NEW LATEX TOOLS

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POLYTECHNIQUE MONTRÉAL

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1. INTRODUCTION

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2. CODE LISTING

The package **Listings** allow the writer to introduce and highlight codes (e.g python).

The basic form of the code provides as an output in black. Commentaries, libraries and other codes attributes can be highlighted once you indicate the language you want to use, as an example:

```
# Hour of occurrence - distribution
def histogram(occurrence_list, name):
        hour_list = [t.hour for t in occurrence_list]
        numbers = [x for x in range(0,24)]
        labels = map(lambda x: str(x), numbers)
        plt.xticks(numbers, labels)
        plt.xlim(0,24)
        plt.xlabel("Time of day (UTC - 3)", fontsize = 14)
        plt.ylabel("Number of occurrence", fontsize = 14)
        plt.title("Occurrence of events", fontsize = 18)
        plt.hist(hour_list, color = 'brown')
        plt.grid(c = 'silver')
        plt.show()
```

However, the code indentation must be introduce manually.

Another tool the Listing package is to import a code. Once again, the code language must be indicate. As in the following example:

```
# Python test file
#Hello
from scipy.io import loadmat
import pandas as pd
import matplotlib.pyplot as plt
import numpy as np
```

If you upload the code content and save it, it will update automatically in o latex document. In this case, the file is inside the latex paste. However, is it possible to add codes by indicating their directory. In addition, it is possible to select only a part of the code the "firstline" and "lastline" command. As an example we will only select the second line of the imported code:

```
from scipy.io import loadmat
import pandas as pd
```

The listings package is customisable. The code colours can be modified by using the **XColor** package. The color definition using RGB is at the main.tex file.

To implement the new style the following code (see the manual.tex source) can be used as base.

It is important to highlight the aforementioned code must be implement in the main.tex file.

```
# Python test file
#Hello
from scipy.io import loadmat
import pandas as pd
import matplotlib.pyplot as plt
import numpy as np
```

3. INSERTING GIF IN LATEX

Two steps are necessary to insert a image format gif in pdf. The first is run a command to convert the gif file to multiple png files. To perform this conversion, the "magick" program will be need.

To download it, you must access https://imagemagick.org/script/convert.php.

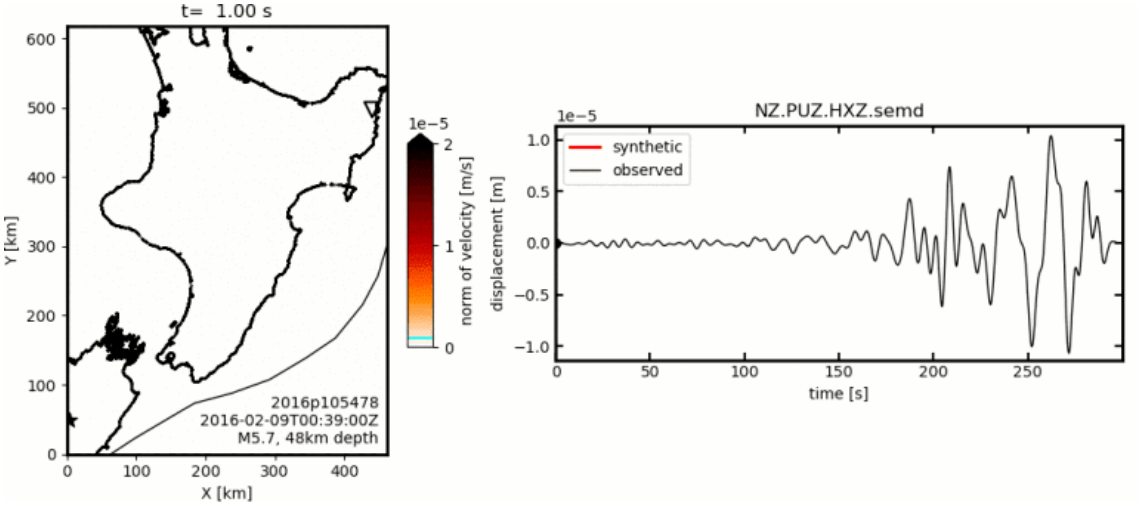
Then, in your computer command prompt, connect to the folder in which you have the gif file. In this manual, we used image from a SpecFem 2D example. For a gif named "name.gif", type the following command:

magick convert - coalesce name.gif name.png

The png files will be storage at the same directory. Depending on the gif file size, this process can take a while.

As an alternative, online converters can be applied. For large gifs, this browser converters are usually more efficient.

To insert the multiple png files as a gif, use the following latex command (see the tex file), providing the package options, frame rate, file base name and first and last file ID.



The main option provided by the animated package are:

- **autoplay** the gif starts automatically;
- **loop** the gif is reproduced in loop;
- **width=h-size** define the gif dimension; and
- **controls[=all** | **true** | **on]** or **controls=(none** | **false** | **off)** | **[play][,step][,stop][,speed]** adds and customizes controls for the animation.