **Visualization analysis of multivariate spatial-temporal data of the Red Army Long March in China** [7492-197]  
D. Ma, Xi'an Univ. of Science and Technology (China); Z. Ma, Chang'an Univ. (China); L. Meng, Xi'an Univ. of Science and Technology (China); X. Li, Chang'an Univ. (China)

- 7492 0Y **Use of Google SketchUp to implement 3D spatio-temporal visualization** [7492-47]  
L. Li, L. Qu, S. Ying, Wuhan Univ. (China); D. Liang, Wuhan Univ. (China) and Anhui Normal Univ. (China); Z. Hu, Wuhan Univ. (China) and 69028 Troops (China)
- 7492 0Z **Research for 3D visualization of Digital City based on SketchUp and ArcGIS** [7492-202]  
H. Xu, Nanjing Univ. (China) and Hohai Univ. (China); R. Badawi, Nanjing Univ. (China); X. Fan, J. Ren, Z. Zhang, Hohai Univ. (China)
- 7492 10 **Quadtree of TIN: a new algorithm of dynamic LOD** [7492-96]  
J. Zhang, L. Fei, Wuhan Univ. (China); Z. Chen, Zhuhai Urban Planning Research and Information Ctr. (China)
- 7492 11 **Computation of hillshade values considering diffuse radiation condition** [7492-147]  
Q. Luo, Y. Yan, S. Yue, Nanjing Univ. of Information Science and Technology (China)
- 7492 12 **Spatial-temporal variations of evapotranspiration in the upper Huaihe River basin** [7492-264]  
Q. Li, M. Yu, Hohai Univ. (China); Y. Xue, P. Li, L. Bai, B. You, W. Yu, Bureau of Xinyang Hydrology and Water Resources Survey (China)
- 7492 13 **A 3D data model for fast visualization** [7492-74]  
Q. Wang, Wuhan Institute of Technology (China) and Wuhan Univ. (China)
- 7492 14 **Research on symbolization of urban topographic features in ArcGIS** [7492-257]  
X. Xu, L. Li, H. Li, D. Gao, Wuhan Univ. (China)

---

#### SESSION 4 DATA MINING AND KNOWLEDGE DISCOVERY

- 7492 15 **A prototype system based on visual interactive SDM called VGC** [7492-53]  
Z. Jia, Wuhan Univ. (China) and Central South Univ. (China); Y. Liu, Y. Liu, Wuhan Univ. (China)
- 7492 16 **Application of data mining in science and technology management information system based on WebGIS** [7492-10]  
X. Wu, South China Agricultural Univ. (China); Z. Xu, Bureau of Urban Utilities and Landscaping of Guangzhou Municipality (China); S. Bao, F. Chen, South China Agricultural Univ. (China)
- 7492 17 **Obstacle constraint spatial clustering** [7492-52]  
Y. Wang, Wuhan Univ. (China) and Computer College of China Univ. of Geosciences (China); F. Bian, Wuhan Univ. (China)
- 7492 18 **Data mining based on spectral and spatial features for hyperspectral classification** [7492-05]  
H. Su, Y. Sheng, Y. Wen, Nanjing Normal Univ. (China)
- 7492 19 **Predicting methods of construction land demand and application in county's general land use planning** [7492-12]  
X. Gao, Y. Liu, L. Su, Y. Zhang, Wuhan Univ. (China)
- 7492 1A **The comparative analysis of various classification models on land evaluation** [7492-50]  
J. Tian, Hefei Univ. of Technology (China); Y. Hu, South China Agricultural Univ. (China); J. Liu, Y. Zhao, Hefei Univ. of Technology (China); C. Wang, South China Agricultural Univ. (China)

- 7492 1B **Multisource geological data mining and its utilization of uranium resources exploration** [7492-19]  
J. Zhang, Beijing Research institute of Uranium Geology (China)
- 7492 1C **Measuring the amount of information of national topographic database based on entropy** [7492-85]  
H. Wang, Chinese Academy of Surveying and Mapping (China) and Liaoning Technical Univ. (China); S. Su, Y. Li, R. Yu, Chinese Academy of Surveying and Mapping (China)
- 7492 1D **Application of binary tree based SVMs approach to land grade evaluation** [7492-161]  
Y. Xia, Y. Liu, X. Hong, D. Liu, Wuhan Univ. (China)
- 7492 1E **Gross error detection and correction based on wavelet transform and support vector machine** [7492-210]  
T. Tao, Wuhan Univ. (China) and Hefei Univ. of Technology (China); F. Gao, Z. Wu, Hefei Univ. of Technology (China)
- 7492 1F **Indicator mining model for spatial multi-scale degraded land evaluation** [7492-118]  
D. Liu, Y. Liu, Y. Xia, X. Hong, Z. Zhao, Wuhan Univ. (China)
- 7492 1G **A data skew handling method based on the minimum spatial proximity for parallel spatial database** [7492-40]  
Y. Zhou, Univ. of Electronic Science and Technology of China (China); Q. Zhu, Y. Zhang, Wuhan Univ. (China)
- 7492 1H **Harmonic generalization based on the integrated geographic feature retrieval** [7492-120]  
L. Huang, L. Fei, Wuhan Univ. (China); J. He, Hubei Univ. (China)
- 7492 1I **Experimental analysis on classification of unmanned aerial vehicle images using the probabilistic latent semantic analysis** [7492-111]  
W. Yi, H. Tang, Beijing Normal Univ. (China)
- 7492 1J **Design and implementation of multi-source data mining system for land use** [7492-163]  
X. Hong, Y. Liu, D. Liu, Y. Xia, X. Hu, Wuhan Univ. (China)
- 7492 1K **Study on the expropriation (requisition) price of cultivated land in China: take Nanyang City, Henan Province as an example** [7492-173]  
Z. Zhang, Y. Liu, Wuhan Univ. (China); J. Gong, Wuhan Univ. (China) and China Univ. of Geosciences (China)
- 7492 1L **Entropy-theory-based study on the relationship between land use structure and industry system: a case study of the eastern Hubei metropolitan area** [7492-08]  
L. Su, Y. Liu, X. Gao, Wuhan Univ. (China)
- 7492 1M **Knowledge acquisition model of map generalization based on granular computing** [7492-124]  
Y. Song, Wuhan Univ. (China); D. Yu, Qingdao Univ. (China); C. Shen, Heilongjiang Land Resource Surveying and Planning Institute (China)
- 7492 1N **Modeling the demand forecast of construction land of county-level** [7492-175]  
H. Dong, X. Wang, L. Jiao, Q. Guo, Wuhan Univ. (China)

- 7492 1O **Research on land registration procedure ontology of China** [7492-54]  
Z. Zhao, Q. Du, W. Zhang, T. Liu, Wuhan Univ. (China)
- 7492 1P **Spatial information semantic query based on SPARQL** [7492-200]  
Z. Xiao, L. Huang, X. Zhai, Wuhan Univ. (China)
- 7492 1Q **Research on uncertainty spatial association rule based on geo-rough space theory**  
[7492-32]  
M. Liu, Chuzhou Univ. (China); X. Hong, Wuhan Univ. (China); D. Fang, Chuzhou Univ. (China)
- 7492 1R **Analysis of obstruction reason of urban sewer using spatial association rules** [7492-186]  
H. Zhu, Yunnan Univ. (China); Y. Luo, Univ. of Electronic Science and Technology of China  
(China)
- 7492 1S **Research on the methods of connecting contour lines' breakpoints** [7492-68]  
R. Hu, Wuhan Polytechnic Univ. (China); G. Wang, Wuhan Univ. (China)
- 7492 1T **Applying fuzzy clustering optimization algorithm to extracting traffic spatial pattern**  
[7492-238]  
C. Hu, Wuhan Univ. (China); W. Shi, Hong Kong Polytechnic Univ. (Hong Kong, China);  
L. Meng, M. Liu, Wuhan Univ. (China)
- 7492 1U **Research on determining the weights of urban land grading evaluation factors based on  
Spearman rank correlation analysis** [7492-16]  
W. Wang, W. Qi, N. Chen, P. Wang, J. Chen, Wuhan Univ. (China)
- 7492 1V **Fuzzy Bayesian network classifier for extraction of rocky desertification** [7492-107]  
S. Li, Wuhan Univ. (China) and Guangxi Bureau of Geology and Mineral Prospecting and  
Exploitation (China); N. Shu, J. Tao, Wuhan Univ. (China); Y. Zhang, Guangxi Remote Sensing  
Ctr. (China)
- 7492 1W **Agricultural regionalization based on spatial clustering of mixed data** [7492-261]  
L. Li, W. Xiang, Y. Tian, Wuhan Univ. (China)
- 7492 1X **Data mining of synergetic coupling for land use based on extenics** [7492-39]  
J. Niu, Wuhan Univ. (China) and Xinyang Normal Univ. (China); Y. Liu, Wuhan Univ. (China);  
F. Xu, Xinyang Normal Univ. (China); Y. Zhang, Wuhan Univ. (China)
- 7492 1Y **Construction and application of particle swarm optimization algorithm for ecological spatial  
data mining** [7492-180]  
Z. Fu, B. Wan, Wuhan Univ. (China)
- 7492 1Z **An adaptive spatial clustering algorithm based on the minimum spanning tree-like**  
[7492-117]  
M. Deng, Q. Liu, G. Li, Central South Univ. (China); T. Cheng, Univ. College London (United  
Kingdom)
- 7492 20 **Extraction and mining for layered natural disaster information based on GIS** [7492-56]  
Y. Zhu, X. Liu, L. Sun, Chinese Academy of Surveying and Mapping (China)



---

**SESSION 5 SPATIAL REASONING**

---

- 7492 21 **The digital generalization principle of digital elevation model** [7492-193]  
H. Hu, Wuhan Univ. (China); J. Gao, Zhengzhou Institute of Geodesy and Geomatics (China); P. Hu, Wuhan Univ. (China)
- 7492 22 **Ontology for cell-based geographic information** [7492-26]  
B. Zheng, Huazhong Univ. of Science and Technology (China); L. Huang, Wuhan Univ. (China); X. Lu, Huazhong Univ. of Science and Technology (China)
- 7492 23 **Progressive transmission of road network** [7492-121]  
B. Ai, Shandong Univ. of Science and Technology (China); T. Ai, Wuhan Univ. (China); X. Tang, Chinese Academy of Surveying and Mapping (China); Z. Li, Shandong Univ. of Science and Technology (China)
- 7492 24 **The change detection of multi-temporal remote sensing images based on D-S algorithm** [7492-233]  
Y. Dian, Wuhan Univ. (China) and Huazhong Agricultural Univ. (China); S. Fang, Wuhan Univ. (China)
- 7492 25 **Geographic spatial reasoning strategy based on ontology** [7492-109]  
X. Du, Hubei Univ. (China); Q. Guo, Wuhan Univ. (China); Q. Wang, Hubei Univ. (China)
- 7492 26 **A research on natural geographical factors based on Chinese urban expansion** [7492-70]  
S. Hu, Institute of Remote Sensing Applications (China) and Graduate Univ. of the Chinese Academy of Sciences (China); Z. Zhang, Institute of Remote Sensing Applications (China); X. Wei, F. Liu, Institute of Remote Sensing Applications (China) and Graduate Univ. of the Chinese Academy of Sciences (China)
- 7492 27 **Study on paddy rice yield estimation based on multisource data and the Grey system theory** [7492-20]  
W. Deng, W. Wang, Hubei Univ. (China); H. Liu, Wuhan Univ. (China); C. Li, Y. Ge, Hubei Univ. (China); X. Zheng, Wuhan Univ. (China)
- 7492 28 **The GIS map coloring support decision-making system based on case-based reasoning and simulated annealing algorithm** [7492-259]  
S. Deng, W. Xiang, Y. Tian, Wuhan Univ. (China)
- 7492 29 **Study on temporal and spatial variations of urban land use based on land change data** [7492-43]  
P. Jiang, Y. Liu, M. Fan, Y. Zhang, Wuhan Univ. (China)

**Part Two**

---

**SESSION 6 MULT-SENSOR, MULTI-RESOLUTION, AND MULTI-MODE DATA FUSION**

---

- 7492 2A **Multi-scale terrain representation and terrain analysis** [7492-42]  
X. Ke, Wuhan Univ. (China) and Xi'an Research Institute of Surveying and Mapping (China); Q. Guo, Wuhan Univ. (China); Y. Zhang, Xi'an Research Institute of Surveying and Mapping (China); P. Gao, Wuhan Mechanical Technological College (China)

- 7492 2B **Application of multi-source data fusion in navigation satellite autonomous orbit determination** [7492-270]  
F. Hou, H. Liu, Wuhan Univ. (China)
- 7492 2C **Statistics analysis on SPOT 5 classification accuracy of different data fusion methods** [7492-177]  
G. Liu, H. Lu, Henan Univ. (China)
- 7492 2D **Multispectral and SAR image fusion based on wavelet and IHS transform** [7492-15]  
L. Liu, N. Shu, Wuhan Univ. (China)
- 7492 2E **Study on multiscale generalization of DEM based on lifting scheme** [7492-229]  
Z. Yang, Huanggang Normal Univ. (China) and Wuhan Univ. (China); H. Liu, Huanggang Normal Univ. (China); N. Yang, Wuhan Univ. (China); X. Xiao, Huanggang Normal Univ. (China)
- 7492 2F **Uniform color processing of scanned topographic maps based on SSR** [7492-269]  
Z. Fu, C. Tong, L. Liu, Y. Huang, Wuhan Univ. (China)
- 7492 2G **An effective method for merging point-cloud model** [7492-240]  
G. Wang, Wuhan Univ. (China); Y. Wang, Beijing Univ. of Civil Engineering and Architecture (China)

---

**SESSION 7 SPATIAL-TEMPORAL DATA MODELING**

---

- 7492 2H **Ancient architecture point cloud data triangulation based on algorithm integration with the subdivision of the grid and tangent plane projection** [7492-11]  
J. Zhao, Wuhan Univ. (China) and Beijing Univ. of Civil Engineering and Architecture (China); Y. Wang, Beijing Univ. of Civil Engineering and Architecture (China); X. Hu, Hangzhou Geotechnical Engineering and Surveying Research Institute (China)
- 7492 2I **Automatic modeling of cliff symbol in 3D topographic map** [7492-72]  
N. Yang, Q. Guo, D. Shen, Wuhan Univ. (China)
- 7492 2J **Process-oriented research on spatio-temporal dynamic semantics** [7492-116]  
C. Xue, Q. Dong, Ctr. for Earth Observation and Digital Earth (China); J. Xie, F. Su, Institute of Geographical Science and Natural Resources (China)
- 7492 2K **Design and implementation of segment oriented spatio-temporal model in urban panoramic maps** [7492-36]  
H. Li, Wuhan Univ. (China) and Wuhan Geotechnical Engineering and Surveying Institute (China); L. Fei, Wuhan Univ. (China); Q. Peng, Wuhan Geotechnical Engineering and Surveying Institute (China); Y. Li, Wuhan Univ. (China)
- 7492 2L **DEM's digital progressive generalization and multi-scale visualization of contour lines** [7492-127]  
P. Hu, L. Yang, Wuhan Univ. (China)
- 7492 2M **Study on relationship between vegetation index and meteorological factors in north Hubei** [7492-108]  
J. Zhou, J. Ge, Wuhan Univ. (China)

- 7492 2N **A multiple representation data model based on state and behavior** [7492-67]  
J. Li, T. Ai, Wuhan Univ. (China)
- 7492 2O **Representation and application of bus system at the lowest level of detail** [7492-03]  
Z. Huang, J. Li, X. Xia, Wuhan Univ. (China)
- 7492 2P **A top-down hierarchical spatio-temporal process description method and its data organization** [7492-133]  
J. Xie, Institute of Geographical Science and Natural Resources (China); C. Xue, Ctr. for Earth Observation and Digital Earth (China)
- 7492 2Q **Spatial-temporal database model based on geodatabase** [7492-188]  
H. Zhu, Yunnan Univ. (China); Y. Luo, Univ. of Electronic Science and Technology of China (China)
- 7492 2R **Spatio-temporal statistics for exploratory NDVI image analysis** [7492-212]  
H. Shu, C. Zhao, A. Xu, Wuhan Univ. (China)
- 7492 2S **Building depth images from scattered point cloud** [7492-154]  
S. Wei, Beijing Univ. of Civil Engineering and Architecture (China); H. Chen, China Institute of Geotechnical Investigation and Surveying (China)
- 7492 2T **A spatial-temporal covariance model for rainfall analysis** [7492-242]  
S. Li, Wuhan Univ. (China) and Hubei Univ. of Education (China); H. Shu, Z. Xu, Wuhan Univ. (China)
- 7492 2U **A geodatabase-based data model for Poyang Lake watershed comprehensive management modeling** [7492-179]  
G. Lai, J. Lv, Jiangxi Normal Univ. (China); C. Chen, Dresden Univ. of Technology (Germany); S. Bao, F. Fan, Jiangxi Normal Univ. (China)
- 7492 2V **Remote satellite sensor modeling design and implementation based on the sensor modeling language** [7492-100]  
J. Chen, N. Chen, W. Wang, C. Hu, Z. Zheng, Wuhan Univ. (China)
- 7492 2W **Sphere target fitting of point cloud data based on TLS** [7492-150]  
T. Lu, East China Institute of Technology (China) and Wuhan Univ. (China); S. Zhou, East China Institute of Technology (China) and Jiangxi Academy of Science (China); L. Zhang, Y. Guan, East China Institute of Technology (China)
- 7492 2X **Chaos analysis of groundwater depth time series using surrogate data method** [7492-27]  
W. Wang, S. Peng, G. An, Hohai Univ. (China)
- 7492 2Y **Construction of geographical names knowledge base with ontology and production rule** [7492-115]  
G. Cheng, Henan Polytechnic Univ. (China) and Univ. of Electronic Science and Technology of China (China); Q. Du, Wuhan Univ. (China)

- 7492 27 **An event-version-based spatio-temporal modeling approach and its application in the cadastral management** [7492-206]  
Y. Li, Z. Han, Shanghai Ocean Univ. (China); Z. Liao, Changsha Univ. of Science and Technology (China)
- 7492 30 **An improved trajectory query on moving objects in a spatio-temporal database** [7492-92]  
J. Tang, T. Liu, Wuhan Univ. (China)
- 7492 31 **Development of a spatio-temporal data model based on events and objects in land reclamation information system** [7492-122]  
J. Hu, Wuhan Univ. (China) and Xuzhou Normal Univ. (China); Z. He, Wuhan Univ. (China); J. Kang, Xuzhou Normal Univ. (China); P. Liu, X. Wei, Wuhan Univ. (China)
- 7492 32 **A judgment approach to topological relation of regions with a hole** [7492-159]  
B. Liu, S. Zou, D. Li, J. Ruan, East China Institute of Technology (China)
- 7492 33 **Design of objectified spatial-temporal relation data model for WalkGIS platform** [7492-157]  
Y. Li, Y. Lou, Q. Jiang, Zhejiang Univ. (China)
- 7492 34 **Dynamic change of landscape patterns of Momoge wetland in the last two decades** [7492-250]  
G. Hou, H. Zhang, Y. Wang, Z. Zhang, J. Zhao, Northeast Normal Univ. (China)
- 7492 35 **Spatial index study for multi-dimension vector data based on improved quad-tree encoding** [7492-83]  
Y. Li, Chinese Academy of Surveying and Mapping (China); H. Wang, Chinese Academy of Surveying and Mapping (China) and Liaoning Technical Univ. (China)

---

**SESSION 8 SPATIAL ANALYSIS APPLICATIONS**

- 7492 36 **Analysis on the RINEX observations translated by Ashtech Solutions and TEQC** [7492-63]  
C. Zhang, H. Liu, R. Zou, Wuhan Univ. (China)
- 7492 37 **Application of RS and GIS in soil erosion load evaluation: case study in Xingzigou basin, Shaanxi Province** [7492-75]  
L.-Q. Zhu, W.-B. Zhu, Henan Univ. (China)
- 7492 38 **Principles of midline method and scale line method employed in ocean delimitation** [7492-216]  
P. Hu, J. Zhou, H. Hu, Wuhan Univ. (China)
- 7492 39 **Design and application analysis of prediction system of geo-hazards based on GIS in the Three Gorges Reservoir** [7492-02]  
D. Li, K. Yin, China Univ. of Geosciences (China); H. Gao, Zhejiang Ocean Univ. (China); C. Liu, China Univ. of Geosciences (China)
- 7492 3A **Research of spatio-temporal analysis of agricultural pest** [7492-160]  
C. Wang, Wuhan Univ. (China) and South China Agricultural Univ. (China); D. Li, Wuhan Univ. (China); Y. Hu, X. Wu, Y. Qi, South China Agricultural Univ. (China)

- 7492 3B **Quantitative factor analysis of forest resources in Changbai mountain areas** [7492-76]  
L. Yang, X. Zhang, J. Wu, Northeast Normal Univ. (China); B. Zou, Central South Univ. (China);  
L. Chang, Northeast Normal Univ. (China)
- 7492 3C **A method for estimating the landing area based on marine dynamic GIS** [7492-45]  
L. Zhang, Dalian Naval Academy (China) and Institute of Geographic Science and Natural  
Resources Research (China); F. Su, Institute of Geographic Science and Natural Resources  
Research (China); S. Li, Dalian Naval Academy (China); R. Xiao, Institute of Geographic  
Science and Natural Resources Research (China)
- 7492 3D **Spatial and temporal variations in residential housing prices in Beijing** [7492-73]  
Y. Zhang, M. Lv, Z. Yin, Beijing Forestry Univ. (China)
- 7492 3E **Research on urban land grade adjustment based on digital land price model** [7492-221]  
M. Zhang, S. Zhou, Y. Guan, East China Institute of Technology (China)
- 7492 3F **The techniques and implementation of fast collision detection for three-dimension pipeline**  
[7492-228]  
Z. Fu, S. Shao, Wuhan Univ. (China)
- 7492 3G **Exploratory research on GIS software testing** [7492-271]  
H. Wang, Wuhan Univ. (China) and Chinese Academy of Surveying and Mapping (China);  
X. Tang, Chinese Academy of Surveying and Mapping (China)
- 7492 3H **Zenith angle-based method for pattern recognition of landform elements using feature  
vector matching** [7492-253]  
Y. Wu, Y. Liu, H. Hu, Wuhan Univ. (China); C. Yang, Foshan Urban Planning Design and  
Surveying Research Institute (China)
- 7492 3I **A method of constructing geo-object ontology in disaster system for prevention and  
decrease** [7492-49]  
B. Li, Chinese Academy of Surveying and Mapping (China) and Wuhan Univ. (China); J. Liu,  
L. Shi, Chinese Academy of Surveying and Mapping (China); Z. Wang, Wuhan Univ. (China)
- 7492 3J **Application research of rough sets in the multi-elemental cooperative spatial analysis**  
[7492-112]  
W. Li, Wuhan Univ. of Science and Technology (China); Q. Wang, Z. Lin, Wuhan Univ. (China)
- 7492 3K **Hyperspectral assessment of nitrogen nutrition for winter wheat canopy using  
continuum-removed method** [7492-144]  
X. Zhang, R. Shen, S. Zhu, Nanjing Univ. of Information Science and Technology (China)
- 7492 3L **Study on spatial structure of large scale retail stores based on space syntax: case study in  
Wuhan** [7492-262]  
Q. Zhan, J. Zhou, Wuhan Univ. (China); R. Sliuzas, International Institute for Geo-Information  
Science and Earth Observation (Netherlands)
- 7492 3M **Extraction method of suitable matching regions in the gravity-aided inertial navigation**  
[7492-77]  
L. Yan, Wuhan Univ. (China); X. Ma, Wuhan Univ. (China) and Unit 69028 of PLA (China);  
J. Shi, Wuhan Univ. (China); Y. Shi, Unit 69028 of PLA (China)

- 7492 3N **Scheme evaluation of urban design using 3D visual analysis** [7492-189]  
X. Zhang, Q. Zhu, Wuhan Univ. (China)
- 7492 3O **Design and implementation of land reservation system** [7492-87]  
Y. Gao, Q. Gao, Wuhan Geotechnical Engineering and Surveying Institute (China)
- 7492 3P **Power lines extraction from aerial images based on Gabor filter** [7492-199]  
C. Mu, J. Yu, Wuhan Univ. (China); Y. Feng, J. Cai, Queensland Univ. of Technology (Australia)
- 7492 3Q **GIS-assisted spatial analysis for urban regulatory detailed planning: designer's dimension in the Chinese code system** [7492-181]  
Y. Yu, Z. Zeng, Wuhan Univ. (China)
- 7492 3R **Public facility planning in urban villagers' community based on Public Participation GIS: a case study of Wuhan new urban areas** [7492-184]  
J. Li, Z. Zeng, Y. Yu, Wuhan Univ. (China)
- 7492 3S **The comparison of spatial accessibility measures between non-obstacle and obstacle oriented based on gravity model** [7492-244]  
Z.-G. Han, C.-H. Cui, Henan Univ. (China)
- 7492 3T **An improved particle swarm optimization based on cloud model with implications for urban land use planning** [7492-145]  
Y. Wei, Wuhan Univ. (China) and Guangxi Teachers Education Univ. (China); Y. Liu, D. Wang, Wuhan Univ. (China)
- 7492 3U **Sustainable development strategy based on GIS** [7492-41]  
M. O. Vognimary, Y. Liu, Wuhan Univ. (China); F. Xu, Xinyang Normal Univ. (China)
- 7492 3V **Accuracy analysis of exterior orientation elements on vertical parallax in POS-supported aerial photogrammetry** [7492-164]  
Z. Wu, X. Yuan, Wuhan Univ. (China)
- 7492 3W **Pattern analysis of geo-referenced motion processes** [7492-97]  
H. Wang, Peking Univ. (China) and Wuhan Univ. (China); C. Cheng, Peking Univ. (China); T. Ai, Wuhan Univ. (China)
- 7492 3X **Analysis on influence of non-point source pollution in Fuhe watershed based on the SWAT model and ArcGIS** [7492-185]  
X. Guo, East China Institute of Technology (China) and Jiangxi Province Key Lab. for Digital Land (China); B. Zhao, D. Li, J. Xiao, East China Institute of Technology (China)
- 7492 3Y **Spatio-temporal contextual approaches to mapping land cover change based on remote sensing imagery** [7492-191]  
J. Zhang, J. Zhang, Y. Tang, J. You, Wuhan Univ. (China)
- 7492 3Z **Building MapObjects attribute field in cadastral database based on the method of Jackson system development** [7492-64]  
Z. Chen, L. Zhang, L. Liu, East China Institute of Technology (China)

- 7492 40 **Managing landscape connectivity for a fragmented area using spatial analysis model at town scale** [7492-196]  
S. Liu, Beijing Normal Univ. (China); Y. Dong, Research Institute of Forestry (China); W. Fu, Beijing Normal Univ. (China); Z. Zhang, Research Institute of Forestry (China)
- 7492 41 **Development of a GIS database for Iraqi marshlands ecosystem studies** [7492-81]  
H. Zhang, Shandong Univ. of Technology (China); F. H. Abed, Ministry of Higher Education and Scientific Research (Iraq)
- 7492 42 **Integrating models to predict the reason of unknown-caused grassland fire based on GIS** [7492-207]  
Z. Zhang, G. Hou, H. Zhang, Northeast Normal Univ. (China); D. Zhou, Northeast Normal Univ. (China) and Northeast Institute of Geography and Agroecology (China)
- 7492 43 **Direction difference in terrain features extraction** [7492-236]  
X. Guo, R. Li, C. Huang, Chang'an Univ. (China)
- 7492 44 **Urban landscape change analysis using satellite imagery and support vector machines** [7492-190]  
H. Zhu, Yunnan Univ. (China)

---

**SESSION 9 WEB-BASED SPATIAL-TEMPORAL MODEL AND APPLICATIONS**

---

- 7492 45 **Massive spatial data network service architecture based on double-cluster** [7492-23]  
Z. Li, Nanchang Hangkong Univ. (China) and Wuhan Univ. (China); L. Gao, Wuhan Univ. (China)
- 7492 46 **2-D files declustering method based on virtual devices** [7492-22]  
Z. Li, Nanchang Hangkong Univ. (China) and Wuhan Univ. (China); L. Gao, Wuhan Univ. (China)
- 7492 47 **Research on land information web query service for public** [7492-65]  
D. Liang, Wuhan Univ. (China) and Anhui Normal Univ. (China); L. Li, P. Song, Y. Cheng, S. Mei, Wuhan Univ. (China); Y. Min, Geomatics Ctr. of Henan Province (China)
- 7492 48 **WebGIS based on semantic grid model and web services** [7492-37]  
W. Zhang, Kunming Univ. of Science and Technology (China); C. Yue, Southwest Forestry Univ. (China); J. Gao, Kunming Univ. of Science and Technology (China)
- 7492 49 **Research on intelligent push of spatial information service based on context-sensitive** [7492-57]  
M. Kang, B. Wang, Q. Du, Wuhan Univ. (China)
- 7492 4A **Research on sharing platform of urban spatial information service** [7492-69]  
G. Wang, Wuhan Univ. (China) and Tianjin Institute of Surveying and Mapping (China); R. Hu, Wuhan Polytechnic Univ. (China)
- 7492 4B **Research on models of Digital City geo-information sharing platform** [7492-187]  
H. Xu, Nanjing Univ. (China) and Hohai Univ. (China); Z. Liu, Hohai Univ. (China); R. Badawi, Nanjing Univ. (China); H. Liu, Hohai Univ. (China)

- 7492 4C **Research on the application of GIS and sensor network in the building settlement observation** [7492-114]  
Y. Lv, Chinese Academy of Surveying and Mapping (China) and Liaoning Technical Univ. (China); Y. Zhu, Chinese Academy of Surveying and Mapping (China)
- 7492 4D **A system architecture of GIS middleware support for context-sensitivity** [7492-139]  
Z. Cai, M. Weng, Y. Li, Q. Du, Wuhan Univ. (China)
- 7492 4E **A research on spatial information service based on geo-ontology** [7492-143]  
M. Wu, Z. Wang, A. Zhang, X. Kong, Ludong Univ. (China)
- 7492 4F **A SOA-based approach to geographical data sharing** [7492-162]  
Z. Li, M. Peng, W. Fan, Wuhan Urban Planning Information Ctr. (China)

## Part Three

### SESSION 10 SPATIAL ANALYSIS MODELS

---

- 7492 4G **Interactive decision-making support model in MOSD** [7492-174]  
Y. Liu, Guangzhou Urban Planning and Design Survey Research Institute (China); Z. Lan, Y. Liu, Wuhan Univ. (China); L. Qin, Guangzhou Urban Planning and Design Survey Research Institute (China)
- 7492 4H **The study of noise filtering algorithm experiment on spatial domain and frequency domain of hyperspectral image** [7492-128]  
L. Han, J. Wu, Chang'an Univ. (China)
- 7492 4I **A regression-kriging model for estimation of rainfall in the Laohahe basin** [7492-89]  
H. Wang, L. L. Ren, Hohai Univ. (China); G. H. Liu, Institute of Geographic Sciences and Natural Resources Research (China)
- 7492 4J **A new practical methodology of the coal bed stability evaluation: the trend and variation method** [7492-06]  
Y. Wei, D. Cao, J. Deng, China Univ. of Mining and Technology (China)
- 7492 4K **Research on the comparison of extension mechanism of cellular automaton based on hexagon grid and rectangular grid** [7492-168]  
X. Zhai, X. Zhu, Z. Xiao, J. Weng, Wuhan Univ. (China)
- 7492 4L **Massive spatial data materialization method based on ArcGIS engine** [7492-95]  
L. Shi, Chinese Academy of Surveying and Mapping (China); H. Li, Chinese Academy of Surveying and Mapping (China) and Liaoning Technical Univ. (China)
- 7492 4M **Dynamic study of land-use in Yining City** [7492-227]  
J. Wang, L. Wei, Wuhan Univ. (China)
- 7492 4N **An improved Voronoi diagram model based on fuzzy interval theory** [7492-105]  
B. Yan, Z. Shao, Y. Zhou, Wuhan Univ. (China); Q. Cheng, Huazhong Univ. of Science and Technology (China)



- 7492 4O **Plantation change in Wuhan and its driving force analysis during 1978–2008** [7492-21]  
W. Deng, H. Xiang, Hubei Univ. (China); C. Wang, China National Environmental Monitoring Ctr. (China); J. Zhu, G. Chen, Hubei Univ. (China)
- 7492 4P **The application of spatial analysis based on rough set theory and hierarchical analysis** [7492-165]  
Z. Lin, S. Liang, Wuhan Univ. (China)
- 7492 4Q **Spatial clustering analysis based on graphics** [7492-241]  
Z. Wang, China Univ. of Mining and Technology (China) and Wuhan Univ. (China); Z. He, Wuhan Univ. (China)
- 7492 4R **Division of urban hierarchical grid based on hierarchical spatial reasoning** [7492-148]  
M. Peng, Wuhan Urban Planning Information Ctr. (China)
- 7492 4S **A new interpolation model of convex hull in Delaunay triangulation** [7492-155]  
P. Duan, J. Li, X. Zuo, J. Li, Kunming Univ. of Science and Technology (China)
- 7492 4T **Concepts and classification of spatial similarity relations in multi-scale map spaces** [7492-33]  
H. Yan, Sun Yat-sen Univ. (China) and Lanzhou Jiaotong Univ. (China)
- 7492 4U **Determination of suitable cell size for grid based digital elevation model** [7492-225]  
X. Liu, Y. Wang, B. Jin, Nanjing Normal Univ. (China)
- 7492 4V **Formal representation for gradual changes of spatial relations between regional objects** [7492-113]  
N. Meng, Chang'an Univ. (China) and Wuhan Univ. (China); T. Ai, Wuhan Univ. (China); X. Zhou, Xi'an Institute of Surveying and Mapping (China); X. Guo, Chang'an Univ. (China)
- 7492 4W **Study on quantitative model for relationship between displacement and precipitation for Laozaoping landslide** [7492-136]  
Y. You, Chongqing Institute of Meteorological Sciences (China) and Chongqing Univ. (China); Y. Gao, Y. Tang, Y. Chen, Chongqing Institute of Meteorological Sciences (China)
- 7492 4X **Research on the decision-making model of land-use spatial optimization** [7492-132]  
J. He, Wuhan Univ. (China); Y. Yu, Wuhan Univ. of Technology (China); Y. Liu, Wuhan Univ. (China); F. Liang, Y. Cai, Wuhan Univ. of Technology (China)
- 7492 4Y **Research on the model of land eco-economic suitability evaluation based on niche suitability** [7492-134]  
Y. Yu, Wuhan Univ. of Technology (China); J. He, Wuhan Univ. (China); Y. Cai, Y. Yuan, Wuhan Univ. of Technology (China)
- 7492 4Z **Study on cadastral basic attribute data structure based on man-land relationship** [7492-260]  
C. Zhan, Y. Liu, Wuhan Univ. (China)

---

**SESSION 11 SPATIAL-TEMPORAL APPLICATIONS FOR MOBILE, WIRELESS, AND LOCATION-BASED SERVICE NETWORKS**

---

- 7492 50 **Research on the key technology of update of land survey spatial data based on embedded GIS and GPS** [7492-137]  
D. Chen, Y. Liu, Wuhan Univ. (China); H. Yu, Survey and Design Institute of Land in Wuhan (China); Y. Xia, Wuhan Univ. (China)
- 7492 51 **The structure of sharing for land information based on MAGIS-P2P** [7492-226]  
L. Zhang, Z. Chen, Y. Luo, Y. Hu, East China Institute of Technology (China)

---

**SESSION 12 SPATIAL SIMULATION MODELS**

---

- 7492 52 **Study on drought-stricken and drought-damaged farmland in China during 1982~2001 with remote sensing** [7492-88]  
S. Qi, Jiangxi Normal Univ. (China); Z. Li, Institute of Geographic Science and Natural Resources Research (China); C. Wang, State Key Lab. of Remote Sensing Science (China)
- 7492 53 **A new way of modeling 3D entities based on raster technique** [7492-91]  
Y. Liu, L. Fei, Q. Lan, Wuhan Univ. (China)
- 7492 54 **Research on the recovery of the lunar gravity from simulant orbit perturbation data** [7492-230]  
K. Zeng, J. C. Li, Y. Fang, Wuhan Univ. (China)
- 7492 55 **Flow paths tracing from raster contours using distance transform** [7492-220]  
Y. Wu, Y. Liu, H. Hu, Wuhan Univ. (China); C. Yang, Foshan Urban Planning Design and Surveying Research Institute (China)
- 7492 56 **Simulation of spatial-temporal change of urban land use/cover in a short period of time** [7492-84]  
H. Zhang, L. Yu, B. Xie, Zhejiang Univ. (China)
- 7492 57 **Pedestrian simulation and distribution in urban space based on visibility analysis and agent simulation** [7492-78]  
S. Ying, L. Li, Wuhan Univ. (China); Y. Gao, Wuhan Geotechnical Engineering and Surveying Institute (China)
- 7492 58 **Spatial simulation model of storm flow process based on cellular automata algorithm** [7492-99]  
P. Wang, W. Wang, N. Chen, L. Wu, W. Qi, Wuhan Univ. (China)
- 7492 59 **Urban land space evolution based on geographical simulation systems** [7492-252]  
J. Gong, China Univ. of Geosciences (China) and Wuhan Univ. (China); Y. Liu, Z. Zhang, Wuhan Univ. (China); J. Li, China Univ. of Geosciences (China)
- 7492 5A **Research on optimal DEM cell size for 3D visualization of loess terraces** [7492-28]  
W. Zhao, Hefei Univ. of Technology (China) and Nanjing Normal Univ. (China); G. Tang, Nanjing Normal Univ. (China); B. Ji, L. Ma, Hefei Univ. of Technology (China)

- 7492 5B **Application and comparison of different grid-based hydrological models in the Laoha River basin** [7492-266]  
X. Wang, Hohai Univ. (China) and Substation of Hydrology, Liaoyang (China); X. Song, Conservancy Bureau, Jining (China); Y. Xue, P. Li, L. Bai, B. You, W. Yu, Bureau of Xinyang Hydrology and Water Resources Survey (China); Q. Li, Hohai Univ. (China)
- 7492 5C **Developing a web-based cellular automata model for urban growth simulation** [7492-249]  
Y. Liu, Nanyang Technological Univ. (Singapore); J. He, Nanyang Technological Univ. (Singapore) and Hubei Univ. (China)
- 7492 5D **Dynamic modeling of tourism by stochastic method: a case of the Beijing-Tianjin-Hebei region** [7492-243]  
J. Dai, China Univ. of Geosciences (China); S. Zhang, North China Electric Power Univ. (China); C. Xue, China Univ. of Geosciences (China)
- 7492 5E **Natural neighbors interpolation method for correcting IDW** [7492-169]  
J. Li, J. Li, X. Zuo, P. Duan, Kunming Univ. of Science and Technology (China)
- 7492 5F **Application of generalized regression neural network residual kriging for terrain surface interpolation** [7492-18]  
F. Liu, X. He, L. Zhou, Huaihai Institute of Technology (China)

*Author Index*



# Conference Committee

## *Conference Chairs*

**Yaolin Liu**, Wuhan University (China)  
**Xinming Tang**, Chinese Academy of Surveying and Mapping (China)

## *Scientific Committee*

**Wenzhong Shi** (Chair), Hong Kong Polytechnic University (Hong Kong, China)  
**Yaolin Liu** (Vice-Chair), Wuhan University (China)  
**Xinming Tang** (Vice-Chair), Chinese Academy of Surveying and Mapping (China)  
**Chenghu Zhou**, Chinese Academy of Sciences (China)  
**Feibing Zhan**, University of Texas (United States)  
**Guonian Lv**, Nanjing Normal University (China)  
**Lun Wu**, Peking University (China)  
**Manchun Li**, Nanjing University (China)  
**Martien Molenaar**, International Institute for Geo-Information Science and Earth Observation (Netherlands)  
**Michael F. Goodchild**, University of California, Santa Barbara (United States)  
**Peter Fisher**, University of Leicester (United Kingdom)  
**Qiming Zhou**, Hong Kong Baptist University (Hong Kong, China)  
**Qingming Zhan**, Wuhan University (China)  
**Renzhong Guo**, Shenzhen Municipal Bureau of Land Resources and Housing Management (China)  
**Robert Haining**, University of Cambridge (United Kingdom)  
**Tao Cheng**, University College London (United Kingdom)  
**Xia Li**, Sun Yat-sen University (China)  
**Xinchang Zhang**, Sun Yat-sen University (China)  
**Yu Fang**, Peking University (China)  
**Zhilin Li**, Hong Kong Polytechnic University (Hong Kong, China)

## *Program Committee*

**Yaolin Liu** (Chair), Wuhan University (China)  
**Xinming Tang** (Cochair), Chinese Academy of Surveying and Mapping (China)  
**Lin Li**, Wuhan University (China)  
**Qinyun Du**, Wuhan University (China)  
**Tinghua Ai**, Wuhan University (China)  
**Guofeng Wu**, Wuhan University (China)



## Introduction

Spatial analysis, spatial-temporal data modeling and data mining are key research topics in the field of geographical information science and have attracted great attention around the world. With the developments of space technologies, computer technologies, mathematics, communication technologies and information processing technologies, the existing techniques and methods on spatial analysis, spatial-temporal data modeling and data mining have enabled human beings to observe, analyze, and understand the earth resources and environment, which have made a tremendous contribution to the development of the geographical information science and sustainability of human society.

To exchange the latest and advanced technologies and methods of spatial analysis, spatial-temporal data modeling and data mining, to enhance the connection between international and Chinese colleagues in this field, the International Symposium on Spatial Analysis, Spatial-Temporal Data Modeling and Data Mining was held 13–14 October 2009 in Wuhan. The conference aims to provide a high-level platform for scholars, entrepreneurs and technical personnel to exchange and learn from each other.

These proceedings contains 194 academic papers, covering 12 themes including spatial-temporal data capturing, Spatial-temporal data modeling, visualization of spatial-temporal data, web-based spatial-temporal model and applications, spatial-temporal applications for mobile, wireless, location-based service networks, data mining and knowledge discovery, spatial simulation models, spatial analysis models, Spatial reasoning, multisensor, multiresolution, and multimode data fusion, applications of data fusion to object recognition, classification and change detection, and spatial analysis applications. We hope that these academic papers will contribute to the developments and improvements of related theories, methods, techniques and applications.

**Yaolin Liu**  
**Xinming Tang**

