DESCRIPTION

*Medical Dosimetry*, the official journal of the American Association of Medical Dosimetrists, is the key source of information on new developments for the medical dosimetrist. Practical and comprehensive in coverage, the journal features original contributions and review articles by medical dosimetrists, oncologists, physicists, and radiation therapy technologists on clinical applications and techniques of **external beam**, **interstitial**, **intracavitary** and **intraluminal irradiation** in cancer management. Articles dealing primarily with physics will be reviewed by a specially appointed team of experts in the field.

Visit the American Association of Medical Dosimetrists Website at: [http://www.medicaldosimetry.org](http://www.medicaldosimetry.org)

AUDIENCE

Medical Dosimetrists, Radiation Oncologists, Clinicians.

IMPACT FACTOR

2018: 1.123 © Clarivate Analytics Journal Citation Reports 2019

ABSTRACTING AND INDEXING

- PubMed/Medline
- Applied Health Physics Abstracts
- Current Contents
- Embase
- Science Citation Index Expanded
- Elsevier BIOBASE
- Science Citation Index
- Scopus
EDITORIAL BOARD

Editor-in-Chief
Cory J. Neill, MS, CMD, RT(R)(T), Carson-Tahoe Radiation Oncology Carson City, NV

Associate Editors
George S. Arnould, M.S. C.M.D., University of Michigan, Ann Arbor, MI
Lee Hales, B.Sc., CMD, Roswell Park Cancer Institute Buffalo, NY
James P. Bell, M.S., CMD, UT Southwestern Harold C. Simmons Cancer Center, Dallas, TX
Mary Z. Hare, University of Rochester James P. Wilmot Cancer Center, Dept. of Radiation Oncology, Rochester, NY
Yusung Kim, University of Iowa, Iowa City, IA
Grayden MacLennan, MBA, MSM, MS, CMD, Seattle Cancer Care Alliance Proton Therapy Center, Seattle, WA
Donna Powell, Temple Health, Philadelphia, PA
Timothy A. Ritter, Veterans Affairs Ann Arbor Healthcare System, Ann Arbor, MI
Robert Rodgers, Rhode Island Hospital, Providence, RI
Yi Rong, Ph.D., Ohio State University Medical Center, Columbus, OH

DJR Editors
Grayden MacLennan
Bert Wood

DJR Advisory Editors
Laura Brady
Valerie Radice
Laurie Wheelington

DJR Committee Members
Greg Ouellette
Rejina Alam
Terri Ashley
Jeanine Turner

DJR Advisors
Janice Jensen
Mary Jo Repasky, CMD
Carol Ann Schneider

Physics Advisory Editors
Hungcheng (Hank) Chen, Christiana Care Hospital, Newark, DE
Chuxiong Ding, University of Texas Southwestern Medical Center, Dallas, TX
Jian-Yue Jin, Henry Ford Hospital System, Detroit, MI
Krishna V. Komanduri, Cancer Treatment Services International, Wexford, PA
Dante E. Roa, PhD, University of California, Orange, CA
Narayan Sahoo, MD Anderson Cancer Center, Houston, TX
Cheng B. Saw, Senior Physics Reviewer, Northeast Radiation Oncology Centers, Dunmore, PA
Stephen Sawchuk, PhD, London Regional Cancer Program, London, ON, Canada
Anil Sethi, Loyola University Medical Center, Maywood, IL
Shidong Tong, Inova Alexandria Cancer Center, Alexandria, VA
Poonam Yadav, University of Wisconsin, Madison, WI
Chunli (Claus) Yang, University of Mississippi Medical Center, Jackson, MS
Ching-Chong, Jack Yang, PhD, Monmouth Medical Center, Long Branch, NJ
INTRODUCTION

Aims and Scope
Medical Dosimetry aims to publish articles that will enhance the overall knowledge of the medical dosimetrist. Articles are published from the point of view not only of dosimetrists, but also of medical physicists, radiation oncologists, radiologic technologists, and other specialists. Therefore, submissions to Medical Dosimetry must concern subject matter relevant to the common field of medical dosimetry. Content should add to or improve the working knowledge of a medical dosimetrist or to the field of radiation oncology in general. Articles that do not meet these requirements will be deemed out of scope and returned without review.

Maintenance of Profile

It is the responsibility of the Author to assure all contact and personal information is current in his/her user profile. Medical Dosimetry will not assume responsibility for obtaining updated contact information for any Author. Manuscripts for which the listed Corresponding Author’s information is invalid will be automatically assigned a status of "withdrawn." Failure to maintain user profiles may result in rejection of the manuscript, even after an acceptance has been issued, when a communication pathway for correspondence with the journal is required and determined by the Editor-in-Chief to be unavailable.

Category of Articles


It is recognized that radiation oncology is a specialty that uniquely integrates different professional aspects. As such, it is natural that many manuscripts will incorporate elements of each of the former categories. Therefore, the Corresponding Author should identify the predominant theme of the manuscript and submit it under that category.

Dosimetry Contribution: The theme of an article submitted as a Dosimetry Contribution should indicate how theory is translated into practical implementation for use by the medical dosimetrist. Examples: use of treatment planning involved in the research process how new technology can be incorporated into practical treatment delivery or planning implementation and use of new techniques

Medical Physics Contribution: The theme of an article submitted as a Medical Physics Contribution should predominantly address radiation oncology related physics theory, quality assurance, and/or subject matter that pertains to the function of a medical physicist working in radiation oncology.

Examples: machine or beam characteristics algorithm development or their implementation analysis of models (physical or biological) quality assurance mechanics, control practices, or techniques

Clinical Radiation Oncology Contribution: The theme of an article submitted as a Clinical Contribution should predominantly address how a class of patients responds to a particular treatment or technique.
Examples: use of tumor dose limits for better tumor treatment biological motivation or changes in outcomes due to the use of new treatment or simulation approaches dose-related response characteristics

Article Type Submissions

2. Article Type Submissions may be in the form of a (a) Research Article, (b) Review Article, (c) Case Study, (d) Technical Note, (e) Didactic Note, or (f) Letter to the Editor. For length estimation, a rule of thumb is to divide the double-spaced manuscript text by 3 and the number of figures/tables by 4 to estimate the total count of resulting printed pages.

a) A Research Article is a report of original experimental or theoretical research. Authors should keep in mind that attention to clarity and conciseness facilitates the review process and also the impact of the published article. Limit: 10 journal pages.
b) A **Review Article** is an authoritative review of a subject important to the field of radiation oncology. It may be either invited or proffered. In either case, the review process will be employed. Limit: 10 journal pages.

c) A **Case Study** is a concise description of a technique, procedure, clinical implementation, or clinical patient-related complication of relevance to the practice of medical dosimetry. Appropriate for this article type are "tricks-of-the-trade," helpful hints to solve a specific problem, or "how-to's" on application to clinical practice. Limit: 3 journal pages.

d) A **Technical Note** is a brief description of a specific new development, procedure, or use of a device that offers a solution to a current specific problem and has sufficient relevance to be useful to many readers of Medical Dosimetry. Limit: 3 journal pages.

e) A **Didactic Note** is a short explanation of technical or clinical concepts that are specifically relevant to the practice and understanding of medical dosimetry. The Didactic Note may still present some newly measured data or a new derivation of some kind, but this must be done with pedagogic purpose in mind. These submissions should contain a brief introduction that explains why clarification of the topic is necessary. Limit: 4 journal pages.

f) A **Letter to the Editor** is a brief response to a published article of general interest to readers. It may be either invited or proffered. Letter must reference Medical Dosimetry articles no older than two issues from the last published volume. Limit: 1 journal page.

**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 competing interests include employment, consultancies, stock ownership, honoraria, paid expert testimony, patent applications/registrations, and grants or other funding. Authors must disclose any interests in two places: 1. A summary declaration of interest statement in the title page file (if double-blind) or the manuscript file (if single-blind). If there are no interests to declare then please state this: ‘Declarations of interest: none’. This summary statement will be ultimately published if the article is accepted. 2. Detailed disclosures as part of a separate Declaration of Interest form, which forms part of the journal's official records. It is important for potential interests to be declared in both places and that the information matches. More information.

*Prior to Publication*

The submission of a manuscript with the exact same words or general premises as that of another published article is plagiarism. Authors do not have the right under any circumstances to try to double-publish any information or phrasing whatsoever in an article submitted to Medical Dosimetry. Although it is rare, such acts have been identified within the journal on different levels. The most common motive behind these types of publications involves academic advancement by increasing their professional productivity (Benos DJ, Fabres J, Farmer J, et al. Ethics and scientific publication. Advan Physiol Edu 2005;29:59-74). Authors are strongly recommended to review the types of plagiarism below, to become familiar with unacceptable practice histories, in order to avoid actions taken by the journal or through copyright litigation from other authors or researchers.

Often, plagiarism is identified on a minor level where the occurrence is when the authors were found to plagiarize words from their own prior published works. Regardless of whether or not the two articles are from the same author(s), it is an unacceptable practice occurrence. Plagiarism also comes in the form of inadequate referencing or quoting the conclusions of published papers without a link to authorship. This is a more common situation. However, it is a more serious problem for the author, because it involves other authors with copyright protected publications already in press. From this standpoint, the issue is less of a conflict professionally if it is caught during the review or editing process, because it would not have been published yet. Given the possibility of an article submission to take on a form of redundancy (repetitive ideas of the same author), duplication (double-publishing) or plagiarism (copying), such instances may result in swift and direct action, possibly prohibition from further submissions to the Journal altogether.
Medical Dosimetry and the AAMD do not tolerate plagiarism or any misrepresentation of original work. Authors found in violation of this position will be barred from further submissions to the Journal. This is a risk for not only the Corresponding Author, but to all other Co-authors on the identified manuscript as well.

**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.

**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').

**Authorship**
All authors should have made substantial contributions to all of the following: (1) the conception and design of the study, or acquisition of data, or analysis and interpretation of data, (2) drafting the article or revising it critically for important intellectual content, (3) final approval of the version to be submitted.

Rights of Co-Authors

Even though persons may have been a part of a research endeavor, they may not attest to the data being transmitted into the scientific mainstream with their name attached to it. Conversely, if the researcher was a major part of the work conducted, there should be consideration to include them as an author of the manuscript or in the Acknowledgements section. These two possibilities are to be decided upon by the Corresponding Author, who is solely responsible for every component of the manuscript submitted. The Journal does not endorse or protect authors from failure to comply with copyright laws or litigation related to publication and research credit.

The Corresponding Author shall always provide ample time for Co-authors to discuss and edit the manuscript both prior to initial submission, after every revision required, and throughout publication production processes. It is recommended that complete communication be provided to each co-author. This includes updates on submission review status and comments from the Associate Editor and/or Reviewers.

All correspondence is to be carried solely by the Corresponding Author. The Corresponding Author is responsible for ensuring that all individuals included as Co-authors have: (1) made substantial contributions to conception and design, and/or acquisition of data, and/or analysis, and/or interpretation of data; (2) drafted the article and/or revised it critically for important intellectual content, and (3) given final approval of the version to be published. All Co-authors should meet conditions (1), (2) and (3). The Corresponding Author is also responsible for ensuring that no legitimate Co-authors have been omitted. For submissions where the first author of a paper is a student or fellow, the Corresponding Author should be an experienced scientist with supervisory responsibilities.

The Corresponding Author is responsible for ensuring that the manuscript is written in clear English. For a list of companies that can offer language editing services, please see https://www.elsevier.com/languag-polishing. If English is not the first language of the Corresponding Author, he or she should...
seek help from a colleague for whom English is the first language to review and edit the paper before its initial submission. Articles that do not strictly adhere to the submission guidelines and format will be returned without review.

The word "significant" should be used in a manuscript only in a statistical context and should be accompanied by the results of a statistical analysis. It should not be used as a modifying adjective. As specified below, for specific article types, it may be necessary to explain the use of statistics in more detail than usual.

**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.

**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.

After acceptance, open access papers will be published under a noncommercial license. For authors requiring a commercial CC BY license, you can apply after your manuscript is accepted for publication.

**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-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 2500, 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 12 months.

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
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.

Submit your article

When a revision is called for, Corresponding Authors will have three (3) months within which to submit their revision. If a revision is not submitted, the submission will be archived and rejected without further processing. For all revisions, the manuscript will be assigned a new manuscript number and considered as a new submission to the Journal. It is likely that the same Associate Editor and Reviewers will handle the revision(s).

PREPARATION
Style: Authors are expected to follow the conventional writing, notation, and illustration style prescribed in the American Institute of Physics (AIP) Style Manual. A free copy is available by clicking on the link provided (http://www.aip.org/pubservs/style/4thed/toc.html). Authors are encouraged to gain familiarization with the journal's form and style by reviewing recent issues of Medical Dosimetry. The order of information should be provided as follows: title with the first word capitalized, authors' names, authors' affiliations, abstract, text, acknowledgments, appendixes (if necessary), collected references in the order in which they are cited, tables each with a caption, collected figure captions, and figures. Some additional highlights are summarized below.

Manuscripts are normally reviewed by an Associate Editor and by one or more independent Reviewers chosen by the Associate Editor. Upon submission, the Editor-in-Chief and/or Associate Editor will determine whether the topic is relevant and should proceed through the review process. The Associate Editor will determine whether the article is appropriate for the category as stated by the Corresponding Author. The article may be rejected at this point or returned to the Corresponding Author with suggestions on how it would be more appropriate for a category and type. Reviewer comments are requested to be both general and specific. It is important for the Corresponding Author to respond to each specific comment or suggestion in an itemized fashion after apprising all Co-authors of the communications from the journal office.

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 word processing software
It is important that the file be saved in the native format of the word processor 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 word processor's options to justify text or to hyphenate words. However, do use bold face, italics, subscripts, superscripts etc. 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). Note that source files of figures, tables and text graphics will be required whether or not you embed your figures in the text. 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.

Article structure
Subdivision - unnumbered sections
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.

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.** Where the family name may be ambiguous (e.g., a double name), please indicate this clearly. 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. Ensure that phone numbers (with country and area code) are provided in addition to the e-mail address and the complete postal address. Contact details must be 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.

Structured abstract
A structured abstract, by means of appropriate headings, should provide the context or background for the research and should state its purpose, basic procedures (selection of study subjects or laboratory animals, observational and analytical methods), main findings (giving specific effect sizes and their statistical significance, if possible), and principal conclusions. It should emphasize new and important aspects of the study or observations.

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.

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
Follow internationally accepted rules and conventions: use the international system of units (SI). If other units are mentioned, please give their equivalent in SI.

Math formulae
Please submit math equations as editable text and not as images. Present simple formulae in line with normal text where possible and use the solidus (/) instead of a horizontal line for small fractional terms, e.g., X/Y. In principle, variables are to be presented in italics. Powers of e are often more conveniently denoted by exp. Number consecutively any equations that have to be displayed separately from the text (if referred to explicitly in the text).

Embedded math equations
If you are submitting an article prepared with Microsoft Word containing embedded math equations then please read this (related support information).

Footnotes
Footnotes should be used sparingly. Number them consecutively throughout the article. Many word processors can build footnotes into the text, and this feature may be used. Otherwise, please indicate the position of footnotes in the text and list the footnotes themselves separately at the end of the article. Do not include footnotes in the Reference list.

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.
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.
Illustration services

Elsevier's Author Services offers Illustration Services to authors preparing to submit a manuscript but concerned about the quality of the images accompanying their article. Elsevier's expert illustrators can produce scientific, technical and medical-style images, as well as a full range of charts, tables and graphs. Image 'polishing' is also available, where our illustrators take your image(s) and improve them to a professional standard. Please visit the website to find out more.

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.

Tables: Extensive numerical material should be presented in tables rather than in the body of the text. Each table must have a caption that makes the data in the table intelligible without reference to the text. Complicated column headings should be avoided, but symbols used in the tables should be in the caption. Long tables should be avoided if possible. Footnotes to tables should be indicated by lower case letters in the following order: *, †, ‡, #, ||, §, **. Tables should not include extensive detail that could be included in the main manuscript. Tables should be numbered using Arabic numerals starting from 1.

References

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 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:

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

**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.

**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:**
One author has been designated as the corresponding author with contact details:
- E-mail address
- Full postal address
- Phone numbers
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'
- References are in the correct format for this journal
- All references mentioned in the Reference list are cited in the text, and vice versa
- If the paper was presented at a meeting, the name of the organization, place, and date of the meeting should be listed.
- Permission has been obtained for use of copyrighted material from other sources (including the Web)
- Color figures are clearly marked as being intended for color reproduction on the Web (free of charge) and in print, or to be reproduced in color on the Web (free of charge) and in black-and-white in print
- If only color on the Web is required, black-and-white versions of the figures are also supplied for printing purposes
- Manuscript has been blinded to authors' identity.
For any further information please visit our customer support site at https://service.elsevier.com.

**Permissions**
If a table or figure has been previously published, the manuscript should include a credit line and the Corresponding Author should include a permission letter from the original publisher.

**AFTER ACCEPTANCE**

**Proofs**
One set of page proofs (as PDF files) will be sent by e-mail to the corresponding author (if we do not have an e-mail address then paper proofs will be sent by post) or, a link will be provided in the e-mail so that authors can download the files themselves. Elsevier now provides authors with PDF proofs which can be annotated; for this you will need to download the free Adobe Reader, version 9 (or higher). Instructions on how to annotate PDF files will accompany the proofs (also given online). The exact system requirements are given at the Adobe site.
If you do not wish to use the PDF annotations function, you may list the corrections (including replies to the Query Form) and return them to Elsevier in an e-mail. Please list your corrections quoting line number. If, for any reason, this is not possible, then mark the corrections and any other comments (including replies to the Query Form) on a printout of your proof and scan the pages and return via e-mail. 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. We will do everything possible to get your
article published quickly and accurately. 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 25 free paper offprints, or alternatively 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 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.