# Template for a Research article or a Methodology of the Progress in Earth and Planetary Science: an example

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## Abstract

A short, unstructured, single paragraph summary, no more than 350 words, of the major points raised, making evident the key work highlighted in the article. Minimize the use of abbreviations and do not cite references in the abstract.

### Keywords

Three to ten keywords representing the main content of the article. Keywords should be separated by a comma (,) and a space as shown in the following example.

Computational seismology, Crustal structure, Finite-difference method simulation, Lg wave, Regional wave, Sn wave, Wave propagation

If a keyword includes a comma, place a semicolon (;) and a space between keywords as below.

Computational seismology; Crustal structure; Lg wave; Red, white and blue; Regional wave; Sn wave; Wave propagation

## 1 Introduction

This should explain the background to the article, its aims, a summary of a search of the existing literature and the issue under discussion, and may also be broken into subsections with short, informative headings.

### 1.1 Subsection ABC

This is a subsection in Introduction section.

## 2 Methods/Experimental

The methods section should include the aim, design and setting of the study, the characteristics of participants or description of materials involved, a clear description of all processes and methodologies employed, and the type of statistical analysis used, to enable replication.

### 2.1 Subsection DEF

This is a subsection in Methods section.

## 3 Results

This should include the findings of the study including, if appropriate, results of statistical analysis which must be included either in the text or as tables and figures.

### 3.1 Subsection GHI

This is a subsection in Results section.

### 3.1.1 Sub-subsection JKL

### 3.1.2 Sub-subsection MNO

### 3.2 Subsection PQR

## 4 Discussion (can be combined in ‘Results and Discussion’ section)

For research articles this section should discuss the implications of the findings in context of existing researches and highlight limitations of the study. For methodology manuscripts this section should include a discussion of any practical or operational issues involved in performing the study and any issues not covered in other sections.

**4.1 Subsection STU**

This is a subsection in Discussion section.

## 5 Conclusions

This should state clearly the main conclusions and include a clear explanation of their relevance or importance to the field.

## Abbreviations

CMB: Core-mantle boundary; GOSAT: Greenhouse Gases Observing Satellite; JAXA: Japan Aerospace eXploration Agency; TRMM: Tropical rainfall measuring mission

## Declarations

### Availability of data and material

All manuscripts must include an ‘Availability of data and materials’ statement. It should include information on where to find data supporting the results reported in the article.

For example:

The dataset(s) supporting the conclusions of this article is(are) available in the [repository name] repository, [unique persistent 　　　 　identifier and hyperlink to dataset(s) in http:// format].

The dataset(s) supporting the conclusions of this article is(are) included within the　article (and its additional file(s)).

If it is not possible to share research data publicly:

Data sharing not applicable to this article as no datasets were generated or analysed during the current study. Please contact author for data requests.

If your manuscript does not contain any data:

'Not applicable'

More examples of template data availability statements　are available at:

<https://progearthplanetsci.springeropen.com/submission-guidelines/preparing-your-manuscript/research-article>

### Competing interests

The authors declare that they have no competing interest.

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HK was partly funded by ABC project (ABC-123-456).

### Authors' contributions

The individual contributions of authors to the manuscript should be specified in this section. The authors should be referred to by their initials.

MS proposed the topic, conceived and designed the study. HK carried out the experimental study. RT analyzed the data and helped in their interpretation. JM collaborated with the corresponding author in the construction of manuscript. All authors read and approved the final manuscript.

### Authors' information

You may choose to use this section to include any relevant information about the author(s) that may aid the reader's interpretation of the article, and understand the standpoint of the author(s). This may include details about the authors' qualifications, current positions they hold at institutions or societies, or any other relevant background information. Please refer to authors using their initials. Note this section should not be used to describe any competing interests.

### Acknowledgements

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### Endnotes

## References

Citations in the reference list should include all named authors, up to the first 30 before adding 'et al.'. The reference list should be ordered alphabetically, by lead author's last name.

Article within a journal (30 authors or less)

Smith J, Jones M Jr, Houghton L (1999) Future of health insurance. N Engl J Med 965:325-329

Article within a journal (more than 30 authors)

McMullen MD, Kresovich S, Villeda HS, Bradbury P, Li H, Sun Q, Flint-Garcia S, Thornsberry J, Acharya C, Bottoms C, Brown P, Browne C, Eller M, Guill K, Harjes C, Kroon D, Lepak N, Mitchell SE, Peterson B, Pressoir G, Romero S, Oropeza Rosas M, Salvo S, Yates H, Hanson M, Jones E, Smith S, Glaubitz JC, Goodman M, Ware D, et al. (2009) Genetic properties of the maize nested association mapping population. Science 325:737-740

Article by DOI (with page numbers)

Slifka MK, Whitton JL (2000) Clinical implications of dysregulated cytokine production. J Mol Med 78:74-80. doi:10.1007/s001090000086.

Article by DOI (before issue publication and with page numbers)

Slifka MK, Whitton JL (2000) Clinical implications of dysregulated cytokine production. J Mol Med. doi:10.1007/s001090000086

Article in electronic journal by DOI (no paginated version)

Mysen B (2014) Water–melt interaction in hydrous magmatic systems at high temperature and pressure. Prog Earth Planet Sci 1:4. doi:10.1186/2197-4284-1-4

Journal issue with issue editor

Smith J (ed) (1998) Rodent genes. Mod Genomics J 14(6):126-233

Journal issue with no issue editor

Mod Genomics J (1998) Rodent genes. Mod Genomics J 14(6):126-233

Book chapter, or an article within a book

Brown B, Aaron M (2001) The politics of nature. In: Smith J (ed) The rise of modern genomics, 3rd edn. Wiley, New York

Complete book, authored

South J, Blass B (2001) The future of modern genomics. Blackwell, London

Complete book, edited

Smith J, Brown B (eds) (2001) The demise of modern genomics. Blackwell, London

Complete book, also showing a translated edition [Either edition may be listed first.]

Adorno TW (1966) Negative Dialektik. Suhrkamp, Frankfurt. English edition: Adorno TW (1973) Negative Dialectics (trans: Ashton EB). Routledge, London

Chapter in a book in a series without volume titles

Schmidt H (1989) Testing results. In: Hutzinger O (ed) Handbook of environmental chemistry, vol 2E. Springer, Heidelberg, p 111

Chapter in a book in a series with volume titles

Smith SE (1976) Neuromuscular blocking drugs in man. In: Zaimis E (ed) Neuromuscular junction. Handbook of experimental pharmacology, vol 42. Springer, Heidelberg, pp 593-660

Online First chapter in a series (without a volume designation but with a DOI)

Saito Y, Hyuga H (2007) Rate equation approaches to amplification of enantiomeric excess and chiral symmetry breaking. Topics in Current Chemistry. doi:10.1007/128\_2006\_108.

Proceedings as a book (in a series and subseries)

Zowghi D (1996) A framework for reasoning about requirements in evolution. In: Foo N, Goebel R (eds) PRICAI'96: topics in artificial intelligence. 4th Pacific Rim conference on artificial intelligence, Cairns, August 1996. Lecture notes in computer science (Lecture notes in artificial intelligence), vol 1114. Springer, Heidelberg, p 157

Article within conference proceedings with an editor (without a publisher)

Aaron M (1999) The future of genomics. In: Williams H (ed) Proceedings of the genomic researchers, Boston, 1999

Article within conference proceedings without an editor (without a publisher)

Chung S-T, Morris RL (1978) Isolation and characterization of plasmid deoxyribonucleic acid from Streptomyces fradiae. In: Abstracts of the 3rd international symposium on the genetics of industrial microorganisms, University of Wisconsin, Madison, 4-9 June 1978

Article presented at a conference

Chung S-T, Morris RL (1978) Isolation and characterization of plasmid deoxyribonucleic acid from Streptomyces fradiae. Paper presented at the 3rd international symposium on the genetics of industrial microorganisms, University of Wisconsin, Madison, 4-9 June 1978

Abstract presented at a Japan Geoscience Meeting

Kawahata H (2017) Current status and future development of Progress in Earth and Planetary Science. Abstract U01-08 presented at the JpGU-AGU Joint Meeting 2017, Makuhari, Japan, 20-25 May 2017. <https://confit.atlas.jp/guide/event/jpguagu2017/subject/U01-08/advanced>. Accessed 1 Sept 2017

Patent

Norman LO (1998) Lightning rods. US Patent 4,379,752, 9 Sept 1998

Dissertation

Trent JW (1975) Experimental acute renal failure. Dissertation, University of California

Book with institutional author

International Anatomical Nomenclature Committee (1966) Nomina anatomica. Excerpta Medica, Amsterdam

In press article

Major M (2007) Recent developments. In: Jones W (ed) Surgery today. Springer, Dordrecht (in press)

Online document

Doe J (1999) Title of subordinate document. In: The dictionary of substances and their effects. Royal Society of Chemistry. Available via DIALOG. http://www.rsc.org/dose/title of subordinate document. Accessed 15 Jan 1999

Online database

Healthwise Knowledgebase (1998) US Pharmacopeia, Rockville. http://www.healthwise.org. Accessed 21 Sept 1998

Supplementary material/private homepage

Doe J (2000) Title of supplementary material. http://www.privatehomepage.com. Accessed 22 Feb 2000

University site

Doe J (1999) Title of preprint. http://www.uni-heidelberg.de/mydata.html. Accessed 25 Dec 1999

FTP site

Doe J (1999) Trivial HTTP, RFC2169. ftp://ftp.isi.edu/in-notes/rfc2169.txt. Accessed 12 Nov 1999

Organization site

ISSN International Centre (2006) The ISSN register. http://www.issn.org. Accessed 20 Feb 2007

## Figure legends

Figures should be provided as separate files, not embedded in the text file.

The figure legends should be included in the main manuscript text file at the end of the document.

For each figure, the following information should be provided: Figure number (in sequence, using Arabic numerals - i.e. Figure 1, 2, 3 etc); short title of figure (maximum 15 words); detailed legend, up to 300 words.

Figure 1. Distributions of aerosol optical thickness and cloud droplet effective radius from the NICAM-SPRINTARS simulations. Global geographical distributions of (a, c) aerosol optical thickness and (b, d) cloud droplet effective radius from (c, d) the NICAM-SPRINTARS simulations in comparison to those obtained from (a, b) the MODIS satellite observations for 1 to 8 July 2006 (cited from Suzuki et al. 2008). The unit of cloud droplet effective radius is micrometers.

Figure 2. XXXXXXXXXXXX

Figure 3. YYYYYYYYYYYY

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## Tables

Each table should be numbered and cited in sequence using Arabic numerals (i.e. Table 1, 2, 3 etc.). Tables should have a title (above the table) that summarizes the whole table; it should be no longer than 15 words. Detailed captions may then follow, but they should be concise. The title and any captions associated with each table should not be included in the main manuscript file, but be placed with the table in the relevant table file.

Even small tables that are integral to the manuscript should be uploaded as separate files, not embedded in the main manuscript file. These will be typeset and displayed in the final published form of the article.

Larger datasets or tables too wide for a portrait page should be uploaded separately as supplementary material files. These additional files will not be displayed in the final article, but a link will be provided to them in the published PDF.