Clinical Radiology is published by Elsevier on behalf of The Royal College of Radiologists. Clinical Radiology is an International Journal bringing you original research, editorials and review articles on all aspects of diagnostic imaging, including:

- Computed tomography
- Magnetic resonance imaging
- Ultrasonography
- Digital radiology
- Interventional radiology
- Radiography
- Nuclear medicine

Papers on radiological protection, quality assurance, audit in radiology and matters relating to radiological training and education are also included. In addition, each issue contains correspondence, book reviews and notices of forthcoming events.

IMPACT FACTOR

2018: 2.082 © Clarivate Analytics Journal Citation Reports 2019
ABSTRACTING AND INDEXING

Scopus
Biological Abstracts
Chemical Abstracts
Elsevier BIOBASE
Current Contents - Clinical Medicine
Embase
Nuclear Science Abstracts
Research Alert
Science Citation Index
Social Sciences Citation Index
CINAHL
Sociedad Iberoamericana de Informacion Cientifica (SIIC) Data Bases
PubMed/Medline

EDITORIAL BOARD

Editor-in-Chief
M. Weston, Leeds, United Kingdom

Deputy Editors
J. Cox, Sunderland, UK
A. Rajesh, Leicester, United Kingdom
A. Shaw, Cambridge, United Kingdom

Advisory Editors: Breast
J. Cox, Sunderland, UK
R. Given-Wilson, London, United Kingdom
J. Litherland, Glasgow, United Kingdom
S. Lowes, Gateshead, United Kingdom
I. Lyburn, Cheltenham, United Kingdom
A. Malhotra, London, United Kingdom
A. Maxwell, Manchester, United Kingdom
N. Sharma, Leeds, United Kingdom

Advisory Editors: Cardiac/Inc. interventional
A. Awwad, Nottingham, United Kingdom
R. Rajani, London, United Kingdom
G. Roditi, Glasgow, United Kingdom
C. Roobottom, Plymouth, United Kingdom
I. Vlahos, London, United Kingdom
M. Williams, Edinburgh, Scotland, UK

Advisory Editors: ENT/Maxillofacial
A. Ahuja, New Territories, Hong Kong
K. Bhatia, London, United Kingdom
G. Madani, London, United Kingdom
C. Offiah, London, United Kingdom
S. Vaid, Pune, India

Advisory Editors: Gastrointestinal (inc. interventional)
J. Burn, London, UK
D. Eason, Inverness, United Kingdom
A. Lim, London, United Kingdom
K. Planche, London, United Kingdom
R. Sinha, Warwick, UK
J. Stephenson, Leicester, UK
R. Verma, Leicester, United Kingdom

Advisory Editors: Guidelines, Educational and Manpower
R. Proctor, Lancaster, United Kingdom
S. Shamshuddin, Lancaster, United Kingdom
Advisory Editors: Musculoskeletal
S. Babar, London, United Kingdom
W. Bhatti, Manchester, United Kingdom
R. Botchu, Birmingham, United Kingdom
R. Chowdhury, Oxford, United Kingdom
R. Johnson, Oxford, United Kingdom
S. Shamshuddin, Lancaster, United Kingdom
P. Wilson, Belfast, United Kingdom
N. Winn, Oswestry, United Kingdom

Advisory Editors: Neurological
J. Domjan, Portsmouth, United Kingdom
L. McGavin, Plymouth, United Kingdom
D. Minks, Newcastle Upon Tyne, United Kingdom
M. Radon, Sheffield, United Kingdom
S. Stivaros, Manchester, United Kingdom

Advisory Editors: Oncological Radiology (inc. interventional)
A. Lim, London, United Kingdom
A. Malhotra, London, United Kingdom
A. Rajesh, Leicester, United Kingdom
B. Taylor, Manchester, United Kingdom

Advisory Editors: Paediatric
O. Arthurs, London, United Kingdom
S. Chakraborty, Oxford, United Kingdom
S. Shelmerdin, London, United Kingdom
N. Wright, Manchester, United Kingdom

Advisory Editors: Pancreatic/Hepato-biliary (inc. interventional)
R. Albazaz, Leeds, United Kingdom
E.M. Anderson, Oxford, United Kingdom
H. Bungay, Oxford, United Kingdom

Advisory Editors: Radiology Systems/PACS
C. Cash, London, United Kingdom
S. Shamshuddin, Lancaster, United Kingdom

Advisory Editors: Radionuclide Radiology/PET
R. Graham, Bath, United Kingdom
V. Prakash, Ashford, United Kingdom
A. Scarsbrook, Leeds, United Kingdom

Advisory Editors: Thoracic
A. Awwad, Nottingham, United Kingdom
C. Cash, London, United Kingdom
S. Copley, London, United Kingdom
B. Hudson, Bath, United Kingdom
A Nair, London, United Kingdom
G. Robinson, Bath, United Kingdom
N. Screaton, Cambridge, United Kingdom
A. Swift, Sheffield, United Kingdom
I. Vlahos, London, United Kingdom

Advisory Editors: Uro-Genital (inc. interventional)
M. Balogun, Birmingham, United Kingdom
T. Barrett, Cambridge, United Kingdom
J. Belfield, Liverpool, United Kingdom
V. Duddalwar, Los Angeles, United States
D. Maudgil, Slough, UK
M. Robinson, Cardiff, United Kingdom
B. Taylor, Manchester, United Kingdom
R. Wiles, Liverpool, United Kingdom

Advisory Editors: Vascular (inc. interventional)
A. Awwad, Nottingham, United Kingdom
S.B. Babu, Singapore, Singapore
S. Chandramohan, Singapore
J. Cox, Sunderland, UK
R. Kasthuri, Glasgow, United Kingdom
G. Roditi, Glasgow, United Kingdom
R. Uberoi, Oxford, United Kingdom

Trainee AE
R. Frood, Leeds, United Kingdom
N. Parvizi, Oxford, United Kingdom

Editorial Office
Clinical Radiology Editorial Office, 21 Lion Close, Overton, Hampshire, RG25 3HL, UK
INTRODUCTION

Clinical Radiology is published under the auspices of The Royal College of Radiologists which appoints the Editor who selects all material for publication. No responsibility is accepted by The Royal College of Radiologists or the Editor for opinions expressed by the contributors. The instructions below accord with the Uniform Requirements for Manuscripts Submitted to Biomedical Journals (http://www.icmje.org/). The journal supports the guidelines published by the Committee on Publication Ethics and the recommendations of the Standards for Reporting of Diagnostic Accuracy steering group and requires that authors do the same. The guidelines can be found at http://www.publicationethics.org.uk and http://www.stard-statement.org/ respectively. The right is reserved to introduce any changes necessary to make contributions conform to the editorial standards and format of the journal. Original manuscripts will be accepted only on the understanding that they have been submitted exclusively to Clinical Radiology.

All papers accepted for publication in Clinical Radiology will appear on our online platforms. The Editor in Chief will decide which accepted papers will appear in the print version of the Journal.

Types of submission

Clinical Radiology invites submission of the following:

Original Papers should be no more than 4,000 words in length, and should contain no more than 10 illustrations (single frames), which will be printed at single column width.

Technical Reports should be no more than 2,000 words in length.

Review Articles* should not exceed 5,000 words and should include no more than 10 illustrations, which will be printed no larger than the width of a single column of text.

Pictorial Reviews* should not exceed 2,500 words and should include no more than 20 illustrations (single frame) which will be published at single column width.

Letters to the Editor concerning papers published in the journal, and other points of interest to readers, are welcomed by the Editor and are published at the Editor's discretion. All text should be double-spaced.

* To avoid duplicating review articles and pictorial reviews please contact the editorial office (crad@editorialoffice.co.uk) if you are planning to write a review article for Clinical Radiology. Please include a short précis (100 words or less) describing the intended review and any novel aspects. Specify how many figures you will intend to include, referring to the instructions for authors for current requirements. Please note that a favourable response does not mean that the Journal has commissioned the review, simply that there is no clash with other papers in the pipeline. Submitted reviews are subject to peer review and publication is not guaranteed.

Additional illustrations: Illustrations in excess of the numbers specified above, including video clips, may be included in the online version of the paper at the discretion of the Editor. This will only be considered if the additional material clearly adds value for readers of the paper, and the author will be responsible for identifying which key images he or she wishes to appear in the paper version. Despite the availability of this facility, the uncritical inclusion of large number of illustrations should be avoided, as it may reduce the likelihood of acceptance.

Contact Details

If you have any queries, contact Clinical Radiology, Editorial Office, 21 Lion Cose, Overton, Hampshire, RG25 3HL.
Tel: +44 (0)845 834 0370; Fax: 044 (0)1256 771303; Email: crad@editorialoffice.co.uk

Submission checklist

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

Ensure that the following items are present:

One author has been designated as the corresponding author with contact details:
• E-mail address
• Full postal address
All necessary files have been uploaded:

**Manuscript:**
- Include keywords
- All figures (include relevant captions)
- All tables (including titles, description, footnotes)
- Ensure all figure and table citations in the text match the files provided
- Indicate clearly if color should be used for any figures in print

**Graphical Abstracts / Highlights files** (where applicable)

**Supplemental files** (where applicable)

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

For further information, visit our Support Center.

**BEFORE YOU BEGIN**

**Ethics in publishing**
Please see our information pages on [Ethics in publishing](https://www.elsevier.com/locate/crad) and [Ethical guidelines for journal publication](https://www.elsevier.com/locate/crad).

**Studies in humans and animals**
If the work involves the use of human subjects, the author should ensure that the work described has been carried out in accordance with [The Code of Ethics of the World Medical Association (Declaration of Helsinki)](https://www.elsevier.com/locate/crad) for experiments involving humans. The manuscript should be in line with the [Recommendations for the Conduct, Reporting, Editing and Publication of Scholarly Work in Medical Journals](https://www.elsevier.com/locate/crad) and aim for the inclusion of representative human populations (sex, age and ethnicity) as per those recommendations. The terms sex and gender should be used correctly.

Authors should include a statement in the manuscript that informed consent was obtained for experimentation with human subjects. The privacy rights of human subjects must always be observed.

All animal experiments should comply with the [ARRIVE guidelines](https://www.elsevier.com/locate/crad) and should be carried out in accordance with the U.K. Animals (Scientific Procedures) Act, 1986 and associated guidelines, [EU Directive 2010/63/EU for animal experiments](https://www.elsevier.com/locate/crad), or the National Institutes of Health guide for the care and use of Laboratory animals (NIH Publications No. 8023, revised 1978) and the authors should clearly indicate in the manuscript that such guidelines have been followed. The sex of animals must be indicated, and where appropriate, the influence (or association) of sex on the results of the study.

**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](https://www.elsevier.com/locate/crad).

**Submission declaration**
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.

**Author Contributions**

Authors are required to identify the contributions for which they are responsible. The author responsible for the integrity of the entire study should be identified. Please list the following phrases and beside each indicate the name(s) of the author(s) to whom they apply:

1. guarantor of integrity of the entire study
2. study concepts and design
3. literature research
4. clinical studies
5. experimental studies / data analysis
6. statistical analysis
7. manuscript preparation
8. manuscript editing

Items that do not apply should also be indicated with N/A. Where there is any uncertainty regarding authorship the editor of the study reserves the right to contact the guarantor of the study for further 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').

**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.

**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 2875, 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.
Informed consent and patient details

Studies on patients or volunteers require ethics committee approval and informed consent, which should be documented in the paper. Appropriate consents, permissions and releases must be obtained where an author wishes to include case details or other personal information or images of patients and any other individuals in an Elsevier publication. Written consents must be retained by the author but copies should not be provided to the journal. Only if specifically requested by the journal in exceptional circumstances (for example if a legal issue arises) the author must provide copies of the consents or evidence that such consents have been obtained. For more information, please review the Elsevier Policy on the Use of Images or Personal Information of Patients or other Individuals. Unless you have written permission from the patient (or, where applicable, the next of kin), the personal details of any patient included in any part of the article and in any supplementary materials (including all illustrations and videos) must be removed before submission.

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
Please submit your article via http://www.editorialmanager.com/crad/.

PREPARATION

Please add continuous line numbers to your main manuscript file.

Double-blind review

This journal uses double-blind review, which means the identities of the authors are concealed from the reviewers, and vice versa. More information is available on our website. To facilitate this, please include the following separately:

Title page (with author details): This should include the title, authors' names, affiliations, acknowledgements and any Declaration of Interest statement, and a complete address for the corresponding author including an e-mail address.

Blinded manuscript (no author details): The main body of the paper (including the references, figures, tables and any acknowledgements) should not include any identifying information, such as the authors' names or affiliations.

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.
Materials and Methods
Describe clearly the number and selection of the subjects studied (patients or experimental animals, including controls). For studies of the diagnostic accuracy of new imaging tests, authors should refer to the STARD recommendations (http://www.stard-statement.org). Identify the methods, instrumentation (manufacturer’s name and address in parentheses), and procedures in sufficient detail to allow other workers to reproduce the results. Give references to established methods, including statistical methods that have been published but are not well known; describe new or substantially modified methods and give reasons for using these techniques. Detailed statistical analyses, mathematical derivations and similar should be presented in one or more appendices.

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.

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

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. 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.

Units and Abbreviations
Radiation measurements and laboratory values should be given in the International System of Units (SI) (see: SI Units in Radiation Protection and Measurements. NCRP Report no. 82 [August 1985]). Abbreviations should be used sparingly and only when the term appears more than 10 times in the following text. Abbreviations should be spelled out when first used in the text such as 'cerebrospinal fluid (CSF)'. Laboratory slang, clinical jargon, and uncommon abbreviations should be avoided.
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.

Artwork
Image manipulation
Whilst it is accepted that authors sometimes need to manipulate images for clarity, manipulation for purposes of deception or fraud will be seen as scientific ethical abuse and will be dealt with accordingly. For graphical images, this journal is applying the following policy: no specific feature within an image may be enhanced, obscured, moved, removed, or introduced. Adjustments of brightness, contrast, or color balance are acceptable if and as long as they do not obscure or eliminate any information present in the original. Nonlinear adjustments (e.g. changes to gamma settings) must be disclosed in the figure legend.

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

A detailed guide on electronic artwork is available.

You are urged to visit this site; some excerpts from the detailed information are given here.
Formats
If your electronic artwork is created in a Microsoft Office application (Word, PowerPoint, Excel) then please supply 'as is' in the native document format.
Regardless of the application used other than Microsoft Office, when your electronic artwork is finalized, please 'Save as' or convert the images to one of the following formats (note the resolution requirements for line drawings, halftones, and line/halftone combinations given below):
EPS (or PDF): Vector drawings, embed all used fonts.
TIFF (or JPEG): Color or grayscale photographs (halftones), keep to a minimum of 300 dpi.
TIFF (or JPEG): Bitmapped (pure black & white pixels) line drawings, keep to a minimum of 1000 dpi.
TIFF (or JPEG): Combinations bitmapped line/half-tone (color or grayscale), keep to a minimum of 500 dpi.

Please do not:
• Supply files that are optimized for screen use (e.g., GIF, BMP, PICT, WPG); these typically have a low number of pixels and limited set of colors;
• Supply files that are too low in resolution;
• Submit graphics that are disproportionately large for the content.
Color artwork
Please make sure that artwork files are in an acceptable format (TIFF (or JPEG), EPS (or PDF) or MS Office files) and with the correct resolution. If, together with your accepted article, you submit usable color figures then Elsevier will ensure, at no additional charge, that these figures will appear in color online (e.g., ScienceDirect and other sites) in addition to color reproduction in print. 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
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
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 style

Number references consecutively in the order in which they are first mentioned. The abbreviations used for periodicals cited in the references should follow the following style:

For journal articles, list surnames and initials of all authors when six or less, such as:

When seven or more authors are listed, only the first three names need to be identified, followed by 'et al'.

Abstracts, editorials and letters to the Editor should be noted as such. In the case of books, the authors of a chapter, title of the chapter, editor(s), title of the book, edition, city, publisher, year, and specific pages must be provided:

A reference to any website containing background information should list the authors and title (if appropriate), the date it was accessed and the DOI if possible. At the very least, the URL of the website and the date it was accessed should be given.

Journal abbreviations source

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

Video

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

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.

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 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.

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