

ISSN: 2151-1950 Volume 10, Number 6, December 2018



Journal of Geographic Information System



www.scirp.org/journal/jgis

Journal Editorial Board

ISSN: 2151-1950 (Print) ISSN: 2151-1969 (Online)

<http://www.scirp.org/journal/jgis>

Editor-in-Chief

Prof. Francisco J. Tapiador

University of Castilla-La Mancha (UCLM), Spain

Editorial Board

Dr. Alia I. Abdelmoty

Cardiff University, UK

Dr. Tofael Ahamed

University of Tsukuba, Japan

Prof. Dafer Algarni

King Saud University, Saudi Arabia

Prof. Carlos Marcelo Di Bella

Instituto de Clima y Agua CIRN-INTA Castelar, Argentina

Prof. Christophe Claramunt

Naval Academy Research Institute, France

Prof. Weihong Cui

International Europe and Asia Academy of Sciences, China

Prof. Fuchu Dai

Chinese Academy of Sciences, China

Prof. Anrong Dang

Tsinghua University, China

Dr. Ahmed F. Elaksher

Cal Poly Pomona, USA

Prof. Hossein Ghadiri

Griffith University, Australia

Prof. Shuanggen Jin

Shanghai Astronomical Observatory, China

Dr. Mohammad Reza Khosravi

Shiraz University of Technology, Iran

Prof. Saro Lee

Korea Institute of Geoscience and Mineral Resources, South Korea

Dr. Xiang Li

East China Normal University, China

Prof. Michel Mainguenaud

Institut National des Sciences Appliquées, France

Prof. Jordi Martí-Henneberg

University of Lleida, Spain

Prof. Hervé Martin

Joseph Fourier University, France

Dr. Kaveh Ostad-Ali-Askari

Islamic Azad University, Iran

Prof. Christopher James Pettit

The University of Melbourne, Australia

Dr. Saied Pirasteh

University of Waterloo, Canada

Prof. Biswajeet Pradhan

Dresden University of Technology, Germany

Prof. Michael D. Proctor

University of Central Florida, USA

Prof. Xiaosheng Qin

Nanyang Technological University, Singapore

Prof. Shih-Lung Shaw

University of Tennessee, USA

Dr. P. S. Sriraj

University of Illinois at Chicago, USA

Prof. Eddy Lynn Usery

Center of Excellence for Geospatial Information Science, USA

Dr. Herna Viktor

University of Ottawa, Canada

Prof. Jianhua Xu

East China Normal University, China

Prof. Xiaohuan Yang

Chinese Academy of Sciences, China

Prof. Axing Zhu

University of Wisconsin, USA

Dr. Liang-feng Zhu

East China Normal University, China

Table of Contents

Volume 10 Number 6

December 2018

Assessing the Suitability of the WorldClim Dataset for Ecological Studies in Southern Kenya

T. J. L. Wango, D. Musiega, C. N. Mundia.....643

Detection, Mapping and Assessment Change in Urban and Croplands Area in Al-Hassa Oasis, Eastern Region in Saudi Arabia Using Remote Sensing and Geographic Information System

S. Alqarni, A. Babiker, A. Salih.....659

Flood Risk Code Mapping Using Multi Criteria Assessment

R. Khalil.....686

Modeling and Mapping Sand Encroachment Risk as an Aid for Urban Planning in the United Arab Emirates (UAE)

N. Alhosani.....699

Spatial Analysis of Federal Protected Areas and Priority Areas for Biodiversity Conservation in Brazil

V. A. Steinke, S. M. da Silva Barbosa, V. J. de Miranda Mendes, V. G. Zanatto, G. E. Pessoa, G. Bayma.....718

Journal of Geographic Information System (JGIS)

Journal Information

SUBSCRIPTIONS

The *Journal of Geographic Information System* (Online at Scientific Research Publishing, www.SciRP.org) is published bimonthly by Scientific Research Publishing, Inc., USA.

Subscription rates:

Print: \$89 per issue.

To subscribe, please contact Journals Subscriptions Department, E-mail: sub@scirp.org

SERVICES

Advertisements

Advertisement Sales Department, E-mail: service@scirp.org

Reprints (minimum quantity 100 copies)

Reprints Co-ordinator, Scientific Research Publishing, Inc., USA.

E-mail: sub@scirp.org

COPYRIGHT

Copyright and reuse rights for the front matter of the journal:

Copyright © 2018 by Scientific Research Publishing Inc.

This work is licensed under the Creative Commons Attribution International License (CC BY).

<http://creativecommons.org/licenses/by/4.0/>

Copyright for individual papers of the journal:

Copyright © 2018 by author(s) and Scientific Research Publishing Inc.

Reuse rights for individual papers:

Note: At SCIRP authors can choose between CC BY and CC BY-NC. Please consult each paper for its reuse rights.

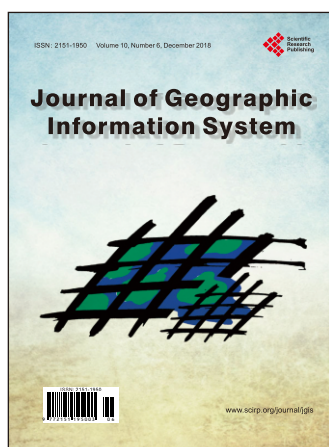
Disclaimer of liability

Statements and opinions expressed in the articles and communications are those of the individual contributors and not the statements and opinion of Scientific Research Publishing, Inc. We assume no responsibility or liability for any damage or injury to persons or property arising out of the use of any materials, instructions, methods or ideas contained herein. We expressly disclaim any implied warranties of merchantability or fitness for a particular purpose. If expert assistance is required, the services of a competent professional person should be sought.

PRODUCTION INFORMATION

For manuscripts that have been accepted for publication, please contact:

E-mail: jgis@scirp.org



Call for Papers

Journal of Geographic Information System (JGIS)

ISSN 2151-1950 (Print) ISSN 2151-1969 (Online)

<http://www.scirp.org/journal/jgis/>

JGIS is an international refereed journal dedicated to the latest advancement of Geographic Information System. The goal of this journal is to keep a record of the state-of-the-art research and promote the research work in these fast moving areas. The journal publishes the highest quality, original papers included but not limited to the fields:

Subject Coverage

- Cartography and Geodesy
- Computational Geometry
- Computer Vision Applications in GIS
- Distributed, Parallel, and GPU Algorithms for GIS
- Earth Observation
- Environmental Geomatics—GIS, RS and Other Spatial Information Technologies
- Geographic Information Retrieval
- Geographical Analysis for Urban and Regional Development
- GIS and Cloud Computing
- GIS and High Performance Computing
- Human Computer Interaction and Visualization
- Image and Video Understanding
- Location Privacy, Data Sharing and Security
- Location-Based Services
- Performance Evaluation
- Photogrammetry
- Similarity Searching
- Social Networks and Volunteer Geographic
- Spatial Analysis and Integration
- Spatial and Spatio-Temporal Information Acquisition
- Spatial Data Mining and Knowledge Discovery
- Spatial Data Quality and Uncertainty
- Spatial Data Structures and Algorithms
- Spatial Data Warehousing, OLAP, and Decision Support
- Spatial Information and Society
- Spatial Modeling and Reasoning
- Spatial Query Processing and Optimization
- Spatial Semantic Web
- Spatio-Temporal Data Handling
- Spatio-Temporal Sensor Networks
- Spatio-Temporal Stream Processing
- Spatio-Textual Searching
- Standardization and Interoperability for GIS
- Storage and Indexing
- Systems, Architectures and Middleware for GIS
- Traffic Telematics
- Transportation
- Visual Languages and Querying
- Wireless, Web, and Real-Time Applications

We are also interested in short papers (letters) that clearly address a specific problem, and short survey or position papers that sketch the results or problems on a specific topic. Authors of selected short papers would be invited to write a regular paper on the same topic for future issues of the **JGIS**.

Notes for Intending Authors

Submitted papers should not have been previously published nor be currently under consideration for publication elsewhere. Paper submission will be handled electronically through the website. All papers are refereed through a peer review process. For more details about the submissions, please access the website.

Website and E-mail

<http://www.scirp.org/journal/jgis>

E-mail: jgis@scirp.org

What is SCIRP?

Scientific Research Publishing (SCIRP) is one of the largest Open Access journal publishers. It is currently publishing more than 200 open access, online, peer-reviewed journals covering a wide range of academic disciplines. SCIRP serves the worldwide academic communities and contributes to the progress and application of science with its publication.

What is Open Access?

All original research papers published by SCIRP are made freely and permanently accessible online immediately upon publication. To be able to provide open access journals, SCIRP defrays operation costs from authors and subscription charges only for its printed version. Open access publishing allows an immediate, worldwide, barrier-free, open access to the full text of research papers, which is in the best interests of the scientific community.

- High visibility for maximum global exposure with open access publishing model
- Rigorous peer review of research papers
- Prompt faster publication with less cost
- Guaranteed targeted, multidisciplinary audience



Website: <http://www.scirp.org>

Subscription: sub@scirp.org

Advertisement: service@scirp.org