

# **Joint International Conference on Theory, Data Handling, and Modelling in GeoSpatial Information Science 2010**

## **Volume XXXVIII – Part 2**

**ISPRS Technical Commission II Symposium  
IGU International Symposium on Spatial Data Handling  
IGU International Conference on Modelling Geographical Systems**

**Hong Kong, China  
26-28 May 2010**

**Editors:**

**Eric Guilbert  
Brian Lees  
Yee Leung**

**ISBN: 978-1-61839-466-8**

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

Copyright© (2010) by the International Society for  
Photogrammetry and Remote Sensing (ISPRS)  
All rights reserved.

Printed by Curran Associates, Inc. (2012)

For permission requests, please contact the International Society for  
Photogrammetry and Remote Sensing (ISPRS)  
at the address below.

International Society for Photogrammetry and Remote Sensing (ISPRS)  
Attn: Chen Jun  
National Geomatics Centre of China  
28 Lianhuachixi Road Haidian  
Beijing 100830 China

Phone: 86 10 63 88 1102

Fax: 86 10 68 42 4101

chenjun@nsdi.gov.cn

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2634  
Email: curran@proceedings.com  
Web: www.proceedings.com

# TABLE OF CONTENTS

INTRODUCTION	1
KEYNOTE ADDRESSES	
• Twenty Years of Progress: GIScience in 2010 Michael F. Goodchild (University of California, Santa Barbara, USA)	2
• The New Era for Geo-Information Deren Li (Wuhan University, China)	3
• Principles of Neural Spatial Interaction Modeling Manfred Fischer (Vienna University of Economics and Business, Austria)	4
• Deriving Space-Time Variograms from Space-Time Autoregressive (STAR) Model Specifications Daniel Griffith (University of Texas at Dallas, USA) and Gerard B.M. Heuvelink (Wageningen University, The Netherlands)	15
• GIS as Planning Support System Anthony G.O. Yeh (The University of Hong Kong, Hong Kong)	20
SESSION 1 – SPATIAL MODELLING	
• A Unified Spatial Model for GIS Maciej Dakowicz and Chris Gold (University of Glamorgan, UK)	21
• Spatial Morphological Conceptual Model of Bay Dandan Zhang, X. M. Yang, F. Z. Su and Y. Y. Du (Institute of Geographical Sciences and Natural Resources Research, Chinese Academy of Sciences, China)	27
• W-Based VS Latent Variables Spatial Autoregressive Models: Evidence from Monte Carlo Simulations An Liu (University of Groningen, The Netherlands), Henk Folmer (Wageningen University, The Netherlands) and Han Oud (Radboud University Nijmegen, The Netherlands)	32
• Generalization of Tiled Models with Curved Surfaces Using Typification Richard Guercke (Leibniz University Hanover, Germany), Junqiao Zhao (Wuhan University, China), Claus Brenner (Leibniz University Hanover, Germany) and Qing Zhu (Wuhan University, China)	38
• An Optimised Cellular Automata Model Based on Adaptive Genetic Algorithm for Urban Growth Simulation Yan Liu (The University of Queensland, Australia) and Yongjiu Feng (Shanghai Ocean University, China)	44
• Validation of Planar Partitions Using Constrained Triangulation Hugo Ledoux and Martijn Meijers (Delft University of Technology, The Netherlands)	50
SESSION 2 - SPACE AND TIME	
• Space-Time Kernels Jiaqiu Wang, Tao Cheng and James Haworth (University College London, UK)	56
• Modeling Land Allocation in Time and Space Ali Sharifi (Tewente University, The Netherlands) and Mohammad Karimi (K.N. Toosi University of Technology, Iran)	64
• A Spatio-Temporal Population Model for Alarming, Situation Picture and Warning System Zhe Zhang, Rangsimma Sunila and Kirsi Virrantaus (Helsinki University of Technology, Finland)	6:
• Defining Spatio-Temporal Neighbourhood of Network Data Tao Cheng and Berk Anbaroglu (University College London, UK)	76
• An Approach of Discovering Spatial-Temporal Patterns in Geographical Process Siyue Chai and Fenzhen Su (Institute of Geographic Sciences and Natural Resources Research, CAS, China)	79
• Spatio-Temporal Trajectory Analysis of Mobile Objects Following the Same Itinerary Laurent Etienne, Thomas Devogele (French Naval Academy Research Institute, France) and Alain Bouju (Data-processing and Industrial Imagery Laboratory, France)	85

- Spatio-Temporal Analyses of Precipitation and Temperature Distribution over Turkey 91  
Pinar Aslantaş Bostan and Zuhul Akyürek (Middle East Technical University, Turkey)

### SESSION 3 - SPATIAL ANALYSIS

- Automatically and Accurately Matching Objects in Geospatial Datasets 97  
Linna Li and Michael F. Goodchild (University of California, Santa Barbara, USA)
- Estimation of Change of MOE in the South China Sea 103  
Yunyan Du, Chenghu Zhou, Lijing Wang, Guangya Qi and Xinzhou Yan (Institute of Geographic Sciences and Natural Resources Research, CAS, China)
- The Use of Statistical Point Processes in Geoinformation Analysis 108  
Alfred Stein, Valentyn Tolpekin (International Institute for Geo-Information Science and Earth Observation, The Netherlands), Olga Spatenkova (Helsinki University of Technology, Finland)
- Urban Road Network Accessibility Evaluation Based on GIS Spatial Analysis Techniques 113  
Weiping Hu and Chi Wu (South China Normal University, China)
- Relevance-driven Acquisition and Rapid on-site Analysis of 3D Geospatial Data 117  
Daniel Eggert and Volker Paelke (Leibniz Universität Hannover, Germany)
- Facial Expression Recognition Based on Cloud Model 123  
Hehua Chi (Wuhan University, China), Lianhua Chi (Huazhong University of Science and Technology, China), Meng Fang and Juebo Wu (Wuhan University, China)
- Glacier Information Extraction Based on Multi-Feature Combination Model 128  
Jianming Gong, Xiaomei Yang, Chenghu Zhou and Tao Zhang (Institute of Geographic Sciences and Natural Resources Research, CAS, China)
- Exploring Spatiotemporally Varying Regressed Relationships: the Geographically Weighted Panel Regression Analysis 133  
Danlin Yu (Department of Earth and Environmental Studies, Montclair State University, Montclair, NJ, USA)

### SESSION 4 - SPATIAL DATA MINING

- Land Suitability Evaluation for Wheat Cultivation by Fuzzy Theory Approach as Compared with Parametric Method 139  
Marzieh Mokarram, Kazem Rangzan, Abdolamir Moezzi (Shahid Chamran University, Iran) and Jamal Baninemeh (Khuzestan Agriculture and Natural Resources Research Centre, Iran)
- Knowledge Discovery from Mining the Associations Between H5N1 Outbreaks and Environmental Factors 145  
Yali Si, Tiejun Wang, Andrew Skidmore and Herbert Prins (International Institute for Geo-Information Science and Earth Observation, The Netherlands)
- Spatial Object Recognition via Integration of Discrete Wavelet Denoising and Nonlinear Segmentation 151  
Zhengmao Ye and Habib Mohamadian (Southern University, USA)
- Based On Multi-scale and Multi-feature Information Mining Technique for Remote Sensing Image and Application 157  
Xiaomei Yang (Institute of Geographic Sciences and Natural Resources Research, CAS, China), Wei Cui (Beihang University, China), Jianming Gong and Tao Zhang (Institute of Geographic Sciences and Natural Resources Research, CAS, China)
- Mining Time Series Data Based Upon Cloud Model 161  
Hehua Chi, Juebo Wu, Shuliang Wang (Wuhan University, China), Lianhua Chi (Huazhong University of Science and Technology, China), Meng Fang (Wuhan University, China)
- Semantic Augmentation of Geospatial Concepts: The Multi-View Augmented Concept to Improve Semantic Interoperability 166  
Between Multiples Geospatial Databases  
Mohamed Bakillah (Université Laval, Canada), Mir Abolfazl Mostafavi (Université Laval, Canada) and Jean Brodeur (Centre d'information topographique de Sherbrooke, Canada)
- Graph Based Recognition of Grid Pattern in Street Networks 172  
Jing Tian, Tinghua Ai and Xiaobin Jia (Wuhan University, China)

### SESSION 5 - UNCERTAINTY MODELLING

- Model Errors of Line Objects in Geographic Information Science 178  
Wenzhong Shi (The Hong Kong Polytechnic University, Hong Kong), Sio Kei Cheong (Department of Land Management, Renmin University of China) and Eryong Liu (The Hong Kong Polytechnic University, Hong Kong)

- Comparison and Uncertainty Analysis in Remote Sensing Based Production Efficiency Models 183  
Rui Liu, Jiu-lin Sun, Juan-le Wang, Min Liu (Institute of Geographic Sciences and Natural Resources Research, CAS, China), Xiao-lei Li (Chongqing University of Science and Technology, China), Fei Yang (Institute of Geographic Sciences and Natural Resources Research, CAS, China)
- Accuracy Assessment of Sampling Designs for Surveying Heavy Metal Content in Soil Using SSSI 189  
Aihua Ma (Beijing Normal University, China), Jinfeng Wang (Institute of Geographic Sciences and Nature Resources Research, CAS, China) and Keli Zhang (Beijing Normal University, China)
- Attribute Uncertainty Modeling in Lunar GIS Data 195  
Peter Simon Weiss, Wenzhong Shi and Kai-Leung Yung (The Hong Kong Polytechnic University, Hong Kong)
- Assessment of Extensional Uncertainty Modeled by Random Sets on Segmented Objects from Remote Sensing Images 200  
Xi Zhao, Xiaoling Chen, Liqiao Tian (Wuhan University, China), Tiejun Wang and Alfred Stein (International Institute for Geo-Information Science and Earth Observation, The Netherlands)
- Study on the Data Quality Management and the Data Quality Control - A Case Study of the Earth System Data Sharing Project 206  
Chongliang Sun and Juanle Wang (Institute of Geographic Sciences and Natural Resources Research, CAS, China)
- Research on Visualized Data Quality Control Methods of Ground Object Spectrum in Yanzhou Mining Area 210  
Junfu Fan, Min Ji, Ting Li and Zhuo Li (Shandong University of Science and Technology, China)

## SESSION 6 - SPATIAL DATABASE

- A Hierarchical Quality-Dependent Approach toward Establishing a Seamless Nationwide Topographic Database 216  
Sagi Dalyot, Ariel Gershkovich and Yerach Doytsher (Israel Institute of Technology, Israel)
- Influence Power-Based Clustering Algorithm for Measure Properties in Data Warehouse 222  
Min Ji, Fengxiang Jin, Ting Li, Xiangwei Zhao and Bo Ai (Shandong University of Science and Technology, China)
- Normalizing Spatial Information to Improve Geographical Information Indexing and Retrieval in Digital Libraries 227  
Damien Palacio, Christian Sallaberry and Mauro Gaio (Université de Pau, France)
- Design and Construction of a GIS-based Database for Managing Landslides in Mining Area 233  
Shanshan Wang, Min Ji and Xiangwei Zhao (Shandong University of Science and Technology, China)
- Exploratory Spatial Data Analysis of Regional Economic Disparities in Beijing during 2001-2007 239  
Xiaoyi Ma and Tao Pei (Institute of Geographic Sciences and Natural Resources Research, CAS, China)
- Study on Data Integration and Sharing Standard and Specification System for Earth System Science 243  
Juanle Wang and Jiulin Sun (Institute of Geographic Sciences and Natural Resources Research, CAS, China)
- Estimation of Imprecision in Length and Area Computation in Vector Databases Including Production Processes Description 247  
Jean -François Girres and Anne Ruas (Institut Géographique National, France)

## SESSION 7 - ADVANCES IN CARTOGRAPHY

- Digital Chart Cartography: Error and Quality Control 253  
Di Wu (Yantai Institute of Coastal Zone Research, CAS, China), Hai Hu (Dalian Naval Academy, China), Xiaomei Yang (Institute of Geographic Sciences and Natural Resources Research, CAS, China), Yidong Zheng and Lihua Zhang (Dalian Naval Academy, China)
- Characterization and Detection of Building Patterns in Cartographic Data: Two Algorithms 259  
Xiang Zhang, Tinghua Ai and Jantien Stoter (International Institute for Geo-Information Science and Earth Observation, The Netherlands)
- Formalization and Data Enrichment for Automated Evaluation of Building Pattern Preservation 265  
Xiang Zhang (International Institute for Geo-Information Science and Earth Observation, The Netherlands), Jantien Stoter (Delft University of Technology, The Netherlands), Tinghua Ai (Wuhan University, China) and Menno-Jan Kraak (International Institute for Geo-Information Science and Earth Observation, The Netherlands)
- A Method Using ESDA to Analyze the Spatial Distribution Patterns of Cultural Resource 271  
Dongying Zhang, Xiajun Mao and Lingkui Meng (Wuhan University, China)
- Layout Optimization of Urban Underground Pipeline based on 3D Digital City 277  
Jianchun He (Central South University, China), Jinxing Hu, Qingyuan Tang (Shenzhen Institutes of Advanced Technology, CAS, China) and Shanshan Guo (Central South University, China)

- Multi-Resolution Representation of Digital Terrain and Building Models 282  
Fuan Tsai, Wan-Rong Lin and Liang-Chien Chen (National Central University, Taiwan)

## SESSION 8 - LOCATION-BASED SERVICES

- Location Based Context Awareness through Tag-Cloud Visualizations 288  
Volker Paelke, Tobias Dahinden, Daniel Eggert and Juliane Mondzsch (Leibniz Universität Hannover, Germany)
- An Open-Source Web Architecture for Adaptive Location-Based Services 294  
Gavin McArdle, Andrea Ballatore, Ali Tahir and Michela Bertolotto (University College Dublin, Ireland)
- Campusgis Routing - A Web-Based LBS for the University of Cologne 300  
Ursula Baaser, Rainer Laudien and Georg Bareth (University of Cologne, Germany)
- Location-Aware Personal Life Content Manager and Its Privacy Functions 305  
Hideki Kaji and Masatoshi Arikawa (The University of Tokyo, Japan)
- Landmarks Guided Routing or Wayfinding 311  
Jun Luo, Rong Peng, Chenglin Fan and Jinxing Hu (Shenzhen Institute of Advanced Technology, CAS, China)
- Individual Differences in the Tourist Wayfinding Decision Making Process 317  
Mohd Faisal Abdul Khanan (University of Technology Malaysia, Malaysia) and Jianhong (Cecilia) Xia (Curtin University of Technology, Australia)
- Evaluation of Online Itinerary Planner and Investigation of Possible Enhancement Features 323  
Homing Tam and L.S.C. Pun-Cheng (The Hong Kong Polytechnic University, Hong Kong)

## SESSION 9 - MOBILE DATA MODELS

- A Simple and Efficient SQL-Based Approach for Retrieval of Geospatial Data in Mobile GIS Application 329  
G. Y. K. Shea and J.N. Cao (The Hong Kong Polytechnic University, Hong Kong)
- Mobile Routing Services for Small Towns Using Cloudmade API and Openstreetmap: Maynooth as an Example 335  
Jianghua Zheng, Xiaoyu Chen, Błażej Ciepluch, Adam C. Winstanley, Peter Mooney and Ricky Jacob (National University of Ireland Maynooth, Ireland)
- A Multi-Modal Route Planning Approach with an Improved Genetic Algorithm 341  
Haicong Yu and Feng Lu (Institute of Geographic Sciences and Natural Resources Research, CAS, China)
- The Extended Route Service Based on Dynamic Update Frame: From Design to Deployment 347  
Shanxin Guo, Linghui Meng (Wuhan University, China) and Wanli Yu (Graduate University of Chinese Academy of Sciences, China)
- Enhancing Travel Time Forecasting with Traffic Condition Detection 353  
Yingying Duan, Feng Lu and Jun Ouyang (Institute of Geographic Sciences and Natural Resources Research, CAS, China)
- Evaluation of Automatically Extracted Landmarks for Future Driver Assistance Systems 359  
Claus Brenner and Sabine Hofmann (Leibniz Universität Hannover, Germany)
- Temporally Adaptive A\* Algorithm on Time-Dependent Transportation Network 365  
Nian-bo Zheng and Feng Lu (Institute of Geographic Sciences and Natural Resources Research, CAS, China)

## SESSION 10 - SPATIAL DATA PROCESSING ALGORITHMS

- Wavelet De-Noising of Terrestrial Laser Scanner Data for the Characterization of Rock Surface Roughness 371  
Kourosh Khoshelham and Dogan Altundag (Delft University of Technology, The Netherlands)
- CCSSM: A Toolkit for Information Extraction from Remotely Sensed Imagery 377  
Yong Ge, Chi Zhang and Hexiang Bai (Institute of Geographic Sciences and Natural Resources Research, CAS, China)
- Constraint Energies for the Adaptation of 2D River Borderlines to Airborne Laser Scanning Data Using Snakes 381  
Jens Goepfert, Franz Rottensteiner, Christian Heipke, Yasin Alakese and Bodo Rosenhahn (Leibniz Universität Hannover, Germany)
- Tracking Areal Object Identity in Snapshot Sequences 387  
Mingzheng Shi and Stephan Winter (University of Melbourne, Australia)

- The Study for Matching Algorithms and Matching Tactics about Area Vector Data Based on Spatial Directional Similarity 393  
Li Guo, Zhiping Lv, Bin Zhang and Yaoge Wang (Information Engineering University, China)
- Linear Feature Alignment based on Vector Potential Field 398  
David Siriba and Monika Sester (Leibniz Universität Hannover, Germany)
- Research on Prediction Model of Mining Landslide Based on SVM 404  
Xiaowen Zhao, Min Ji and Xianguo Cui (ShanDong University of Science and Technology, China)

## SESSION 11 - WEB GIS

- Preliminary Investigation of Web GIS Trust: The Example of the “WIYBY” Website 409  
Artemis Skarlatidou, Muki Haklay and Tao Cheng (University College London, UK)
- The Design and Implementation of a Web Services-based Application Framework for Sea Surface Temperature Information 415  
Yawen He, Yunyan Du, Fenzhen Su and Yi Gao (Institute of Geographic Sciences and Natural Resources Research, CAS, China)
- A Study of Spatial Data Sharing System with Web Services 420  
Fan Li, Xu Zhang, Xian Jiang (Institute of Forest Resource Information Technique, China), Shan Yong (Georgia State University, USA)
- An Automated Internet Geoinformation Service for Integrating Online Geoinformation Services and Generating Quasi-Realistic Spatial Population GIS Maps 425  
Shaoshong Shi and Nigel Walford (Kingston University London, UK)
- A Dynamically Load and Unload Enabled Aggregation Model Based on the WPS 431  
JianBo Zhang (Chinese Academy of Surveying and Mapping, China), JiPing Liu (School of Resource and Environmental Science, Wuhan University, China) and Bei Wang (Institute of Geographic Sciences and Natural Resources Research, Beijing, China)
- An Indexing Method for Supporting Spatial Queries in Peer-To-Peer Systems 437  
Lingkui Meng, Wenjun Xie and Dan Liu (Wuhan University, China)
- Cooperative Information Augmentation in a Geosensor Network 442  
Malte Jan Schulze, Claus Brenner and Monika Sester (Leibniz Universität Hannover, Germany)

## SESSION 12 - GEO-VISUALIZATION

- Sharing Landscape Information through an Online Geographical Visualisation Portal 448  
Christopher Pettit, Mark Imhof, Mathew Cox, Wayne Harvey and Jean-Philippe Aurambout (Department of Primary Industries, Victorian Government, Australia)
- An Online Visualization and Data Analysis System for Social and Economic Data Based on Flash Technology 454  
Jinqu Zhang (Institute of Geographic Sciences and Natural Resources Research, CAS and Spatial Information Research Centre, South China Normal University, Guangzhou, China), Yunqiang Zhu, Yaping Yang and Jiulin Sun (Institute of Geographic Sciences and Natural Resources Research, CAS, China)
- Visualizing Climate Change Impact with Ubiquitous Spatial Technologies 459  
Rohan Bennett (University of Melbourne, Australia), Chris Pettit, Jean-Philippe Aurambout, Falak Sheth (Department of Primary Industries, Victorian Government, Australia), Herve Senot (University of Melbourne, Australia), Leon Soste and Victor Sposito (Department of Primary Industries, Victorian Government, Australia)
- Visualizing Future Biolinks Using a Touch Table – New Dimensions in Planning 465  
Chhavi Bhandari (University of Melbourne, Australia), Subhash Sharma (Department of Primary Industries, Victorian Government, Australia), Ian D. Bishop (University of Melbourne, Australia) and Christopher Pettit (Department of Primary Industries, Victorian Government, Australia)
- 3D Data Visualisation within Spatial Decision Support Systems by Using ArcGIS Engine 470  
Rainer Laudien, Alexander Christmann and Sebastian Brocks (University of Cologne, Germany)
- Selecting Offshore Renewable Energy Futures for Victoria 476  
Marika Anne Boelen, Ian Bishop (University of Melbourne, Australia) and Christopher Pettit (Department of Primary Industries, Victorian Government, Australia)
- Spatial Relations and Inferences for Context Aware Visualization 482  
Ozgun Akcay and Orhan Altan (Istanbul Technical University, Turkey)

## SESSION 13 - SPATIAL INFORMATION FOR ENVIRONMENTAL STUDIES

- Design and Development of Field Synchronous Data Collecting System of Mining Area Surface Deformation Information 485  
Yong Sun, Ming Ji, Tao Jiang and Xiaojing Yao (Shandong University of Science and Technology, China)
- Coastline Change Measurement and Generating Risk Map for Coast Using Geographic Information System 490  
Santosh Kanakappan, Kumaran Durairaju, Chandrasekar Jayaraj and Teh Tiong Sa (National University of Singapore, Singapore)
- GIMS-Technology for the Environmental Diagnostics 496  
Ferdenant Mkrtechyan and Vladimir Krapivin (Kotelnikov's Institute of Radioengineering and Electronics, Russia)
- A Decision Support Framework for the Risk Assessment of Coastal Erosion in the Yangtze Delta 500  
Xing Li, Yunxuan Zhou, Fang Shen, Runyuan Kuang, Wen Wu (East China Normal University, China) and Zongsheng Zheng (Shanghai Ocean University, China)
- GIS-Based Multicriteria Land Suitability Evaluation Using Ordered Weight Averaging With Fuzzy Quantifier: A Case Study 506  
In Shavur Plain, Iran  
Marzieh Mokarram and Fatemeh Aminzadeh (Shahid Chamran University, Iran)
- Identification of Municipal Policies that Influence the Distribution of Green Cover Across Metropolitan Regions 511  
Su Jin Lee, Travis Longcore and John P. Wilson (University of Southern California, USA)
- The Calculation of TVDI Based on the Composite Time of Pixel and Drought Analysis 517  
Lingkui Meng, Jiyuan Li (Wuhan University, China), Zidan Chen (Water Resources Information Center, China) and Wenjun Xie (Wuhan University, China)

## SESSION 14 - SPATIAL INFORMATION FOR LAND USE STUDY

- Object-Based Image Classification Utilizing Background Knowledge: A Case Study of Land Use Classification 523  
Tao Zhang, Xiaomei Yang, Chenghu Zhou, Fenzhen Su, Jianming Gong and Yunyan Du (Institute of Geographic Sciences and Natural Resources Research, CAS, China)
- The Application on Sustainable Land Use Evaluation Using 3S Technology 529  
Bin Zhao, Wenji Zhao and Jiacun Li (Capital Normal University, China)
- An Assessment of the Efficiency of LANDSAT, NIGERIASAT-1 and SPOT Images for Landuse/Landcover Analysis in Ekiti West Area of Nigeria 534  
Adebayo Ojo (African Regional Centre for Space Science and Technology Education) and Francis Adesina (Obafemi Awolowo University, Nigeria)
- Landuse Data Generalization Indices based on Scale and Landscape Pattern 540  
Yaolin Liu, Limin Jiao and Yanfang Liu (Wuhan University, China)
- Evaluation and Forecast of Human Impacts based on Land Use Changes Using Multi-Temporal Satellite Imagery and GIS: A Case Study on Zanjan, Iran (1984-2009) 546  
Mohsen Ahadnejad (Zanjan University, Iran) and Ali reza Rabet (Peyam-e-Nour University, Tehran Branch, Iran)
- Comparison of Spatial Compactness Evaluation Methods for Simple Genetic Algorithm Based Land Use Planning Optimization Problem 551  
Kai Cao and Bo Huang (The Chinese University of Hong Kong, Hong Kong)
- Reclassification and Generalization of Landuse Data from Topographic Information 556  
Frank Thiemann, Monika Sester (Leibniz Universität Hannover, Germany) and Joachim Bobrich (Federal Agency for Cartography and Geodesy, Germany)

## SESSION 15 - APPLICATION OF GIS AND REMOTE SENSING

- Extracting the Spatial-Temporal Rules of the Mesoscale Ocean Eddies in the South China Sea based on Rough Sets 562  
Guangya Qi, Yunyan Du and Feng Cao (Institute of Geographic Sciences and Natural Resources Research, CAS, China)
- The Effect of Distance Correction Factor in Case-Based Predictions of Vegetation Classes in Estonia, Karula 568  
Madli Linder, Laura Jakobson and Eerik Absalon (University of Tartu, Estonia)
- Explore Multivariable Spatio-Temporal Data with the Time Wave Case Study on Meteorological Data 573  
Xia Li and Menno-Jan Kraak (International Institute for Geo-Information Science and Earth Observation, The Netherlands)



- Research of Spatial and Temporal Variations of Wetland in Pearl River Estuary (1978 - 2005)  
 Yi Gao, Fenzhen Su, Xiaomei Yang, Xiaoyu Sun, Zhenshan Xue (Institute of Geographic Sciences and Natural Resources Research, CAS, China) and Yawen He (Yantai Institute of Coastal Zone Research for Sustainable Development, CAS, China)

579
- GIS Techniques for Mapping Urban Ventilation Using Frontal Area Index and Least Cost Path Analysis  
 Man Sing Wong, Janet Nichol (The Hong Kong Polytechnic University, Hong Kong), Edward Yan-Yung Ng (The Chinese University of Hong Kong, Hong Kong), Eric Guilbert, Ka Hei Kwok, Pui Hang To and J. Z. Wang (The Hong Kong Polytechnic University, Hong Kong)

584
- Estimating Ice Thickness in South Georgia from SRTM Elevation Data  
 A Paul R Cooper (British Antarctic Survey, UK), James W Tate (University College London, UK) and Alison J Cook (British Antarctic Survey, UK)

590
- On-Shore Wind and Solar Power Plants as Alternative Energy Sources for Victoria  
 Sophie Margret-Gay, Ian Bishop (University of Melbourne, Australia) and Christopher Pettit (Department of Primary Industries, Victorian Government, Australia)

596