Reproducible Paper:

Writing technical papers by using Madagascar and \LaTeX

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Sep 6, 2020
Motivations

How to use SEGTeX
- Requirements
- Implement steps
- Rules
- Some tips

Simple Example
Motivations

• MS-word--> LaTeX

  “I hope to die before I have to use Microsoft Word”
  – Donald Ervin Knuth

  Reasons:
  – 1) Focus on paper structure and content;
  – 2) Better mathematic style;
  – 3) More efficient (easy comments);
  – 4) Better revision for long document;
  – 5) Sole high-quality text software in Linux;
  – 6) Compiling by command line and supported by Madagascar.

• “All technical papers should be "reproducible" in the sense that someone of reasonable skill ought to be able to read the paper and then reproduce the results.”
  – Joe Dellinger

• Remember, LaTeX is not perfect, either MS-word or LaTeX is just a tool, choose any of them you need.
SEGTeX

SEGTeX is a LaTeX package for geophysical publications. It consists of
- LaTeX class files for Geophysics papers, SEG expanded abstracts, etc
- BibTeX style files seg.bst
- BibTeX cumulative bibliography of geophysical publications SEG.bib
- latex2html@ customizations

LaTeX package for paper submission to GEOPHYSICS

A typesetting package is available to help authors prepare papers for GEOPHYSICS. The package consists of a set of macros designed specifically for GEOPHYSICS and the SEG Annual Meeting Expanded Abstracts.

Authors who use the LaTeX typesetting program to prepare their manuscripts can use the SEG macros (called SEGTeX) to format the text, equations, references, and appendices so that they conform to Geophysics guidelines for submission. If using BibTeX to create references, authors must run BibTeX before submitting the .tex file and read in or paste the resulting contents of the generated .bbl file within the bibliography section of the .tex file. All LaTeX submissions must include only one .tex file and a PDF of that file. You may send questions concerning LaTeX files to the SEGTeX mailing list.

To submit papers to Geophysics, follow the procedures described in the SEG Instructions to Authors (in the January-February issue of Geophysics and on this Web site at the link above). The manuscript will undergo the standard review process. Once all revisions and changes to the manuscript are made and the manuscript is accepted, LaTeX files will be converted to Microsoft Word documents for production.
Outline

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Installation Requirements

1) Madagascar package
   download from: http://www.ahay.org/wiki/Download

2) LaTeX package
   download from: http://www.tug.org/texlive/

3) Text editor: emacs, gedit, vim, et al.

4) Compiler: pdflatex

5) SEGTeX:
   download from: http://www.ahay.org/wiki/SEGTeX
More presentations about Writing

(Fomel, School, 2006)

Writing a paper
using Madagascar

Tariq Alkhalifah
Seismic Analysis Group (SWAG)
KAUST
swag.kaust.edu.sa

(Alkhalifah, School, 2011)

Reproducible Paper:
Writing and publishing using LaTeX and Madagascar

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(Liu, School, 2015)

Writing a Reproducible Paper
using LaTeX and Madagascar

Jiubing Cheng & Yang Liu

(Cheng and Liu, School, 2017)
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Simple Example
Implement steps

1) Ideas

2) Implement ideas in Madagascar and lock Figures (scons `fig.lock`)

3) Write a paper text by following SEGTeX rules

4) Insert Figures into paper by following SEGTeX rules
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Simple Example
Some rules

Project folder

SConstruct

Example #1
folder

......

Example #n
folder

texname.tex
bibname.bib

SConstruct

Fig
folder

SConstruct

Fig
folder

Look inside example: ~/madagascar-3.0/book/jlu/txsopf
Some rules

Look inside example: ~/madagascar-3.0/book/jlu/txsopf
Some rules:

If (paper name is “paper.tex”) 

    from rsf.tex import *
    End(use='listings')

else (“texname.tex”)

    from rsf.tex import *

    Paper('texname',lclass='geophysics',
          options='noblind,manuscript',use='listings')
    End()
1) SEP report  
   no need \texttt{lclass} and options

2) Geophysics  
   \texttt{lclass='geophysics', options='manuscript'}

3) Geophysical Prospecting  
   \texttt{lclass='geophysics', options='manuscript,a4paper'}

4) SEG abstract  
   \texttt{lclass='segabs'}

5) EAGE abstract  
   \texttt{lclass='name', options='11pt'}

\textbf{Need edit name.cls}  
See template "\texttt{texmf/tex/latex/cwp/adam2009.cls}"

\textbf{Revised mode: options='manuscript, revised'}
from rsf.proj import *

Fetch('Txx.HH','septour')

Result('wiggle0','Txx.HH','wiggle')

Flow('windowed','Txx.HH','window n2=10 min1=0.4 max1=0.8')

plotpar = '''
    transp=y poly=y yreverse=y pclip=100 nc=100 allpos=n'''

for plot in ('wiggle','contour','grey'):
    Result(plot,'windowed',plot + plotpar)

End()
\title{paper title}

\address{\footnotemark[1] address1 \footnotemark[2] address2 \footnotemark[3] address3}
\author{Name1\footnotemark[1], Name2\footnotemark[2], and Name3\footnotemark[3]}
\footer{GEO-2020-XXXX}
\lefthead{Surname1 et al.}
\righthead{short title}
\maketitle

\begin{abstract}
Write paper abstract here ...
\end{abstract}
The paper starts from old idea \cite{refname1}. \cite{refname2} also improve it. ...

The theory is shown as follows ...
\begin{equation}
\mathbf{C} = \frac{\mathbf{A}}{b}
\end{equation}
Refer to equation~\ref{eq:eq1}.

\section{section name, e.g., Theory}
\subsection{subsection name}

The theory is shown as follows ...
\section{Synthetic examples}
The paper has several synthetic tests...

\inputdir{example#1 folder name}
\multiplot{2}{fig1,fig2}{width=0.5\textwidth}{figure1 name (a) and figure2 name (b)}

One can also refer to different figures, e.g., Figure\ref{fig:fig1,fig2}a ...

\section{Field data tests}
The method is also used to deal with field data (Figure\ref{fig:fig3}).

\inputdir{example#2 folder name}
\plot{fig3}{width=0.75\textwidth}{figure3 name.}
\section{Conclusion}
Write conclusion here...

\section{Acknowledgments}
Should thank anyone for useful help...

\appendix
\section{Appendix: name}
Write the content of appendix here...

\bibliographystyle{seg}
\bibliography{SEG,bibname}
Make revision available:

Use \texttt{\new{new contents}} and \texttt{\old{old contents}} to indicate “revised contents” and “replaced contents” corresponding to SConstruct[1] “options='revised' ”

**Tricks:**

Equations, citation commands, etc don't work inside \texttt{\old}.

1) Enclose citations in \texttt{\mbox}:

   Instead of \texttt{\old{wrong citation \cite{wrong}}}, use \texttt{\old{wrong citation \mbox{\cite{wrong}}}}.
2) Enclose equations in \parbox or minipage

\begin{minipage}{\textwidth}
\begin{equation}
2*2 = 5
\end{equation}
\end{minipage}

or

\parbox{\textwidth}{
\begin{equation}
2*2 = 5
\end{equation}
}

\end{parbox}
@Article{Abma05,
  author = {R[] Abma and N[] Kabir},
title = {Comparisons of interpolation methods},
journal = {The Leading Edge},
year = 2005,
volume = 24,
pages = {984-989}
}

@Article{Naghizadeh09,
  author = {M[ostafa] Naghizadeh and M[auricio] D[] Sacchi},
title = {f-x adaptive seismic-trace interpolation},
journal = {Geophysics},
year = 2009,
volume = 74,
pages = {V9-V16}
}
Check “texmf/bibtex/bib/seg/SEG.bib” before you start to type the references.
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Simple Example
1) Label parameter:
   - http://ahay.org/blog/2008/03/26/a-journal-requires-tick-labels-on-my-plots-to-be-oriented-vertically-and-aligned-on-the-left-how-do-i-achieve-that/
   - http://ahay.org/blog/2008/10/15/a-journal-requires-a-particular-font-e-g-arial-or-helvetica-in-figure-labels-how-do-i-achieve-that/

2) Figure color:
   - http://ahay.org/blog/2005/03/28/color-schemes/
   - http://ahay.org/blog/2013/03/19/color-palettes/
   - http://ahay.org/blog/2014/05/15/light-bartlein-color-palette/
   - http://ahay.org/blog/2014/10/18/tutorial-on-colormaps/
   - http://ahay.org/blog/2015/07/12/more-colormaps/
Some tips

3) Insert hand drawing:
   (a) XFig
   (b) MS-PowerPoint -> Adobe Illustrator -> EPS/PDF file
   (b) MS-PowerPoint -> Adobe Acrobat Professional -> EPS/PDF file

4) Control figure color and resolution (SConstruct [1]):

   Paper('name',lclass='geophysics', options='manuscript',
   use='listings', hires='fig1 fig2 fig3', color='fig4 fig5 fig6')

5) Insert only grey figures in LaTeX (SConstruct [1]):

   from rsf.tex import *
   import os
   os.environ['PSTEXPENOPTS'] = 'color=n'

   End(use='amsmath,hyperref',options='manuscript')
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Never start from scratch!

STEP 1:

STEP 2:
$cd ~/school2020
$sftour pscons lock

STEP 3:
$scons school2020.read

STEP 4:
✓ Change examples in SConstruct[2] and LaTeX files
✓ Change parameters in SConstruct[1] to get different template
✓ Loop over STEP 2-4
Stand on each other’s shoulders (not each other’s toes)!

Modify/add your own data tests, write your own papers ...

http://www.ahay.org