

Seismological Society of America: L^AT_EX Guidelines for authors

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ABSTRACT

This guide is for authors who are preparing papers for the *Seismological Society of America* journal using the L^AT_EX document preparation system.

INTRODUCTION

The layout design for the *Seismological Society of America* journal has been implemented as a L^AT_EX style file. The SSA style file is based on the ARTICLE style as discussed in the L^AT_EX manual. Commands which differ from the standard L^AT_EX interface, or which are provided in addition to the standard interface, are explained in this guide. This guide is not a substitute for the L^AT_EX manual itself.

Introduction to L^AT_EX

The L^AT_EX document preparation system is a special version of the T_EX typesetting program. L^AT_EX adds to T_EX a collection of commands which simplify typesetting by allowing the author to concentrate on the logical structure of the document rather than its visual layout.

L^AT_EX provides a consistent and comprehensive document preparation interface. There are simple-to-use commands for generating a table of contents, lists of figures and/or tables, and indexes. L^AT_EX can automatically number list entries, equations, figures, tables, and footnotes, as well as parts, chapters, sections and subsections. Using this numbering system, bibliographic citations, page references and cross references to any other numbered entity (e.g. chapter, section, equation, figure, list entry) are quite straightforward. To know more information about L^AT_EX and its packages, try <https://ctan.org/?lang=en>.

THE SSA DOCUMENT CLASS

Separate document class file with the respective journal name to be used for the three SSA Journals. The use of document class allows a simple change of style to trans-

form the appearance of your document. These three SSA class files preserve the standard L^AT_EX interface such that any document which can be produced using the standard L^AT_EX ARTICLE style can also be produced with the SSA style. However, the fonts (sizes) and measure of text is slightly different from that for ARTICLE, therefore line breaks will change and it is possible that equations may need re-setting.

Class Options

The class file options can be used within optional brackets of the `\documentclass` command with a comma separator as shown below:

```
\documentclass[linenum,doublespace,onecolumn,draft]{SSA-JID}
```




The SSA style provides various class options to cater its specific requirements like:

- `linenum` – for enabling the line numbers in the output.
- `doublespace` – for enabling the text with spaced rows
- `onecolumn` – for enabling the manuscript content in single column
- `draft` – for showing the output in draft mode
- `OA` – for enabling the Open Access blub in the output (for TSR style).

ADDITIONAL FACILITIES

In addition to all the standard L^AT_EX design elements, the SSA style includes the following feature:

- Extended commands for the environments like :
 - "Data and Resources" head with `\begin{datres} ... \end{datres}`. However, a customized optional heading can be handled with `\begin{datres}[Customized heading]`
...
`\end{datres}`
 - "Acknowledgments" head with `\begin{ack} ... \end{ack}`. Customized optional heading can be handled with `\begin{ack}[Customized heading]`
...

1. First Affiliation, Institute, City, Country,  <https://orcid.org/0000-0000-0000-0001> (AAF)  <https://orcid.org/0000-0000-0000-0002> (ABS); 2. Second Affiliation, Institute, City, Country,  <https://orcid.org/0000-0000-0000-0003> (ACT); 3. Third Affiliation, Institute, City, Country

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```
\end{ack}
```

- "Key Points" (for BSSA style) with

```
\begin{keypoints}
\item ...
\item ...
\end{keypoints}
```

Once you have used the said additional facilities in your document, do not process it with a standard \LaTeX style file.

Titles authors' names and affiliation

In the SSA style, the title of the article and the author's name (or authors' names) are used at the beginning of the article for the main title. As

Moreover, the main heading can also incorporate new line commands (e.g. `\\`). If more authors has to be used in `\author` command then each authors should be captured in separate `\author{}` command. `\affil` command is used to call the affiliation, if more affiliations has to be used in `\affil` command then each affiliations should be captured in separate `\affil{ }{ }` command. The author and affiliation indicator should be captured with an option argument in `\author` and `\affil` command such as `\author[...]{ }` and `\affil[...]{ }`.

If any author has an ORCID ID, the command `\orc{ }` should be used within the option argument (i.e. `\author[...]{ }`) in order to appear the ORCID Logo to the said author in the superscript with a hyperlink value.

The `\affil` command consists of two arguments along with an optional one in which the second argument to be filled only when its corresponding author has ORCID information as per the SSA style requirement. For this, the command `\auorc{ }` is used as shown in the below sample coding for "authors and affiliation".

```
\author[*1\orc{0000-0000-0000-0001}]{Author A. First}%
\author[1,3\orc{0000-0000-0000-0002}]{Author B. Second}
\author[2\orc{0000-0000-0000-0003}]{Author C. Third}

\affil[1]{First Affiliation, Institute, City, Country}
{\auorc{0000-0000-0000-0001}{(AAF)}
\auorc{0000-0000-0000-0002}{(ABS)}}

\affil[2]{Second Affiliation, Institute, City, Country}
{\auorc{0000-0000-0000-0003}{(ACT)}}

\affil[3]{Third Affiliation, Institute, City, Country}
{}
\corau{*Corresponding author: auname@abc.org}
```

Abstract

The SSA style provides for an abstract which is produced by the following commands

```
\begin{abstract} ... \end{abstract}
```

Lists

The SSA style provides the three standard list environments.

- Bulleted lists, created using the `itemize` environment.
- Numbered lists, created using the `enumerate` environment.
- Labelled lists, created using the `description` environment.

Footnotes

The SSA journal style uses superior numbers for footnote references.¹

SOME GUIDELINES FOR USING STANDARD FACILITIES

The following notes may help you to achieve the best effects with the SSA style file.

Sections

\LaTeX provides five levels of section headings and they are all defined in the SSA style file:

- `\section.`
- `\subsection.`
- `\subsubsection.`
- `\paragraph.`
- `\subparagraph.`

Section numbers are disabled through template as per the SSA layout requirements for all level of section headings.

Tables

The `figure` and `table` environments are implemented as described in the \LaTeX Manual to provide consecutively numbered floating inserts for illustrations and tables respectively. Line breaks in captions can be inserted as required using `\\`.

The SSA style file will cope with most positioning of your tables and you should not normally use the optional positional qualifiers on the `table` environment which would override these decisions. Normal journal style sets the table caption first, followed by a Thick rule, the table body and a rule at the bottom. Single rules and spanner rules (`\cline`) can be used to separate headings from the columns. For example, Table 1 is produced using the following commands:

```
\begin{table}
\tbl{This is a Model Two-Column Table Coding\label{samp-tabl}}
{\begin{tabular*}{\columnwidth}{@{\extracolsep{\fill}}l l l l l@{}}%
\textrbf{Complete Dataset} & \multicolumn{1}{c}{\textrbf{N}} & \\
& \multicolumn{1}{c}{\textrbf{\boldsymbol{\mu}}}} & \\
& \multicolumn{1}{c}{\textrbf{\boldsymbol{\sigma}}}} & \\
& \multicolumn{1}{c}{\textrbf{\boldsymbol{\sigma}}}} & \\
\colrule
\multicolumn{5}{@{}l}{a. Faulting Type} \\
Thrust & 3801 & 18.1 \% & 0.3 \% & 15.6 \% \\
Strike-Slip & 3829 & 25.2 \% & 0.3 \% & 18.5 \% \\
\end{tabular*}}
\end{table}
```

¹This shows how a footnote is typeset.

```

Normal & 3180 & 25.5 \% & 0.4 \% & 19.8 \% \\
Oblique & 2046 & 25.5 \% & 0.5 \% & 21.0 \% \\
\multicolumn{4}{@{}l}{b. Geologic Environment} \\
Subduction Zone & 8691 & 21.6 \% & 0.2 \% & 19.7 \% \\
Spreading Center & 2785 & 28.0 \% & 0.4 \% & 18.2 \% \\
Volcanoes & 163 & 26.0 \% & 1.6 \% & 20.0 \% \\
\botrule
\end{tabular*}}
{}
\end{table}

```

TABLE 1
This is a Model Two-Column Table Coding

Complete Dataset	N	μ	σ_{μ}	σ
a. Faulting Type				
Thrust	3801	18.1 %	0.3 %	15.6 %
Strike-Slip	3829	25.2 %	0.3 %	18.5 %
Normal	3180	25.5 %	0.4 %	19.8 %
Oblique	2046	25.5 %	0.5 %	21.0 %
b. Geologic Environment				
Subduction Zone	8691	21.6 %	0.2 %	19.7 %
Spreading Center	2785	28.0 %	0.4 %	18.2 %
Volcanoes	163	26.0 %	1.6 %	20.0 %

The `tabular` environment should be used to produce ruled tables; it has been modified for the SSA style in the following ways:

1. Additional vertical space is inserted above and below a horizontal rule (produced by `\hline`);
2. `\trowsep` to be used in place of `\\` in the end of table row in order to get extra row separation for "SRL" and "TSR" as per SSA style requirement.

Because of this reformatting, vertical rules should not be used; furthermore, commands to redefine quantities such as `\arraystretch` should be omitted.

Illustrations (or figures)

The SSA style will cope with most positioning of your illustrations and you should not normally use the optional positional qualifiers on the `figure` environment which would override these decisions. Figure captions should be below the figure itself, therefore the `\caption` command should appear after the figure or space left for an illustration.

Figure 1 shows an example on working with LaTeX code to load art files. `\includegraphics` command is to load art files `scale` option used in `\includegraphics` is to reduce the art. EPS format will be compiled using LaTeX. PNG, PDF and JPG format art files are loaded in the same command but the TeX file should be compiled using PDFLaTeX:

```

\begin{figure}
\centering
\includegraphics[scale=.4]{Figures/Sample}
\caption{An example figure with space for artwork.}
\label{sample-figure}
\end{figure}

```



Figure 1. An example figure with space for artwork.

The vertical depth should correspond roughly to the artwork you will submit; it will be adjusted to fit the final artwork exactly.

Creating new theorem-like environments

You can create your own environments in \LaTeX , and although you may already be familiar with `\newtheorem`, here is below few sample definitions to be defined in the preamble before using them in your TeX file.

```

\newtheorem{theorem}{Theorem}
\newtheorem{cor}{Corollary}
\newtheorem{lemma}{Lemma}
\newtheorem{prop}{Proposition}

```

`\newtheorem` is a standard command used for creating new theorem-like environments, such as theorems, corollaries, lemmas, conjectures and propositions, with the body of the text (automatically) in italic.

MATHEMATICS

The SSA class file will insert the correct space above and below if standard \LaTeX commands are used; for example use `\[... \]` and *not* `$$... $$`. Do not leave blank lines above and below displayed equations unless a new paragraph is really intended.

`amsmath.sty` is common package to handle various type math equations. The `amsmath` descriptions are available in the document can be find in the web link <https://ctan.org/pkg/amsmath?lang=en>

Numbering of equations

The `subequations` and `subeqnarray` environments have been incorporated into the SSA class file. Using these two environments, you can number your equations (1a), (1b) etc. automatically. For example, you can typeset

$$a_1 \equiv (2\Omega M^2/x)^{\frac{1}{4}} y^{\frac{1}{2}} \quad (1a)$$

and

$$a_2 \equiv (x/2\Omega)^{\frac{1}{2}} k_y / M. \quad (1b)$$

by using the subequations environment as follows:

```
\begin{subequations}
\begin{equation}
a_1 \equiv (2\Omega M^2/x)^{\frac{1}{4}}
y^{\frac{1}{2}} \label{a1}
\end{equation}
and
\begin{equation}
a_2 \equiv (x/2\Omega)^{\frac{1}{2}} k_y / M.
\label{a2}
\end{equation}
\end{subequations}
```

Bibliography

As with standard LaTeX, there are two ways of producing a bibliography; either by compiling a list of references by hand (using a thebibliography environment), or by using BibTeX with a suitable bibliographic database for example "Sample.bib" with the bibliography style provided with the SSA-AuthorGuide.tex like \bibliographystyle{SSAbib}. The "SSAbib.bst" will produce the bibliography which is similar to SSA style but not exactly. If any modification has to be made with "SSAbib.bst" can be adjusted during manuscript preparation but the updated bst file should be given with source files. However, contributors are encouraged to format their list of references style outlined in section below.

References in the text. References in the text are given author year format. Whichever method is used to produce the bibliography, the references in the text are done in the same way. Each bibliographical entry has a key, which is assigned by the author and used to refer to that entry in the text.

natbib.sty is common package to handle various reference and its cross citations. The natbib descriptions are available in the document can be find in the web link <https://ctan.org/pkg/natbib?lang=en>

List of references The following listing shows some references prepared in the style of the journal.

```
\begin{thebibliography}{}
\bibitem[protect\citeauthoryear{Abramowitz and Stegun}]{Abramowitz and Stegun}{1972}{Abramowitz_1972}
Abramowitz, M. and I.~A. Stegun (1972).
\newblock {\em Handbook of mathematical functions}.
\newblock Dover, New York.
\bibitem[protect\citeauthoryear{Adams, Banks, Davidian, Kwon, Tran, Wynne, and Rosenberg}{Adams et-al.}{2005}]{Adams_2005}
Adams, B.~M., H.~T. Banks, M.~Davidian, H.~D. Kwon, H.~T. Tran, S.~N. Wynne, and E.~S. Rosenberg (2005).
\newblock Hiv dynamics: modeling, data analysis, and optimal treatment protocols.
\newblock {\em Journal of Computational and Applied Mathematics}\~{\bf 184}\~(1), 10--49.
\bibitem[protect\citeauthoryear{Adams and Swarztrauber}{Adams and Swarztrauber}{1997}]{AdaSwa97}
Adams, J. and P.~Swarztrauber (1997, September).
```

```
\newblock Sperepack 2.0: {A} model development facility.
\newblock Technical Report {TN}-436-{STR}, {NCAR},
Boulder, {CO}.
\bibitem[protect\citeauthoryear{Adiyaman, Chorowicz, Arnaud, G\~{u}ndogdu, and Gourgaud}{Adiyaman et-al.}{2001}]{Adiyaman_2001}
Adiyaman, O., J.~Chorowicz, O.~N. Arnaud, M.~N. G\~{u}ndogdu, and A.~Gourgaud (2001).
\newblock {Late Cenozoic tectonics and volcanism along the North Anatolian Fault: New structural and geochemical data}.
\newblock {\em Tectonophysics}\~{\bf 338}, 135--165.
\bibitem[protect\citeauthoryear{Afanasiev, Boehm, van Driel, Krischer, Rietmann, May, Knepley, and Fichtner}{Afanasiev et-al.}{2019}]{Afanasiev_2019}
Afanasiev, M.~V., C.~Boehm, M.~van Driel, L.~Krischer, M.~Rietmann, D.~A. May, M.~G. Knepley, and A.~Fichtner (2019).
\newblock {Modular and flexible spectral-element waveform modelling in two and three dimensions}.
\newblock {\em Geophys. J. Int.}\~{\bf 216},
doi: 10.1093/gji/ggy469.
\bibitem[protect\citeauthoryear{Afanasiev, Peter, Sager, Simute, Ermert, Krischer, and Fichtner}{Afanasiev et-al.}{2016}]{Afanasiev_2016}
Afanasiev, M.~V., D.~B. Peter, K.~Sager, S.~Simute, L.~Ermert, L.~Krischer, and A.~Fichtner (2016).
\newblock {Foundations for a multiscale collaborative Earth model}.
\newblock {\em Geophys. J. Int.}\~{\bf 204}, 39--58.
\bibitem[protect\citeauthoryear{Afanasiev, Pratt, Kamei, and McDowell}{Afanasiev et-al.}{2014}]{Afanasiev_2014}
Afanasiev, M.~V., R.~G. Pratt, R.~Kamei, and G.~McDowell (2014).
\newblock {Waveform-based simulated annealing of crosshole transmission data: A semi-global method for estimating seismic anisotropy}.
\newblock {\em Geophys. J. Int.}\~{\bf 199}, 1586--1607.
\bibitem[protect\citeauthoryear{Afonso, Fullea, Griffin, Yang, Jones, Connolly, and O'Reilly}{Afonso et-al.}{2013}]{Afonso_2013}
Afonso, J.~C., J.~Fullea, W.~L. Griffin, Y.~Yang, A.~G. Jones, J.~A.~D. Connolly, and S.~Y. O'Reilly (2013).
\newblock {3-D multiobservable probabilistic inversion for the compositional and thermal structure of the lithosphere and upper mantle. I: a priori petrological information and geophysical observables}.
\newblock {\em J. Geophys. Res.}\~{\bf 118},
2586-2617.
\bibitem[protect\citeauthoryear{Agliz and Atmani}{Agliz and Atmani}{2013}]{Agliz_2013}
Agliz, D. and A.~Atmani (2013).
\newblock {Seismic signal classification using a multi-layer preceptron neural network}.
\newblock {\em Int. J. Comp. Alg.}\~{\bf 79}, 35--43.
\end{thebibliography}
```

Meta information

To be placed in the preamble; for example:

- \citethisauthor{First, A., A. Second, and A. Third}
- \vol{2}
- \iss{1}
- \doi{00.0000/0000000000}
- \recdate{00 Month 0000}

DATA AND RESOURCES

Here is the content of Data and Resources.

CONFLICTS OF INTEREST

You must declare any potential conflicts of interest, whether personal, financial or other. If there is nothing, write The authors declare no conflicts of interest exist.

ACKNOWLEDGMENTS

Acknowledgements text goes here. Acknowledgements text goes here. Acknowledgements text goes here. Acknowledgements text goes here. Acknowledgements text goes here. Acknowledgements text goes here. Acknowledgements text goes here. Acknowledgements text goes here.

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- Adams, B. M., H. T. Banks, M. Davidian, H.-D. Kwon, H. T. Tran, S. N. Wynne, and E. S. Rosenberg (2005). Hiv dynamics: modeling, data analysis, and optimal treatment protocols. *Journal of Computational and Applied Mathematics* **184**(1), 10–49.
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- Adiyaman, O., J. Chorowicz, O. N. Arnaud, M. N. Gündogdu, and A. Gourgau (2001). Late Cenozoic tectonics and volcanism along the North Anatolian Fault: New structural and geochemical data. *Tectonophysics* **338**, 135–165.
- Afanasiev, M. V., C. Boehm, M. van Driel, L. Krischer, M. Rietmann, D. A. May, M. G. Knepley, and A. Fichtner (2019). Modular and flexible spectral-element waveform modelling in two and three dimensions. *Geophys. J. Int.* **216**, doi: 10.1093/gji/ggy469.
- Afanasiev, M. V., D. B. Peter, K. Sager, S. Simute, L. Ermert, L. Krischer, and A. Fichtner (2016). Foundations for a multi-scale collaborative Earth model. *Geophys. J. Int.* **204**, 39–58.
- Afanasiev, M. V., R. G. Pratt, R. Kamei, and G. McDowell (2014). Waveform-based simulated annealing of crosshole transmission data: A semi-global method for estimating seismic anisotropy. *Geophys. J. Int.* **199**, 1586–1607.
- Afonso, J. C., J. Fullea, W. L. Griffin, Y. Yang, A. G. Jones, J. A. D. Connolly, and S. Y. O'Reilly (2013). 3-D multiobservable probabilistic inversion for the compositional and thermal structure of the lithosphere and upper mantle. I: a priori petrological information and geophysical observables. *J. Geophys. Res.* **118**, 2586–2617.
- Agliz, D. and A. Atmani (2013). Seismic signal classification using a multi-layer preceptron neural network. *Int. J. Comp. Alg.* **79**, 35–43.

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