PROCEEDINGS OF SPIE

Geoinformatics 2008 and Joint Conference on GIS and Built Environment

Monitoring and Assessment of Natural Resources and Environments

Lin Liu Xia Li Kai Liu Xinchang Zhang Yong Lao Editors

28–29 June 2008 Guangzhou, China

Organized by

Sun Yat-sen University (China) • University of Cincinnati (USA) • CPGIS—The International Association of Chinese Professionals in Geographic Information Sciences

Co-organized by

Guangzhou Institute of Geography (China) • South China Normal University (China) • Guangdong Institute of Eco-Environmental and Soil Sciences (China) • Guangdong Association of Remote Sensing and Geographic Information Systems (China)

Sponsored by

NSFC—National Natural Science Foundation of China

Published by SPIE

Part One of Two Parts

Volume 7145

Proceedings of SPIE, 0277-786X, v. 7145

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 Geoinformatics 2008 and Joint Conference on GIS and Built Environment: Monitoring and Assessment of Natural Resources and Environments, edited by Lin Liu, Xia Li, Kai Liu, Xinchang Zhang, Yong Lao, Proceedings of SPIE Vol. 7145 (SPIE, Bellingham, WA, 2008) Article CID Number.

ISSN 0277-786X ISBN 9780819473875

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 © 2008, Society of Photo-Optical Instrumentation Engineers

Copying of material in this book for internal or personal use, or for the internal or personal use of specific clients, beyond the fair use provisions granted by the U.S. Copyright Law is authorized by SPIE subject to payment of copying fees. The Transactional Reporting Service base fee for this volume is \$18.00 per article (or portion thereof), which should be paid directly to the Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, MA 01923. Payment may also be made electronically through CCC Online at copyright.com. Other copying for republication, resale, advertising or promotion, or any form of systematic or multiple reproduction of any material in this book is prohibited except with permission in writing from the publisher. The CCC fee code is 0277-786X/08/\$18.00.

Printed in the United States of America.

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



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

xiii xvii	Symposium Committees Introduction
SESSION 1	ANALYSIS AND MONITORING OF HAZARDS
7145 02	Variation of chlorophyll: a concentration before an algal bloom in Taihu Lake detected by MODIS/Terra imagery [7145-01] D. Liu, Guangdong Ocean Univ. (China) and South China Sea Institute of Oceanology (China); C. Chen, South China Sea Institute of Oceanology (China); L. Zhao, Henan Qualit Polytechnic (China); D. Yang, South China Sea Institute of Oceanology (China); D. Fu, Guangdong Ocean Univ. (China)
7145 03	Design and realization of disaster assessment algorithm after forest fire [7145-02] A. Xu, D. Wang, L. Tang, Zhejiang Forestry Univ. (China)
7145 04	GIS-based climatic regionalization of potato late blight in mountain areas of Southwest Sichuan [7145-03] Q. Luo, G. Peng, Institute of Plateau Meteorology (China); J. Ruan, Liangshan Agricultural Bureau (China); Y. Cao, P. Fang, Liangshan Meteorological Office (China); D. Li, Mianning County Agricultural Technology Station (China); Armuzhong, Zhaojue County Agricultural Technology Station (China); D. Huang, Mianning County Agricultural Technology Station (China); Q. Hu, Y. Chen, Zhaojue County Agricultural Technology Station (China)
7145 05	The regional geological hazard forecast based on rainfall and WebGIS in Hubei, China [7145-04] G. Zheng, Y. Chao, H. Xu, China Univ. of Geosciences (China)
7145 06	Development and research on the GIS-based landslide prediction system of the Three Gorges area [7145-05] Q. Ge, Z. Tang, H. Wang, Tsinghua Univ. (China)
7145 07	Application research of environmental disaster spatial information semantic grid based or geo-ontology [7145-06] W. Cui, T. Chen, L. Gao, Wuhan Univ. of Technology (China)
7145 08	Research on assessment system of flood losses for Poyang Lake area based on GIS [7145-07] X. Liu, H. Yu, Q. Sun, Jiangxi Univ. of Science and Technology (China)
7145 09	Modeling the impact of urbanization on infectious disease transmission in developing countries: a case study in Changchun City, China [7145-08] P. Zhang, Jilin Univ. (China); P. Atkinson, Univ. of Southampton (United Kingdom); C. Yang, Jilin Univ. (China)

7145 0A	Web-based hydrological modeling system for flood forecasting and risk mapping [7145-09] L. Wang, York Univ. (Canada); Q. Cheng, York Univ. (Canada) and China Univ. of Geosciences (China)
7145 OB	Land use suitability evaluation based on GIS and matter-element model [7145-10] H. Fu, Nanjing Univ. (China) and Northwest Normal Univ. (China); M. Li, Z. Chen, W. Hu, Nanjing Univ. (China)
7145 0C	Satellite image processing and analyzing for marine oil spills [7145-11] Y. Li, S. Yu, L. Ma, Y. Liu, Q. Li, Dalian Maritime Univ. (China)
7145 OD	Study on snowmelt flood forecasting based on 3S technologies and DSS [7145-12] S. Fang, Xinjiang Univ. (China); H. Pei, Nanjing Univ. (China); Z. Liu, Xinjiang Univ. (China) and International Ctr. for Desert Affairs (China); W. Dai, Y. Liu, Q. Zhao, L. Feng, Xinjiang Univ. (China)
7145 OE	Integrated assessment and mapping of the regional eco-environment based on integrated geographical unit [7145-13] L. Xu, Shandong Univ. of Science and Technology (China) and Taishan Univ. (China); Q. Qi, L. Jiang, Z. Chen, Institute of Geographical Sciences and Natural Resources Research (China); Z. Ma, Shandong Univ. of Science and Technology (China) and Institute of Geographical Sciences and Natural Resources Research (China)
7145 OF	Study on GIS-based flood risk map for flood detention area [7145-14] Z. Liang, J. Wang, Y. Shi, Hohai Univ. (China); Z. Yu, Hohai Univ. (China) and Univ. of Nevada, Las Vegas (United States)
7145 0G	Analysis on the spatial-temporal change characteristics of flood and drought disasters in China during 1950-2005 [7145-15] X. Zou, S. Chen, Institute of Policy and Management (China); Z. Xu, Institute of Geographical Sciences and Natural Resources Research (China); M. Ning, Institute of Policy and Management (China)
7145 OH	The design and implementation of urban earthquake disaster loss evaluation and emergency response decision support systems based on GIS [7145-16] K. Yang, Yunnan Normal Univ. (China); Q. Xu, Kunming Univ. of Science and Technology (China); S. Peng, Yunnan Normal Univ. (China); Y. Cao, Yunnan Seismological Bureau (China)
SESSION 2	SOIL, LAND, AND AGRICULTURE
7145 01	Monitoring interannual variability of vegetation in the western Liaohe River Basin, Northeast China [7145-17] F. Huang, P. Wang, Y. Qin, Y. Li, Northeast Normal Univ. (China)
7145 OJ	Estimation of net primary productivity in North Tibet Plateau by integrating CASA model with MODIS data [7145-18] Y. Lu, Guangxi Teacher Education Univ. (China) and Institute of Mountain Hazards and Environment (China); L. Wu, Guangxi Teacher Education Univ. (China) and Sun Yat-sen Univ. (China); C. Hua, Guangxi Teacher Education Univ. (China)

7145 OK	Spatial structure and distribution of heavy metals in agricultural soils of peri-urban area in Pudong of Shanghai, China [7145-19] F. Meng, Shandong Univ. (China) and Shandong Jianzhu Univ. (China); J. Zhang, Q. Q. Shi, Shandong Univ. (China); M. Liu, East China Normal Univ. (China)
7145 OL	Study on agricultural application of remote sensing technology in water and soil loss district of China's Loess Plateau: taking Shanxi Province as an example [7145-20] Y. Qiao, Taiyuan Univ. of Technology (China); T. Sun, Shanxi Agricultural Univ. (China); S. Zhao, Xinjiang Institute of Ecology and Geography (China)
7145 OM	Estimation of soil moisture conditions with Landsat TM in Guangzhou [7145-21] Q. Sun, Guangzhou Institute of Geochemistry (China) and Graduate Univ. of Chinese Academy of Sciences (China); J. Tan, Guangzhou Institute of Geochemistry (China); S. Chen, Guangzhou Institute of Geochemistry (China) and Naval Academy Research Institute (France)
7145 ON	Application of MODIS on monitoring dissolved inorganic nitrogen and dissolved inorganic phosphorus in Haizhou Gulf [7145-22] Y. Xu, Nanjing Normal Univ. (China) and Yancheng Teachers College (China); Y. Zhang, D. Zhang, Nanjing Normal Univ. (China); J. Liu, Ocean Environmental Monitoring Station, State Oceanic Administration (China)
7145 00	Comparison analysis of agricultural land gradation evaluation based on different weight making methods [7145-23] X. Jin, Nanjing Univ. (China); H. Zhang, Central South Univ. (China) and Changsha Urban Planning Information Service Ctr. (China); Y. Zhou, Nanjing Univ. (China)
7145 OP	Plumbum contamination detecting model for agricultural soil using hyperspectral data [7145-24] X. Liu, China Univ. of Geosciences (China); F. Huang, P. Wang, Northeast Normal Univ. (China)
7145 0Q	Analysis of the ecological environment change by geoinformatics technology at special erosion area in Taiwan [7145-25] CP. Chang, Chung Chou Univ. of Technology (Taiwan); ST. Tsai, Transworld Institute of Technology (Taiwan); ZF. Wu, Guangdong Institute of Ecology, Environment and Soil Science (China); TC. Liang, Chung Chou Univ. of Technology (Taiwan)

7145 0S **Spatial scaling of net primary productivity using subpixel landcover information** [7145-27] X. F. Chen, Hohai Univ. (China) and Nanjing Univ. (China); J. M. Chen, Univ. of Toronto (Canada); W. M. Ju, Nanjing Univ. (China); L. L. Ren, Hohai Univ. (China)

farmland based on hyperspectral data [7145-26]

L. Guan, C. Cheng, Peking Univ. (China)

Remote sensing monitoring mechanism model for heavy metal Cd pollution in rice

7145 OR

7145 0T Quantitative analysis and monitoring of soil erosion based on RS and GIS technology: case study of Makeng area in Fujian Province [7145-28]

T. Shi, N. Wang, C. Li, China Univ. of Geosciences (China); X. Yang, Institute of Geological Environment Monitoring (China); H. Canute, China Univ. of Geosciences (China)

- 7145 0U Research on monitoring tobacco fields by multi-source remote sensing data [7145-29] M. Wu, Z. Wang, A. Zhang, Ludong Univ. (China); Y. Huang, Institute of Remote Sensing Applications (China); Q. Cui, Ludong Univ. (China)
- Monitoring the naked croplands in Beijing with multi-temporal remote sensing images
 [7145-30]
 L. Qi, Beijing Academy of Agriculture and Forestry Sciences (China) and Beijing Normal
 Univ. (China); W. Huang, J. Zhou, C. Zhao, Beijing Academy of Agriculture and Forestry
 Sciences (China)
- Study on the spatial variability of heavy metals in the soil of geo-authentic productive area of Ligusticum chuanxiong Hort. based on GIS and BP-Kriging [7145-31]
 F. Wang, Institute of Plateau Meteorology (China) and Chengdu Univ. of Information Technology (China); G. Z. Peng, Chengdu Institute of Plateau Meteorology (China);
 J. G. Jiang, Chengdu Univ. of Information Technology (China)
- Arable land spatial pattern analysis along the middle-lower of Dongjiang River, China
 [7145-32]

 Z. Lv, Guangzhou Institute of Geochemistry (China) and Guangdong Institute of
 Eco-environment and Soil Sciences (China); Y. Wen, South China Agricultural Univ. (China);
 Z. Wu, Guangdong Institute of Eco-Environment and Soil Science (China); H. Chen,
 J. Zhang, L. Cheng, Guangzhou Institute of Geochemistry (China)
- 7145 0Y Monitoring wetland of Poyang Lake National Nature Reserve zone by remote sensing [7145-33]
 X. Le, Nanjing Univ. (China); Z. Fan, Y. Fang, Y. Yu, Remote Sensing Information System Ctr. (China); Y. Zhang, Nanjing Univ. (China)
- 7145 0Z

 Development of management information system for land in mine area based on MapInfo [7145-34]

 S.-D. Wang, C.-H. Liu, X.-C. Wang, Y.-Y. Pan, Henan Polytechnic Univ. (China)
- 7145 10 Forecast of soil stalinization in western Jilin Province of China [7145-35] Z. Zhao, Z. Liu, H. Du, Northeast Normal Univ. (China)
- 7145 11 Spatial assessment of the change of mountain range farmland use based on RS and GIS [7145-36]
 L. Xie, Guangzhou Institute of Geography (China), Guangzhou Institute of Geochemistry (China), and Graduate Univ. of the Chinese Academy of Sciences (China); K. Zhong, Guangzhou Institute of Geography (China); C. Sun, Guangzhou Institute of Geography (China), Guangzhou Institute of Geochemistry (China), and Graduate Univ. of the Chinese Academy of Sciences (China)
- Geostatistical analysis of the horizontal distribution of soil lead Guangdong, China
 [7145-37]
 C. L. Yang, Guangzhou Institute of Geochemistry (China), Guangdong Institute of
 Eco-environment and Soil Science (China), and Graduate Univ. of Chinese Academy of
 Sciences (China); Z. F. Wu, H. H. Zhang, J. Cheng, P. Liu, X. N. Liu, Guangdong Institute of
 Eco-Environment and Soil Science (China); R. P. Guo, Graduate Univ. of Chinese Academy
 of Sciences (China); J. H. Zhang, Guangdong Institute of Eco-Environment and Soil Science
 (China)

7145 13	Ground deformation monitoring in Pearl River Delta region with Stacking D-InSAR technique [7145-38]
	Q. Zhao, H. Lin, L. Jiang, The Chinese Univ. of Hong Kong (Hong Kong, China)
7145 14	Spatial analysis of heavy metals in surface soils based on GeoStatistics [7145-39] Y. Sun, N. Ding, F. Cai, F. Meng, Shandong Jianzhu Univ. (China)
7145 15	Designation of a multi-hazard monitoring and management system for urban areas [7145-40]
	H. Assilzadeh, Y. Gao, The Univ. of Calgary (Canada)
7145 16	Application of GIS technology in monitoring and warning system for crop diseases and insect pests [7145-41] X. Wu, C. Wang, South China Agricultural Univ. (China); Z. Xu, Bureau of Urban Utilities and Landscaping of Guangzhou Municipality (China)
7145 17	Assimilation of remote sensing data into a process-based ecosystem model for monitoring changes of soil water content in croplands [7145-42] W. Ju, Nanjing Univ. (China); P. Gao, Meteorological Observatory of Jiangsu Province (China); J. Wang, X. Li, S. Chen, Nanjing Univ. (China)
7145 18	Study on decision-making flow model of high quality prime farmland planning [7145-43] Z. Chen, M. Li, Nanjing Univ. (China); L. Mao, State Univ. of New York at Buffalo (United States); Y. Liu, J. Xu, Nanjing Univ. (China)
7145 19	Quality evaluation of farmland landscape boundary based on GIS [7145-44] Z. Lin, Fujian Normal Univ. (China)
7145 1A	IBMDCH: illegal building monitoring in digital city based on HPC [7145-45] D. Zhu, J. Fan, Shenzhen Institute of Advanced Technology (China) and Institute of Computing Technology (China)
7145 1B	Wetland resources investigation based on 3S technology [7145-46] H. Lin, H. Jing, L. Zhang, Xuzhou Normal Univ. (China)
7145 1C	Development of InSAR technology on deformation monitoring [7145-47] M. Jiao, Huaihai Institute of Technology (China); T. Jiang, Huaihai Institute of Technology (China) and Wuhan Univ. (China); Y. Zong, Huaihai Institute of Technology (China)
7145 1D	FT-NIR spectroscopy technique based analysis and prediction on soil nutrient content of Lychee orchard: a case study in Zhongluotan of Guangzhou, South China [7145-48] J. F. Wang, S. T. Bao, South China Agricultural Univ. (China); S. S. Chen, South China Agricultural Univ. (China) and Guangzhou Institute of Geography (China); Y. F. Wang, South China Agricultural Univ. (China)
7145 1E	Influence of land-use changes on soil erosion based on geo-information Tupu theory in Zhujiang Delta [7145-49] D. Li, B. Ai, X. Li, Q. Wu, X. Xie, Sun Yat-sen Univ. (China)

7145 1F

Applying genetic algorithms to space optimization decision of farmland bio-energy intensive utilization [7145-50]
F. Wang, Guangzhou Univ. (China) and Sun Yat-sen Univ. (China); X. Li, L. Zhuo, H. Tao, Sun Yat-sen Univ. (China); L. Xia, Guangzhou Univ. (China)

Part Two

SESSION 3	WATER, AIR, CLIMATE, AND ECOLOGY
7145 1G	The landscape patterns change of Tarim Populus Nature Reserve and its eco- environmental effects, Xinjiang, China [7145-51] M. Eziz, Xinjiang Univ. (China) and Ministry of Education (China); H. Yimit, Xinjiang Univ. (China); G. Halmurat, G. Amrulla, Xinjiang Univ. (China) and Ministry of Education (China)
7145 1H	The study on atmospheric correction of TM image data in GuangZhou [7145-52] J. Xu, Z. Liu, W. Ya, South China Agricultural Univ. (China)
7145 11	Zoigê wetland eco-environment impact research basing on RS and GIS techniques [7145-53] C. Ouyang, Chengdu Univ. of Technology (China); J. Sun, Northwest Sichuan Geological Team (China); S. Shen, Remote Sensing Ctr. of Sichuan Province (China); H. Chen, Chengdu Univ. of Technology (China)
7145 1J	Inversion and validation of QingHai Lake temperature [7145-54] X. Yu, G. Yang, D. You, S. Zhan, Jilin Univ. (China)
7145 1K	Exploitative intensity evaluating of Zhuhai coastal zone land resource by multidimensional-vectors model [7145-55] X. y. Sun, Institute of Geographical Sciences and Natural Resources Research (China) and Graduate School of the Chinese Academy of Sciences (China); F. z. Su, Institute of Geographical Sciences and Natural Resources Research (China); T. t. Lv, D. d. Zhang, Institute of Geographical Sciences and Natural Resources Research (China) and Graduate School of the Chinese Academy of Science (China)
7145 1L	Improved conceptual three-band model for Chlorophyll-a retrieval in inland Case-II waters [7145-56] J. P. Xu, Northeast Institute of Geography and Agricultural Ecology (China) and Graduate School of Chinese Academy of Sciences (China); F. Li, B. Zhang, K. S. Song, Z. M. Wang, D. W. Liu, G. X. Zhang, Northeast Institute of Geography and Agricultural Ecology (China)
7145 1M	Quantitative analysis of ecological effects for land use planning based on ecological footprint method: a case research in Nanyang City [7145-57] J. Zhang, Y. Liu, Wuhan Univ. (China); X. Chen, Land Consolidation Ctr. (China)
7145 IN	Modeling chlorophyll-a concentration in Taihu Lake based on different trophic state [7145-58] L. Wang, Y. Li, C. Le, D. Sun, Nanjing Normal Univ. (China)

7145 10	Study on ecological impact evaluation for land consolidation based on cloud model: c
	case study of Miaotan town [7145-59]

Y. Liu, Univ. of Education, Wuhan Univ. (China); M. Fan, Wuhan Univ. (China); X. Yang, City Planning and Designing Dept. of WuXi (China); H. Liu, Wuhan Univ. (China)

- 7145 1P Analysis of landscape security pattern in western Mountains of Shijiazhuang [7145-60] X. Gao, Z. Feng, J. Ge, Hebei Normal Univ. (China) and Hebei Key Lab. of Environmental Change and Ecological Construction (China)
- 7145 1Q A study on the climate change in northwestern Hebei Mountains area over the past 46 years [7145-61]

Y. Liu, Z. Feng, J. Ge, Hebei Normal Univ. (China) and Hebei Key Lab. of Environmental Change and Ecological Construction (China); Z. Xia, Hebei Normal Univ. (China)

7145 1R Land degradation mapping based on hyperion data in desertification region of northwest China [7145-62]

P. Cheng, East China Institute of Technology (China) and Central South Univ. (China); J. Wu, Wuhan Univ. (China); P. Ouyang, Nanchang Institute of Technology (China); T. He, Ministry of Land and Resources, Beijing (China)

- 7145 1S Study of geological hazard's assessment on coastline change [7145-63]
 X. L. Zhao, China Univ. of Geosciences (China) and Graduate School, China Univ. of Geosciences (China); J. Liu, X. L. Yang, Graduate School, China Univ. of Geosciences (China)
- 7145 1T The impact of climatic changes on permafrost degradation in source region of the Yangtze River [7145-64]

J. Chen, D. Li, Q. Meng, G. Yong, Cold and Arid Regions Environmental and Engineering Research Institute (China)

7145 1U Study on the construction of Guangdong coastal zone sustainable development decision support system [7145-65]

Y. Xiong, Jiaying Univ. (China); M. Zhang, B. Xia, Guangzhou Institute of Geochemistry (China); Z. Zhang, Jiaying Univ. (China)

7145 1V The study on landscape pattern change of wetland based on GIS and RS: An example of Dongting Lake area [7145-66]

S. Liang, Yantai Institute of Coastal Zone Research for Sustainable Development (China) and Liaoning Technical Univ. (China)

- 7145 1W Synthetic evaluation of eco-environmental quality in the middle of Jilin Province [7145-67] N. Ling, Z. Liu, N. Zeng, Northeast Normal Univ. (China)
- 7145 1X Effects of land use change on ecosystem services value: a case study in the western of Jilin Province [7145-68]

H. Du, Z. Liu, N. Zeng, Northeast Normal Univ. (China)

Study on inversion model for the suspended sediment concentration in the Pear River delta using remote sensing technology [7145-69]

K. Zhong, X. Liu, Guangzhou Institute of Geography (China); L. Xie, C. g. Sun, Guangzhou Institute of Geochemistry (China) and Graduate Univ. of the Chinese Academy of Sciences (China)

/145 12	[7145-70]
	H. Zhang, Central China Normal Univ. (China); C. Liu, B. He, Institute of Geodesy and Geophysics (China); M. Li, East China Normal Univ. (China); Y. Yi, Central China Normal Univ. (China)
7145 20	Snail identification based on the invariant moments [7145-71] D. Hu, Hubei Univ. (China) and Huazhong Univ. of Science and Technology (China); H. Wang, J. Yang, L. Zhang, Y. Wang, Hubei Univ. (China)
7145 21	Retrieving groundwater depth in the lower reaches of Tarim River by NDVI [7145-72] Q. Shen, East China Normal Univ. (China); Y. Chen, Xinjiang Institute of Ecology and Geography (China); J. Xu, Y. Zhang, East China Normal Univ. (China)
7145 22	Combining remote sensing image with DEM to identify ancient Minqin Oasis, northwest of China [7145-73] Y. Xie, Lanzhou Univ. (China)
7145 23	Temporal and spatial characteristics of wet-dry climate variation in the northern slope of Tianshan Mountains, Xinjiang [7145-74] M. Yu, Xinjiang Institute of Ecology and Geography (China) and Graduate School of Chinese Academy of Sciences (China); C. Xi, A. Bao, Xinjiang Institute of Ecology and Geography (China)
7145 24	Design research about coastal zone planning and management information system based on GIS and database technologies [7145-75] P. Huang, S. Wu, A. Feng, State Oceanic Administration (China); Y. Guo, Qingdao Technological Univ. (China)
7145 25	Combination of CALIPSO and geographic information to analyze the aerosol type in different location and acquire the atmospheric parameter [7145-76] Y. Ma, W. Gong, R. Zeng, P. Li, Wuhan Univ. (China)
7145 26	A GIS based estimation of loss of particulate nitrogen and phosphorus in typical drainage area of Pearl River Delta [7145-77] X. Liu, Z. Wu, J. Cheng, P. Liu, Guangdong Institute of Ecology and Environmental and Soil Sciences (China)
7145 27	Assessing the regional ecological security: methodology and a case study for the western Jilin Province, China [7145-78] X. Li, L. Xue, X. Wang, Jilin Univ. (China)
7145 28	The water withdraws and spectral characteristic analysis of back groundsurface features in Zengcheng City [7145-79] A. Gao, L. Xia, Guangzhou Univ. (China)
7145 29	Variation of seagrass distribution in Sanya Bay impacted by land use change [7145-80] D. Yang, South China Sea Institute of Oceanology (China)
7145 2A	Land use change pattern of analysis based on landscape ecology in Nanhai District of Foshan City [7145-81] X. Meng, LinYi Normal Univ. (China); Q. Zhang, Sun Yat-sen Univ. (China)

7145 2B	GAP analysis of wetland bird habitat diversity in Sanjiang Plain [7145-82]				
	J. Liu, Jilin Normal Univ. (China) and Northeast Normal Univ. (China); C. Li, Q. Liu, Y. Yu, Jilin				
	Normal Univ. (China)				

7145 2C Impacts of land use and climate change on the net primary productivity in XinJiang based on remote sensing [7145-83]

W. Liu, Xinjiang Univ. (China) and International Ctr. for Desert Affairs (China); W. Gao, Xinjiang Univ. (China), International Ctr. for Desert Affairs (China), and Colorado State Univ. (United States); Z. Gao, Institute of Geographical Sciences and Natural Resources Research (China); G. Lv, Xinjiang Univ. (China) and International Ctr. for Desert Affairs (China)

7145 2D An interactive-iteration method for deriving ocean color factors using remote sensing [7145-84]

X. Chen, M. Jiang, R. Liang, Sun Yat-sen Univ. (China)

7145 2E Study on decision making of ecological environment protection and sustainable development based on measurement and assessment [7145-85] Y. Liu, J. Niu, Wuhan Univ. (China); C. Hu, Statistics Bureau of Xiaogan Municipality (China); Y. Liu, Y. Nong, L. Wei, Wuhan Univ. (China)

Regional evapotranspiration estimation using SEBAL model with remotely sensed data in Guanzhong Plain and Weibei Tablelands [7145-86]

W. Xu, P. Wang, China Agricultural Univ. (China); S. Zhang, Remote Sensing Information Ctr. for Agriculture (China)

7145 2G A quantitative analysis of the grassland landscape pattern in arid oasis: a case study in the Qira [7145-87]

G. Ubul, J. Ding, A. Ruzi, Xinjiang Univ. (China)

7145 2H Spatial patterns of seaweed distribution in Malaysia using GIS [7145-88] D. H. Lian, Univ. of Malaysia (Malaysia): L. O. L. Sim, Univ. of Western Australia)

D. H. Lian, Univ. of Malaya (Malaysia); J. O. L. Sim, Univ. of Western Australia (Australia); R. Fauzi, P. S. Moi, Univ. of Malaya (Malaysia)

7145 21 Ecological sensitivity analysis in Fengshun County based on GIS [7145-89]

X. Zhou, Guangzhou Institute of Geography (China) and Graduate Univ. of Chinese Academy of Sciences (China); H. Zhang, Guangzhou Institute of Geography (China)

7145 2J Spatial landscape evolution analysis of dike-pond in Foshan City based on RS and GIS [7145-90]

M. Zhang, Foshan Urban Planning Design and Surveying Research Institute (China); L. Wang, Chang'an Univ. (China); Y. Zhao, Tianjin Institute of Surveying and Mapping (China)

7145 2K Water pollution remote sensing for Pearl River Delta [7145-91]

R. Deng, S. Xiong, Y. Qin, Sun Yat-sen Univ. (China)

GPS, SENSOR, AND SENSING TECHNOLOGIES
Tikhonov-based ARCE algorithm and its applications in rapid positioning using single frequency GPS receivers [7145-92] S. Fan, Z. Wang, X. Peng, China Univ. of Petroleum (China)
Accuracy analysis on C/A code and P(Y) code pseudo-range of GPS dual frequency receiver and application in point positioning [7145-93] X. Peng, S. Fan, China Univ. of Petroleum (China); J. Guo, Wuhan Univ. (China)
SAR optimal polarization analysis based on polarization synthesis [7145-94] Y. Li, Chinese Academy of Surveying and Mapping (China) and Hohai Univ. (China); Y. Zhang, Chinese Academy of Surveying and Mapping (China); Y. Yang, Hohai Univ. (China)
Testing prediction models of land subsidence on GPS permanent station [7145-95] HZ. Chen, PS. Hung, Feng-Chia Univ. (Taiwan); CC. Chang, Ching-Yun Univ. (Taiwan)
A two-level image pair simulator for interferometric synthetic aperture radar [7145-96] W. Chen, Z. Xiang, X. Liu, M. Zhu, Shanghai Jiao Tong Univ. (China)
Study on blimp-based low-cost remote sensing platform [7145-97] W. Zhang, X. Guo, G. Zhou, G. Yan, Beijing Normal Univ. (China), State Key Lab. of Remote Sensing Science (China), and Beijing Key Lab. for Remote Sensing of Environment and Digital Cities (China)
The ground-based lidar combined with sunphotometer for aerosol optical depth retrieval [7145-98] F. Mao, W. Gong, Z. Zhu, P. Li, Wuhan Univ. (China)
Simultaneous correction of GPS error and map error for improved map-matching: algorithm and application [7145-99] H. Liu, Texas Tech Univ. (United States); H. Wei, Univ. of Cincinnati (United States); H. Xu, Texas Tech Univ. (United States); Y. Bao, Univ. of Science and Technology of China (China
Rational function model based geo-positioning accuracy evaluation and improvement of QuickBird Imagery of Shanghai, China [7145-100] S. Liu, X. Tong, Tongji Univ. (China)

Author Index

Symposium Committees

Honorary Chairs

Guanhua Xu, Academician, Chinese Academy of Sciences (China)

Deren Li, Academician, Chinese Academy of Sciences, Wuhan

University (China)

Conference Chairs

Xia Li, School of Geography and Planning, Sun Yat-sen University (China)

Lin Liu, Department of Geography, University of Cincinnati (United States)

Proceedings Editor-In-Chief

Lin Liu, Department of Geography, University of Cincinnati (United States)

Xia Li, School of Geography and Planning, Sun Yat-sen University (China)

International Steering Committee

M.F. Goodchild, University of California, Santa Barbara (USA)

Michael Batty, University College London (United Kingdom)

John R. Townshend, University of Maryland, College Park (USA)

Robert McMaster, University of Minnesota (USA)

Harvey Miller, University of Utah (USA)

Nina Lam, Louisiana State University (USA)

Mark Gahegan, Penn State University (USA)

Qingxi Tong, Institute of Remote Sensing Application, Chinese Academy of Sciences (China)

Xiaowen Li, Beijing Normal University (China) and Institute of Remote Sensing Application, Chinese Academy of Sciences (China)

Gar-on Yeh, University of Hong Kong (China)

Jiyuan Liu, Institute of Geographical Sciences and Natural Resources Research, Chinese Academy of Sciences (China)

Jun Chen, National Center for Geomatics (China)

Yimin Jin, National Remote Sensing Center (China)

Lizhong Yu, East China Normal University (China)

Peijun Shi, Beijing Normal University (China)

Ke Liao, Institute of Geographical Sciences and Natural Resources Research, Chinese Academy of Sciences (China)

Jicheng Cheng, Beijing University (China) Xingyuan Huang, Nanjing University (China) Jigang Bao, Sun Yat-sen University (China)

Technical Committee

Fang Qiu, Chair, University of Texas, Dallas (USA)

Xiaoxiang Chen, Chair, Sun Yat-sen University (China)

Lin Liu, *Chair*, Department of Geography, University of Cincinnati (United States)

Bingkai Ye, Chair, Guangdong Association of Remote Sensing and Geographic Information Systems (China)

Shuming Bao, University of Michigan (USA)

Richard Beck, University of Cincinnati (USA)

Ling Bian, State University of New York at Buffalo (USA)

Ruru Deng, Sun Yat-sen University (China)

Yongjiu Dai, Beijing Normal University (China)

John Eck, University of Cincinnati (USA)

Robert Frohn, University of Cincinnati (USA)

Huili Gong, Capital Normal University (China)

Jianhua Gong, Institute of Remote Sensing Applications, Chinese Academy of Sciences (China)

Jianya Gong, Wuhan University (China)

Peng Gong, Institute of Remote Sensing Applications, Chinese Academy of Sciences (China), University of California, Berkeley (USA), and Nanjing University (China)

Mei-Po Kwan, Ohio State University (USA)

Yong Lao, California State University, Monterey Bay (USA)

Bin Li, Central Michigan University (USA)

Jing Li, Beijing Normal University (China)

Qi Li, Peking University (China)

Zhilin Li, Hong Kong Polytechnic University (China)

Shunlin Liang, University of Maryland, College Park (USA)

Hui Lin, Chinese University of Hong Kong (China)

Yaolin Liu, Wuhan University (China)

Guonian Lu, Nanjing Normal University (China)

Mingming Lu, University of Cincinnati (USA)

Ligiu Mena, Technical University of Munich (Germany)

Jiaguo Qi, University of Michigan (USA)

Qingwen Qi, Institute of Geographical Science and Resources

Research, Chinese Academy of Sciences (China)

Qiming Qing, Peking University (China)

Yun Shao, Institute of Remote Sensing Applications, Chinese Academy of Sciences (China)

Shih-Lung Shaw, University of Tennessee (USA)

Wenzhong Shi, Hong Kong Polytechnic University (China)

Daniel Dianzhi Sui, Texas A&M University (USA)

Xinming Tang, Chinese Academy of Surveying and Mapping (China)

Vicent Tao, Microsoft Corporation (USA)

Susanna Tong, University of Cincinnati (USA)

James Uber, University of Cincinnati (USA)

Yingjie Wang, Institute of Geographical Science and Resources Research, Chinese Academy of Sciences (China)

Jingfeng Wang, Institute of Geographical Science and Resources Research, Chinese Academy of Sciences (China)

Fahui Wang, Louisiana State University (USA)

Le Wang, State University of New York at Buffalo (USA)

Xinhao Wang, University of Cincinnati (USA)

Lixing Wu University of Mining & Technology (China)

David Wong, George Mason University (USA)

Lun Wu, Beijing University (China)

Bing Xu, University of Utah (USA)

Qingnian Zhang, Sun Yat-sen University (China)

Xinchang Zhang, School of Geography and Planning, Sun Yat-sen University (China)

Chenghu Zhou, Institute of Geographical Science and Resources Research, Chinese Academy of Sciences (China)

Qiming Zhou, Hong Kong Baptist University (China)

A-Xing Zhu, University of Wisconsin, Madison (USA)

Local Organizing Committee

Xinchang Zhang, Chair, School of Geography and Planning, Sun Yat-sen University (China)

Linyuan Xia, Chair, Sun Yat-sen University (China)

Kai Liu, Guangzhou Institute of Geography, Guangdong Academy of Sciences (China)

Qingnian Zhang, Sun Yat-sen University (China)

Zhijian He, Sun Yat-sen University (China)

Guoming Du, Sun Yat-sen University (China)

Haiyan Tao, Sun Yat-sen University (China)

Linbing Ma, Sun Yat-sen University (China)

Holly Arnold, University of Cincinnati (USA)

Introduction

All papers included in this volume are selected from the 16th International Conference on GeoInformatics and the Joint Conference on GIS and Built Environment organized by Sun Yat-sen University and the University of Cincinnati and held 28–29 June 2008 in Guangzhou, China. The Geoinformatics conference series was initiated by the International Association of Chinese Professionals in Geographic Information Sciences (CPGIS) in 1992. The Joint Conference on GIS and Built Environment is a new conference series initiated by Sun Yat-sen University and the University of Cincinnati.

The central theme of the combined conference is GIS, Built Environment, and Geo-simulation. The main topics included geo-simulation and virtual GIS environments, the built environment and its dynamics, the monitoring and assessment of natural resources and environments, advanced spatial data models and analyses, and classification of remote sensing images.

This combined conference provided a unique forum for exchanging ideas and knowledge on geo-information sciences between GIS professionals worldwide. This year's GeoInformatics conference is the largest ever. Over 800 participants came from 15 countries and regions, including the United States, the United Kingdom, Canada, Germany, Australia, South Africa, Turkey, Singapore, Malaysia, Thailand, United Arab Emirates, Mainland China, Hong Kong, Macau, and Taiwan. The organizers received more than 900 abstracts, and nearly 600 full papers. The conference program consists of 212 oral presentations and over 300 posters.

All papers in this volume are selected through a rigorous peer-review process. We believe that you will find these papers useful.

Finally, we would like to thank all authors and reviewers for their contributions to this volume.

Lin Liu and Xia Li Conference Co-Chairs Editors-In-Chief