DESCRIPTION

*Journal of Hydrology* has an open access mirror journal *Journal of Hydrology X*, sharing the same aims and scope, editorial team, submission system and rigorous peer review.

*Journal of Hydrology* publishes original research papers and comprehensive reviews in all the subfields of the **hydrological sciences**, including **water based management** and **policy** issues that impact on economics and society. These comprise, but are not limited to the physical, chemical, biogeochemical, stochastic and systems aspects of surface and groundwater **hydrology**, **hydrometeorology**, **hydrogeology** and **hydrogeophysics**. Relevant topics incorporating the insights and methodologies of disciplines such as climatology, water resource systems, ecohydrology, geomorphology, soil science, instrumentation and remote sensing, data and information sciences, civil and environmental engineering are within scope. Social science perspectives on hydrological problems such as resource and ecological economics, sociology, psychology and behavioural science, management and policy analysis are also invited. Multi-and interdisciplinary analyses of hydrological problems are within scope. The science published in the *Journal of Hydrology* is relevant to catchment scales rather than exclusively to a local scale or site. Studies focused on urban hydrological issues are included. Submissions focusing on region-specific problems, past and future conditions, analysis, review and solutions, can be submitted to the journal?s companion title, *Journal of Hydrology: Regional Studies*.

**Benefits to authors**

We also provide many author benefits, such as free PDFs, a liberal copyright policy, special discounts on Elsevier publications and much more. Please click here for more information on our author services.

Please see our Guide for Authors for information on article submission. If you require any further information or help, please visit our Support Center.

AUDIENCE

Surface hydrologists, groundwater hydrologists, hydrometeorologists, hydrogeologists.

**IMPACT FACTOR**

2018: 4.405 © Clarivate Analytics Journal Citation Reports 2019
ABSTRACTING AND INDEXING

AGI’s Bibliography and Index of Geology
Cambridge Scientific Abstracts
Engineering Village - GEOBASE
Current Contents - Agriculture, Biology & Environmental Sciences
Chemical Abstracts
Elsevier BIOBASE
AESIS
Engineering Index
AGRICOLA
BIOSIS Citation Index
Scopus
Agricultural Engineering Abstracts
Bulletin Signalétique
Pascal Francis
Science Citation Index
Web of Science
INSPEC

EDITORIAL BOARD

Editors-in-Chief

Emmanouil Anagnostou, University of Connecticut Department of Civil & Environmental Engineering, Storrs, Connecticut, United States
András Bárdossy, University of Stuttgart Institute for Modelling Hydraulic and Environmental Systems, Stuttgart, Germany
Nandita Basu, University of Waterloo, Waterloo, Ontario, Canada
Marco Borga, University of Padova Department of Land Environment Agriculture and Forestry, Legnaro PD, Italy
Corrado Corradini, University of Perugia, Department of Civil and Environmental Engineering, Perugia, Italy
Huaming Guo, China University of Geosciences Beijing School of Water Resources and Environment, Beijing, China
Jirka Simunek, University of California Riverside Department of Environmental Sciences, Riverside, California, United States
Sally E. Thompson, The University of Western Australia Department of Civil Environmental and Mining Engineering, Perth, Australia

Associate Editors

Working with Emmanouil Anagnostou

Dingjiang Chen, Zhejiang University, Hangzhou, China
River; Nutrients; Water Quality; Hydrology; Land Use
Zoi Dokou, California State University, Water Resources Engineering and Civil Engineering Department, Sacramento, California, United States
Groundwater modelling; Surface water – groundwater interactions; Remote sensing in groundwater modelling; Groundwater flow and transport; Groundwater remediation; Seawater intrusion in coastal aquifers; Water energy food nexus; Food and water security; Citizen science; Water resources management and optimization
Yang Hong, The University of Oklahoma School of Civil Engineering and Environmental Science, Norman, Oklahoma, United States
Pierre-Emmanuel Kirstetter, National Weather Center, Norman, Oklahoma, United States
Viviana Maggioni, George Mason University, Department of Civil, Environmental, and Infrastructure Engineering - Sid and Reva Dewberry, Fairfax, Virginia, United States
Yiwen Mei, George Mason University, Department of Civil, Environmental, and Infrastructure Engineering - Sid and Reva Dewberry, Fairfax, Virginia, United States
Hydrology; Data assimilation; Remote sensing
Hamid Moradkhani, Portland State University Department of Civil and Environmental Engineering, Portland, Oregon, United States
Efthymios Nikolopoulos, University of Connecticut Department of Civil & Environmental Engineering, Storrs, Connecticut, United States
Guy Schumann, University of Bristol School of Geographical Sciences, Bristol, United Kingdom
Xinyi Shen, University of Connecticut Department of Civil & Environmental Engineering, Storrs, Connecticut, United States
Prashant Srivastava, Banaras Hindu University, Varanasi, India
Tao Yang, Hohai University College of Hydrology and Water Resources, Nanjing, China
Qiang Zhang, Beijing Normal University, Faculty of Geographical Science, Beijing, China
Hydro-meteorology, Hydrology, Water resources
Yongqiang Zhang, Institute of Geographic Sciences and Natural Resources Research Chinese Academy of Sciences, Beijing, China
Evapotranspiration; Runoff; Hydrological model; Predictions in ungauged catchments; Remote sensing hydrology; Vegetation phenology; Land-atmosphere interactions; Land use and land cover change
Yu Zhang, National Weather Service, Silver Spring, Maryland, United States

Working with Andras Bardossy
Vazken Andréassian, Biotechnological Processes for the Environment, Antony, France
Axel Bronstert, Universität Potsdam, Lehrstuhl Hydrologie und Klimatologie, Potsdam-Golm, Germany
Antonio Cancelliere, University of Catania Department of Civil and Architectural Engineering, Catania, Italy
Fi-John Chang, National Taiwan University Department of Bioenvironmental Systems Engineering, Taipei, Taiwan
Hydrology; Water Resources Management; Artificial Intelligence; Artificial Neural Network; Optimization; Modelling
Fateh Chebana, INRS – Research Centre on Water Earth and the Environment, Quebec, Quebec, Canada
Ji Chen, University of Hong Kong Environmental Materials Research Group, Hong Kong, Hong Kong
River basin hydrology; Numerical modeling; Water resources management; Floods; Droughts; Teleconnection; Climate change; Urbanization
Anne-Catherine Favre, National School of Energy Water and Environment, Grenoble, France
Félix Francés, Politecnica University of Valencia Research Group of Hydrological and Environmental Modelling, Valencia, Spain
Uwe Haberlandt, Leibniz University Hanover Institute of Hydrology and Water Management, Hannover, Germany
Andreas Langousis, University of Patras Department of Civil Engineering, Patra, Greece
Qihua Liang, Newcastle University School of Civil Engineering and Geosciences, Newcastle Upon Tyne, United Kingdom
Shreeddhar Maskey, IHE Delft Institute for Water Education Department of Water Science & Engineering, Delft, Netherlands
Hydrological modeling; Evapotranspiration; Flood forecasting; Drought; Remote sensing hydrology; Soil moisture; Hydrometeorology; Landslide
Working with Marco Borga
Luca Brocca, Institute for Geo-Hydrological Protection Research National Research Council, Perugia, Italy
Soil Moisture; Remote Sensing; Flood; Landslide; Precipitation
Michael Bub, University College Dublin College of Engineering and Architecture, Dublin, Ireland
George Constantinescu, The University of Iowa College of Engineering, Iowa City, Iowa, United States
Edoardo Dalì, Monash University Department of Civil Engineering, Clayton, Victoria, Australia
Eco-hydrology; Soil moisture dynamics; Urban hydrology; Land-atmosphere interaction; Land-use change; Smoothed particles hydrodynamics
Jennifer Duan, The University of Arizona Department of Civil and Architectural Engineering and Mechanics, Tucson, Arizona, United States
Hydrologic change, Catchment hydrology, Mountain hydrology, Hydrological modelling
Baptiste François, University of Massachusetts Amherst Department of Civil and Environmental Engineering, Amherst, Massachusetts, United States
Huaode Guan, Flinders University School of the Environment, Adelaide, Australia
Kelly Kibler, University of Central Florida Department of Civil Environmental and Construction Engineering, Orlando, Florida, United States
Di Long, State Key Laboratory of Hydroscience and Engineering Tsinghua University, Beijing, China
Luca Mao, University of Lincoln, School of Geography, Lincoln, United Kingdom
Fluvial geomorphology, sediment transport, river science
Lorenzo Marchi, Institute for Geo-Hydrological Protection Research National Research Council Padova Branch, Padova, Italy
Debris flow, Flash flood, Erosion, Landslide
Francesco Marra, Hebrew University of Jerusalem Fredy and Nadine Herrmann Institute of Earth Sciences, Jerusalem, Israel
Christian Massari, Institute for Geo-Hydrological Protection Research National Research Council, Perugia, Italy
Soil moisture; Precipitation; Discharge; Floods; Droughts; Remote Sensing; Data Assimilation; Filtering; Data Fusion
Stefano Orlandini, University of Modena and Reggio Emilia Department of Engineering Enzo Ferrari, Modena, Italy
Trend analysis, Surface-subsurface flow interactions, Surface flow propagation, Floods, Wildlife impact on earth levees
Daniele Penna, University of Florence Department of Agrarian Management Systems Food and Forestry, Firenze, Italy
Catchment hydrology; Hillslope hydrology; Ecohydrology; Isotope hydrology; Tracer hydrology; Runoff processes; Spatio-temporal patterns; Snowmelt; Glacier melt; Soil moisture
Yadu Pokhrel, Michigan State University Department of Civil and Environmental Engineering, East Lansing, Michigan, United States
Large-scale Hydrological Modeling; Human-Water Interactions; Water-Energy-Food Nexus; Remote Sensing of Hydrology
Maria-Helena Ramos, Irstea Scientific and Technical Information, UR HYCAR, Antony, France
Hydrology; Hydrometeorology; Hydrologic forecasting; Rainfall hazard; Flood warning; Water resources management; Uncertainty quantification; Risk communication
Eylon Shamir, Hydrologic Research Center, San Diego, California, United States
Rao Govindaraju, Purdue University Lyles School of Civil Engineering, West Lafayette, Indiana, United States

Working with Corrado Corradini

Felipe de Barros, University of Southern California Sonny Astani Department of Civil and Environmental Engineering, Los Angeles, California, United States
Okke Batelaan, Australian Research Council National Centre for Groundwater Research and Training, Adelaide, Australia
Philip Brunner, University of Neuchatel Hydrogeology and Geothermal Center, Neuchatel, Switzerland
Weiping Chen, Research Centre for Eco-Environmental Sciences Chinese Academy of Sciences, Beijing, China
Fate and transport model; Heavy metal; Risk assessment; Soil pollution; Soil salinity
Subashisa Dutta, Indian Institute of Technology Guwahati Department of Civil Engineering, North Guwahati, India
Juan Vicente Giraldez, University of Cordoba Department of Agronomy, Cordoba, Spain
Rao Govindaraju, Purdue University Lyles School of Civil Engineering, West Lafayette, Indiana, United States
Dongmei Han, Key Laboratory of Water Cycle & Related Land Surface Processes Chinese Academy of Sciences, Beijing, China
Wei Hu, New Zealand Institute for Plant and Food Research Ltd Soil Water and Environment Group, Christchurch, New Zealand
Soil physics; Soil moisture; Agricultural water management; Hydrological processes and modelling; Scaling; Spatio-temporal variability; Land use effect; Management practices effect; Climate change; Drainage & nitrate leaching
Frédéric Huneau, University of Corsica, Department of Hydrology, Corte, France
Hydrogeology; Isotope hydrology; Geochemistry; Groundwater; Tracers; Residence time; Emerging pollutants; Water management
Yongjun Jiang, Southwest University, Chongqing Key Laboratory of Karst Environment & School of Geographical Sciences, Chongqing, China
Environmental geochemistry; Hydrogeology; Groundwater contamination; Eco-hydrology; Isotope hydrology
Patrick Lachassagne, HydroSciences Montpellier, Montpellier, France
Hydrogeology/groundwater hydrology; Operational hydrogeology; Modeling; Hard rock/cristalline aquifers; Volcanic aquifers; Thermal and mineral waters/ geothermics
Zhiming Lu, Los Alamos National Laboratory - Computational Earth Science Group, Los Alamos, New Mexico, United States
Stochastic analysis; Uncertainty quantification; Inverse modelling; Mathematical analysis; Groundwater hydrology; Solute transport; Upscaling; Numerical simulations; Sensitivity analysis; Unsaturated flow
Renato Morbidelli, University of Perugia Department of Engineering, Perugia, Italy
Vahid Nourani, University of Tabriz Faculty of Civil Engineering, Tabriz, Iran, Islamic Republic of Hydroinformatics; Artificial Intelligence; Soft Computing; Wavelet Analysis; Stochastic Hydrology; Geostatistics; Groundwater Modeling; Rainfall-runoff Modeling; GIS; Numerical Modeling
Saket Pande, Delft University of Technology Department of Water Management, Delft, Netherlands
Vincent Post, Geo Centre Hannover, Hannover, Germany
Groundwater; Coastal hydrogeology; Hydrochemistry; Numerical modelling; Seawater intrusion; Netherlands; Australia; Germany
Carla Saltalippi, University of Perugia, Department of Civil and Environmental Engineering, Perugia, Italy
Hydrology, rainfall, runoff, ground water
Mohsen Sherif, UAE University Department of Civil and Environmental Engineering, Al Ain, United Arab Emirates
Gokmen Tayfur, Izmir Institute of Technology Faculty of Engineering, Izmir, Turkey
Zhang Wen, China University of Geosciences, Department of Water Resources and Hydrogeology, Wuhan, China
Well Hydraulics, Solute transport, numerical modeling, groundwater flow
Stephen Worthington, Worthington Groundwater, Dundas, Ontario, Canada

Working with Huaming Guo
Prosun Bhattacharya, KTH Royal Institute of Technology Department of Sustainable Development Environmental Science and Engineering, Stockholm, Sweden
Hydrogeology; Groundwater Contamination; Environmental Chemistry; Arsenic Geochemistry; Drinking Water Quality; Soil Remediation; Water Resources Management; Contaminants in Agricultural Landscape; Crop; Environmental Engineering; Water Resources Engineering; Drinking Water Treatment
Kenneth Carroll, New Mexico State University, Las Cruces, New Mexico, United States
Mingjie Chen, Sultan Qaboos University Water Research Center, Muscat, Oman
Groundwater model; Multiphase flow; Coastal aquifer; Watershed modelling; Optimization; Uncertainty quantification
Pedro Depetris, National University of Cordoba Centre for Geochemical and Surface Processes Research, Cordoba, Argentina
Georgia Destouni, University of Stockholm Department of Physical Geography, Stockholm, Sweden
Jiin-Shuh Jean, National Cheng Kung University Department of Earth Sciences, Tainan City, Taiwan
Dirk M. Kirste, Simon Fraser University Department of Earth Science, Burnaby, British Columbia, Canada
Aqueous geochemistry, isotopes, geochanical modelling
Tamotsu Kozaki, Hokkaido University Faculty of Engineering Laboratory of Nuclear and Environmental Materials, Sapporo, Japan
Patrick Lane, The University of Melbourne School of Ecosystem and Forest Sciences, Carlton, Victoria, Australia
Xiaohui Lei, China Institute of Water Resources and Hydropower Research Department of Water Resources, Beijing, China
Multi-reservoir operation; Joint operation of sluice and pumping stations; Integrated water, energy, and environmental management; Climate change assessment and adaption; Flood and drought management; Uncertainty analysis; Hydro-solar-wind hybrid energy system
Wei Cheng Lo, National Cheng Kung University Department of Hydraulic and Ocean Engineering, Tainan, Taiwan
Adam Loch, The University of Adelaide, Centre for Global Food and Resources, Adelaide, Australia
Agricultural economist; Transaction costs; Water markets; Risk and uncertainty; Water use efficiency
Federico Maggi, The University of Sydney School of Civil Engineering, Sydney, Australia
Philippe Negrel, Bureau for Geological and Mining Research, Orleans, France
Rafael Pérez López, University of Huelva Department of Geology, Huelva, Spain
Fereidoun Rezanezhad, University of Waterloo Department of Earth and Environmental Sciences, Waterloo, Ontario, Canada
Gas Exchange, Isotopes, Water table fluctuation, Soil column experiment, Flow and transport in porous media, Dual-porosity media, Freeze and thaw cycling, Soil biogeochemistry, Soil respiration, Fate and transport of nutrients and Microbial activity in soil.
Jianying Shang, China Agricultural University College of Animal Science and Technology, Beijing, China
Transport; contaminant; colloid; fate; soil pollution
Dingbao Wang, University of Central Florida Department of Civil Environmental and Construction Engineering, Orlando, Florida, United States
Surface water hydrology; Water resources systems
Wenke Wang, Chang'an University School of Environmental Science and Engineering, Xian, China
Interaction between surface water and groundwater; Subsurface hydrology and ecological effect in arid region; Numerical simulation of variably saturated flow; Hydrogeology of vadose zone; Groundwater resource evaluation and management
Xu-Sheng Wang, China University of Geosciences Beijing School of Water Resources and Environment, Beijing, China
Hydrological model; Groundwater hydraulics; Evapotranspiration; Unsaturated flow; Groundwater-surface water interactions
Chong-ju Xu, University of Oslo Department of Geosciences, Oslo, Norway
Seong-Taek Yun, Korea University Department of Earth and Environmental Sciences, Seongbuk-gu, Korea, Republic of
Water chemistry; Environmental geochemistry; Geochemical modelling; Groundwater contamination; Nutrient management; Heavy metals in groundwater and soils; Geochemistry of geologic carbon sequestration

Working with Jirka Simunek
Hoori Ajami, University of California Riverside Department of Environmental Sciences, Riverside, California, United States
Surface water-groundwater interaction, groundwater recharge, distributed hydrologic modeling, climate impacts
Habib A. Basha, American University of Beirut Department of Civil and Environmental Engineering, Beirut, Lebanon
Infiltration; Groundwater Flow; Groundwater Transport; Flow in Karst Systems; Surface Water Flow; Surface Water Transport; Groundwater/Surface Water Interaction; Mathematical Modeling.
Giuseppe Brunetti, University of Natural Resources and Life Sciences, Institute for Soil Physics and Rural Water Management, Vienna, Austria
Numerical modeling, vadose zone hydrology, urban hydrology, Bayesian analysis, model calibration
Michael Cardiff, University of Wisconsin-Madison Department of Geoscience, Madison, Wisconsin, United States
Hydrogeology, heterogeneity, inverse problems, geophysics, uncertainty analysis
Yonghong Hao, Tianjin Normal University, Tianjin Key Laboratory of Water Resources and Environment, Tianjin, China
Karst hydrology; Spring discharge simulation; Time series analysis; Climate change; Groundwater modeling.
Diederik Jacques, Belgian Nuclear Research Centre, Institute of Environment, Health and Safety, Waste & Disposal Department, Mol, Belgium
Unsaturated zone flow and transport processes, Coupled reactive transport modelling, Subsurface hydrology and contaminant transport, Biogeochemical processes
Jonghyun Harry Lee, University of Hawai‘i at Manoa Department of Civil and Environmental Engineering, Honolulu, Hawaii, United States
Inverse modeling; Machine learning; Subsurface flow and transport modelling; Optimization; Numerical linear algebra
Chunhui Lu, State Key Laboratory of Hydrology-Water Resources and Hydraulic Engineering, Nanjing, China
Groundwater Hydrology; Groundwater Modelling; Solute Transport; Coastal Aquifer; Seawater Intrusion; Submarine Groundwater Discharge; Aquifer Storage and Recovery; Saltwater Upconing;, Surface Water-Groundwater Interaction; Pumping
Jian Luo, Georgia Institute of Technology School of Civil and Environmental Engineering, Atlanta, Georgia, United States
Simon Mathias, Durham University Department of Earth Sciences, Durham, United Kingdom
Wolfgang Nowak, University of Stuttgart Institute for Modelling Hydraulic and Environmental Systems, Stuttgart, Germany
Todd Rasmussen, University of Georgia Department of Biological and Agricultural Engineering, Athens, Georgia, United States
Delphine Roubinet, Geosciences Montpellier, Montpellier, France
Hydrogeology; Analytical and numerical modelling; Fractured rock characterization; Transport; Heat transfer
Kathleen Smits, The University of Texas at Arlington Department of Computer Science & Engineering, Arlington, Texas, United States
Martin Thullner, Helmholtz Centre for Environmental Research UFZ Department of Environmental Microbiology, Leipzig, Germany
Jan Vanderbourght, Research Centre Julich Institute of Bio- and Geosciences Department 2 Plant Sciences, Jülich, Germany
Vadose zone hydrology, soil physics, hydrogeophysics, root water uptake, solute transport
Xu Xu, China Agricultural University, Chinese-Israeli International Center for Research and Training in Agriculture; Department of Hydraulic Engineering, Beijing, China
Vadose zone hydrology, Eco-hydrological modeling, Groundwater modeling, Best management practices
Newsha Ajami, Stanford University Woods Institute for the Environment, Stanford, California, United States
Sustainable Water Resources Management, Smart Resilient Cities, water policy, water-energy nexus, Environmental economics and finance

Working with Nandita Basu
Hazi Mohammad Azamathulla, University of the West Indies, Department of Civil and Environmental Engineering, St. Augustine, Trinidad and Tobago
Physical hydraulic model studies; Hydroinformatics
Andrea E. Brookfield, University of Waterloo Department of Earth and Environmental Sciences, Waterloo, Ontario, Canada
Groundwater, Surface water, Groundwater/surface water interactions, hydrological modeling, water management
Saeid Eslamian, Isfahan University of Technology College of Agriculture, Isfahan, Iran, Islamic Republic of
Joseph Guillaume, Aalto University Water and Development Research Group, ESPOO, Finland
Uncertainty; Decision support; Integrated modelling; Integrated assessment; Integrated water resources management; Integration and implementation sciences
Li He, State Key Laboratory of Hydraulic Engineering Simulation and Safety, Tianjin, China
Water resources; Contaminant Hydrology; Subsurface Hydrology
Giorgio Mannina, University of Palermo Department of Civil Environmental Aerospace Materials Engineering, Palermo, Italy
Membrane bioreactor; Activated sludge; Biological nutrient removal
Ursula McKnight, Technical University of Denmark Department of Environmental Engineering, Kogens Lyngby, Denmark
Aquatic ecohydrology; Contaminant impacts on stream ecology; Application of innovative field characterization technologies; Data-driven decision support systems development; Science-policy linkage
Marc Muller, University of Notre Dame College of Engineering Department of Civil & Environmental Engineering & Earth Sciences, Notre Dame, Indiana, United States
Water economics
Natalie Nelson, North Carolina State University Department of Biological and Agricultural Engineering, Raleigh, North Carolina, United States
Water quality, harmful algal blooms, watershed modeling, machine learning, land-sea connectivity
Veena Srinivasan, Ashoka Trust for Research in Ecology and the Environment, Bangalore, India
Sociohydrology
Xiaodong Zhang, Shandong University School of Environmental Science and Engineering Sciences, Jinan, China
Hydrology; Hydrogeology; Climate change; Water-energy-food nexus; Hydrological modeling; Surface water and groundwater interactions; Groundwater and soil remediation; Water resources systems analysis; data-driven modeling and decision support

Working with Sally E. Thompson
Ji Chen, University of Hong Kong Environmental Materials Research Group, Hong Kong, Hong Kong
River basin hydrology; Numerical modeling; Water resources management; Floods; Droughts; Teleconnection; Climate change; Urbanization
Iryna Dronova, University of California Berkeley, College of Environmental Design, Department of Landscape Architecture and Environmental Planning, Berkeley, California, United States
Wetlands; Remote sensing; Phenology; Spatial analysis
Xue Feng, University of Minnesota Department of Civil Engineering, Minneapolis, Minnesota, United States
Ecohydrology, Soil moisture dynamics, Plant-water interactions, Hydroclimatology, Water resources

Jesús Mateo Lázaro, University of Zaragoza Department of Earth Sciences, Zaragoza, Spain
Hydrological and Hydrodinamic models, 3D geological an groundwater models, Hydrological statistics,
Management and research of water resources, Water cycle research in civil engineering infrastructure,
mining, environment and territorial management, Software development for Science and Engineering

Ashok Mishra, Clemson University Glenn Department of Civil Engineering, Clemson, South Carolina, United States

José-Luis Molina, University of Salamanca Department of Cartographic and Land Engineering, Ávila, Spain
Integrated Water Management; Uncertainty; Stochastic Hydrology; Decision Tools; Climate Change

Carlos Oroza, University of Utah, Department of Civil and Environmental Engineering, Salt Lake City, Utah,
United States
Snow, sensors

Bellie Sivakumar, Indian Institute of Technology Bombay Department of Civil Engineering, Mumbai, India

Tara J. Troy, University of Victoria, Department of Civil Engineering, Victoria, Canada
Hydrologic modeling, Human-natural systems, Water-energy-food nexus, Climate change impacts

Shuo S. Wang, The Hong Kong Polytechnic University Department of Land Surveying and GeoInformatics, Hong Kong, Hong Kong
Stochastic hydrology; Uncertainty quantification; Data assimilation; Sensitivity analysis; Diagnostic model calibration; Water resources systems analysis; Decision making under uncertainty
INTRODUCTION

Journal of Hydrology has an open access mirror journal, Journal of Hydrology X.

You can use this list to carry out a final check of your submission before you send it to the journal for review. Please check the relevant section in this Guide for Authors for more details.

Ensure that the following items are present:

One author has been designated as the corresponding author with contact details:
- E-mail address
- Full postal address

All necessary files have been uploaded:
Manuscript:
- Include keywords
- All figures (include relevant captions)
- All tables (including titles, description, footnotes)
- Ensure all figure and table citations in the text match the files provided
- Indicate clearly if color should be used for any figures in print
Graphical Abstracts / Highlights files (where applicable)
Supplemental files (where applicable)

Further considerations
- Manuscript has been 'spell checked' and 'grammar checked'
- All references mentioned in the Reference List are cited in the text, and vice versa
- Permission has been obtained for use of copyrighted material from other sources (including the Internet)
- A competing interests statement is provided, even if the authors have no competing interests to declare
- Journal policies detailed in this guide have been reviewed
- Referee suggestions and contact details provided, based on journal requirements
- Please ensure that any included maps are scientifically relevant and focus only on the region relevant to the article

For further information, visit our Support Center.

BEFORE YOU BEGIN

Ethics in publishing
Please see our information pages on Ethics in publishing and Ethical guidelines for journal publication.

Declaration of interest
All authors must disclose any financial and personal relationships with other people or organizations that could inappropriately influence (bias) their work. Examples of potential conflicts of interest include employment, consultancies, stock ownership, honoraria, paid expert testimony, patent applications/registrations, and grants or other funding. Authors should complete the declaration of interest statement using this template and upload to the submission system at the Attach/Upload Files step. If there are no interests to declare, please choose: 'Declarations of interest: none' in the template. This statement will be published within the article if accepted. More information.

Submission declaration and verification
Submission of an article implies that the work described has not been published previously (except in the form of an abstract, a published lecture or academic thesis, see 'Multiple, redundant or concurrent publication' for more information), that it is not under consideration for publication elsewhere, that its publication is approved by all authors and tacitly or explicitly by the responsible authorities where the work was carried out, and that, if accepted, it will not be published elsewhere in the same form, in English or in any other language, including electronically without the written consent of the copyright-holder. To verify originality, your article may be checked by the originality detection service Crossref Similarity Check.
Preprints

Please note that preprints can be shared anywhere at any time, in line with Elsevier's sharing policy. Sharing your preprints e.g. on a preprint server will not count as prior publication (see 'Multiple, redundant or concurrent publication' for more information).

Use of inclusive language

Inclusive language acknowledges diversity, conveys respect to all people, is sensitive to differences, and promotes equal opportunities. Articles should make no assumptions about the beliefs or commitments of any reader, should contain nothing which might imply that one individual is superior to another on the grounds of race, sex, culture or any other characteristic, and should use inclusive language throughout. Authors should ensure that writing is free from bias, for instance by using 'he or she', 'his/her' instead of 'he' or 'his', and by making use of job titles that are free of stereotyping (e.g. 'chairperson' instead of 'chairman' and 'flight attendant' instead of 'stewardess').

Author contributions

For transparency, we encourage authors to submit an author statement file outlining their individual contributions to the paper using the relevant CRediT roles: Conceptualization; Data curation; Formal analysis; Funding acquisition; Investigation; Methodology; Project administration; Resources; Software; Supervision; Validation; Visualization; Roles/Writing - original draft; Writing - review & editing. Authorship statements should be formatted with the names of authors first and CRediT role(s) following. More details and an example

Changes to authorship

Authors are expected to consider carefully the list and order of authors before submitting their manuscript and provide the definitive list of authors at the time of the original submission. Any addition, deletion or rearrangement of author names in the authorship list should be made only before the manuscript has been accepted and only if approved by the journal Editor. To request such a change, the Editor must receive the following from the corresponding author: (a) the reason for the change in author list and (b) written confirmation (e-mail, letter) from all authors that they agree with the addition, removal or rearrangement. In the case of addition or removal of authors, this includes confirmation from the author being added or removed.

Only in exceptional circumstances will the Editor consider the addition, deletion or rearrangement of authors after the manuscript has been accepted. While the Editor considers the request, publication of the manuscript will be suspended. If the manuscript has already been published in an online issue, any requests approved by the Editor will result in a corrigendum.

Article transfer service

This journal is part of our Article Transfer Service. This means that if the Editor feels your article is more suitable in one of our other participating journals, then you may be asked to consider transferring the article to one of those. If you agree, your article will be transferred automatically on your behalf with no need to reformat. Please note that your article will be reviewed again by the new journal. More information.

Copyright

Upon acceptance of an article, authors will be asked to complete a 'Journal Publishing Agreement' (see more information on this). An e-mail will be sent to the corresponding author confirming receipt of the manuscript together with a 'Journal Publishing Agreement' form or a link to the online version of this agreement.

Subscribers may reproduce tables of contents or prepare lists of articles including abstracts for internal circulation within their institutions. Permission of the Publisher is required for resale or distribution outside the institution and for all other derivative works, including compilations and translations. If excerpts from other copyrighted works are included, the author(s) must obtain written permission from the copyright owners and credit the source(s) in the article. Elsevier has preprinted forms for use by authors in these cases.

Elsevier supports responsible sharing

Find out how you can share your research published in Elsevier journals.
Role of the funding source
You are requested to identify who provided financial support for the conduct of the research and/or preparation of the article and to briefly describe the role of the sponsor(s), if any, in study design; in the collection, analysis and interpretation of data; in the writing of the report; and in the decision to submit the article for publication. If the funding source(s) had no such involvement then this should be stated.

Open access
Authors wishing to publish open access can choose to publish open access in [Journal of Hydrology X] [https://www.journals.elsevier.com/journal-of-hydrology-x], the open access mirror journal of [Journal of Hydrology]. One, unified editorial team manages the peer-review for both titles using the same submission system. The authors choice of publishing model will determine in which journal, [Journal of Hydrology] or [Journal of Hydrology X], the accepted manuscript will be published. The choice of publishing model will be blinded to referees, ensuring the editorial process is identical.

Elsevier Researcher Academy
Researcher Academy is a free e-learning platform designed to support early and mid-career researchers throughout their research journey. The "Learn" environment at Researcher Academy offers several interactive modules, webinars, downloadable guides and resources to guide you through the process of writing for research and going through peer review. Feel free to use these free resources to improve your submission and navigate the publication process with ease.

Language and language services
Manuscripts should be written in English (American or British usage is accepted, but not a mixture of these). Authors who are unsure of correct English usage should have their manuscript checked by someone proficient in the language. Manuscripts in which the English is difficult to understand may be returned to the author for revision before scientific review.

LINE and PAGE NUMBERING (NEW AND REVISED SUBMISSIONS)
Please ensure the text of your paper is double-spaced and has consecutive(continuous) LINE numbering. Please also ensure to add PAGE numbers to the source file- this is an essential peer review requirement.

Submission
Our online submission system guides you stepwise through the process of entering your article details and uploading your files. The system converts your article files to a single PDF file used in the peer-review process. Editable files (e.g., Word, LaTeX) are required to typeset your article for final publication. All correspondence, including notification of the Editor's decision and requests for revision, is sent by e-mail.

Submission: Special Issues
In the case of Special Issues, manuscripts should be submitted also through the online Submission System to the Guest Editor(s). Authors should ensure that they submit manuscripts and meet any additional requirements in line with deadlines set by the Guest Editor(s) to ensure that the entire Special Issue can be published in a timely fashion.

Revised submissions
Revision requirement: The authors are requested to submit a marked and clean version of their submissions.

Marked Manuscript: The Marked Manuscript should be a version of your revised manuscript in which all of the ways in which it is different from the original manuscript are indicated for the sake of the Editor. The preferred method of indicating changes is Microsoft Word's Track Changes feature. Alternately, any text that has been added should be underlined, and any text that was deleted should be indicated by strikethrough formatting. Any table that was part of your original submission should be either embedded within the Marked Manuscript or provided as a separate file (e.g., "Table II - Marked"); if changes have been made to the table, they should be indicated. Likewise, any figure that was part of your original submission should be either embedded within the Marked Manuscript or provided as a separate file (e.g., "Figure 1 - Marked"); if changes have been made to the figure, they should be described in your Responses to Comments document.

The marked version will not be used for typesetting. It is only for review purpose.
**Clean Manuscript:** The final version of the submission with all the revisions included.

**IMPORTANT:** Please note that the clean manuscript is the version that will be sent to production for typesetting. Hence, ensure that this version is the final version and includes all the revisions requested for.

**Referees**
Please submit, with the manuscript, the names, addresses and e-mail addresses of 4 potential referees. Note that the editor retains the sole right to decide whether or not the suggested reviewers are used.

**Additional information**
Journal of Hydrology has no page charges.

**PREPARATION**

**Peer review**
This journal operates a single blind review process. All contributions are typically sent to a minimum of two independent expert reviewers to assess the scientific quality of the paper. The Editor is responsible for the final decision regarding acceptance or rejection of articles. The Editor's decision is final. More information on types of peer review.

**Use of wordprocessing software**
Manuscripts should be prepared with numbered lines, with wide margins and double spacing throughout, i.e. also for abstracts and references. Every page of the manuscript, including the title page, references, tables, etc. should be numbered. Avoid excessive use of italics to emphasize part of the text.

It is important that the file be saved in the native format of the wordprocessor used. The text should be in single-column format. Keep the layout of the text as simple as possible. Most formatting codes will be removed and replaced on processing the article. In particular, do not use the wordprocessor's options to justify text or to hyphenate words. However, do use bold face, italics, subscripts, superscripts etc. Do not embed "graphically designed" equations or tables, but prepare these using the wordprocessor's facility. When preparing tables, if you are using a table grid, use only one grid for each individual table and not a grid for each row. If no grid is used, use tabs, not spaces, to align columns.

The electronic text should be prepared in a way very similar to that of conventional manuscripts (see also the Guide to Publishing with Elsevier: https://www.elsevier.com/guidepublication). Do not import the figures into the text file but, instead, indicate their approximate locations directly in the electronic text and on the manuscript. See also the section on Electronic illustrations.

To avoid unnecessary errors you are strongly advised to use the "spell-check" and "grammar-check" functions of your wordprocessor.

**Article structure**

**Subdivision - numbered sections**
Divide your article into clearly defined and numbered sections. Subsections should be numbered 1.1 (then 1.1.1, 1.1.2, ...), 1.2, etc. (the abstract is not included in section numbering). Use this numbering also for internal cross-referencing: do not just refer to 'the text'. Any subsection may be given a brief heading. Each heading should appear on its own separate line.

**Introduction**
The Introduction Section should first provide an adequate background and an analysis of the state of the art identifying the existing shortcomings of the subject matter being addressed. On this basis, the description of the objectives should give a clear view of the originality of the manuscript. A summary of the paper content or a repetition of results should be avoided.

**Material and methods**
Provide sufficient details to allow the work to be reproduced by an independent researcher. Methods that are already published should be summarized, and indicated by a reference. If quoting directly from a previously published method, use quotation marks and also cite the source. Any modifications to existing methods should also be described.

**Theory/calculation**
A Theory section should extend, not repeat, the background to the article already dealt with in the Introduction and lay the foundation for further work. In contrast, a Calculation section represents a practical development from a theoretical basis.
**Results**
Results should be clear and concise.

**Discussion**
This should explore the significance of the results of the work, not repeat them. A combined Results and Discussion section is often appropriate. Avoid extensive citations and discussion of published literature.

**Conclusions**
The main conclusions of the study may be presented separately as a short Conclusions section, or as a subsection of a Discussion or Results and Discussion section. The progress with respect to the available research and the critical elements of the proposed investigation should also be discussed.

**Appendices**
If there is more than one appendix, they should be identified as A, B, etc. Formulae and equations in appendices should be given separate numbering: Eq. (A.1), Eq. (A.2), etc.; in a subsequent appendix, Eq. (B.1) and so on. Similarly for tables and figures: Table A.1; Fig. A.1, etc.

**Essential title page information**
- **Title.** Concise and informative. Titles are often used in information-retrieval systems. Avoid abbreviations and formulae where possible.
- **Author names and affiliations.** Please clearly indicate the given name(s) and family name(s) of each author and check that all names are accurately spelled. You can add your name between parentheses in your own script behind the English transliteration. Present the authors' affiliation addresses (where the actual work was done) below the names. Indicate all affiliations with a lower-case superscript letter immediately after the author's name and in front of the appropriate address. Provide the full postal address of each affiliation, including the country name and, if available, the e-mail address of each author.
- **Corresponding author.** Clearly indicate who will handle correspondence at all stages of refereeing and publication, also post-publication. This responsibility includes answering any future queries about Methodology and Materials. Ensure that the e-mail address is given and that contact details are kept up to date by the corresponding author.
- **Present/permanent address.** If an author has moved since the work described in the article was done, or was visiting at the time, a 'Present address' (or 'Permanent address') may be indicated as a footnote to that author's name. The address at which the author actually did the work must be retained as the main, affiliation address. Superscript Arabic numerals are used for such footnotes.

**Highlights**
Highlights are optional yet highly encouraged for this journal, as they increase the discoverability of your article via search engines. They consist of a short collection of bullet points that capture the novel results of your research as well as new methods that were used during the study (if any). Please have a look at the examples here: example Highlights.

Highlights should be submitted in a separate editable file in the online submission system. Please use 'Highlights' in the file name and include 3 to 5 bullet points (maximum 85 characters, including spaces, per bullet point).

**Abstract**
An abstract is often presented separately from the article and it is the section of the paper that ensures a wide dissemination due to on-line free access and high visibility provided by multiple Abstract & Indexing services. So it must be able to stand alone and motivate the reading of the whole paper.

**Technical submissions**
A concise and rationalized abstract strictly based on the crucial elements of the proposed research is required for technical papers. The abstract should match the following framework in the specified sequence: short description of the problem targeted (the abstract should not include general elements that are typical of Introduction Section); description of the article novelities; description of the methodologies; a summary of the main results; specific conclusions, ideally in the context of the current knowledge.

**Review papers**
A concise and rationalized abstract describing the main elements characterizing the framework of the proposed review is required.
Formal requirements
References should be avoided, but if essential they should be part of the sentence in the form: Author(s) (year) [J. Hydrol. vol, pp] Non-standard or uncommon abbreviations should be avoided, but if essential they must be defined at their first mention in the abstract itself Tables and figures should not be mentioned First person construction should be avoided

Graphical abstract
Although a graphical abstract is optional, its use is encouraged as it draws more attention to the online article. The graphical abstract should summarize the contents of the article in a concise, pictorial form designed to capture the attention of a wide readership. Graphical abstracts should be submitted as a separate file in the online submission system. Image size: Please provide an image with a minimum of 531 × 1328 pixels (h × w) or proportionally more. The image should be readable at a size of 5 × 13 cm using a regular screen resolution of 96 dpi. Preferred file types: TIFF, EPS, PDF or MS Office files. You can view Example Graphical Abstracts on our information site. Authors can make use of Elsevier’s Illustration Services to ensure the best presentation of their images and in accordance with all technical requirements.

Keywords
Immediately after the abstract, provide a maximum of 6 keywords, using American spelling and avoiding general and plural terms and multiple concepts (avoid, for example, ‘and’, ‘of’). Be sparing with abbreviations: only abbreviations firmly established in the field may be eligible. These keywords will be used for indexing purposes.

Abbreviations
Define abbreviations that are not standard in this field in a footnote to be placed on the first page of the article. Such abbreviations that are unavoidable in the abstract must be defined at their first mention there, as well as in the footnote. Ensure consistency of abbreviations throughout the article.

Acknowledgements
Collate acknowledgements in a separate section at the end of the article before the references and do not, therefore, include them on the title page, as a footnote to the title or otherwise. List here those individuals who provided help during the research (e.g., providing language help, writing assistance or proof reading the article, etc.).

Formatting of funding sources
List funding sources in this standard way to facilitate compliance to funder's requirements:

Funding: This work was supported by the National Institutes of Health [grant numbers xxxx, yyy]; the Bill & Melinda Gates Foundation, Seattle, WA [grant number zzzz]; and the United States Institutes of Peace [grant number aaaa].

It is not necessary to include detailed descriptions on the program or type of grants and awards. When funding is from a block grant or other resources available to a university, college, or other research institution, submit the name of the institute or organization that provided the funding.

If no funding has been provided for the research, please include the following sentence:

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Artwork
Electronic artwork
General points
• Make sure you use uniform lettering and sizing of your original artwork.
• Embed the used fonts if the application provides that option.
• Aim to use the following fonts in your illustrations: Arial, Courier, Times New Roman, Symbol, or use fonts that look similar.
• Number the illustrations according to their sequence in the text.
• Use a logical naming convention for your artwork files.
• Provide captions to illustrations separately.
• Size the illustrations close to the desired dimensions of the published version.
• Submit each illustration as a separate file.
• Ensure that color images are accessible to all, including those with impaired color vision.

A detailed guide on electronic artwork is available.

You are urged to visit this site; some excerpts from the detailed information are given here.

**Formats**

If your electronic artwork is created in a Microsoft Office application (Word, PowerPoint, Excel) then please supply 'as is' in the native document format.

Regardless of the application used other than Microsoft Office, when your electronic artwork is finalized, please 'Save as' or convert the images to one of the following formats (note the resolution requirements for line drawings, halftones, and line/halftone combinations given below):

- **EPS (or PDF):** Vector drawings, embed all used fonts.
- **TIFF (or JPEG):** Color or grayscale photographs (halftones), keep to a minimum of 300 dpi.
- **TIFF (or JPEG):** Bitmapped (pure black & white pixels) line drawings, keep to a minimum of 1000 dpi.
- **TIFF (or JPEG):** Combinations bitmapped line/half-tone (color or grayscale), keep to a minimum of 500 dpi.

**Please do not:**

- Supply files that are optimized for screen use (e.g., GIF, BMP, PICT, WPG); these typically have a low number of pixels and limited set of colors;
- Supply files that are too low in resolution;
- Submit graphics that are disproportionately large for the content.

**Color artwork**

Please make sure that artwork files are in an acceptable format (TIFF (or JPEG), EPS (or PDF), or MS Office files) and with the correct resolution. If, together with your accepted article, you submit usable color figures then Elsevier will ensure, at no additional charge, that these figures will appear in color online (e.g., ScienceDirect and other sites) regardless of whether or not these illustrations are reproduced in color in the printed version. For color reproduction in print, you will receive information regarding the costs from Elsevier after receipt of your accepted article. Please indicate your preference for color: in print or online only. Further information on the preparation of electronic artwork.

**Figure captions**

Ensure that each illustration has a caption. Supply captions separately, not attached to the figure. A caption should comprise a brief title (not on the figure itself) and a description of the illustration. Keep text in the illustrations themselves to a minimum but explain all symbols and abbreviations used.

**Text graphics**

Text graphics may be embedded in the text at the appropriate position. If you are working with LaTeX and have such features embedded in the text, these can be left. See further under Electronic artwork.

**Tables**

Please submit tables as editable text and not as images. Tables can be placed either next to the relevant text in the article, or on separate page(s) at the end. Number tables consecutively in accordance with their appearance in the text and place any table notes below the table body. Be sparing in the use of tables and ensure that the data presented in them do not duplicate results described elsewhere in the article. Please avoid using vertical rules and shading in table cells.

**References**

Responsibility for the accuracy of bibliographic citations lies entirely with the authors.

**Citation in text**

Please ensure that every reference cited in the text is also present in the reference list (and vice versa). Any references cited in the abstract must be given in full. Unpublished results and personal communications are not recommended in the reference list, but may be mentioned in the text. If these references are included in the reference list they should follow the standard reference style of the journal and should include a substitution of the publication date with either "Unpublished results" or "Personal communication". Citation of a reference as "in press" implies that the item has been accepted for publication.

**Reference links**

Increased discoverability of research and high quality peer review are ensured by online links to the sources cited. In order to allow us to create links to abstracting and indexing services, such as Scopus, CrossRef and PubMed, please ensure that data provided in the references are correct. Please
note that incorrect surnames, journal/book titles, publication year and pagination may prevent link creation. When copying references, please be careful as they may already contain errors. Use of the DOI is highly encouraged.

A DOI is guaranteed never to change, so you can use it as a permanent link to any electronic article. An example of a citation using DOI for an article not yet in an issue is: VanDecar J.C., Russo R.M., James D.E., Ambeh W.B., Franke M. (2003). Aseismic continuation of the Lesser Antilles slab beneath northeastern Venezuela. Journal of Geophysical Research, https://doi.org/10.1029/2001JB000884. Please note the format of such citations should be in the same style as all other references in the paper.

Web references
As a minimum, the full URL should be given and the date when the reference was last accessed. Any further information, if known (DOI, author names, dates, reference to a source publication, etc.), should also be given. Web references can be listed separately (e.g., after the reference list) under a different heading if desired, or can be included in the reference list.

Data references
This journal encourages you to cite underlying or relevant datasets in your manuscript by citing them in your text and including a data reference in your Reference List. Data references should include the following elements: author name(s), dataset title, data repository, version (where available), year, and global persistent identifier. Add [dataset] immediately before the reference so we can properly identify it as a data reference. The [dataset] identifier will not appear in your published article.

References in a special issue
Please ensure that the words 'this issue' are added to any references in the list (and any citations in the text) to other articles in the same Special Issue.

Reference management software
Most Elsevier journals have their reference template available in many of the most popular reference management software products. These include all products that support Citation Style Language styles, such as Mendeley. Using citation plug-ins from these products, authors only need to select the appropriate journal template when preparing their article, after which citations and bibliographies will be automatically formatted in the journal’s style. If no template is yet available for this journal, please follow the format of the sample references and citations as shown in this Guide. If you use reference management software, please ensure that you remove all field codes before submitting the electronic manuscript. More information on how to remove field codes from different reference management software.

Users of Mendeley Desktop can easily install the reference style for this journal by clicking the following link:
http://open.mendeley.com/use-citation-style/journal-of-hydrology
When preparing your manuscript, you will then be able to select this style using the Mendeley plug-ins for Microsoft Word or LibreOffice.

Free Reference Style
There are no strict requirements on reference formatting at submission. References can be in any style or format as long as the style is consistent. Where applicable, author(s) name(s), journal title/book title, chapter title/article title, year of publication, volume number/book chapter and the pagination must be present. Use of DOI is highly encouraged. The reference style used by the journal will be applied to the accepted article by Elsevier at the proof stage. Note that missing data will be highlighted at proof stage for the author to correct. If you do wish to format the references yourself they should be arranged according to the following example:


Reference Style
Text: All citations in the text should refer to:
1. Single author: the author's name (without initials, unless there is ambiguity) and the year of publication;
2. Two authors: both authors' names and the year of publication;
3. Three or more authors: first author's name followed by "et al." and the year of publication.
Citations may be made directly (or parenthetically). Groups of references should be listed first alphabetically, then chronologically. For Notes containing more than one citation, references should be separated by a semi-colon.

Examples: "as demonstrated (Allan, 1996a, 1996b, 1999; Allan and Jones, 1995). Kramer et al. (2000) have recently shown ...."

List: References should be arranged first alphabetically and then further sorted chronologically if necessary. More than one reference from the same author(s) in the same year must be identified by the letters "a", "b", "c", etc., placed after the year of publication.

Examples:
Reference to a journal publication:

Reference to a book:

Reference to a chapter in an edited book:

Journal abbreviations source
Journal names should be abbreviated according to the List of Title Word Abbreviations.

Video
Elsevier accepts video material and animation sequences to support and enhance your scientific research. Authors who have video or animation files that they wish to submit with their article are strongly encouraged to include links to these within the body of the article. This can be done in the same way as a figure or table by referring to the video or animation content and noting in the body text where it should be placed. All submitted files should be properly labeled so that they directly relate to the video file’s content. In order to ensure that your video or animation material is directly usable, please provide the file in one of our recommended file formats with a preferred maximum size of 150 MB per file, 1 GB in total. Video and animation files supplied will be published online in the electronic version of your article in Elsevier Web products, including ScienceDirect. Please supply 'stills' with your files: you can choose any frame from the video or animation or make a separate image. These will be used instead of standard icons and will personalize the link to your video data. For more detailed instructions please visit our video instruction pages. Note: since video and animation cannot be embedded in the print version of the journal, please provide text for both the electronic and the print version for the portions of the article that refer to this content.

Data visualization
Include interactive data visualizations in your publication and let your readers interact and engage more closely with your research. Follow the instructions here to find out about available data visualization options and how to include them with your article.

Supplementary material
Supplementary material such as applications, images and sound clips, can be published with your article to enhance it. Submitted supplementary items are published exactly as they are received (Excel or PowerPoint files will appear as such online). Please submit your material together with the article and supply a concise, descriptive caption for each supplementary file. If you wish to make changes to supplementary material during any stage of the process, please make sure to provide an updated file. Do not annotate any corrections on a previous version. Please switch off the 'Track Changes' option in Microsoft Office files as these will appear in the published version.

Research data
This journal encourages and enables you to share data that supports your research publication where appropriate, and enables you to interlink the data with your published articles. Research data refers to the results of observations or experimentation that validate research findings. To facilitate reproducibility and data reuse, this journal also encourages you to share your software, code, models, algorithms, protocols, methods and other useful materials related to the project.
Below are a number of ways in which you can associate data with your article or make a statement about the availability of your data when submitting your manuscript. If you are sharing data in one of these ways, you are encouraged to cite the data in your manuscript and reference list. Please refer to the "References" section for more information about data citation. For more information on depositing, sharing and using research data and other relevant research materials, visit the research data page.

Data linking
If you have made your research data available in a data repository, you can link your article directly to the dataset. Elsevier collaborates with a number of repositories to link articles on ScienceDirect with relevant repositories, giving readers access to underlying data that gives them a better understanding of the research described.

There are different ways to link your datasets to your article. When available, you can directly link your dataset to your article by providing the relevant information in the submission system. For more information, visit the database linking page.

For supported data repositories a repository banner will automatically appear next to your published article on ScienceDirect.

In addition, you can link to relevant data or entities through identifiers within the text of your manuscript, using the following format: Database: xxxx (e.g., TAIR: AT1G01020; CCDC: 734053; PDB: 1XFN).

Mendeley Data
This journal supports Mendeley Data, enabling you to deposit any research data (including raw and processed data, video, code, software, algorithms, protocols, and methods) associated with your manuscript in a free-to-use, open access repository. During the submission process, after uploading your manuscript, you will have the opportunity to upload your relevant datasets directly to Mendeley Data. The datasets will be listed and directly accessible to readers next to your published article online.

For more information, visit the Mendeley Data for journals page.

Data in Brief
You have the option of converting any or all parts of your supplementary or additional raw data into one or multiple data articles, a new kind of article that houses and describes your data. Data articles ensure that your data is actively reviewed, curated, formatted, indexed, given a DOI and publicly available to all upon publication. You are encouraged to submit your article for Data in Brief as an additional item directly alongside the revised version of your manuscript. If your research article is accepted, your data article will automatically be transferred over to Data in Brief where it will be editorially reviewed and published in the open access data journal, Data in Brief. Please note an open access fee of 600 USD is payable for publication in Data in Brief. Full details can be found on the Data in Brief website. Please use this template to write your Data in Brief.

MethodsX
You have the option of converting relevant protocols and methods into one or multiple MethodsX articles, a new kind of article that describes the details of customized research methods. Many researchers spend a significant amount of time on developing methods to fit their specific needs or setting, but often without getting credit for this part of their work. MethodsX, an open access journal, now publishes this information in order to make it searchable, peer reviewed, citable and reproducible. Authors are encouraged to submit their MethodsX article as an additional item directly alongside the revised version of their manuscript. If your research article is accepted, your methods article will automatically be transferred over to MethodsX where it will be editorially reviewed. Please note an open access fee is payable for publication in MethodsX. Full details can be found on the MethodsX website. Please use this template to prepare your MethodsX article.

Data statement
To foster transparency, we encourage you to state the availability of your data in your submission. This may be a requirement of your funding body or institution. If your data is unavailable to access or unsuitable to post, you will have the opportunity to indicate why during the submission process, for example by stating that the research data is confidential. The statement will appear with your published article on ScienceDirect. For more information, visit the Data Statement page.

AFTER ACCEPTANCE
**Online proof correction**
To ensure a fast publication process of the article, we kindly ask authors to provide us with their proof corrections within two days. Corresponding authors will receive an e-mail with a link to our online proofing system, allowing annotation and correction of proofs online. The environment is similar to MS Word: in addition to editing text, you can also comment on figures/tables and answer questions from the Copy Editor. Web-based proofing provides a faster and less error-prone process by allowing you to directly type your corrections, eliminating the potential introduction of errors.

If preferred, you can still choose to annotate and upload your edits on the PDF version. All instructions for proofing will be given in the e-mail we send to authors, including alternative methods to the online version and PDF.

We will do everything possible to get your article published quickly and accurately. Please use this proof only for checking the typesetting, editing, completeness and correctness of the text, tables and figures. Significant changes to the article as accepted for publication will only be considered at this stage with permission from the Editor. It is important to ensure that all corrections are sent back to us in one communication. Please check carefully before replying, as inclusion of any subsequent corrections cannot be guaranteed. Proofreading is solely your responsibility.

**Offprints**
The corresponding author will, at no cost, receive a customized Share Link providing 50 days free access to the final published version of the article on ScienceDirect. The Share Link can be used for sharing the article via any communication channel, including email and social media. For an extra charge, paper offprints can be ordered via the offprint order form which is sent once the article is accepted for publication. Both corresponding and co-authors may order offprints at any time via Elsevier's Author Services. Corresponding authors who have published their article gold open access do not receive a Share Link as their final published version of the article is available open access on ScienceDirect and can be shared through the article DOI link.

**Author's Discount**
Contributors to Elsevier journals are entitled to a 30% discount on most Elsevier books, if ordered directly from Elsevier.

**AUTHOR INQUIRIES**
Visit the Elsevier Support Center to find the answers you need. Here you will find everything from Frequently Asked Questions to ways to get in touch.
You can also check the status of your submitted article or find out when your accepted article will be published.

© Copyright 2018 Elsevier | https://www.elsevier.com