

# A Sample American Meteorological Society L<sup>A</sup>T<sub>E</sub>X Document

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## ABSTRACT

Enter the text of your abstract here. This is a sample American Meteorological Society (AMS) L<sup>A</sup>T<sub>E</sub>X template. This document provides authors with both a L<sup>A</sup>T<sub>E</sub>X template and basic AMS formatting guidelines to be used when writing a paper. Authors should refer to the file `amspaper.tex` to review the actual L<sup>A</sup>T<sub>E</sub>X code used to create this document. The `amspaper.tex` (or `blank_template.tex`) file can then be modified by authors for their own manuscript.

The abstract should be no longer than 250 words in length. The abstract should not contain any mathematical expressions, should include no footnotes or citations, and should not contain first-person sentence structure.

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## 1. Introduction

This document will provide authors with the basic American Meteorological Society (AMS) formatting guidelines. This document was created using L<sup>A</sup>T<sub>E</sub>X and demonstrates how to use the L<sup>A</sup>T<sub>E</sub>X template when submitting a manuscript to the AMS. The following sections will outline the guidelines and formatting for text, math, figures, and tables while using L<sup>A</sup>T<sub>E</sub>X. A more thorough review of all manuscript requirements can be found in the AMS Authors' Guide (available online at [www.ametsoc.org/PUBS/Authorsguide/html\\_vs/index.html](http://www.ametsoc.org/PUBS/Authorsguide/html_vs/index.html)).

An attempt to compile `amspaper.tex` should be made before using the template. The files have been tested on a Mandriva 10.2 Limited Edition Linux distribution (available online at <http://www.mandriva.com>) using T<sub>E</sub>X Live 2007 (available online at <http://www.tug.org/texlive/>) and the now obsolete `tetex-3.0-8`, and on Windows XP using ProT<sub>E</sub>Xt (available online at <http://www.tug.org/protex/>), which is based on MiK<sub>T</sub>ex. Other distributions of

Linux/Unix, Windows, and L<sup>A</sup>T<sub>E</sub>X may be acceptable. Feedback and questions should be sent to [latex@ametsoc.org](mailto:latex@ametsoc.org).

Authors may use the empty template `blank_template.tex` to begin their paper. A valuable source of L<sup>A</sup>T<sub>E</sub>X information are the *Tex Frequently Asked Questions* available at numerous Web sites (available online at [faq.tug.org](http://faq.tug.org)).

## 2. Formatting text and sections

The text should be divided into sections, each with a separate heading and consecutive numbering. Note, however, that single secondary, tertiary, and quaternary sections remain unnumbered. Each section heading should be placed on a separate line using the appropriate L<sup>A</sup>T<sub>E</sub>X commands. For more detailed information on different sections and their formatting see the Authors' Guide.

### *Secondary headings*

Secondary headings labeled with letters are formatted using the `\subsection*` or `\subsection` command for single (as in this case) or multiple secondary sections, respectively.

### TERTIARY HEADINGS

Tertiary headings are formatted using the `\subsubsection*` or `\subsubsection` command.

### *Quaternary headings*

Quaternary headings are formatted using the `\paragraph*` or `\paragraph` command.

## 3. Citations

Citations to standard references in text should consist of the name of the author and the year of publication, for example, Becker and Schmitz (2003) or (Becker and Schmitz 2003) using the appropriate `\cite` or `\citep` com-

mands, respectively. A variety of citation formats can be used with the natbib package. Refer to documentation on the natbib package for more information on the basic citation commands. References should be entered in the references.bib file located in the bibliography subdirectory. For a thorough discussion of how to enter references into the references.bib database file following AMS style please refer to the AMS\_references.pdf document included in this package.

#### 4. Formatting math

The following sections will outline the basic formatting rules for mathematical symbols and units. In addition, a review of the amspaper.tex file will show how this is done with the use of L<sup>A</sup>T<sub>E</sub>X commands. The AMS template provides the American Mathematical Society math, font, symbol, and boldface packages for use in math mode.

##### a. Mathematical symbols

Symbols must be of the same font style both in text discussion and in displayed equations or terms (and figures should be prepared to match). Scalar single character symbols are set italic, Greek, or script. Examples are  $u$ ,  $L$  [note that  $v$  (Greek upsilon) is used instead of  $v$  (italic “vee”) to avoid confusion with  $\nu$  (Greek nu) often used for viscosity; this is handled automatically when in L<sup>A</sup>T<sub>E</sub>X math mode],  $w$ ,  $x$ ,  $y$ ,  $z$ ,  $f$ ,  $g$ ,  $r$ , indices such as  $i$  or  $j$ , and constants such as  $C_D$ ,  $k$ , or  $K$ . Multiple character scalar variables, abbreviations, nondimensional numbers, and acronyms for variables are set regular nonitalic: LWC, Re, Ro, BT, abs, obs, max, min, Re/Im (real/imaginary), etc. For vectors, use boldface nonitalic Times Roman as in  $\mathbf{V}$ ,  $\mathbf{v}$ , or  $\mathbf{x}$ , and  $\mathbf{i}$ ,  $\mathbf{j}$ , and  $\mathbf{k}$  unit vectors. Do not use the L<sup>A</sup>T<sub>E</sub>X `\vec` command to denote vectors. For matrix notation use nonitalic boldface Arial (or Sans Serif) font as in  $\mathbf{A}$ ,  $\mathbf{B}$ , or  $\mathbf{M}$ . All mathematical operator abbreviations/acronyms are set lowercase regular Roman font, except  $O$  (on the order of): sin, cos, tan, tanh, cov, Pr (for probability; note same as Prandtl number), const (for constant), c.c. (complex conjugate).

##### b. Units

Units are always set on a single line with a space separating the denominator, which is set with a superscript  $-1$ ,  $-2$ , and so on, rather than using a slash for “per.” Examples are  $\text{g kg}^{-1}$ ,  $\text{m}^2 \text{s}^{-1}$ ,  $\text{W m}^{-2}$ ,  $\text{g m}^{-3}$ , and  $\text{m s}^{-1}$  (note that  $\text{ms}^{-1}$  is the unit for “per millisecond”).

##### c. Equations

Brief equations or terms set inline in text must be set as a single line expression because page proofs are not double spaced, for example,  $\rho^{-1}p/x$  or  $(1/\rho)p/x$  or  $(a-b)/(c+d)$ ; that is, use a superscript  $-1$  for the denominator. In case

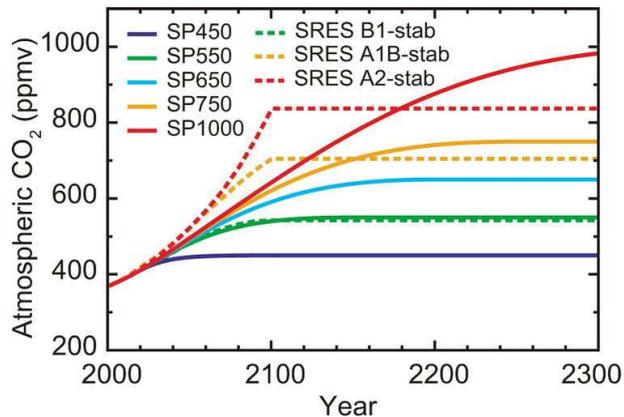


FIG. 1. Enter the caption for your figure here. Repeat as necessary for each of your figures. Create a figures directory and place all figures in that directory. Figure from Houghton et al. (2001).

of a more complicated term or equation, it should be set as an unnumbered display equation, such as

$$x = \frac{2b \pm \sqrt{b^2 - 4ac}}{2c}.$$

Otherwise, numbered display equations can be entered using the appropriate `\equation` command, such as

$$x = \frac{2b \pm \sqrt{b^2 - 4ac}}{2c}. \quad (1)$$

Lists of equations are punctuated as written English, and commas, semicolons, and periods are placed where appropriate. Conjunctions such as “and,” “while,” “when,” or “for” are also typically placed before the final element in a mathematical phrase, as befits the intended mathematical meaning.

#### 5. Figures and tables

##### a. Figures

Detailed information about figures can be found both in the Authors’ Guide and through links on the AMS Author Upload Web page (available online at [http://www.ametsoc.org/au\\_upload/index.cfm](http://www.ametsoc.org/au_upload/index.cfm)). The insertion of a sample figure (Fig. 1) and caption is shown above. Standard figure sizes are 19 (one column), 27, 30, 33 (two columns), 36, and 39 picas. Authors should attempt to size their figures appropriately. At this time our press can accept only eps and TIFF figures. Because pdfTeX does not support the use of either of these figure types authors should not attempt to build their PDF file using this driver. The dvips driver does support the use of eps files, but not TIFF files. Therefore, authors should use eps figure files when using this template.

TABLE 1. This is a sample table caption and table layout. Enter as many tables as necessary at the end of your manuscript. Table from Lorenz (1963).

| $N$  | $X$  | $Y$  | $Z$  |
|------|------|------|------|
| 0000 | 0000 | 0010 | 0000 |
| 0005 | 0004 | 0012 | 0000 |
| 0010 | 0009 | 0020 | 0000 |
| 0015 | 0016 | 0036 | 0002 |
| 0020 | 0030 | 0066 | 0007 |
| 0025 | 0054 | 0115 | 0024 |

*b. Tables*

Each table must be numbered, provided with a caption, and mentioned specifically in the text. Each table should be in double-spaced format on a separate page, with an explanatory caption typed above the table on the same page. All tables should be attached at the end of the manuscript, following the figure legends. See section 11 of the Authors' Guide for more information on the proper preparation of tables. See above for the formatting of a sample table (Table 1).

*Acknowledgments.*

Keep acknowledgments (note correct spelling: no “e” between the “g” and “m”) as brief as possible. In general, acknowledge only direct help in writing or research. Financial support (e.g., grant numbers) for the work done, or for an author, or for the laboratory where the work was performed is best acknowledged here rather than as footnotes to the title or to an author's name. Contribution numbers (if the work has been published by the author's institution or organization) should be included on the title page, not in the acknowledgments.

APPENDIX A

**Appendix Title Is Entered Here**

*Appendix section*

The AMS template allows authors to format an unlimited number of appendixes. To format a single appendix, use the `\appendix` command with no additional argument. Otherwise, add the appropriate one-letter argument to the `\appendix` command (e.g. `\appendix[A]`, `\appendix[B]`, `\appendix[C]`, etc.) corresponding to the appropriate appendix. The title of the appendix can be formatted using the `\section*` command as shown above (which also provides code for centering). The `\subsection`, `\subsubsection`, and `\paragraph` commands are used to create sections within

the appendix. Equations are automatically numbered appropriately for each appendix. Here is an example of the first equation in appendix A, automatically labeled (A1),

$$x = \frac{2b \pm \sqrt{b^2 - 4ac}}{2c}. \tag{A1}$$

APPENDIX B

**File structure of the AMS L<sup>A</sup>T<sub>E</sub>X Package**

*AMS L<sup>A</sup>T<sub>E</sub>X files*

You will be provided with a tarred, zipped L<sup>A</sup>T<sub>E</sub>X package containing eleven files: `amspaper.tex`, `blank_template.tex`, `ametsoc.sty`, `ametsoc2col.sty`, `amspaper.pdf`, `amspaper2col.pdf`, `figure01.eps`, `AMS_references.pdf`, `ametsoc.bst`, `database.bib`, and `references.bib`. Two subdirectories will be created when you untar the package: `figures` and `bibliography`. The `figures` directory will contain the sample figure file `figure01.eps`. This directory should be used to store all your figure files. The `bibliography` directory will contain the sample bibliography files `database.bib` and `references.bib`. You should alter `references.bib` with your own bibliography information. Refer to the `AMS_references.pdf` file included in this package for information on how to properly populate the `references.bib` file. The files `ametsoc.sty` and `ametsoc2col.sty` are the two style files. The file `ametsoc.sty` generates a PDF that follows all AMS guidelines for submission and peer review. The file `ametsoc2col.sty` can be used to generate a PDF that closely follows the layout of an AMS journal page, including single spacing and two columns. This journal style PDF is only for the author's personal use, and any papers submitted in this style will not be accepted. Always use the `ametsoc.sty` when generating a PDF for submission to the AMS. The file `ametsoc.bst` is the bibliography style file. The file `amspaper.tex` contains the L<sup>A</sup>T<sub>E</sub>X code for this sample file. The resulting PDF can be seen in either `amspaper.pdf` or `amspaper2col.pdf`, depending on the which style file is used. The file `blank_template.tex` provides a basic blank template with some section headings for authors to more easily enter their manuscript into.

Questions and feedback concerning the use of the AMS L<sup>A</sup>T<sub>E</sub>X files should be directed to `latex@ametsoc.org`.

APPENDIX C

**How to Compile the L<sup>A</sup>T<sub>E</sub>X Files and Create a PDF**

*a. Compilation*

There are a variety of different methods and programs that will create a final PDF from your L<sup>A</sup>T<sub>E</sub>X document.

Here, the basic commands for one method of creating a final PDF are presented. You can compile your L<sup>A</sup>T<sub>E</sub>X files and build the dvi file with the following commands on a Linux-/Unix-based system:

- i. `latex filename.tex` (e.g., `latex amspaper.tex`)
- ii. `bibtex filename` (e.g., `bibtex amspaper`). Note that the `.tex` extension is not included in the filename
- iii. `latex filename.tex` (e.g., `latex amspaper.tex`)
- iv. `latex filename.tex` (e.g., `latex amspaper.tex`). This command is repeated twice to clean up any reference dependencies.

This will create a dvi file (e.g., `amspaper.dvi`). You can view the dvi file using a dvi file viewer, such as `xdvi`, `kdvi`, or some similar program. Your PDF will be created from the dvi file, so do not delete this file.

#### b. *Creating the PDF*

The final PDF can be created from the dvi file using the following two commands on a Linux-/Unix-based system:

`dvips filename.dvi -o filename.ps` (e.g., `dvips amspaper.dvi -o amspaper.ps`), which converts the dvi file to a postscript file that will be converted to the final PDF; and

`ps2pdf14 filename.ps` (e.g., `ps2pdf14 amspaper.ps`), which creates the final PDF file (`amspaper.pdf`). The “14” at the end of the `ps2pdf14` command will generate a PDF compatible with Acrobat Reader, version 5 and later. It may be replaced with `ps2pdf13` or `ps2pdf`, which will generate PDFs compatible with Acrobat Reader, version 4 or 3 and later, respectively.

#### c. *Other software*

There is a variety of software that can be used to edit `.tex` files and build a PDF. The AMS does not support L<sup>A</sup>T<sub>E</sub>X-related WYSIWYG software, such as Scientific Workplace, or WYSIWYM software, such as LyX. T<sub>E</sub>X Live (available online at <http://www.tug.org/texlive/>) is recommended for users needing an up-to-date L<sup>A</sup>T<sub>E</sub>X distribution with software that includes an editor and the ability to automatically generate a PDF.

## REFERENCES

- Becker, E. and G. Schmitz, 2003: Climatological effects of orography and land–sea heating contrasts on the gravity wave–driven circulation of the mesosphere. *J. Atmos. Sci.*, **60**, 103–118.