

# Contents

Preface by *Yangbo Chen, Christopher Neale, Ian Cluckie, Z. (Bob) Su, Jianzhong Zhou, Qiang Huang & Zongxue Xu* v

## 1 GIS and Remote Sensing

Calibration of hydrological models using TOPEX/Poseidon radar altimetry observations <i>Wenchao Sun, Hao Song, Tao Cheng &amp; Jingshan Yu</i>	3
GéoSAS: A modular and interoperable Open Source Spatial Data Infrastructure for research <i>R. Béra, H. Squividant, G. Le Henaff, P. Pichelin, L. Ruiz, J. Launay, J. Vanhouteghem, P. Aurousseau &amp; C. Cudennec</i>	9
Simultaneous atmospheric correction and quantification of suspended particulate matter in the Guadalquivir estuary from Landsat images <i>Miriam Carpintero, María José Polo &amp; Mhd. Suhyb Salama</i>	15
Seasonal variation of ice melting on varying layers of debris of Lirung Glacier, Langtang Valley, Nepal <i>Mohan B. Chand, Rijan B. Kayastha, Achut Parajuli &amp; Pradeep K. Mool</i>	21
Atmospheric boundary layer characteristics and land–atmosphere energy transfer in the Third Pole area <i>Yaoming Ma, Zhikun Zhu, Pukar Man Amatya, Xuelong Chen, Zeyong Hu, Lang Zhang, Maoshan Li &amp; Weiqiang Ma</i>	27
Snow evolution in a semi-arid mountainous area combining snow modelling and Landsat spectral mixture analysis <i>Rafael Pimentel, Javier Herrero &amp; María José Polo</i>	33
Studying snow cover in European Russia with the use of remote sensing methods <i>A. A. Telegina</i>	40
Estimating atmospheric visibility using synergy of MODIS data and ground-based observations <i>Hossein Komeilian, S. Mohyeddin Bateni, Tongren Xu &amp; Jeffrey Nielson</i>	46
Application of ZY-3 remote sensing image in the research of Huashan experimental watershed <i>Kun Guo, Jianqun Wang &amp; Yang Wang</i>	51
Glacier area and volume changes of Hidden Valley, Mustang, Nepal from ~1980s to 2010 based on remote sensing <i>Lakshman Lama, Rijan B. Kayastha, Suadan Bikash Maharjan, Samjwal Ratna Bajracharya, Mohan B. Chand &amp; Pradeep K. Mool</i>	57
Driving factors for runoff decline in the Upper Hanjiang basin, a major water source for the South-to-North Water Diversion Project in China <i>Shulei Zhang, Dawen Yang &amp; Xiangyu Xu</i>	63
Atmospheric correction of HJ1-A/B images and the effects on remote sensing monitoring of cyanobacteria bloom <i>Hongxu Ma, Shenglian Guo, Xingjun Hong &amp; Yanlai Zhou</i>	69
Comparison of multiple models for estimating gross primary production using remote sensing data and fluxnet observations <i>Sisi Wang &amp; Xingguo Mo</i>	75
Surface resistance calibration for a hydrological model using evapotranspiration retrieved from remote sensing data in Nahe catchment forest area <i>Weiwei Bie, Markus C. Casper, Philipp Reiter &amp; Michael Vohland</i>	81

## 2 Hydrology

### Precipitation estimation and applications

- Evaluation of radar-based precipitation estimates for flash flood forecasting in the Three Gorges Region 89  
*Zhe Li, Dawen Yang, Yang Hong, Youcun Qi & Qing Cao*
- Application of quantitative precipitation forecasting and precipitation ensemble prediction for hydrological forecasting 96  
*Peng Tao, Shen Tie-Yuan, Yin Zhi-Yuan & Wang Jun-Chao*
- Influence of rainfall space-time variability over the Ouémé basin in Benin 102  
*T. Gascon, T. Vischel, T. Lebel, G. Quantin, T. Pellarin, V. Quatela, D. Leroux & S. Galle*
- Study of a dynamic downscaling scheme for quantitative precipitation forecasting 108  
*Yuan Li, G.H. Lu, Z.Y. Wu & Jun Shi*
- Analysis of precipitation cycles based on MEM in the Yellow River basin 114  
*Zhanjie Li, Tao Cheng, Hao Song, Zhanling Li & Jingshan Yu*
- Temporal and spatial variations of precipitation in the Jinsha River basin during 1961–2010 120  
*Xiaofan Zeng, Na Zhao, Huaiwei Sun, Lei Ye & Jianqing Zhai*
- Trends of surface humidity and temperature during 1951–2012 in Beijing, China 126  
*Qi Chu, Zongxue Xu, Dingzhi Peng, Xiaojing Yang & Gang Yang*
- Satellite and gauge rainfall merging using geographically weighted regression 132  
*Qingfang Hu, Hanbo Yang, Xianmeng Meng, Yintang Wang & Pengxin Deng*
- Spatial and temporal variations of precipitation in Haihe River basin in the recent 53 years 138  
*Bing Wang & Zhixia Xu*

### Simulation and prediction of hydrological processes

- Online watershed boundary delineation: sharing models through Spatial Data Infrastructures 144  
*H. Squidant, R. Béra, P. Arousseau & C. Cudennec*
- Study of Beijiang catchment flash-flood forecasting model 150  
*Yangbo Chen, Ji li, Shaokun Huang & Yi Dong*
- Physically-based distributed modelling of river runoff under changing climate conditions 156  
*I. Krylenko, Yu. Motovilov, E. Antokhina, V. Zhuk & G. Surkova*
- Optimal parameters of the SVM for temperature prediction 162  
*Xiaoyu Shi, Qiang Huang, Jianxia Chang, Yimin Wang, Jiangqun Lei & Jing Zhao*
- Study of heterogeneous vertical hyporheic flux via streambed temperature at different depths 168  
*Jingsi Zhu, Longcang Shu, Chengpeng Lu, Junjiang Li, Shuai Chen, Shulei Li & Guan Wang*
- Research experiment on infiltration and runoff in Jujube land of northern Shaanxi Province 174  
*Xiaoyu Song & Peng Bai*
- Evaluation of the HYMOD model for rainfall–runoff simulation using the GLUE method 180  
*Zhongxian Quan, Jianbiao Teng, Wenchao Sun, Tao Cheng & Jie Zhang*
- Urban flood simulation based on the SWMM model 186  
*Lei Jiang, Yangbo Chen & Huanyu Wang*
- Flood forecasting model based on geographical information system 192  
*An Dong, Li Zhi-Jia, Wu Yong-Tuo, Yao Cheng & Du Yi-Heng*

An estimation method of the direct benefit of a waterlogging control project applicable to the changing environment <i>Liu Zengmei, Qin Guanghua &amp; Chen Zishen</i>	197
Annual runoff prediction using a nearest-neighbour method based on cosine angle distance for similarity estimation <i>Guanghua Qin, Hongxia Li, Xin Wang, Qingyan He &amp; Shenqi Li</i>	204
Application of the PRMS model in the Zhenjiangguan watershed in the Upper Minjiang River basin <i>Longzhang Fang, Chao Liu, Guanghua Qin, Bin Zhang &amp; Tiegang Liu</i>	209
Simulation of soil moisture for typical plain region using the Variable Infiltration Capacity model <i>Zhiyong Wu, Yun Mao, Guihua Lu &amp; Jianhua Zhang</i>	215
Simulating hydrological processes in a sub-basin of the Mekong using GBHM and RS data <i>Wei Wang, Hui Lu, Dawen Yang, Bin Gao, Yang Jiao &amp; Zhiguo Pang</i>	221
Optimal application of conceptual rainfall–runoff hydrological models in the Jinshajiang River basin, China <i>Muhammad Tayyab, Jianzhong Zhou, Xiaofan Zeng, Lu Chen &amp; Lei Ye</i>	227
<b>Evaluation of hydrological processes</b>	
Detecting runoff variation in Weihe River basin, China <i>Fan Jingjing, Huang Qiang, Cui Shen &amp; Guo Aijun</i>	233
Improving evaluation of climate change impacts on the water cycle by remote sensing ET-retrieval <i>Sandra G. García Galiano, Patricia Olmos Giménez, José Ángel Martínez Pérez, Juan Diego Giraldo Osorio</i>	239
Spatial and temporal variations of winter discharge under climate change: Case study of rivers in European Russia <i>E.A. Telegina</i>	245
POME-copula for hydrological dependence analysis <i>Dengfeng Liu, Dong Wang, Lachun Wang, Yuanfang Chen, Xi Chen &amp; Shenghua Gu</i>	251
An evaluation of the effect of future climate on runoff in the Dongjiang River basin, South China <i>Kairong Lin, Wenliang Zhai, Shuxian Huang &amp; Zufa Liu</i>	257
Quantitative study of impacts of climate change and human activities on runoff in Beiluohe River basin <i>Aijun Guo, Qiang Huang &amp; Yimin Wang</i>	263
Analysing the influence of human activity on runoff in the Weihe River basin <i>Cui Shen &amp; Huang Qiang</i>	269
Effects of dams on river flow regime based on IHA/RVA <i>Qingting Zuo &amp; Shikui Liang</i>	275
Calculation of design flood for regions with no data but influenced by warping dam projects <i>Qin Yi, Quan Qize, Li Ke &amp; Li Xuechun</i>	281
Impact of global dimming on reference evapotranspiration in Hai River basin, China <i>Na Zhao, Xiaofan Zeng &amp; Huaiwei Sun</i>	287
Response of hydrological processes to climate change in the middle reaches of the Yellow River, China <i>Xiaolei Yao, Xingqi Cui, Jingshan Yu &amp; Wenchao Sun</i>	293

Monitoring temporal patterns of vertical hyporheic flux via distributed temperature sensors <i>Xiaoru Su, Longcang Shu, Wei Li, Chengpeng Lu, Jingsi Zhu, Guangdong Wu, Xi Wang &amp; Guan Wang</i>	299
Effect of length of the observed dataset on the calibration of a distributed hydrological model <i>Xingqi Cui, Wenchao Sun, Jianbiao Teng, Hao Song &amp; Xiaolei Yao</i>	305
Sensitivity and uncertainty analysis of the Variable Infiltration Capacity model in the upstream of Heihe River basin <i>Rui He &amp; Bo Pang</i>	312
Regionalization of coaxial correlation diagrams for the semi-humid and semi-arid catchments in Northern China <i>Qiaoling Li, Zhijia Li, Lizhe Chen &amp; Cheng Yao</i>	317

### 3 Water Resources

Satellite data analysis for identification of groundwater salinization effects on coastal forest for monitoring purposes <i>M. Barbarella, M. De Giglio, L. Panciroli &amp; N. Greggio</i>	325
Forecast of irrigation water demand considering multiple factors <i>Xuemei Wang, Xiaohui Lei, Xuning Guo, Jinjun You &amp; Hao Wang</i>	331
Estimation of long-term nutrient loadings into a hyper-eutrophic artificial lake in a lowland catchment, western Japan <i>Yuta Shimizu, Shin-Ichi Onodera, Guangzhe Jin &amp; Mitsuyo Saito</i>	337
Estimating water availability across the Upper Salween and Mekong river basins <i>Suxia Liu, Wenhao Ding, Changming Liu, Lifang Liu, Sagar Bajracharya, Arun Shrestha, Neera Shrestha Pradhan</i>	343
Risk control of groundwater exploitation for Zhangye basin in the middle reaches of Heihe River basin, China <i>Xiang Guosheng, Qian Ju, Wang Shuixian, Liu Qin, Liu Fen &amp; Wan Liu</i>	350
Development of Chengdu and sustainable utilization of the ancient Dujiangyan Water-Conservancy Project <i>Xiaorong Huang, Jinjun You, Pengpeng Yang &amp; Xuerui Chai</i>	356
Studying groundwater and surface water interactions using airborne remote sensing in Heihe River basin, northwest China <i>Chuankun Liu, Jie Liu, Yue Hu &amp; Chunmiao Zheng</i>	361
Study of an evaluation index system of well-off water conservancy in Yunnan Province <i>Chunxiao Chang, Zhonghui Wen, Longcang Shu, Chengpeng Lu, Shixiang Gu, Jianguang Su, Meng He, Kundong Xing</i>	366
Analysis of shallow-groundwater dynamic responses to water supply change in the Haihe River plain <i>Zhou Lin, Wang Lin &amp; Lin Pengfei</i>	373
Combining the trapezoidal relationship between land surface temperature and vegetation index with the Priestley-Taylor equation to estimate evapotranspiration <i>Xiaogang Wang, Wen Wang &amp; Yanyang Jiang</i>	379
Spatial and temporal characteristics of water resources in Argun River basin based on multi-source data <i>Liu Hui, Baiyin Baoligao, Chen Xingru &amp; Wang Xiuying</i>	385

Spatio-temporal variation of surface soil moisture over the Yellow River basin during 1961–2012 <i>Rui Tong, Xiaoli Yang, Liliang Ren, Hongren Shen, Hongcui Shan, Hao Kong &amp; Changqing Lin</i>	391
Regional drought assessment using a distributed hydrological model coupled with Standardized Runoff Index <i>Hongren Shen, Fei Yuan, Liliang Ren, Mingwei Ma, Hao Kong &amp; Rui Tong</i>	396
Analysis of baseflow index based hydrological model in Upper Wei River basin on the Loess Plateau in China <i>Dengfeng Liu, Jianxia Chang, Fuqiang Tian, Qiang Huang &amp; Xianmeng Meng</i>	403
Modified temperature index model for estimating the melt water discharge from debris-covered Lirung Glacier, Nepal <i>Achut Parajuli, Mohan B. Chand, Rijan B. Kayastha, Joseph M. Shea &amp; Pradeep K. Mool</i>	409

#### 4 Environment

Ecological restoration and effect investigation of a river wetland in a semi-arid region, China <i>Shiguo Xu, Xin Jiang, Yuyu Liu, Yanzhao Fu &amp; Qian Zhao</i>	417
Impacts of lake water environmental condition on bioavailable-phosphorus of surface sediments in Lixia River basin, China <i>Ying Zhang, Ling Liu &amp; Chengpeng Lu</i>	424
Hindcasting morphodynamic evolution with sand–mud interactions in the Yangtze Estuary <i>Hao Jie, Guo Leicheng, Mick Van Der Wegen &amp; Dano Roelvink</i>	430
Eco-environmental quality evaluation of Huaibei Plain <i>Min Xu, Yonghua Zhu, Haishen Lü, Yuan Li, Xiaozhen Zhou &amp; Yaning Chen</i>	436
Confined aquifer vulnerability induced by a pumping well in a leakage area <i>Xianmeng Meng, Bo Deng, Junyu Shao, Maosheng Yin, Dengfeng Liu &amp; Qingfang Hu</i>	442
Temporal-spatial distribution of non-point source pollution in a drinking water source reservoir watershed based on SWAT <i>Min Wang, Wen Cheng, Bo-shi Yu &amp; Yong Fang</i>	448
Effect of land use on the seasonal variation of streamwater quality in the Wei River basin, China <i>Songyan Yu, Zongxue Xu, Wei Wu &amp; Depeng Zuo</i>	454
Water budget and its variation in Hutuo River basin predicted with the VIP ecohydrological model <i>Farong Huang &amp; Xingguo Mo</i>	460
Experimental study on the spatial variation of hydrodynamic parameters for hillslope-gully side erosion system in loess landscapes <i>Xungui Li &amp; Xia Wei</i>	466
Stochastic analysis of the hydraulic conductivity estimated for a heterogeneous aquifer via numerical modelling <i>Chengpeng Lu, Ying Zhang, Longcang Shu, Xunhong Chen, Shuai Chen, Shulei Li, Guan Wang &amp; Junjiang Li</i>	472
A new empirical model for estimating the hydraulic conductivity of low permeability media <i>Shipeng Qi, Zhonghui Wen, Chengpeng Lu, Longcang Shu, Jianwei Shao, Yin Huang, Shuo Zhang &amp; Yixin Huang</i>	478

