Installing Supporting Software

Introduction

Running and compiling sfit's core code and processing environment involves installation of several software compilers. This page steps you through the installation for various operating systems.

You will need the following software:

- #Fortran compiler
- #C compiler
- #Make software
- #Python, including modules: Numpy, Scipy, and matplotlib

Fortran

Linux

We will assume you are running Ubuntu or some Debian derived linux. If you are using Ubuntu, most likely the GNU fortran compiler is installed already. To check this, at a terminal you can type:

```
dpkg --list | grep compiler
```

If you don't see gfortran listed then you can download the GNU fortran compiler by typing in the following in a terminal:

```
sudo apt-get install gfortran
```

Mac OS X

You can download the .dmg file for the GNU fortran compiler from the following link:

GNU Fortran Compiler

Windows

We highly suggest you install Cygwin which contains the set of GCC compilers. Cygwin can be found here:

Cygwin

C

Linux

If you are using Ubuntu, most likely the GNU fortran compiler is installed already. To check this, at a terminal you can type:

```
dpkg --list | grep compiler
```

If you don't see gcc listed then you can download the GNU fortran compiler by typing in the following in a terminal:

```
sudo apt-get update
sudo apt-get upgrade
sudo apt-get install build-essential
```

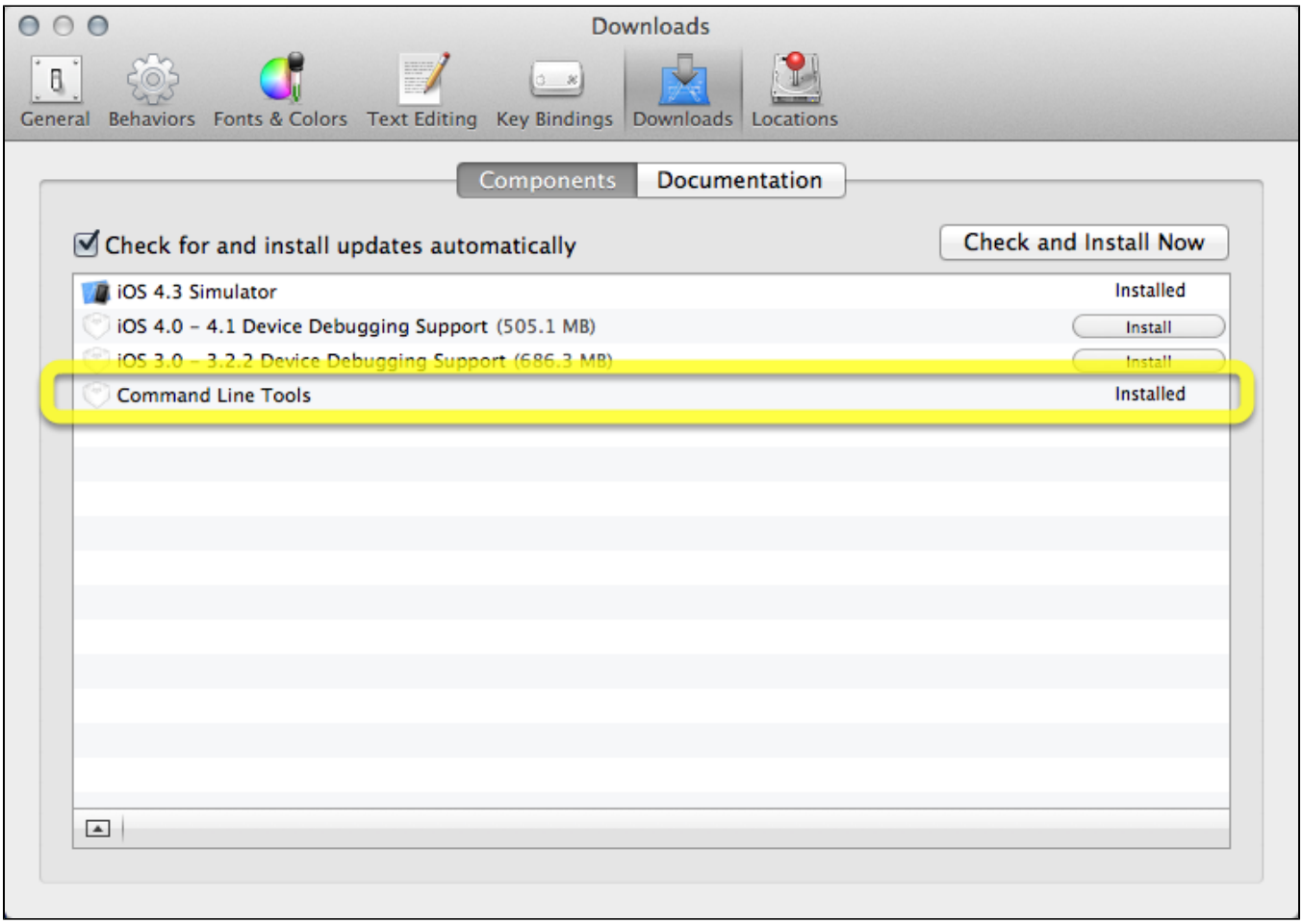
Mac OS X

Make sure you have Xcode installed on your computer. You can download Xcode for mac from the following location:

Xcode

You need to manually install command line tools for Xcode. This can be done from:

```
Xcode menu > Preferences > Downloads
```



Alternatively, there is a separate installation package available via:
Command Line Tools

Windows

We highly suggest you install Cygwin which contains the set of GCC compilers. Cygwin can be found here:

Cygwin

Make

Linux

We will assume you are running Ubuntu or some Debian derived linux. If you are using Ubuntu, most likely the GNU make installed already. To check this, at a terminal you can type:

```
make -v
```

If you get an error follow the instructions above for installing GCC

Mac OS X

GNU make should be installed when you install the command line tools in Xcode

Windows

GNU Make should be installed if you installed cygwin or MinGW

Python

The package has been tested with python >=2.7. However, Python 2.7 reached the end of its life on January 1st, 2020 and it is not maintained. Python3 is preferred.

Linux

To check if python is installed and what is the default version, type:

```
python -V
```

In addition you will need standard python libraries:

`os, sys, numpy, matplotlib, Tkinter, datetime, time, math, csv, itertools, collections, re,`

`scipy, pyhdf, cycler, h5py, abc, getopt, glob, logging, shutil, fileinput, subprocess, netCDF4`

The installation of python3 and these libraries are not covered here but as an example you can install them like this:

```
sudo apt-get install python-numpy python-scipy python-matplotlib
```

Python Deployment

It is recommended to add the PE directory to your PYTHONPATH and PATH environment variables. For example, add the following path to your shell,

i.e., a program designed to start other programs (.bashrc, .bash_profile, .profile) e.g., open your .bash_profile

```
vi ~/.bash_profile
```

and insert the following, for example,

```
export PATH=$PATH:/usr/local/lib/pythonX.Y/site-packages/Layer1
export PYTHONPATH=$PYTHONPATH:/usr/local/lib/pythonX.Y/site-packages/Layer1
```

use the above for all folders.

Additionally, the main python scripts on each folder use the shebang (top line in any script for standalone executable without typing python):

```
#!/usr/bin/python3
```

you can either modify the line with your prefered python version or type your python version in the command line, for example,

```
/usr/bin/python3 sfit4Layer1.py -?
```

Depending on the installation, often, especially when using the --home option it is necessary to change permissions to the directory. In this case, you might use the command below under the directory, e.g., under /dir/lib/python

```
sudo chmod -R 755 *
```