宋宏权

河南大学环境与规划学院
黄河中下游数字地理技术教育部重点实验室
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基本信息

姓　　名：宋宏权		性　　别：男	
民　　族：汉		出生年月：1986 年 5 月	
籍　　贯：河南 民权		学历学位：博士	
专　　业：地图学与地理信息系统		职　　称：副教授	
职　　务：地理信息科学系副主任			

研究兴趣

- 地理过程建模与模拟
- 空气污染-气候-生态系统相互作用
- 全球变化生态学
- 视频 GIS、GIS 设计与开发

工作经历

2017.10 –至今　　　　河南大学环境与规划学院 副教授、硕士生导师
2015.09 – 2016.09　　美国北卡罗莱纳州立大学空气质量模拟实验室 访问学者
　　　　　　　　　　(合作导师：Yang Zhang 教授)
2015.08 – 2017.10　　河南大学环境与规划学院 讲师
2013.07 – 2014.12　　北京大学城市与环境学院 访问研究 (合作导师：朴世龙 教授)
2013.07 – 2015.07　　河南大学棉花生物学国家重点实验室/植物逆境生物学教育部重点实验
　　　　　　　　　　室 生态学博士后 (合作导师: 万师强 教授)

教育经历

2010.09 – 2013.06　　南京师范大学地理科学学院 地图学与地理信息系统 博士
　　　　　　　　　　(导师：闫国年 教授、刘学军教授)
2007.09 – 2010.06　　河南大学与中国科学院大学联合培养 地图学与地理信息系统 硕士
　　　　　　　　　　(导师：孔云峰 教授)
2003.09 – 2007.06　　河南理工大学测绘与国土信息工程学院 资源环境与城乡规划管理 学
　　　　　　　　　　士

发表论文 (*表示通讯作者)

1. **Song, H.**, K. Zhang, S. Piao, L. Liu, Y. Wang, Y. Chen, Z. Yang, L. Zhu, and S. Wan*. 2019. Soil organic carbon and nutrient losses resulted from spring dust emission in Northern China from 1982 to 2011. *Atmospheric Environment*, 213: 585-596. (SCI JCR Q1) doi: https://doi.org/10.1016/j.atmosenv.2019.06.043

2. Li, X., **H. Song*** (Co-first author), S. Zhai, S. Lu, Y. Kong, H. Xia, and H. Zhao. 2019. Particulate matter pollution in Chinese cities: Areal-temporal variations and their relationships with meteorological conditions (2015–2017). *Environmental Pollution*, 246: 11-18. (SCI JCR Q1) doi: https://doi.org/10.1016/j.envpol.2018.11.103

3. **Song, H.***, K. Wang, Y. Zhang, C. Hong, and S. Zhou. 2017. Simulation and evaluation of dust emissions with WRF-Chem (v3.7.1) and its relationship to the changing climate over East Asia from 1980 to 2015. *Atmospheric Environment*, 167: 511-522. (SCI JCR Q1) doi: https://doi.org/10.1016/j.atmosenv.2017.08.051

4. **Song, H.**, K. Zhang, S. Piao, and S. Wan*. 2016. Spatial and temporal variations of spring dust emissions in northern China over the last 30 years. *Atmospheric Environment*, 126: 117-127. (SCI JCR Q1) doi: https://doi.org/10.1016/j.atmosenv.2015.11.052

5. Gu, J., L. Liang, **H. Song***, Y. Kong, R. Ma, Y. Hou, J. Zhao, J. Liu, N. He, and Y. Zhang. 2019. A method for hand-foot-mouth disease prediction using GeoDetector and LSTM model in Guangxi, China. *Scientific Reports*, 9: 17928. (SCI JCR Q1) doi: https://doi.org/10.1038/s41598-019-54495-2

6. Song, D., X. Feng, Z. Wang, and **H. Song***. 2017. Using near-real-time monitoring of landslide deformation to interpret hydrological triggers in Jiudian Gorge Reservoir. *Indian Journal of Geo Marine Science*, 46(11): 2180-2190. (SCI JCR Q4)

7. **Song, H.**, X. Liu*, G. Lü, X. Zhang, and F. Wang. 2014. Video scene invariant crowd density estimation using Geographic Information Systems. *China Communications* 11: 80-89. (SCI JCR Q2) doi: https://doi.org/10.1109/CC.2014.7004526

8. Zhao, H., **H. Song***, P. Liu, X. Li, and T. Wang. 2019. Spatial and temporal variations of soil organic matter and nutrient losses resulted from wind erosion in northern China from 1980 to 2015 [1980-2015 年风蚀影响下中国北方土壤有机质与养分流失时空特征]. *Geographical Research [地理研究]*, 38(11): 1-12. (In Chinese with English abstract)

9. Wang, D.*, Z. Chi, B. Yue, X. Huang, J. Zhao, **H. Song**, Z. Yang, R. Miao, Y. Liu, Y. Zhang, Y. Miao, S. Han, and Y. Liu. 2019. Effects of mowing and nitrogen addition on the ecosystem C and N pools in a temperate steppe: a case study from northern China. Catena, (In press, SCI JCR Q1) doi: https://doi.org/10.1016/j.catena.2019.104332

10. Lei, L., K. Zhang, X. Zhang, Y. Wang, J. Xia, S. Piao, D. Hui, M. Zhong, J. Ru, Z. Zhou, **H. Song**, Z. Yang, D. Wang, Y. Miao, F. Yang, B. Liu, A. Zhang, M. Yu, X. Liu, Y. Song, L. Zhu, and S. Wan*. 2019. Plant feedback aggravates soil organic carbon loss associated with wind erosion in Northwest China. *Journal of Geophysical Research: Biogeosciences*, 124: 825-839. (SCI JCR Q1) doi: https://doi.org/10.1029/2018JG004804

11. Xia, H., Y. Qin*, G. Feng, Q. Meng, Y. Cui, **H. Song**, Y. Ouyang, and G. Liu. 2019. Forest Phenology dynamics to climate change and topography in a geographic and climate

transition zone: The Qinling Mountains in central China. *Forests*, 10: 1007. (SCI JCR Q1) doi: https://doi.org/10.3390/f10111007

12. Xia, H., J. Zhao, Y. Qin, J. Yang, Y. Cui, **H. Song**, L. Ma, N. Jin, and Q. Meng. 2019. Changes in water surface area during 1989–2017 in the Huai River Basin using Landsat data and Google Earth Engine. *Remote Sensing*, 11: 1824. (SCI JCR Q1) doi: https://doi.org/10.3390/rs11151824

13. Liu, H., G. Song, N. He, S. Zhai, **H. Song**, Y. Kong, L. Liang, and X. Liu. 2019. Spatial-temporal variation and risk factor analysis of Hand, Foot, and Mouth disease in children under five years old in Guangxi, China. *BMC Public Health*, 19: 1491. (SCI JCR Q1) https://doi.org/10.1186/s12889-019-7619-y.

14. Han, Z., S. Li, C. Cui, D. Han, and **H. Song**. 2019. Geosocial media as a proxy for security: a review. *IEEE Access*, 7: 154224-154238. (SCI JCR Q1) doi: https://doi.org/10.1109/ACCESS.2019.2949115

15. Han, Z., S. Li, C. Cui, **H. Song**, Y. Kong, and F. Qin. 2019. Camera planning for area surveillance: A new method for coverage inference and optimization using Location-based Service data. *Computers, Environment and Urban Systems*, 78: 101396. (SSCI) doi: https://doi.org/10.1016/j.compenvurbsys.2019.101396

16. Wu, Z., J. Fan, Y. Gao, H. Shang, and **H. Song**. 2019. Study on prediction model of space-time distribution of air pollutants based on artificial neural network. *Environmental Engineering and Management Journal*, 18(7): 1575-1590. (SCI JCR Q3)

17. Liu, P., H. Li, Z. Jing, and **H. Song***. 2019. Analysis of potential factors influencing ground-level ozone concentrations in Chinese cities. *GSES & GeoAI-UC*, (In press, EI)

18. Li, X., S. Li, P. Liu, Y. Kong, and **H. Song***. 2018. Spatial and temporal variations of ozone concentrations in China in 2016 [2016 年中国城市臭氧浓度的时空变化规律]. *Acta Scientiae Circumstantiae[环境科学学报]*, 38: 1263-1274. (In Chinese with English abstract)

19. Song, D., **H. Song***, and G. Xiang. 2017. The influence of water contents on the strength characteristics of municipal solid waste incineration bottom ash. *Journal of Hunan University (Natural Sciences)*, 44(1): 150-156. (EI)

20. Song, D., F. Wang, and **H. Song***. 2017. Distributing and evolutive trend of geological disaster in Jiudian Gorge Reservoir [九甸峡库区地质灾害分布规律及发展趋势]. *Research of Soil and Water Conservation [水土保持研究]*, 24(1): 365-369. (In Chinese with English abstract)

21. Song, D. and **H. Song***. 2017. The influence of reservoir water level rise on the bank landslide. *Journal of Northeastern University (Natural Science)*, 38(5): 735-739. (EI)

22. Song, D., F. Wang, and **H. Song***. 2016. The study of the stability of bank slope in early reservoir impoundment [蓄水初期库岸边坡稳定性研究]. *Journal of Henan Polytechnic University (Natural Science) [河南理工大学学报(自然科学版)]*, 35(5): 719-724. (In Chinese with English abstract)

23. **Song, H.**, F. Wang, X. Liu*, G. Lü, and Z. Han. 2015. Crowd movement analysis and abnormal behavior detection under geographical environment [地理环境下的群体运动分析与异常行为检测]. *Geography and Geo-Information Science [地理与地理信息科学]*,

31(4): 1-5 (in Chinese with abstract English)

24. Zhao, M., C. Zhao, Z. Sun, and **H. Song**. 2015. Spatio-temporal changes of crop diseases and insect pests in China over the last two decades [近 20 年来我国农作物病虫害时空变化特征]. *Acta Scientiarum Naturalium Universitatis Pekinensis [北京大学学报(自然科学版)]*, 51(5): 965-975. (in Chinese with abstract English)

25. **Song, H**., X. Liu*, G. Lü, and X. Zhang. 2013. A cross-camera adaptive crowd density estimation model [一种可跨摄像机的人群密度估计模型]. *China Safety Science Journal [中国安全科学学报]*, 23: 139-145. (in Chinese with abstract English)

26. Zhang, X., X. Liu, and **H. Song**. 2013. Video Surveillance GIS: A Novel Application. Geoinformatics'. (EI) doi: https://10.1109/Geoinformatics.2013.6626079

27. Zhang, X., X. Liu, and **H. Song**. 2013. The study of Image-Video GIS data model based on object-oriented model [面向对象的影视 GIS 数据模型]. *Science of Surveying and Mapping [测绘科学]*, 38: 64-66. (in Chinese with abstract English).

28. **Song, H.**, X. Liu, X. Zhang, and J. Hu. 2012. Real-time monitoring for crowd counting using video surveillance and GIS. *IEEE* 2012 2nd *International Conference on Remote Sensing, Environment and Transportation Engineering*, 2069-2072. (EI)

29. **Song, H.**, X. Liu*, G. Lü, and X. Zhang. 2012. Real-time monitoring for the regional crowds status [区域人群状态的实时感知监控]. *Journal of Geo-Information Science [地球信息科学学报]*, 14: 686-692. (in Chinese with abstract English)

30. **Song, H.**, X. Liu*, G. Lü, and M. Wang. 2012. Research on augmenting aerial earth using videos [基于视频的地理场景增强表达研究]. *Geography and Geo-Information Science [地理与地理信息科学]*, 28: 6-9. (in Chinese with abstract English)

31. **Song, H.**, X. Liu, G. Lü, and Y. Zhen. 2012. 3D points clouds accuracy analysis based on uncalibrated image sequences in georeference framework [地理参考下未标定图像序列的三维点云精度分析]. *Bulletin of Surveying and Mapping [测绘通报]*, 7: 14-16. (in Chinese with abstract English)

32. Xu, J., J. Hou, **H. Song**, and J. Qiao. 2011. Spatial-temporal change of regional differences and spatial patterns in China: a case study of population gravity centers and economic gravity centers [1990—2009 年中国区域差异与空间格局—以人口重心与经济重心为例]. *Human Geography [人文地理]*, 26: 85-90. (in Chinese with abstract English)

33. **Song, H.** and Y. Kong. 2010. Design and implementation of a VideoGIS system using Adobe Flex. *Geomatics and Information Science of Wuhan University*, 35: 743-746. (EI)

34. **Song, H.** and Y. Kong. 2010. Design and implementation of a web-based VideoGIS using Adobe Flex [Flex 框架下网络视频 GIS 设计与实现]. *Science of Surveying and Mapping [测绘科学]*, 35: 208-210. (in Chinese with abstract English)

35. **Song, H.**, Y. Chen, and Y. Kong. 2010. Design and implementation of VideoGIS using Adobe FMS and AIR [应用 Adobe FMS 与 AIR 的视频 GIS 设计与实现]. *Geospatial Information [地理空间信息]*, 8: 93-95. (in Chinese with abstract English)

36. Zhu, Z., Y. Zhou, P. Zhou, and **H. Song**. 2010. Geometric accuracy experimental analysis of remote sensing image of RapidEye satellite [RapidEye 卫星遥感影像几何精度的实验分析]. *Journal of Central South University of Forestry and Technology [中南林业科技大学学报]*, 30: 107-111. (in Chinese with abstract English)

在审论文 (*表示通讯作者)

1. Zhang, T., **H. Song** (Co-first author), B. Zhou, L. Wang, A. Yang, T. Wang, H. Kong, Y. Chen, S. Zhou, and S. Fu*. 2019. Effects of air pollutants and their interactive environmental factors on winter wheat yield. *Journal of Cleaner Production*, (Under review, SCI JCR Q1).

2. Liu, P., **H. Song*** (Co-first author), T. Wang, F. Wang, C. Xu, X. Li, C. Miao, and H. Zhao. 2019. Effects of meteorological conditions and anthropogenic precursors and their interactions on ground ozone concentrations in Chinese cities. *Science of the Total Environment*, (Under review, SCI JCR Q1).

3. Liu, X., **H. Song*** (Co-first author), P. Liu, C. Xu, T. Lei, D. Wang, H. Xia, H. Zhao, and T. Wang. 2019. Analyzing the influence of meteorological and anthropogenic factors and of their interactions on dust events in Northern China. *Catena*, (Under review, SCI JCR Q1).

4. Lei, T., J. Lv, **H. Song**, J. Qin, J. Feng, Y. Li, X. Chen, W. Song, X. Gao., J. Wang, and L. Zhao. 2019. Net primary productivity loss under different drought levels in different grassland ecosystems. *Lang Degradation & Development*, (Under review, SCI JCR Q1)

5. Yang, Z.*, Y. Wei, G. Fu, **H. Song**, G. Li, and R. Xiao. 2019. Asymmetry effect of increasing vs. decreasing precipitation in different periods on soil and microbial respiration in a semiarid grassland. *Agricultural and Forest Meteorology*, (Under review, SCI JCR Q1).

6. Wang, T., **H. Song*** (Co-first author), X. Li, F. Wang, C. Xu, Z. Han, H. Zhao. 2019. Hysteresis effects of meteorological conditions and their interactions on particulate matters in Chinese cities. *Environmental Pollution*, (Under review, SCI JCR Q1)

7. Ma, R., L. Liang, Y. Kong*, Y. Chen, S. Zhai, **H. Song**, Y. Hou, G. Zhang. 2019. Spatiotemporal variations of asthma admission rates and its relationship with environmental factors in Guangxi, China. *BMC Public Health*, (Under review, SCI JCR Q1)

待投论文 (*表示通讯作者)

1. **Song, H.***, H. Zhao, T. Wang, Y. Kim, X. Li, and S. Zhou. 2020. High spatial and temporal resolution traffic emission inventory development and street-level simulation of air pollutants with WRF/Chem and MUNICH model in Kaifeng, China. To be submitted to *Atmospheric Chemistry and Physics*, (In preparation, SCI JCR Q1)

2. Wang, T., **H. Song*** (Co-first author), F. Wang, Z. Han, S. Zhai, H. Zhao. 2020. Hysteresis effects of meteorological conditions and their interactions on particulate matters in Chinese cities. To be submitted to *Agricultural and Forest Meteorology*, (In preparation, SCI JCR Q1)

发明专利

1. 宋宏权, 刘学军, 闾国年, 张兴国. 一种基于贝叶斯网络的监控盲区人群状态推演方法. 中国 发明专利. 专利号: ZL 2013 1 0302473.2

2. 宋宏权, 刘学军, 闾国年, 张兴国. 一种可跨摄像机的自适应人群密度估计方法. 中国 发明专利. 授权号: ZL 2012 1 0434490.7.

3. 宋宏权, 刘学军, 闾国年, 张兴国. 地理环境下的群体行为模式分析与异常行为检测方

法. 中国 发明专利. 公开号: CN 103413321 A.

4. 宋宏权, 王团徽, 韩志刚, 刘鹏飞, 赵海鹏. 一种高时空分辨率交通源排放清单制备方法. 中国 发明专利. (审核中).

5. 宋宏权, 王团徽, 刘鹏飞, 韩志刚, 赵海鹏. 一种高时空分辨率道路扬尘源排放清单制备方法. 中国 发明专利. (审核中).

6. 宋宏权, 赵海鹏, 刘鹏飞, 韩志刚, 王团徽. 面向城市街谷的空气污染模拟方法. 中国 发明专利. (审核中).

7. 张克胜, 万师强, 方世杰, 宋宏权, 杨中领, 王冬, 刘银占, 刘彦春, 苗仁辉. 用于室外的便携式风蚀模拟装置. 中国 实用新型专利. 专利号：ZL 2017 2 0218674.8

教材专著

1. 宋宏权, 刘学军, 张兴国, 闾国年. 2020. 视频 GIS 与人群特征智能感知, 科学出版社 (排版中).

2. 付品德, 秦耀辰, 闫卫阳等. 2018. Web GIS 原理与技术, 高等教育出版社 (宋宏权负责撰写第 10 章、第 11 章).

科研项目

1. 风蚀对锡林郭勒草原土壤有机碳流失的影响研究 (国家自然科学基金青年科学基金项目，No. 41401107)，2015.01-2017.12，主持

2. 基于地理视频的城市动态目标时空格局多维感知方法研究 (国家自然科学基金面上项目，No. 41871316)，2019.01-2022.12，核心参与，负责平台软件研发

3. 全球变化对中国典型草地生态过程的影响及生态环境效应 (科技部重大科学研究计划项目，No. 2013CB956300)，2013.01-2017.08，参与，负责沙尘过程建模及其气候与生态效应评估

4. 风蚀对我国北方草原土壤有机碳流失的影响研究 (河南省博士后项目，No. 2014028)，2014.08-2015.08，主持

5. 空气质量预报预警平台研发 (河南大学成果转化重点项目，No. 2015YBZH001)，2016.01-2017.12，主持

6. 河南省 $PM_{2.5}$ 时空特征及其对气象因子的敏感性 (河南省高等学校重点科研项目，No. 17B170003)， 2017.01-2018.12，参与

7. 近 50 年风蚀对中国北方土壤有机碳动态的影响 (河南省基础前沿与技术研究项目，No. 162300410132)，2016.01-2018.12，参与

8. 中部地区承接产业转移对空气质量的影响与对策研究 (河南省政府决策研究课题，No. 2016B088)，2016.08-2017.12，参与

9. 视频 GIS 与突发公共事件的感知控制系统 (国家"十二五"科技支撑计划课题，No. 2012BAH35B02)，2012.01-2015.12，参与，负责算法与软件平台研发

10. 基于视频监控数据的区域地理场景中人群特征分析 (国家自然科学基金青年科学基金项目，No. 41301415)，2014.01-2016.12，参与，负责软件系统开发

11. 地理视频三维数据模型及 Web 服务接口研究 (国家自然科学基金青年科学基金项目，No. 41201402)，2013.01-2015.12，参与，负责数据模型构建及软件系统设计与开发

12. 面向地理问题求解的分布式地理建模环境研究 (国家自然科学基金重点项目，No.

40730527)，2008.01-2011.12，参与，负责地理模型算法实现与集成
13. 视频地理信息系统(VideoGIS)关键技术研究 (国家自然科学基金项目，No. 40771166)，2008.01-2010.12,30，参与，负责视频网络地理信息系统软件设计与开发

教学经验

1. 《地理信息系统概论》(本科生课程)
2. 《GIS 软件应用》(本科生课程)
3. 《Python 与空间数据处理》(本科生课程)
4. 《GIS 行业应用》（本科生课程）
5. 《遥感与地理信息系统》(研究生课程)
6. 《空间决策支持系统》(研究生课程)

奖励荣誉

1. 2019 年第八届全国大学生 GIS 应用技能大赛优秀指导教师
2. 2017 年第六届全国大学生 GIS 应用技能大赛优秀指导教师
3. 2017 年国家"共享杯"大学生科技资源共享服务创新大赛优秀指导教师
4. 网络视频地理信息系统平台获 2009 年中国大学生 GIS 软件开发竞赛 (ESRI 杯) 应用开发组三等奖 (第一完成人)
5. 创业计划《世窗数字媒体科技有限责任公司》获 2010 年第八届"挑战杯"河南省大学生创业计划竞赛金奖 (第一完成人)

专业技能

计算机: 可熟练运用 C#、C、Python、R、Matlab、NCL、IDL、Fortran、Javascript、Flex 等多种计算机语言，能够熟练运用 Linux 操作系统。

软件开发: 具有丰富的 GIS 桌面软件与 Web 应用设计、开发与应用经验。自主研发了时空大数据云平台 MapFlux，并在智慧城市、国土空间规划等领域进行了推广应用。

气候与大气化学传输模式: 能够熟练运用区域气候模式 (WRF)、区域 (WRF-Chem、WRF-CMAQ)及街谷 (Street-in-Grid, SinG)尺度空气质量模型 (大气化学传输模式)，进行沙尘过程模拟及多尺度气候与空气质量模拟。

遥感与 GIS: 精通 ArcGIS 等地理信息系统软件，可熟练运用 ENVI, ERDAS 等遥感图像处理软件。

视频 GIS: 具有自主研发的智能视频 GIS 系统，可实现对视频场景中动态目标的识别、跟踪、提取与分析，并已成功将此技术应用于人群状态与异常智能检测、智能交通、病虫害监测、滑坡监测、高时空分辨率交通排放清单编制等领域。

学术报告

2019.10.23-25　第四届全国地图学理论与方法研讨会 (中国 开封)

报告：多源时空大数据驱动的城市空气污染精细模拟

2019.10.18-20　2019 年中国地理信息科学理论与方法学术年会 (中国 上海)

报告：城市街谷空气质量建模与模拟

2019.06.24-28　The 2nd Street-in-Grid (SinG) Modeling Symposium and the 3rd SinG Model Training Workshop, Paris, France

Invited Presentation: Simulation for the impacts of motor vehicle restriction on air pollution at the street-level using WRF/Chem and MUNICH model in Kaifeng, China

2019.05.20-22　The 7th International Conference on Air Benefit and Cost and Attainment Assessment

Presentation: Quantitative hysteresis effects of meteorological conditions on particulate matter concentrations in Chinese cities

2019.05.18-20　1st Regional Conference on Environmental Modeling and Software (Asian Region), Nanjing, China

Invited Presentation: Spatial and temporal simulation for the impacts of motor vehicle restriction measures on $PM_{2.5}$ concentrations using WRF-Chem model in Kaifeng, China

2018.11.02-04　2018 年中国地理信息科学理论与方法学术年会 (中国 太原)

Annual Academic Conference of Chinese Geographical Information Science (2018), Taiyuan, China

Presentation: GeoVideo and Air Quality Simulation

2018.05.24-25　The 1st Street-in-Grid (SinG) Modeling Symposium and the 2nd SinG Model Training Workshop, Beijing, China

Invited Presentation: Real time sensing and simulation for fine scale non-exhaust emission on urban roads: An ongoing experiment

2018.05.21-23　2018 Joint International Conference on ABaCAS and CMAS-Asia-Pacific

Poster: Li, X., **H. Song***, H. Zhao, H. Xia, and Y. Kong. Spatial and temporal variations of particulate matters and its relationship with meteorological conditions during 2015-2017 in major cities of China

2017.11.20-22　2017 National Conference on Physical Geography

Presentation: Soil organic carbon and nutrient losses resulted from spring dust emission in Northern China over the past 30 years

2017.11.17-19　2017 年中国地理信息科学理论与方法学术年会 (中国 长沙)

Annual Academic Conference of Chinese Geographical Information Science (2017), Changsha, China

Presentation: Dust emission simulations and its sensitivity to the changing climate in East Asia over the past four decades

2014.10.10-12　2014 年中国地理信息科学理论与方法学术年会 (中国 徐州)

Annual Academic Conference of Chinese Geographical Information Science

(2014), Xuzhou, China

Presentation: Spatial and temporal variations of spring dust emission in northern China over the past three decades

2013.06.20-22   The 21st International Conference on GeoInformatics, Kaifeng, China

Poster: Zhang X., X. Liu, **H. Song**. Video Surveillance GIS: A Novel Application

2012.10.12-14   Annual Meeting of the Geographic Society of China (2012), Kaifeng, China

Presentation: Real-time sensing for the regional crowd status

2012.09.27-28   2012 年中国地理信息科学理论与方法学术年会 (中国 成都)

Annual Academic Conference of Chinese Geographical Information Science Theories and Methods (2012), Chengdu, China

Presentation: Crowds behavior pattern analysis and abnormal behavior detection under geographical environment

2012.06.01-03   IEEE 2012 International Conference on Remote Sensing, Environment and Transportation Engineering, Nanjing, China

Presentation: Real-time sensing for crowd counting using video surveillance and GIS

2009.11.28-30   2009 年中国地理信息科学理论与方法学术年会 (中国 昆明)

Annual Academic Conference of Chinese Geographical Information Science Theories and Methods (2009), Kunming, China

Presentation: Design and implementation of web based VideoGIS