

**USING L<sup>A</sup>T<sub>E</sub>X TO WRITE AN LPSC ABSTRACT.** Ross A. Beyer<sup>1,2</sup> and Moses P. Milazzo<sup>3</sup>, <sup>1</sup>Carl Sagan Center at the SETI Institute, <sup>2</sup>NASA Ames Research Center, MS 245-3, Moffett Field, CA, USA ([Ross.A.Beyer@nasa.gov](mailto:Ross.A.Beyer@nasa.gov)), and <sup>3</sup>Astrogeology Science Center, United States Geological Survey

There used to be a L<sup>A</sup>T<sub>E</sub>X template and a style file for writing Lunar and Planetary Science Conference (LPSC) abstracts available on the LPI Web site. However, no such template has been available for some time, and we found ourselves dragging the old one out. It was full of scary T<sub>E</sub>X commands and had a date from 1996 in it, so we decided to start from scratch and write a [template](#) based on L<sup>A</sup>T<sub>E</sub>X's own article class and a short L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> package file. Most of the L<sup>A</sup>T<sub>E</sub>X work is based on Kopka and Daly [1].

Fortunately, the requirements for LPI-sponsored meeting abstracts (like LPSC) are reasonably relaxed [2].

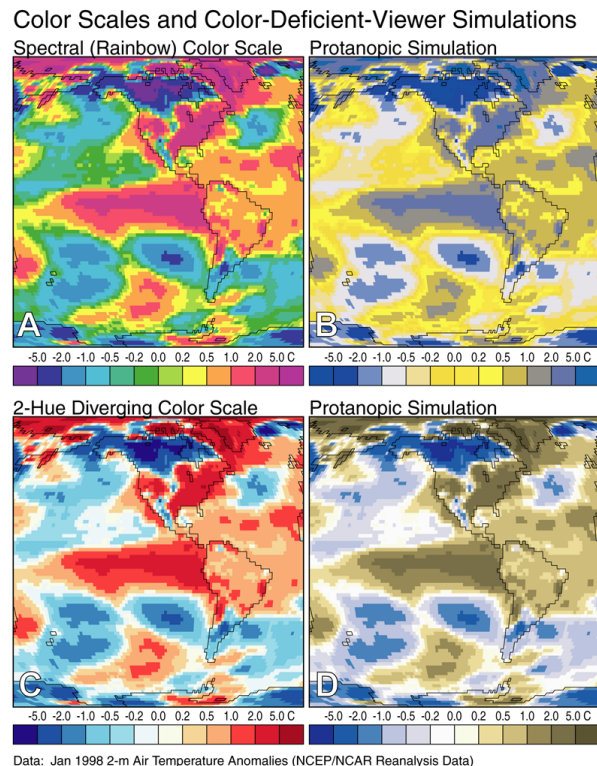
**Title area:** The title mechanism for this template is a simple command, `\titlearea`, which takes two arguments, the title text and the author info text.

The title text is made a font size bigger and made boldface in the `lpscabs` package. If you would like it styled differently, it should be easy to go in to the `lpscabs.sty` file and change it.

The old style file had a fancy automatic mechanism for entering authors and putting superscripted numbers on their names to match up with their affiliations later on in the title. We contemplated doing that and then realized that maybe authors would like some other mechanism besides numbers, maybe little letters, or any of the special characters like † or ‡ to mark their affiliations, or maybe all of the authors are from the same place, so no little super-scripted characters are needed. Possibly some authors could have more than one affiliation. So rather than try to program something that can be all things to all people, we'll just let you (the authors) do whatever you like to the text in that line, you're smart people. It is a little less convenient, but we think it is more flexible. We have commented out a few multiple author styles up near that section of this source file.

We recently added support for the `authblk` package to make dealing with long author lists less of a pain. There's a commented-out example in this `.tex` file.

**Section styles:** In general, people try to put lots of information into their LPSC abstracts, and want to minimize the space being taken up by section headers. You could redefine the sectioning commands to change their styling if you like, or you could just use the `\paragraph` command (as we have done in this example). You can also use the `titlesec` package with the `small` and `compact` options to further compress the font size and space around titles.



Light, A and P.J. Bartlein (2004) The end of the rainbow? Color schemes for improved data graphics. *EOS Transactions of the American Geophysical Union* 85(40):385.

Figure 1: This is Figure 1 from Light and Bartlein [3].

**Figures:** Good figures are hard to make, there's no question about it. That goes double for deciding which figures to include in your space-limited abstract.

When you make the decision to create a color figure, take some time to think about the colors that you use. We think that a strong case has been made [3, 4] for not using the typical rainbow-spectrum color scheme (e.g. Fig. 1). Just because you decide to use color doesn't mean that you need to use *all* of the colors. Don't confuse "pretty" with "meaningful."

A strong suggestion by [5] is that color schemes should be perceived as monotonically increasing (or decreasing) when used to display intensity maps of various sorts (such as topography, etc.). This generally is not the case for most rainbow color schemes. A monotonically increasing color scheme also looks correct whether printed in color or grayscale.

If you need figures or tables to be the full width

of the page, just use their starred versions, like `\begin{figure*}` instead of `\begin{figure}`. If you have problems with double-column-wide floats, you may need to monkey with the `\dbltopfraction` setting or other style parameters for floats (either in the `lpscabs.sty` file or simply via `\renewcommand{\dbltopfraction}{} in your abstract .tex file).`

**URLs and hyperlinks:** Let's face it, the odds are good that more people will read this abstract on a screen with a PDF reader than will do so on paper. Fortunately, PDFs can contain active hyperlinks that can fire off a Web browser, or your e-mail client, and the `hyperref` package helps you do this. It is used in this example file, and there are blue links that you can click on in this document, try them out.

The `hyperref` package has some options that we should probably detail. Here's a copy of the command in this document (carriage returns included for clarity):

```
\usepackage[colorlinks=true,
  urlcolor=blue,citecolor=black,
  linkcolor=black]{hyperref}
```

The options in the square brackets are important, and <http://www.tug.org/applications/hyperref/manual.html> details all of them. The `colorlinks` and `urlcolor` options should be reasonably self-explanatory, but you may wonder why we set `citecolor` and `linkcolor` to black. The `hyperref` package is good, it actually creates links for all kinds of things in the document, and gives them unique link colors. However, in this short document, that's kind of overkill, and a little visually distracting. So the links are still there, it's just that the text is black. So go ahead and click on the references numbers, like this one: [1] (which won't do much since the references are on this page), or figure numbers like this: 1, and you'll get hopped to the right page.

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**Works that you reference:** The best way to get a compact reference list as we have in this document is to use `biblatex` with the `Biber` backend.

However, that is relatively new-fangled as compared to the old style of using `natbib`, so we have left those commands commented out in the `.tex` file, but you have to play a lot more tricks with `natbib` to get something even close to what `biblatex` manages with much less typing.

Using `natbib` with the `numbers` option and the `unsrnat` `bibliographystyle` approximates the reference-style that has emerged for LPSC abstracts over the years, but there is no hard and fast rule. Others have used *Science's* `science.bst` style. You may think that the references take up too much vertical space (with each reference starting a new line). You can use the `paralist` package and enclose the bibliography stuff in a `inparaenum` environment (which is itself enclosed in a `flushleft` environment). Examples of how to do this are commented out in this source file. Of course, you don't have to use `natbib`, if you don't want to. However, if you really have that many references maybe you should be submitting this to a peer-reviewed journal and not just a conference.

**References:** [1] Helmut Kopka and Patrick W. Daly. *A Guide to  $\text{\LaTeX}$* . Third. Addison-Wesley, 1999. [2] Lunar and Planetary Institute. *Abstract Submission Instructions*. <http://www.hou.usra.edu/meetings/lpsc2016/programAbstracts/instructions/>. 2016. [3] A. Light and P. J. Bartlein. "The End of the Rainbow? Color Schemes for Improved Data Graphics". In: *EOS Transactions* 85 (Oct. 2004), pp. 385–391. URL: <http://geography.uoregon.edu/datagraphics/>. [4] D. Borland and R.M. Taylor. "Rainbow Color Map (Still) Considered Harmful". In: *Computer Graphics and Applications, IEEE* 27.2 (Mar. 2007), pp. 14–17. ISSN: 0272-1716. DOI: [10.1109/MCG.2007.323435](https://doi.org/10.1109/MCG.2007.323435). [5] DA Green. "A colour scheme for the display of astronomical intensity images". In: *arXiv preprint arXiv:1108.5083* (2011).