DESCRIPTION

*Environmental Pollution* welcomes high quality submissions on all aspects of environmental pollution and the mitigation measures related to ecosystem & human health.

AUDIENCE

Pollution research workers including chemists, toxicologists, environmentalists, conservationists, botanists, marine scientists, ecologists, biologists.

IMPACT FACTOR

2018: 5.714 © Clarivate Analytics Journal Citation Reports 2019

ABSTRACTING AND INDEXING

- PubMed/Medline
- Environmental Periodicals Bibliography
- Current Contents - Agriculture, Biology & Environmental Sciences
- Science Citation Index
- AGRICOLA
- Energy Information Abstracts
- Embase
- Air Pollution Control Association Journal
- Biological and Agricultural Index
- GeoSciTech
- Web of Science
- Scopus

EDITORIAL BOARD

*Co-Editors-in-Chief*

Christian Sonne, Aarhus University Department of Environmental Science, Roskilde, Denmark

Eddy Zeng, Jinan University, Guangzhou, China
Special Issue Editor
Jörg Rinklebe, University of Wuppertal, Wuppertal, Germany

Associate Editors
Da Chen, Jinan University, Guangzhou, China
Wen Chen, Sun Yat-Sen University, Guangzhou, China
Payam Dadvand, Barcelona Institute for Global Health, Barcelona, Spain
Maria Cristina Fossi, University of Siena, Siena, Italy
Sarah Harmon, University of South Carolina Aiken, Aiken, South Carolina, United States
Klaus Kümmerer, Leuphana University of Lüneburg Institute for Sustainable and Environmental Chemistry, Lüneburg, Germany
Bernd Nowack, Empa Technology and Society Laboratory, St Gallen, Switzerland
Yong Sik Ok, Korea University Division of Environmental Science and Ecological Engineering, Seoul, Korea, Republic of
Jörg Rinklebe, University of Wuppertal, Wuppertal, Germany
Philip Smith, TEXAS TECH UNIVERSITY, Lubbock, Texas, United States
Admir Créso Targino, Federal Technological University of Paraná Department of Physics, Londrina, Brazil
Wen-Xiong Wang, Hong Kong University of Science and Technology, Clear Water Bay, Kowloon, Hong Kong
Charles Wong, Southern California Coastal Water Research Project, Costa Mesa, California, United States
Baoshan Xing, University of Massachusetts Amherst Stockbridge School of Agriculture, Amherst, Massachusetts, United States

Editorial Board
Dula Amarasiriwardena, Hampshire College, Amherst, Massachusetts, United States
Lian-Jun Bao, Jinan University, Guangzhou, China
Allen Barker, University of Massachusetts Amherst Department of Plant Soil and Insect Sciences, Amherst, Massachusetts, United States
Nigel Bell, Imperial College London, London, United Kingdom
Man Yu Bon, Education University of Hong Kong, New Territories, Hong Kong
Juergen Burkhardt, University of Bonn, Germany
Art Chappelka, Auburn University, Auburn, Alabama, United States
Alessandra De Marco, ENEA Casaccia Research Centre, Santa Maria di Galeria, Italy
Jean-Pierre Desforges, Aarhus University, Aarhus, Denmark
Marisa Domingos, Brazilian Association of Environmental Mutagenesis and Genomics, Monte Alegre, Ribeirão Preto, Brazil
Paulo Renato Dorneles, Federal University of Rio de Janeiro, Rio de Janeiro, Brazil
Zafar Fatmi, Aga Khan University, Karachi, Pakistan
Bin Gao, University of Florida, Gainesville, Florida, United States
Martin Hansen, Aarhus University, Aarhus, Denmark
Markus Hauck, University of Freiburg Faculty of Environment and Natural Resources, Freiburg, Germany
Frank von Hippel, Northern Arizona University, Flagstaff, Arizona, United States
Deyi Hou, Tsinghua University, Beijing, China
Magali Houde, Environment and Climate Change Canada, Downsview, Ontario, Canada
Paul Jagals, University of Queensland, Brisbane, Queensland, Australia
Harrri Kankaanpaa, Marine Research Institute, HELSINKI, Finland
Haider Khwaja, New York State Department of Health, Albany, New York, United States
Chunyang Liao, Yantai Institute of Coastal Zone Research, Yantai, China
Daohui Lin, Zhejiang University, Hangzhou, China
Rainer Lohmann, University of Rhode Island Coastal Institute, Narragansett, Rhode Island, United States
Lisbeth Lopez-Carrillo
Stefano Loppi, University of Siena, Siena, Italy
Michael Lydy, Southern Illinois University Carbondale, Carbondale, Illinois, United States
Melissa A. McKinney, McGill University Department of Natural Resource Sciences, Sainte-Anne-De-Bellevue, Quebec, Canada
Denise Mitran, Swiss Federal Institute of Aquatic Science and Technology, Dübendorf, Switzerland
Kunihiro Nakai, Tohoku University, Sendai, Japan
Willie Peijnenburg, Leiden University Institute of Environmental Sciences, Leiden, Netherlands
Elijah J. Petersen, National Institute of Standards and Technology, Cell Systems Science Group, Gaithersburg, Maryland, United States
Stergios Pirintsos, University of Crete Voutes Campus, Iraklion, Crete, Greece
Hakan Pleijel, University of Gothenburg, Goteborg, Sweden
Markus Puschenreiter, University of Natural Resources and Life Sciences Vienna, Wien, Austria
Sabry M. Shaheen, University of Wuppertal, Wuppertal, Germany
Richard Shore, Centre for Ecology and Hydrology Lancaster, Lancaster, United Kingdom
Stefania Squizzato, University of Rochester, Rochester, New York, United States
John Ssempebwa, Makerere University, Kampala, Uganda
GUIDE FOR AUTHORS

Your Paper Your Way

We now differentiate between the requirements for new and revised submissions. You may choose to submit your manuscript as a single Word or PDF file to be used in the refereeing process. Only when your paper is at the revision stage will you be requested to put your paper in the journal’s specific for acceptance and provide the items required for the publication of your article. There are no strict formatting requirements, but all manuscripts must contain the essential elements needed to convey your manuscript, e.g., Abstract, Keywords, Introduction, Materials and Methods, Results and Discussion, Conclusions, Artwork and Tables and Figures with Captions. References can be in any style, 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.

Each manuscript submission must include contact information for a Corresponding Author. It is not acceptable to list more than one Corresponding Author. Authors may suggest that a specific Associate Editor be assigned responsibility for obtaining review of the manuscript, if desired. There should also be names and contact information for at least five potential reviewers together with email addresses.

Introduction

Environmental Pollution is an international journal that seeks to publish papers that report results from original, novel research that addresses significant environmental pollution issues and problems and contribute new knowledge to science. The editors welcome high-quality, process-oriented, hypothesis-based papers along these lines. The scopes for publication include, but are not limited to: Papers where the pollutants are clearly defined and measured in environmental compartments, food and food-related items, and human bodies, and can be directly related to biological, ecological and human health effects or with respect to climate change; Papers on new techniques for study and measurement of pollutants and their effects; Papers on new types of environmental challenges such as pollution/antibiotic resistances of organisms; Papers on contaminants of emerging concern, such as emerging chemicals, microplastics, electronic wastes, light or noise pollution, as long as they can clearly be related to the biological effects mentioned above; Papers on modeling, but these must be related to a specific pollution issue or process that is potentially of environmental and/or human health interest; Papers on innovative techniques to combat global or regional problems, if the field applicability of the technical aspects are clearly demonstrated; Critical review papers and commentaries; Letters to the editor. The editors do not wish to publish papers on: Routine surveys and monitoring programs primarily of local or regional interest (i.e., they must have international interest, such as the characterization of processes that can be applicable elsewhere); Descriptions of well-known contaminants, such as legacy pollutants, in yet another location; Sewage, waste and wastewater treatment and management; Standard techniques in agronomy, remediation, biomonitory, bioremediation and phytoremediation; Known analytical methods, laboratory experiments, food science studies, screening of new plant/animal/microorganism species for effect assessments, or testing of known pollution or chemicals in another setting; Atmospheric models without clear environmental or human health implications; Nitrogen or phosphorus deposition or biogeochemical processes without clear environmental implications; Natural radiation studies without clear environmental or human health perspectives; Eutrophication studies and secondary pollution by eutrophication; Ocean enrichment by CO2

Papers along such lines are subject to being returned to the author without review. The abstract (up to 300 words), highlights and conclusions of papers in this journal must contain clear and concise statements. A graphical abstract is mandatory. A cover letter is required. This must explicitly express how the submission fits the Aims and Scope of Environmental Pollution, and should establish the ramifications of the research findings with regards to environmental quality, ecological health, and/or human health. The cover letter should also list a minimum of five suggested reviewers, as detailed below. Failure to include such justifications in the cover letter may result in returning the paper to the author.
It is unnecessary to ask for permission to the Editor in Chief before submitting a manuscript. Kindly check the guidelines and see if your paper is within the scope of the journal, if yes, please go ahead and submit it.

**Types of paper**

**Full Research Papers:** Full Research Papers should not exceed 8000 words (including abstract, figures, and tables but excluding references). Please note that small tables and figures each count as 300 words, and large tables or figures with multiple panel may count for 600 or more words. There should be no more than nine figures and tables (e.g., 5 figures and 4 tables maximum) in the main text. Any additional figures and tables should be placed in Supplementary Material.

**Critical Reviews:** Authors may submit manuscripts that provide in-depth critical review of a special subject. These reviews must provide a Synthesis and Critical Evaluation of the state of the knowledge of the subject and indicate research directions. The Editors also periodically invite review articles. Manuscripts should not exceed 10,000 words, as defined above.

**Commentary:** Commentary papers may be submitted that express opinions and concerns, suggest research priorities and question conventional methodologies and conclusions. Manuscripts should include an Abstract, Introduction, Presentation of the Concerns or Analysis and Conclusions. References, Tables and Illustrations should be used sparingly. The manuscript should not exceed 12 double-spaced pages. The Editors will evaluate all manuscripts for suitability of publication, including peer review.

**Correspondence:** Readers are encouraged to write to any of the Editors (Letter to Editor) and raise issues and concerns about papers published in the journal. Editors or authors will be invited reply with response letters. The Editor will decide on the publication of Correspondence based on its scientific merit, importance to the raised issues, and interest to the general audience. Correspondence of an unprofessional or unscientific nature, or containing personal invective, will not be considered.

**Special Issues:** Proposals for Special Issues of Full Research Papers that focus on a specific topic or theme will also be considered. Special Issues will be published on emerging thematic issues and innovative conferences. An Editor or Associate Editor should be contacted early in the conference planning process to get approval and for guidelines on special issues of the journal. Furthermore, the Editors or Associate Editors will invite leading experts as Guest Editors for Special Issues.

**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.

For gold open access articles: Upon acceptance of an article, authors will be asked to complete an 'Exclusive License Agreement' (more information). Permitted third party reuse of gold open access articles is determined by the author's choice of user license.

Author rights
As an author you (or your employer or institution) have certain rights to reuse your work. More information.

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.

Funding body agreements and policies
Elsevier has established a number of agreements with funding bodies which allow authors to comply with their funder's open access policies. Some funding bodies will reimburse the author for the gold open access publication fee. Details of existing agreements are available online.

Open access
This journal offers authors a choice in publishing their research:

Subscription
- Articles are made available to subscribers as well as developing countries and patient groups through our universal access programs.
- No open access publication fee payable by authors.
- The Author is entitled to post the accepted manuscript in their institution's repository and make this public after an embargo period (known as green Open Access). The published journal article cannot be shared publicly, for example on ResearchGate or Academia.edu, to ensure the sustainability of peer-reviewed research in journal publications. The embargo period for this journal can be found below.

Gold open access
- Articles are freely available to both subscribers and the wider public with permitted reuse.
- A gold open access publication fee is payable by authors or on their behalf, e.g. by their research funder or institution.

Regardless of how you choose to publish your article, the journal will apply the same peer review criteria and acceptance standards.

For gold open access articles, permitted third party (re)use is defined by the following Creative Commons user licenses:

Creative Commons Attribution (CC BY)
Lets others distribute and copy the article, create extracts, abstracts, and other revised versions, adaptations or derivative works of or from an article (such as a translation), include in a collective work (such as an anthology), text or data mine the article, even for commercial purposes, as long as they credit the author(s), do not represent the author as endorsing their adaptation of the article, and do not modify the article in such a way as to damage the author's honor or reputation.

Creative Commons Attribution-NonCommercial-NoDerivs (CC BY-NC-ND)
For non-commercial purposes, lets others distribute and copy the article, and to include in a collective work (such as an anthology), as long as they credit the author(s) and provided they do not alter or modify the article.

The gold open access publication fee for this journal is USD 3550, excluding taxes. Learn more about Elsevier's pricing policy: https://www.elsevier.com/openaccesspricing.

Green open access
Authors can share their research in a variety of different ways and Elsevier has a number of green open access options available. We recommend authors see our open access page for further information. Authors can also self-archive their manuscripts immediately and enable public access from their institution's repository after an embargo period. This is the version that has been accepted for publication and which typically includes author-incorporated changes suggested during submission, peer review and in editor-author communications. Embargo period: For subscription articles, an appropriate amount of time is needed for journals to deliver value to subscribing customers before an article becomes freely available to the public. This is the embargo period and it begins from the date the article is formally published online in its final and fully citable form. Find out more.

This journal has an embargo period of 24 months.
**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 (usage and editing services)**
Please write your text in good English (American or British usage is accepted, but not a mixture of these). Authors who feel their English language manuscript may require editing to eliminate possible grammatical or spelling errors and to conform to correct scientific English may wish to use the English Language Editing service available from Elsevier's Author Services.

**Submission**

*Manuscript Submission*
The complete manuscript can be submitted via Editorial system (EVISE) at http://www.ees.elsevier.com/envpol, following all instructions exactly.

Complete manuscripts received via EVISE will be further evaluated by an Editor. **Authors are requested to choose an editor most appropriate to their research field during the submission process in the "Provide additional information tab" during the submission process.** This final evaluation will determine whether or not a manuscript will be sent out for review.

Submission to this journal proceeds totally online and you will be guided stepwise through the creation and uploading of your files. The system automatically converts source files to a single PDF file of the article, which is used in the peer-review process. Please note that even though manuscript source files are converted to PDF files at submission for the review process, these source files are needed for further processing after acceptance. All correspondence, including notification of the Editor's decision and requests for revision, takes place by e-mail.

**Revised Submission:** When you submit your revised manuscript, please ensure to remove all the old files pertaining to the original submission and make sure to have the "Revised Manuscript" under the manuscript category along with the respective figures/tables/\ highlights. Please note that authors have a maximum of 6 weeks to resubmit a revised manuscript, unless an extension is requested from the editor. The resubmission of previously rejected manuscripts is by invitation only.

**Referees**
Please submit, with the manuscript, the names, addresses and e-mail addresses of five potential referees who are well-qualified to review the manuscript, if they are asked to review it. Reviewers are asked to evaluate the originality, significance and technical quality of the work, as well as the clarity of the manuscript, and the relevance of the subject matter to the journal. The final decision for publication of all manuscripts is made by the Editor-in-Chief.

**PREPARATION**

**NEW SUBMISSIONS**
Submission to this journal proceeds totally online and you will be guided stepwise through the creation and uploading of your files. The system automatically converts your files to a single PDF file, which is used in the peer-review process.

As part of the Your Paper Your Way service, you may choose to submit your manuscript as a single file to be used in the refereeing process. This can be a PDF file or a Word document, in any format or layout that can be used by referees to evaluate your manuscript. It should contain high enough quality figures for refereeing. If you prefer to do so, you may still provide all or some of the source files at the initial submission. Please note that individual figure files larger than 10 MB must be uploaded separately.

**Line numbering:** Authors are requested to enter continuous line numbering in their manuscript text files before uploading their source files here which will prevent errors of line numbers getting embedded with the text while the PDF is built.

**Formatting requirements:** There are no strict formatting requirements but all manuscripts must contain the essential elements needed to convey your manuscript, for example Abstract, Keywords, Introduction, Materials and Methods, Results, Conclusions, Artwork and Tables with Captions.
If your article includes any Videos and/or other Supplementary material, this should be included in your initial submission for peer review purposes. Divide the article into clearly defined sections. Please ensure your paper has consecutive line numbering - this is an essential peer review requirement.

**Reference Formatting:** 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.


*Figures and tables embedded in text*  
Please ensure that any figures and tables included in the single file are placed at the end of the main text in the manuscript. If your article includes any Videos and/or other Supplementary material, this should be included in your initial submission for peer review purposes.

**Peer review**  
This journal operates a single blind review process. All contributions will be initially assessed by the editor for suitability for the journal. Papers deemed suitable are then typically sent to a minimum of one independent expert reviewer 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.](https://www.elsevier.com/locate/envpol)

**REVISED SUBMISSIONS**  
*Use of word processing software*  
Regardless of the file format of the original submission, at revision you must provide us with an editable file of the entire article. Keep the layout of the text as simple as possible. Most formatting codes will be removed and replaced on processing the article. The electronic text should be prepared in a way very similar to that of conventional manuscripts (see also the Guide to Publishing with Elsevier). See also the section on Electronic artwork.  
To avoid unnecessary errors you are strongly advised to use the 'spell-check' and 'grammar-check' functions of your word processor.

*Cover Letter*  
A cover letter must be sent with the manuscript and must include:

- The novelty, scientific significance and importance of the manuscript.
- The names and valid, current e-mail addresses[institutional email addresses ONLY] for five (5) potential reviewers who are well-qualified to review the manuscript if they are asked to review it. Potential reviewers should be from the international scientific community and not from one country or region.
- The name and e-mail address [institutional email addresses ONLY ] of the corresponding author.

**Article structure**  
*Subdivision - unnumbered heads*  
Divide your article into clearly defined sections. Each subsection is given a brief heading. Each heading should appear on its own separate line. Subsections should be used as much as possible when cross-referencing text: refer to the subsection by heading as opposed to simply "the text".

*Introduction*  
State the objectives of the work and provide an adequate background, avoiding a detailed literature survey or a summary of the results.

*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.
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 in a short Conclusions section, which may stand alone or form a subsection of a Discussion or Results and Discussion section.

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. 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. **Authors are requested to provide only institutional email addresses.**
- **Corresponding author.** Clearly indicate who will handle correspondence at all stages of refereeing and publication, also post-publication. **Environmental Pollution discourages multiple corresponding authors.** 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 mandatory for this journal as they help 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
A concise and factual abstract is required. *(maximum length 300 words).*

The abstract should state briefly the purpose of the research, the principal results and major conclusions. An abstract is often presented separately from the article, so it must be able to stand alone. For this reason, References should be avoided, but if essential, then cite the author(s) and year(s). Also, non-standard or uncommon abbreviations should be avoided, but if essential they must be defined at their first mention in the abstract itself.

Graphical abstract
A Graphical abstract is mandatory for this journal. It should summarize the contents of the article in a concise, pictorial form designed to capture the attention of a wide readership online. Authors must provide images that clearly represent the work described in the article. 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. See https://www.elsevier.com/graphicalabstracts for examples. Authors can make use of Elsevier's Illustration and Enhancement service to ensure the best presentation of their images also in accordance with all technical requirements: Illustration Service.
Keywords

Keywords: Immediately after the abstract, provide a maximum of 5 keywords, 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. Note that these keywords will be used for indexing purposes.

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, yyyy]; 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.

Units

Units and symbols: The SI system should be used for all scientific and laboratory data: if in certain instance, it is necessary to quote other units, these should be added in parentheses. Temperatures should be given in degrees Celsius.

Footnotes

Footnotes should be used sparingly. Number them consecutively throughout the article. Many word processors build footnotes into the text, and this feature may be used. Should this not be the case, indicate the position of footnotes in the text and present the footnotes themselves separately at the end of the article.

Electronic artwork

General points

• Make sure you use uniform lettering and sizing of your original artwork.
• Preferred fonts: Arial (or Helvetica), Times New Roman (or Times), Symbol, Courier.
• Number the illustrations according to their sequence in the text.
• Use a logical naming convention for your artwork files.
• Indicate per figure if it is a single, 1.5 or 2-column fitting image.
• For Word submissions only, you may still provide figures and their captions, and tables within a single file at the revision stage.
• Please note that individual figure files larger than 10 MB must be provided in separate source files.

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

Formats

Regardless of the application used, 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 the font or save the text as 'graphics'.
TIFF (or JPG): Color or grayscale photographs (halftones): always use a minimum of 300 dpi.
TIFF (or JPG): Bitmapped line drawings: use a minimum of 1000 dpi.
TIFF (or JPG): Combinations bitmapped line/half-tone (color or grayscale): a minimum of 500 dpi is required.

Please do not:

• Supply files that are optimized for screen use (e.g., GIF, BMP, PICT, WPG); the resolution is too low.
• 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. 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.

**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.
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/environmental-pollution

When preparing your manuscript, you will then be able to select this style using the Mendeley plug-ins for Microsoft Word or LibreOffice.

Reference formatting

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 article number or 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 examples:

Reference style

Name and year style in the text

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.

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. Note that any (consistent) reference style and format may be used: the Publisher will ensure that the correct style for this journal will be introduced for the proof stages, the final print version and the PDF files for electronic distribution.

Examples:
Reference to a journal publication:

Reference to a book:

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.

**Submission checklist**

The following list will be useful during the final checking of an article prior to sending it to the journal for review. Please consult this Guide for Authors for further details of any item.

**Ensure that the following items are present:**
- Please check continuous line numbers 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, and contain:
  - Keywords
  - All figure captions
  - All tables (including title, description, footnotes)
- 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)
- Printed version of figures (if applicable) in color or black-and-white
  - Indicate clearly whether or not color or black-and-white in print is required.

For any further information please visit our customer support site at https://service.elsevier.com.

**AFTER ACCEPTANCE**

**Online proof correction**

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.

**Additional information**

**Language editing**
Information on author-paid and pre-accept language editing services available to authors can be found at [http://authors.elsevier.com/LanguageEditing.html](http://authors.elsevier.com/LanguageEditing.html).

**Online Publication**
Your article will appear on Elsevier's online journal database ScienceDirect as an "Article in Press" within approximately 4-6 weeks of acceptance. Articles in Press for this journal can be viewed at [http://www.sciencedirect.com/science/journal/02697491](http://www.sciencedirect.com/science/journal/02697491). An Article in Press may be cited prior to its publication by means of its unique digital object identifier (DOI) number, which does not change throughout the publication process.

**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