# Latex Training Document

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# Contents

## List of Figures

## List of Tables

I have now forced a new page. Look at the code.

# 1 First things first: What is it and how do I install LaTeX !!!

## 1.1 What is it?

I dont want reinvent the wheel... here is the link to the wiki book.
http://en.wikibooks.org/wiki/LaTeX/Introduction

## 1.2 How to install LaTeX !!!

I have re-invented the wheel for this one... sometimes you get a better wheel!

First of all, there are lots of different types of LaTeX distributions. To simplify your search process I will suggest you choose from the below(last updated , September, 3rd, 2011). (I suggest following the instructions at this website if your having trouble with the install: http://www.haptonstahl.org/latex/start_downloading.php)

### 1.2.1 WINDOWS and LINUX users:

Download the latest version of Tex Live or MikTex (currently 2.8). It should come with TeX-Works as the user interface.
http://docs.miktex.org/2.8/relnotes/

### 1.2.2 MAC users:

Download the latest version of MacTeX. This comes with TeXShop as the user interface (TeX-Works is unashamedly based on TeXShop. TeXShop is older, and more developed, so at the moment is better. However, keep checking the net for comparisons. If you plan to use multiple platforms (Mac, Linux and Windows, then use TeXWorks, so you only have to learn how to use one style).
http://www.tug.org/mactex/2009/

# 2 The absolute basics

## 2.1 How to create a document with "hello world" as the content

Go to this link http://www.youtube.com/watch?v=kQl2XdBiWNE&feature=related
I suggest saving the first document you create into a folder on the desktop called "MyFirstTex-Document". This is designed for TexShop but most of this is applicable to TexWorks too.

# 3 TexWorks ethos video link

http://www.youtube.com/watch?v=9-Z43CSPgM0

# 4 This is a section heading

This is where the text goes in a section. I will repeat this to create more words. A few more words. This is what happens when there is a really long sentence, or paragraph and how it looks on the page so you can see how it works. I will repeat this to create more words. I will repeat this to create more words. A few more words. This is what happens when there is a

really long sentence, or paragraph and how it looks on the page so you can see how it works. I will repeat this to create more words.

## 4.1 This is a subsection heading

This is where the text goes in a section. I will repeat this to create more words. A few more words. This is what happens when there is a really long sentence, or paragraph and how it looks on the page so you can see how it works. I will repeat this to create more words. I will repeat this to create more words. A few more words. This is what happens when there is a really long sentence, or paragraph and how it looks on the page so you can see how it works. I will repeat this to create more words.

### 4.1.1 This is a subsubsection heading

This is where the text goes in a section. I will repeat this to create more words. A few more words. This is what happens when there is a really long sentence, or paragraph and how it looks on the page so you can see how it works. I will repeat this to create more words. I will repeat this to create more words. A few more words. This is what happens when there is a really long sentence, or paragraph and how it looks on the page so you can see how it works. I will repeat this to create more words.

**This is a paragraph heading** with a few illustrative following paragraphs. This paragraph is to show you how to insert new parargraphs with funky headings.

And then how to make a normal paragraph too, with a different indent etc. And then how to make a normal paragraph too, with a different indent etc. And then how to make a normal paragraph too, with a different indent etc. And then how to make a normal paragraph too, with a different indent etc. And then how to make a normal paragraph too, with a different indent etc.

I have created the space, or empty line, by using a command, see the code. And then how to make a normal paragraph too, with a different indent etc. And then how to make a normal paragraph too, with a different indent etc. And then how to make a normal paragraph too, with a different indent etc. And then how to make a normal paragraph too, with a different indent etc. And then how to make a normal paragraph too, with a different indent etc. And then how to make a normal paragraph too, with a different indent etc. And then how to make a normal paragraph too, with a different indent etc. And then how to make a normal paragraph too, with a different indent etc. And then how to make a normal paragraph too, with a different indent etc.

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Figure 1: This is how you make a figure

## 5   How to make Figures and Tables

LaTeX has a sensible, but very annoying, function that automatically locates your figures in the document where it believes is the best spot, NOT where you placed it in the text / code. Sometimes getting the figure to be exactly where you want it in a long document is tricky. However, because it does this, figures and tables are always located in the same relative positions throughout the entire document (e.g. top of the page) which gives the document a real sense of balance and continuity... It is still really annoying sometimes though...

To force LaTeX to ignore this functionality sometimes, use either:

`\begin{figure}[h]`   where h=here

or

`\FloatBarrier`   which forces all previous "floats" (figure or table environments) to be placed in the document before any of the following text / code.
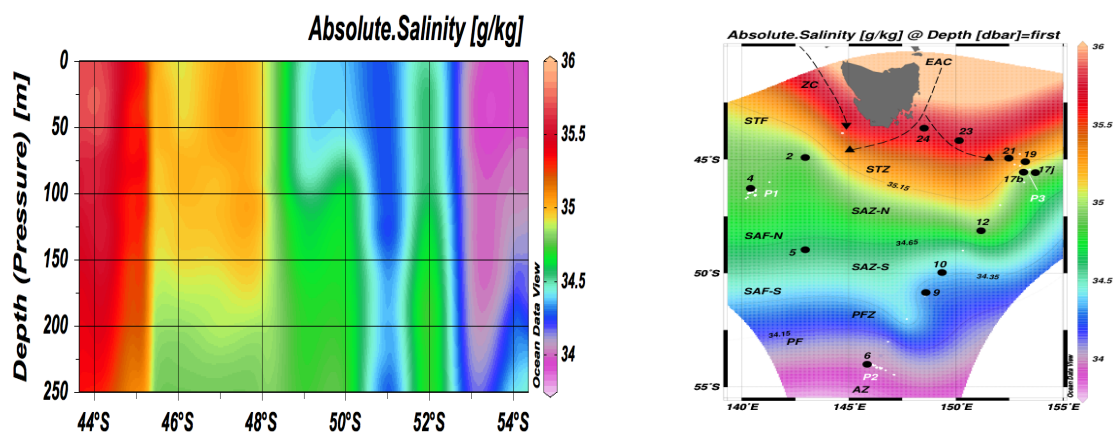
(a) This is a plot of *Absolute Salinity* across a section of the ocean, x-axis is latitude, y-axis is depth



(b) This is a plot of *Absolute Salinity* across the surface of the ocean around Tasmania in summer 2007, x-axis is longitude, y-axis is latitude
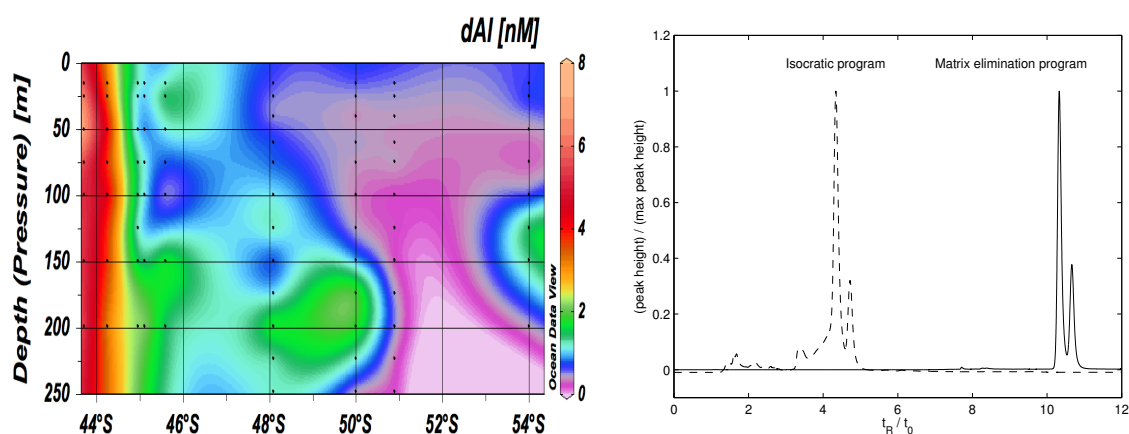


(c) This is a plot of *dissolved aluminium* across the same section of the ocean as 2(a), x-axis is latitude, y-axis is depth



(d) This plot displays the effect of using a matrix elimination step during the analysis of a aluminium–lumogallion complex in a seawater sample

Figure 2: This is how you do subfigures

Figure 3: This is how you get two pictures in the same figure on the same line



Figure 4: This is how you get two pictures in the same figure one on top of the other

# 6 How to use bold and *italics*, and *emphasize*

## 6.1 Bold

This is where the text goes in a subsection. **I will repeat this to create more words.** I will repeat this to create more words. I will repeat this to create more words.

## 6.2 Italize

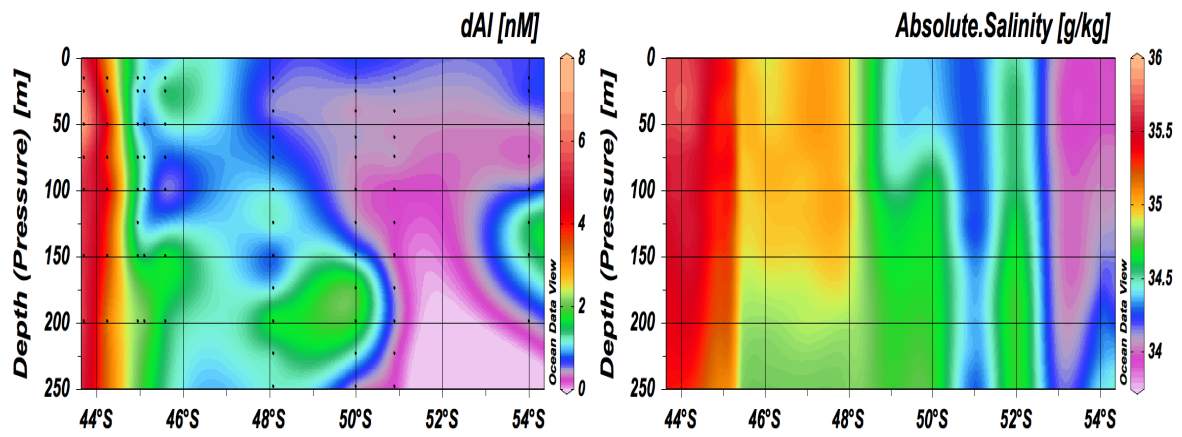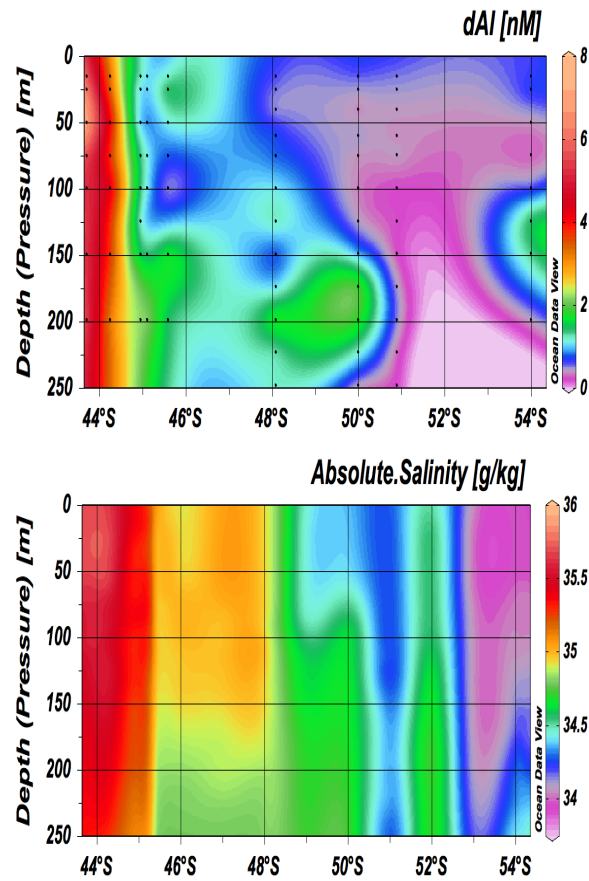A few more words. This is what happens when there is a really long sentence, or paragraph and how it looks on the page so you can see how it works. *A few more words. This is what happens when there is a really long sentence, or paragraph and how it looks on the page so you can see how it works. I will repeat this to create more words.* A few more words. This is what happens when there is a really long sentence, or paragraph and how it looks on the page so you can see how it works. I will repeat this to create more words.

## 6.3 Emphasize

A few more words. *This is what happens* when there is a really long sentence, or paragraph and how it looks on the page so you can see how it works. *Check the* **source** *code for the various ways these* commands *can be* **used.** *Check the source code for the* **various** *ways* these *commands can be used.* A few more words. This is what happens when there is a really long sentence, or paragraph and how it looks on the page so you can see how it works. I will repeat this to create more words.

# 7 How to add different coloured text

NB: Note the different code I have used to end the line here!!!! I have repeated it below as well.
It shows how to make a newline, without makeing a new paragraph
And the color change I have used.    However this is how you make a normal parargraph. However this is how you make a normal parargraph. However this is how you make a normal parargraph. However this is how you make a normal parargraph.

However this is how you make a normal parargraph. However this is how you make a normal parargraph. However this is how you make a normal parargraph. However this is how you make a normal parargraph. However this is how you make a normal parargraph. However this is how you make a normal parargraph.

NB: Note where this sentence is in the code, and where it is relative to all the figures in the document. LATEX decides where figures work best, given the space available in the document.

Table 1: This is how you make a table.

| | Multiple columns are done like this | | |
|---|---|---|---|
| **Multiple rows, like this** | aardvark | bison | cat |
| | dog | emu | fish |
| | giraffe | horse | iguana |
| | jaguar | kite | lizard |
| **Footnotes in tables**[1] | Are done | using the | *threeparttable* package;[2] [3] |

[1] Footnotes in tables should be avoided. Conventions for good table formatting is summarised in the *booktabs* package, and I recommend you use that to produce your tables.

[2] However sometimes they are necessary, and you need to use the *threeparttable* package for that.

[3] For tables with a lot of content, or that already exist in excel, I suggest investgating how to use the "OpenOffice" plugin called "Calc2Latex". This simplifies the construction and alteration of content in the latex code you need in a table.

I have now forced a new page. Look at the code.

Note where the table is in the code, and where it is in the document. Tables and figures are called *floats*, and so they are 'floating' to the best position for the readers eye-flow while reading.

# 8   Making lists (bullets points and the like...)

Below is a few examples of making lists... There are many more styles.

- Point 1

- Point 2

- Point 3

  1. Point 3.1
  2. another point 3.2
  3. another 3.x
     – Some extra 3.x.a
     – Some extra 3.x.1
     – Some extra 3.x.zebra
  4. some more points
  5. some more points

- some more points

- some more points

- some more points

# 9 How you do equations

## 9.1 Puting equations in the text

This is how you do equations in a sentence using the Math environment: $a = b + 7c^2 - d_{testing} \times 15e^{2_i^h} \to 2f_{2\Delta}$.

However, this equation is cut in half by the end of the line on the page. So to force and 'end of line', I will put in a 'newline' command =

    \\

So that again is:

This is how you do equations in a sentence using the Math environment:

$a = b + 7c^2 - d_{testing} \times 15e^{2_i^h} \to 2f_{2\Delta}$

## 9.2 Numbering equations

This is how you give equations a number and a lot of space!!

$$\rho + \delta - \frac{345^{x^2} + \theta \times \Omega_{x-1}}{rarely\ you\ may\ want\ (some\ written\ text\ \times \pi + \chi)} \tag{1}$$

## 9.3 Refer to your figures and tables in the text

I will now reference the figures again. I added a command inside each table or figure environment that was

    \label{RandomNameForFigure}

. I now use

    \ref{RandomNameForFigure}

to refer to each figure, subfigure or table in the text.

When used it look s like this: So I refer to what is in table 1, and the figures 1 and 4, there are no subfigures. However in figure 2 there are subfigures, such as 2(c), and the rest...

# 10 Which spell checker to use....

Go online and find the most appropriate for your platform.

## 10.1 Suggested spell checker for Mac OSX

I use a Mac, with OSX so I use CocoaSpell (its awesome). It has a dictionary the includes all of the latex commands (like \section), which is really handy.

## 10.2 Suggested spell checker for Windows

Unknown...

## 10.3 Suggested spell checker for Linux

If your using linux, you can probably figure out how to find the one that suits you best, based on the distribution and form of LaTeX your using...

## 11 How to cite references in LaTeX

This is how you cite references in latex. It is very like using endnote, so if you know how to do that, find the referencing software for your platform (I suggest JabRef, operates on all platforms, very versatile, lots of functionality), install it, and use it!

However, if you have never used any referencing software (THEN START!!!), you will need a little bit of learning to get it to work. Its easy and straight forward, but outside of the scope of this tute. If you need help ask me.

### 11.1 This is just a small example of how you reference sources.

First person to suggest humans may effect climate was Fourier [1]. The first person to suggest $CO_2$ may trap a large amount of heat per molecule was Tyndall [2] (John Tyndall is a legend, if you havent heard of him, look it up on the net). Andy Bowie is my supervisor and he has written scientific papers [3] [4]. Thomas Trull is my old boss and he has also written some papers [5] [6]. Juliette Tria did some work on her PhD, and her papers effectively explain what I was trying to do in mine [7] [8]. Stefane Blain was nice enough to put me on his paper after I participated in an oceanographic voyage from Reunion Island to Kerguelen Island [9].

## 12 Journal article templates

Elesvier Journals (most of them)
http://www.elsevier.com/framework_authors/misc/journal_refstyles.pdf (please send myself or Spoon the links to any other repositories you find)

## 13 More info

NB: Copy and paste websites from the .pdf, **NOT** from the code. You can just click on them too. (Disclaimer: some of these might be too old, I have not recently checked them).

### 13.1 Cheat sheet of common commands

This will be useful once you get used to using LaTeX .
http://www.stdout.org/~winston/latex/latexsheet.pdf

### 13.2 User Manual

There are heaps online, start the home website and go from there:
http://www.latex-project.org
A good online guide written in 'real person' instead of programmer-speak is :
http://www.haptonstahl.org/latex/index.php

### 13.3 Find Latex symbols here

Symbols used in latex can be found at these sites:
http://omega.albany.edu:8008/Symbols.html
http://www.artofproblemsolving.com/Wiki/index.php/LaTeX:Symbols
http://www.ctan.org/tex-archive/info/symbols/comprehensive/symbols-a4.pdf

### 13.4 How to import excel spreadsheets (but I would sugest using OpenOffice with the Calc2Latex plugin)

See this website:

http://www.mackichan.com/index.html?techtalk/v30/30ts71.htm~mainFrame

### 13.5 How to use 'R' (an open-source statistics package) with/in latex.

See this website:

http://www.stat.umn.edu/~charlie/Sweave/

This would be useful if you are doing regular reports using the same stats each time period.

### 13.6 Anything else, consult the Oracle of Google...

Use real english into google after the keyword "latex":

i.e. Type into the google search window "latex how do I make a figure" or "latex figure" or "latex *whatever you want to know*". Just try heaps of different synonyms for the thing you want.

## References

[1] J. B. J. Fourier. Remarques générales sur les températures du globe terrestre et des espaces planétaires. *Annales de Chemie et de Physique*, 27:136–67, 1824.

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[3] A. R. Bowie, D. J. Whitworth, E. P. Achterberg, R. F. C. Mantoura, and P. J. Worsfold. Biogeochemistry of fe and other trace elements (al, co, ni) in the upper atlantic ocean. *Deep-Sea Research Part I-Oceanographic Research Papers*, 49(4):605–636, 2002.

[4] A. R. Bowie, S. J. Ussher, W. M. Landing, and P. J. Worsfold. Intercomparison between fi-cl and icp-ms for the determination of dissolved iron in atlantic seawater. *Environmental Chemistry*, 4(1):1–4, 2007.

[5] T. W. Trull, D. Davies, and K. Casciotti. Insights into nutrient assimilation and export in naturally iron-fertilized waters of the southern ocean from nitrogen, carbon and oxygen isotopes. *Deep-Sea Research Part II-Topical Studies in Oceanography*, 55(5-7):820–840, 2008.

[6] T. W. Trull, S. G. Bray, K. O. Buesseler, C. H. Lamborg, S. Manganini, C. Moy, and J. Valdes. In situ measurement of mesopelagic particle sinking rates and the control of carbon transfer to the ocean interior during the vertical flux in the global ocean (vertigo) voyages in the north pacific. *Deep-Sea Research Part II-Topical Studies in Oceanography*, pages 1684–95, 2008.

[7] J. Tria, P. R. Haddad, and P. N. Nesterenko. Determination of alluminium using high performance chelation ion chromatography. *Journal of Separation Science*, 31(12):2231–2238, Jul 2008.

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[9] S. Blain, B. Queguiner, L. Armand, S. Belviso, B. Bombled, L. Bopp, A. R. Bowie, C. Brunet, C. Brussaard, F. Carlotti, U. Christaki, A. Corbiere, I. Durand, F. Ebersbach, J. Fuda, N. Garcia, L. Gerringa, B. Griffiths, C. Guigue, C. Guillerm, S. Jacquet, C. Jeandel, P. Laan, D. Lefevre, C. Lo Monaco, A. Malits, J. Mosseri, I. Obernosterer, Y. Park, M. Picheral, P. Pondaven, T. Remenyi, V. Sandroni, G. Sarthou, N. Savoye, L. Scouarnec, M. Souhaut, D. Thuiller, K. Timmermans, T. Trull, J. Uitz, P. van Beek, M. Veldhuis, D. Vincent, E. Viollier, L. Vong, and T. Wagener. Effect of natural iron fertilization on carbon sequestration in the southern ocean. *Nature*, 446(26):1070–1075, April 2007.