How to Install Canopy for VERAView

1 Overview

With the addition of the 3D volume slicer widget, VERAView now relies on Mayavi and its dependents. Enthought's Canopy Python environment provides everything VERAView needs, and pre-built Canopy versions for Windows, Mac OSX, and Linux can be downloaded from:

```
https://store.enthought.com/downloads/#default
```

However, after installing Canopy, it is necessary to use the Canopy *Package Manager* to install the *h5py*, *mayavi*, and *wxPython-3* modules VERAView needs. The steps required to install Canopy in order to run VERAView are described here for Windows, Mac OSX, and Linux.

> ***Note:***
>
> Enthought is continuously updating Canopy. As of this version of this document, the latest Canopy version is 1.7.4. The screen shots in the instructions below were captured from an install of version 1.6.1. Whenever a newer version of a required package is available, use the latest available. If an error occurs when running VERAView, downgrade the wxPython version to 3.0.2.0-1.

2 Windows

2.1 Step 1: Install Canopy

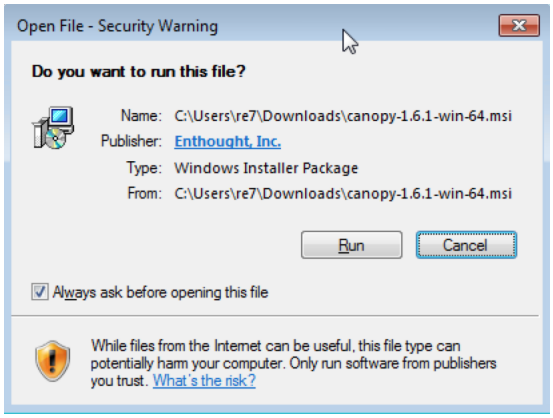
Download `canopy-1.7.4-win-64.msi` from the Enthought site.:

```
https://store.enthought.com/downloads/#default
```

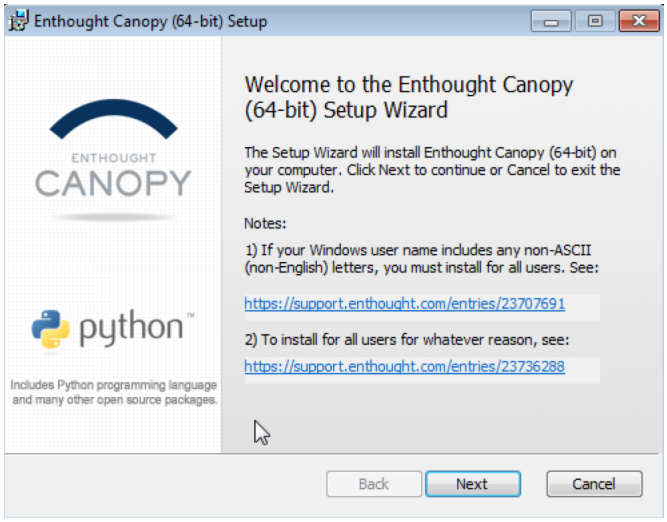
Note you can download a 32-bit version from Enthought if needed.

Launch the installer by clicking or double-clicking (as per your Folder options) the file in *Windows Explorer*, typing the filename in *Command Prompt*, or some other method. Note this is a per-user install that does not require elevated privileges.

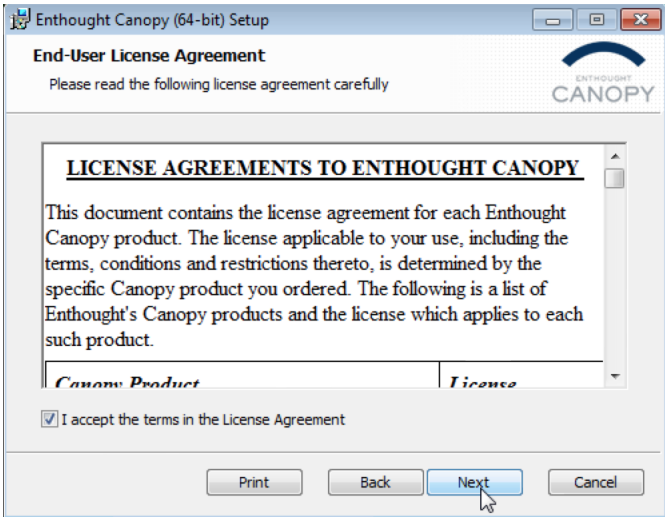
If you receive a security warning such as shown below, activate the *Run* button to continue the install.



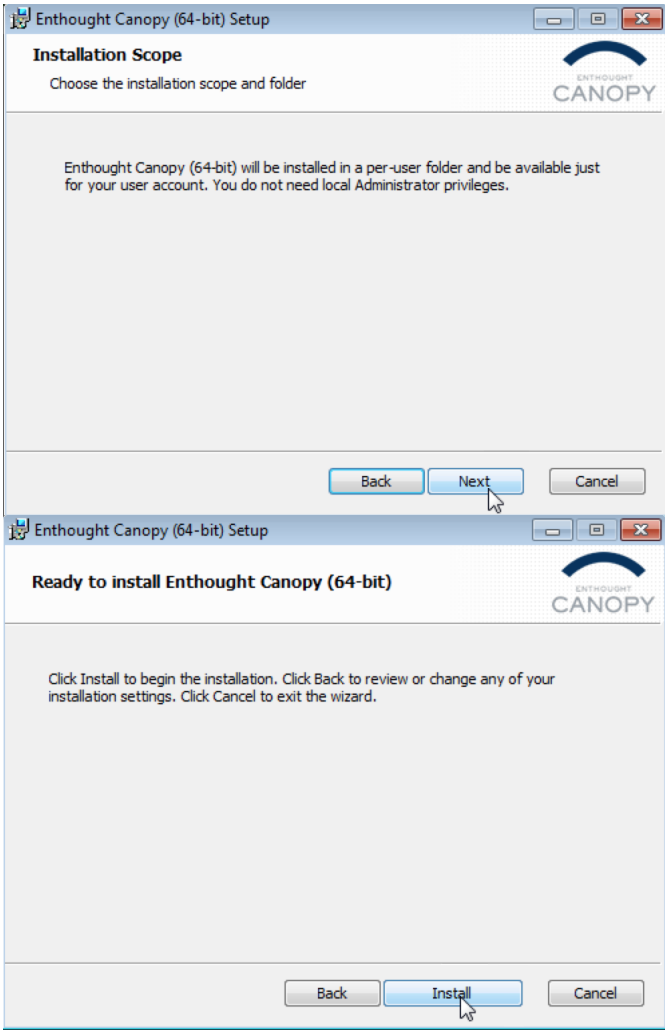
Activate the *Next* button when the Canopy installer wizard appears as shown below. Note you should use the default per-user install.



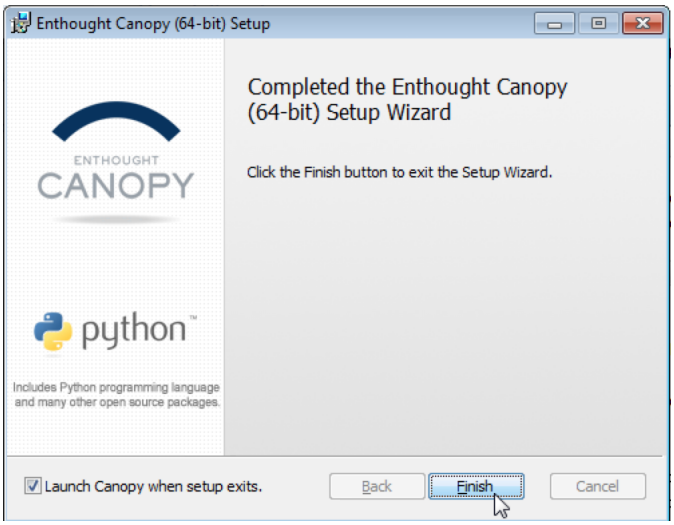
Accept the license and activate the *Next* button.



Continue the installation by activating the *Next* button after being informed of the per-user install and then activating the *Install* button.

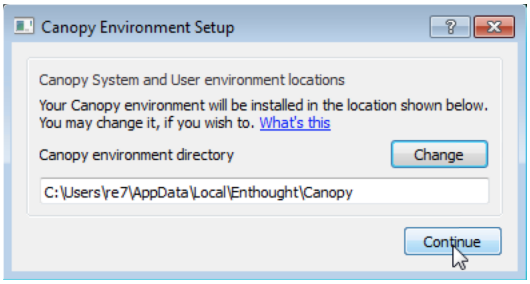


Complete the installation by checking *Launch Canopy* when setup exits and activating the *Finish* button.

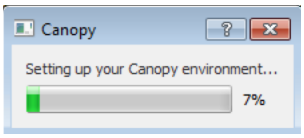


2.2 Step 2: Setup the Canopy Environment

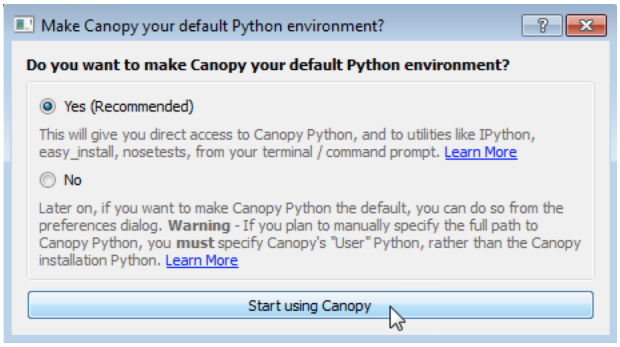
Upon the first execution, the Canopy application will set up the environment for your user account. By default, Canopy will install to `%homepath%\AppData\Local\Enthought\Canopy`. If you change this location, you will need to manually edit the `veraview.run.bat` file inside your VERAView installation directory. Unless you have good reason to choose an alternate location (via the *Change* button), accept the default directory and activate the *Continue* button.



After a few seconds, a progress dialog will appear. It can take several minutes for the setup process to complete.

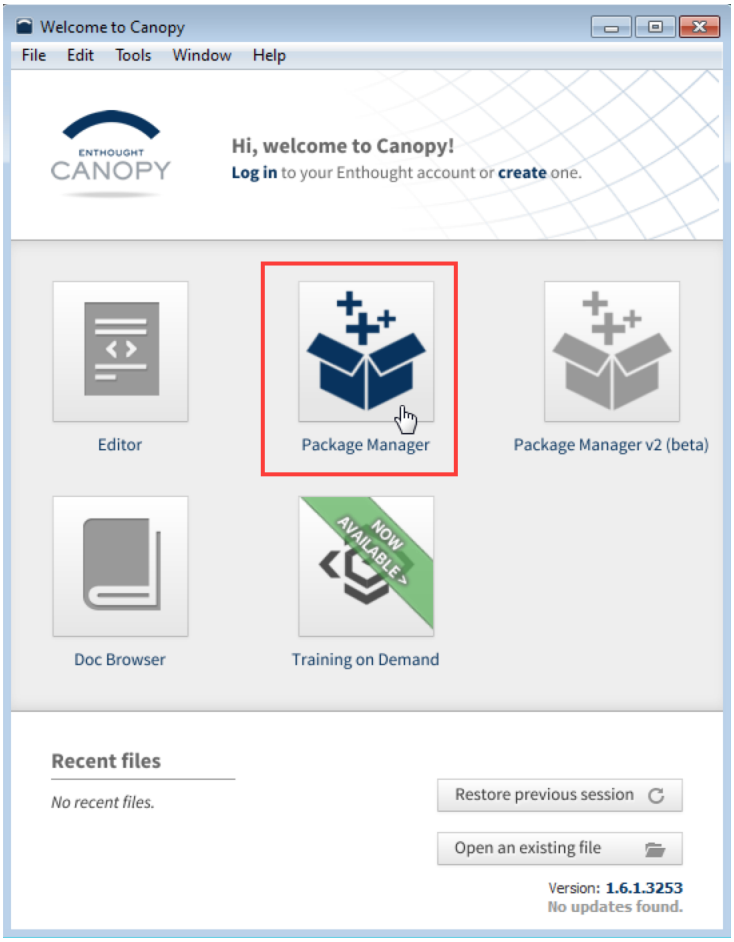


When the setup completes, you will be prompted to make Canopy's Python your default Python environment. This is completely up to you, for the VERAView launch script will reference Canopy directly. Activate the *Starting using Canopy* button to relaunch the Canopy application.

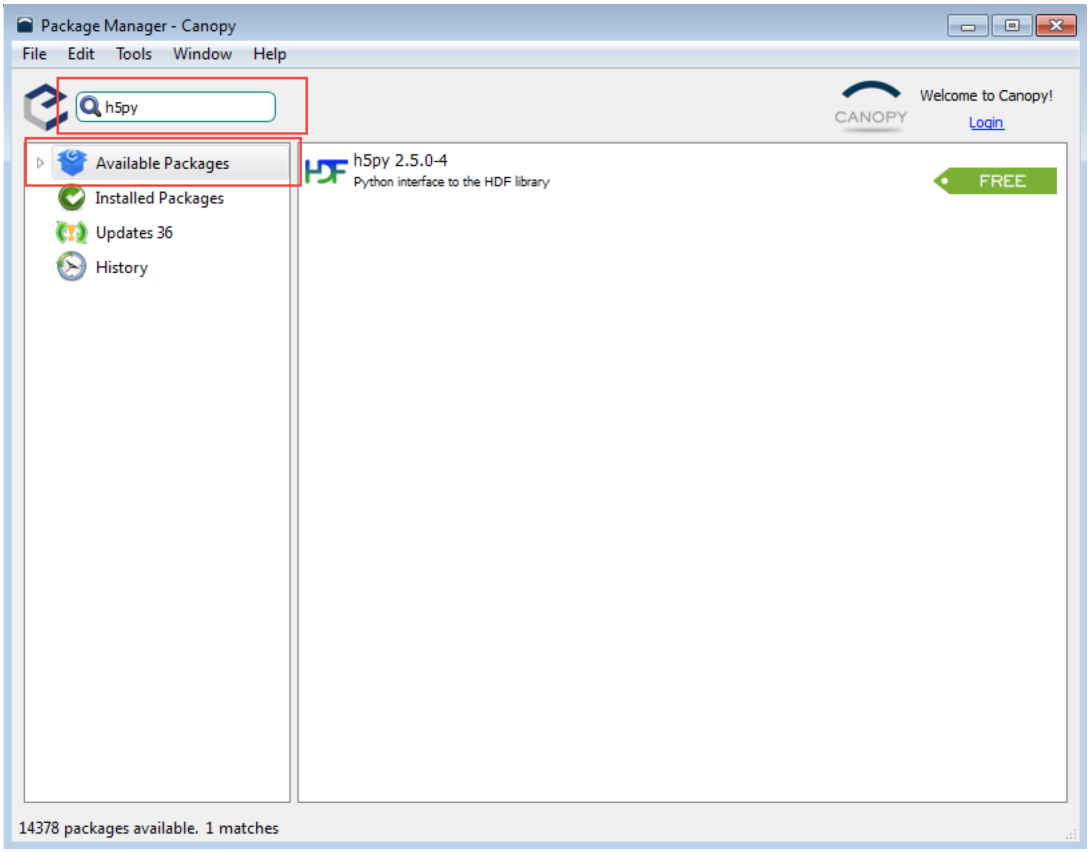


2.3 Step 3: Install the h5py Module

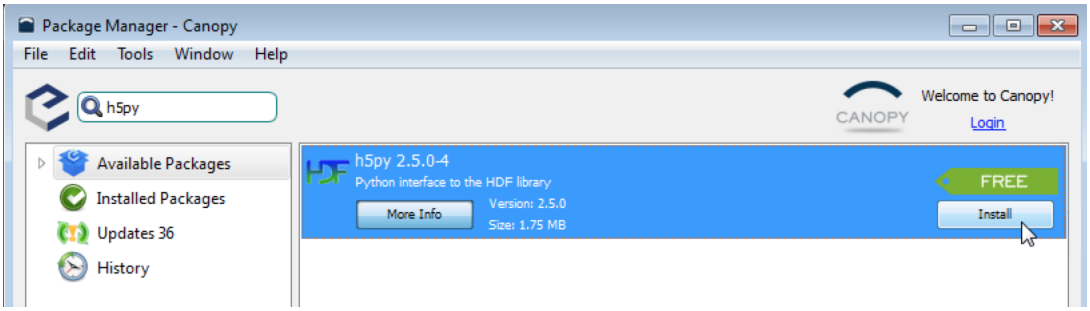
From the Canopy application, launch the *Package Manager* by clicking on its icon.



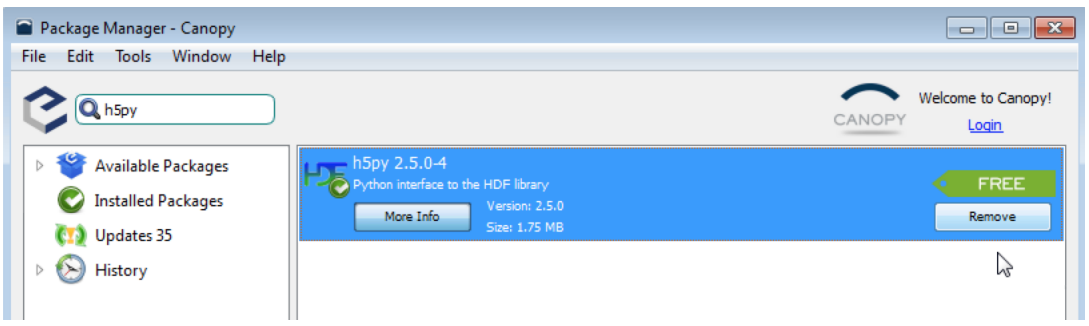
In *Package Manager*, select *Available Packages* selected and enter "h5py" in the search box. The package named "h5py 2.6.0-2" will appear in the package list panel.



Click *h5py 2.6.0-2* in the list panel to select it. Activate the *Install* (or *Upgrade to*) button to install it.

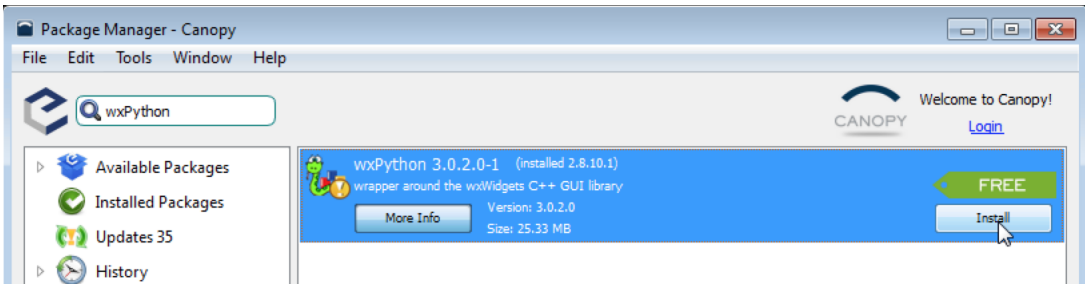


The module and dependency eggs will be downloaded and installed. When complete, the *Install* button will be renamed to *Remove*.



2.4 Step 4: Install the wxPython-3.0.2 Module

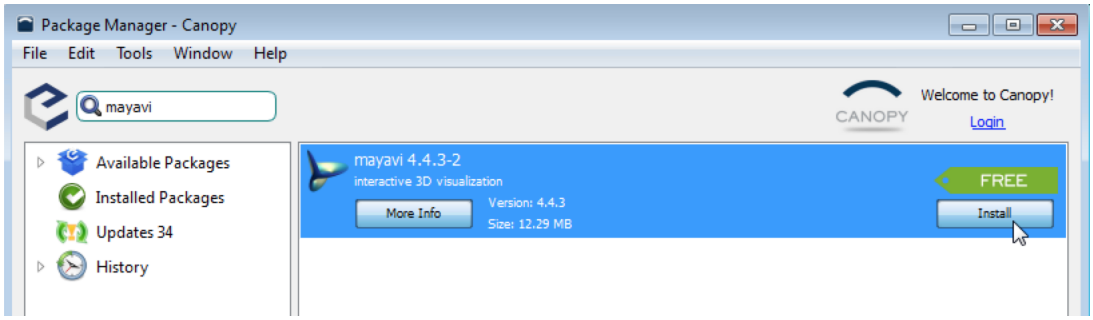
As per Step 3, seach for "wxPython" in *Available Packages*. This will result in *wxPython 3.0.2.0-3* appearing in the list panel. Click *wxPython 3.0.2.0-3* and activate the *Install* (or *Upgrade to*) button to install wxPython and all its dependencies.



> ***Note:***
>
> If VERAView fails with a message about image formats, you should downgrade to *wxPython 3.0.2.0-01* by selected that version from the *Available* combo box and activating the *Downgrade to v3.0.2.0-1* button.

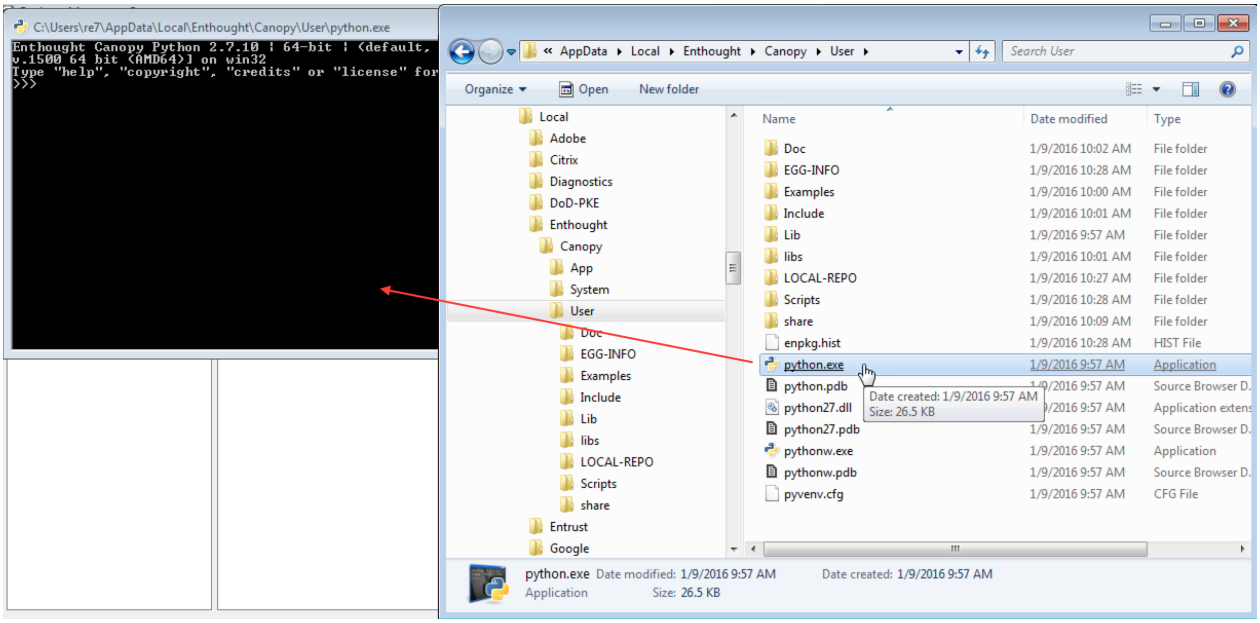
2.5 Step 5: Install the mayava-4.4.3 Module

As per Steps 3 and 4, search for "mayavi" in *Available Packages*. This will result in *mayavi 4.4.3-10* appearing in the panel. Click *mayavi 4.4.3-10* and activate the *Install* (or *Upgrade to*) button.

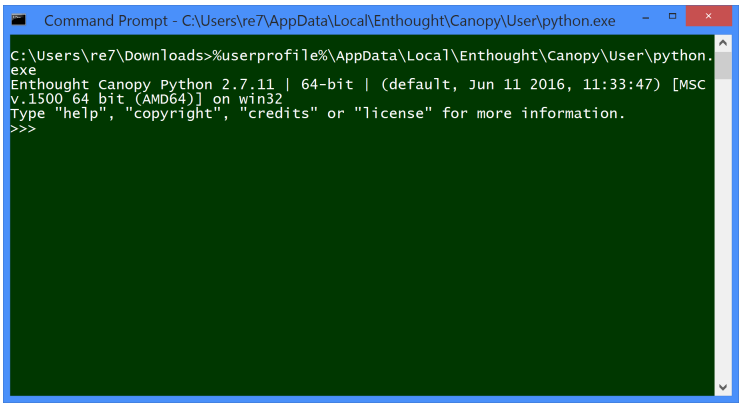


2.6 Step 6: Test the Environment

This is an optional but recommended step that involves launching a Command Prompt and running Python from the command line shell. The shell can be launched in one of two ways. First, using *Windows Explorer* locate the file `%userprofile%\AppData\Local\Enthought\Canopy\User\python.exe` and "open" it by clicking or double-clicking as per your Folder options. This should bring up an interactive prompt window.



Second, open *Command Prompt* and execute the path above.



Download the following script to test that needed modules are available.:

```
https://casl:rocks@newton.ornl.gov/~re7/xfer/casl/test/test-install.py
```

Run the test script from the command line.:

```
> %userprofile%\AppData\Local\Enthought\Canopy\User\python.exe test-install.py

Importing h5py and wx...
wx.version= 3.0.2.0 msw (classic)
Importing numpy...
Importing mayavi...
Good to go!
```

3 Mac OSX

3.1 Step 1: Install Canopy

Download `canopy-1.7.4-osx-64.dmg` (or the latest version) from the Enthought site:

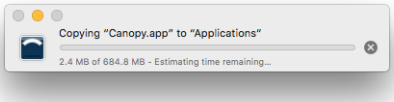
```
https://store.enthought.com/downloads/#default
```

Open or mount the installer image by double-clicking it in Finder or using the `open` command in a Terminal bash shell:

```
$ open canopy-1.7.4-osx-64.dmg
```

A Finder window will appear when the image is mounted.

In the Finder window, drag the *Canopy.app* icon onto the *Applications* folder icon to initiate the install. A progress window will appear during the copy.



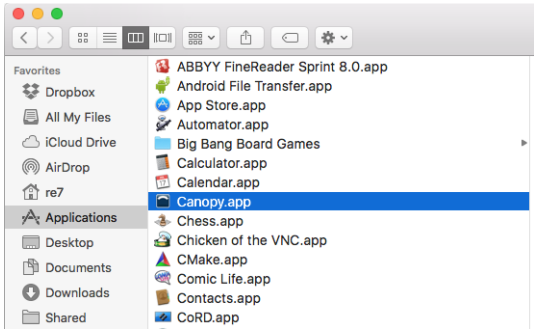
> Note, if you are an *Admin* user, the install will copy the application into the root level `/Applications`. Otherwise, it will be installed in `~/Applications`.

When the install finishes, you can unmount the installer image by clicking the unmount/eject icon in the main Finder window (under "Devices") or by using the `diskutil` command in a Terminal window:

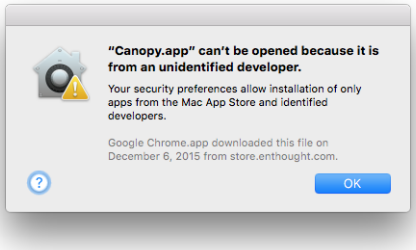
```
$ diskutil unmount /Volumes/Enthought
```

3.2 Step 2: Run the Canopy Application

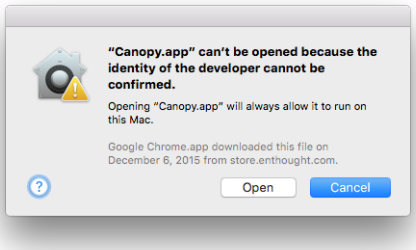
Run the Canopy application by double-clicking the *Canopy.app* icon under *Applications* in the Finder.



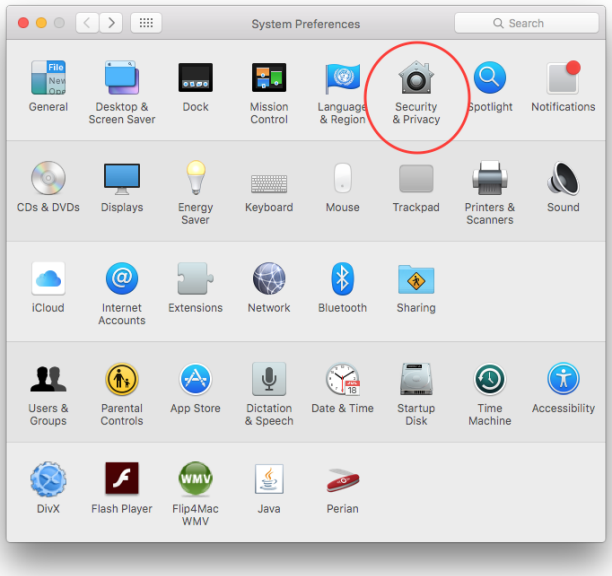
Depending on your *Security & Privacy* configuration, you may be presented with a security challenge since Canopy is not a signed application.



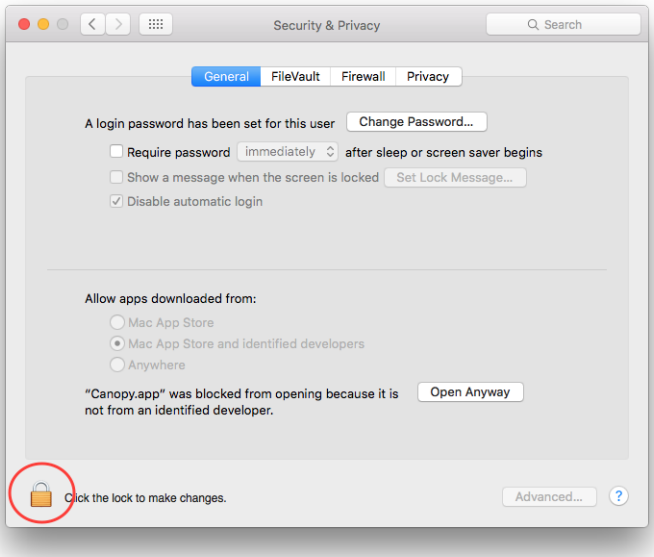
If so, click *OK* to remove the dialog. Return to the Finder window. Instead of double-clicking the *Canopy.app* icon, type and hold the `<Control>` key while left-clicking *Canopy.app* and choose *Open* from the popup menu. This will bring up another dialog verifying you want to run Canopy. Click *Open* on that dialog.



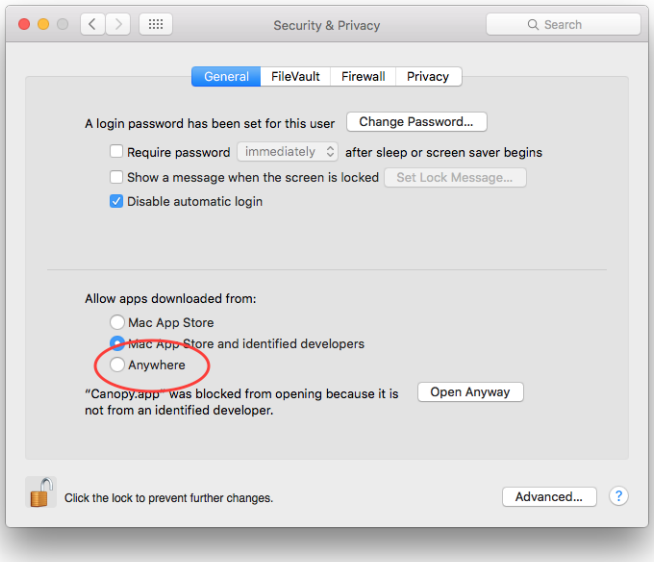
If for some reason this does not work, it may be necessary to open *System Preferences* from Apple menu. Click *Security & Privacy*.



Select the *General* tab. If necessary, click the lock icon to make changes.



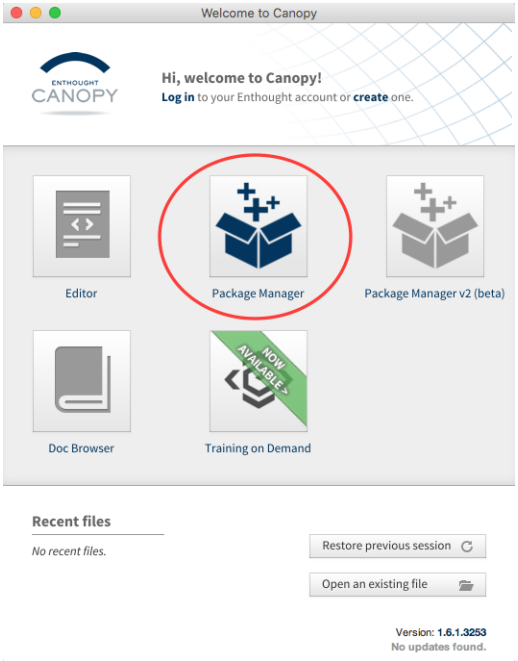
At least temporarily, click the *Anywhere radio button under *Allow apps downloaded from*. you may restore your original *Allow apps downloaded from* settings.



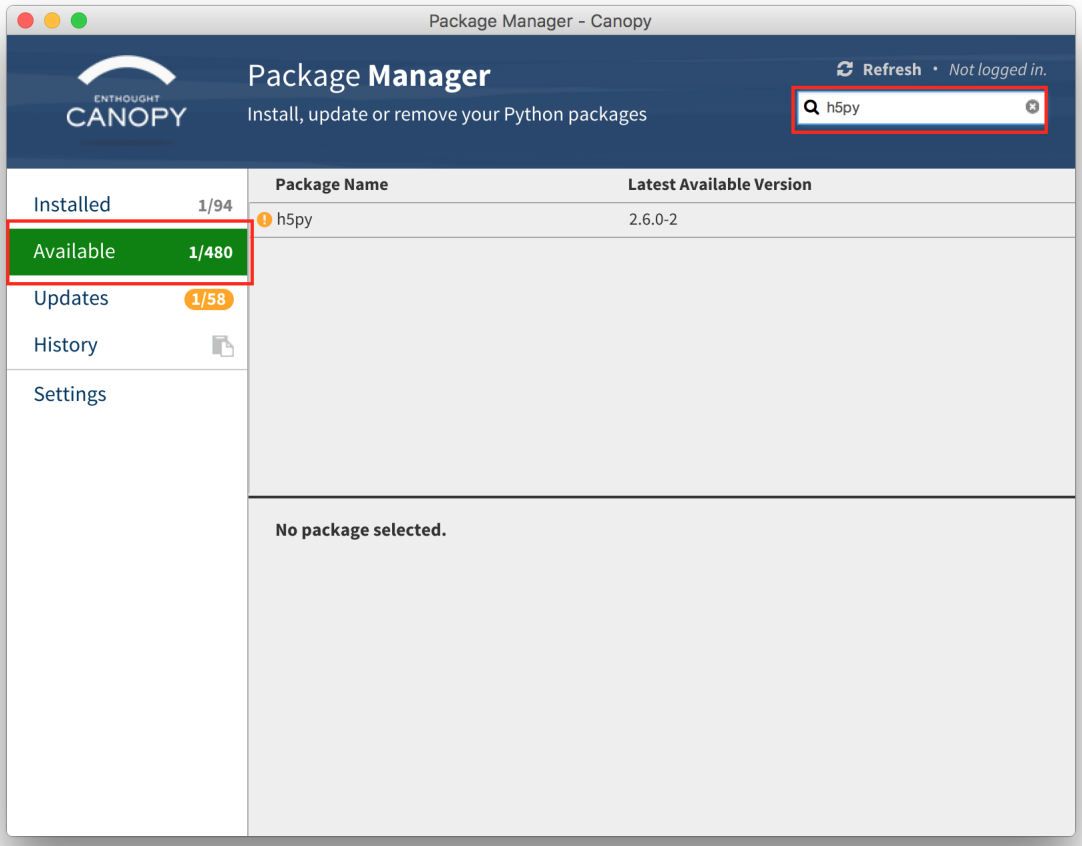
Re-launch *Canopy.app* from Finder. After Canopy runs, you may restore your original *Allow apps downloaded from* settings.

3.3 Step 3: Install the h5py Module

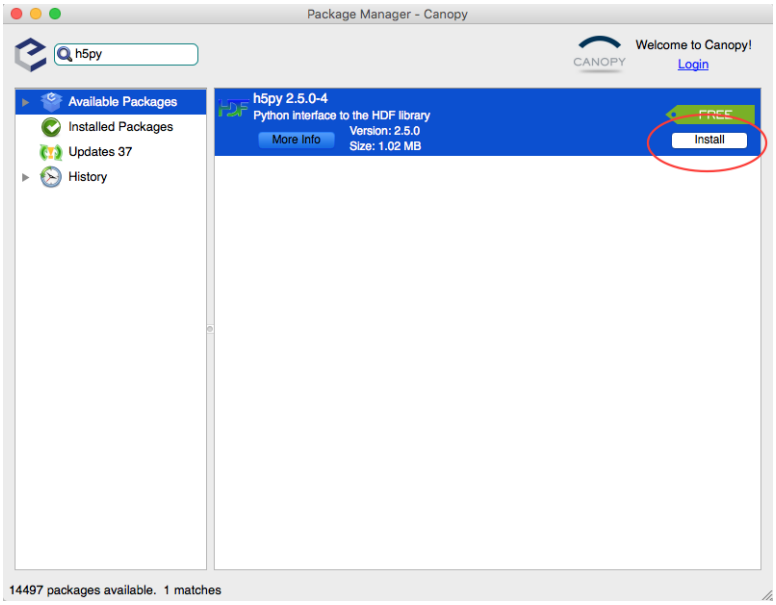
From the Canopy application, launch the *Package Manager* by clicking on the icon.



With *Available Packages* selected, enter "h5py" in the search box. The package named "h5py 2.6.0-2" will appear in the package list.



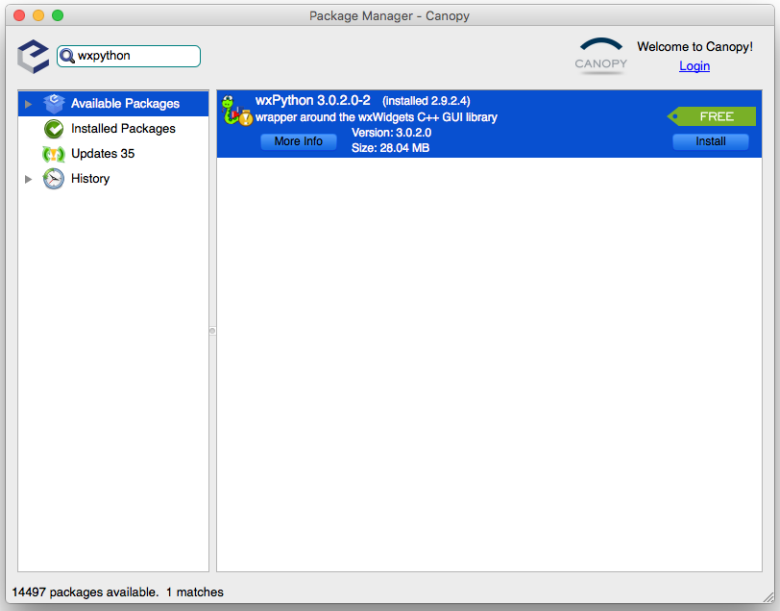
Click *h5py 2.6.0-2* to select it. Activate the *Install* (or *Upgrade to*) button to install it.



The module and dependency eggs will be downloaded and installed. When complete, the *Install* button will be renamed to *Uninstall*.

3.4 Step 4: Install the wxPython-3.0.2 Module

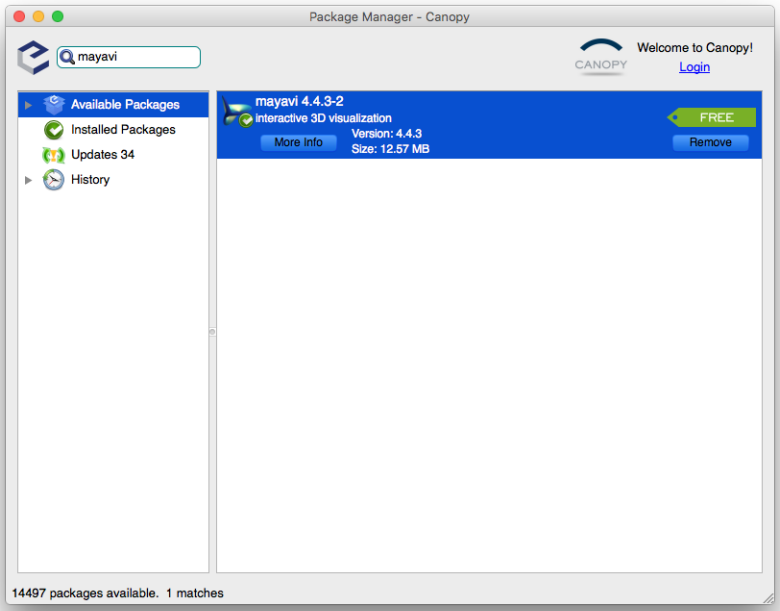
As per Step 3, seach for "wxPython" in *Available Packages*. This will result in *wxPython 3.0.2.0-3* appearing in the list panel. Click *wxPython 3.0.2.0-3* and activate the *Install* (or *Upgrade to*) button to install wxPython and all its dependencies.



> ***Note:***
>
> If VERAView fails with a message about image formats, you should downgrade to *wxPython 3.0.2.0-01* by selected that version from the *Available* combo box and activating the *Downgrade to v3.0.2.0-1* button.

3.5 Step 5: Install the mayava-4.4.3 Module

As per Steps 3 and 4, search for "mayavi" in *Available Packages*. This will result in *mayavi 4.4.3-10* appearing in the panel. Click *mayavi 4.4.3-10* and activate the *Install* (or *Upgrade to*) button.



3.6 Step 6: Test the Environment

This is an optional but recommended step that involves launching a Terminal window and running Python from a shell. If you installed to the default location, the path to Python will be as shown below.:

```
$ ~/Library/Enthought/Canopy_64bit/User/bin/python
Enthought Canopy Python 2.7.11 | 64-bit | (default, Jun 11 2016, 03:41:56)
[GCC 4.2.1 Compatible Apple LLVM 6.0 (clang-600.0.57)] on darwin
Type "help", "copyright", "credits" or "license" for more information.
>>>
```

Download the following script to test that needed modules are available.:

```
https://casl:rocks@newton.ornl.gov/~re7/xfer/casl/test/test-install.py
```

Run the test script from the command line.:

```
$ ~/Library/Enthought/Canopy_64bit/User/bin/python test-install.py

Importing h5py and wx...
wx.version= 3.0.2.0 osx-cocoa (classic)
Importing numpy...
Importing mayavi...
Good to go!
```

4 Linux

4.1 Step 1: Install Canopy

Download `canopy-1.7.4-rh5-64.sh` from the Enthought site or locally:

```
https://store.enthought.com/downloads/#default
```

Note you can download a 32-bit version from Enthought if needed.

> Note this Canopy environment is built on Red Hat 5 and thus should be binary compatible with recent versions of most Linux distributions. Also, this is a per-user install that does not require root privileges.

Execute the installer by running `canopy-1.7.4-rh5-64.sh` with a `bash` shell. When prompted to review the license type `<Enter>`.:

```
$ bash canopy-1.7.4-rh5-64.sh

Welcome to the Canopy 1.7.4 installer!

To continue the installation, you must review and approve the license term
agreement.
Press Enter to continue
>>>
```

Press `<Space>>` to view each license page. When all pages have been viewed, you will be prompted to approve the license. Type "yes" and `<Enter>` to continue.:

```
Do you approve the license terms? [yes|no]
[no] >>> yes
```

Next, you will be prompted for the directory in which to install Canopy. The default will be a `Canopy` subdir in your home directory. Accept this default by typing `<Enter>`.:

```
Canopy will be installed to this location:
/home/<username>/Canopy

  * Press Enter to accept this location
  * Press CTRL-C to abort
  * or specify an alternate location.  Please ensure that your location
    contains only ASCII letters, numbers, and the following punctuation
    chars: '.', '_', '-'

[/home/<username>/Canopy] >>>
Installing to /home/<username>/Canopy ... please wait
...
done.

    You can run the Canopy graphical environment by running the script:

        ~/Canopy/canopy
```

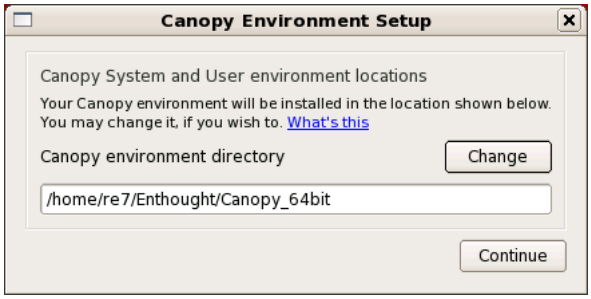
```
    or by selecting 'Canopy' in your Applications menu.

    On your first run, your Canopy User Python environment will be initialized,
    and you will have the opportunity to make Canopy be your default Python
    at the command line. Details at support.enthought.com/forums

    Thank you for installing Canopy!
```

4.2 Step 2: Setup the Canopy Environment

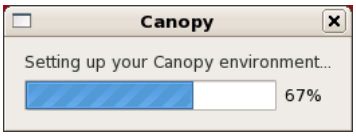
Execute the Canopy GUI application to set up the environmet for your user account by executing the path shown.:

```
$ ~/Canopy/canopy
```

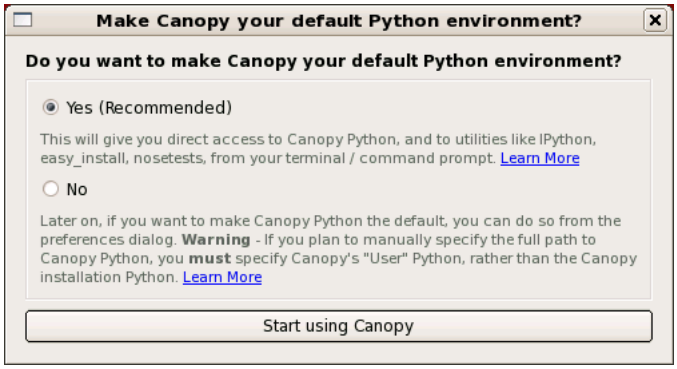
By default, Canopy will install to an `Enthought` subdirectory in your home directory, `$HOME/Enthought/Canopy_64bit`. If you change this location, you will need to manually edit the `veraview-linux.run.sh` file inside your VERAView installation directory. Unless you have good reason to choose an alternate location (via the *Change* button), accept the default directory and activate the *Continue* button.



After a few seconds, a progress dialog will appear. It can take several minutes for the setup process to complete.

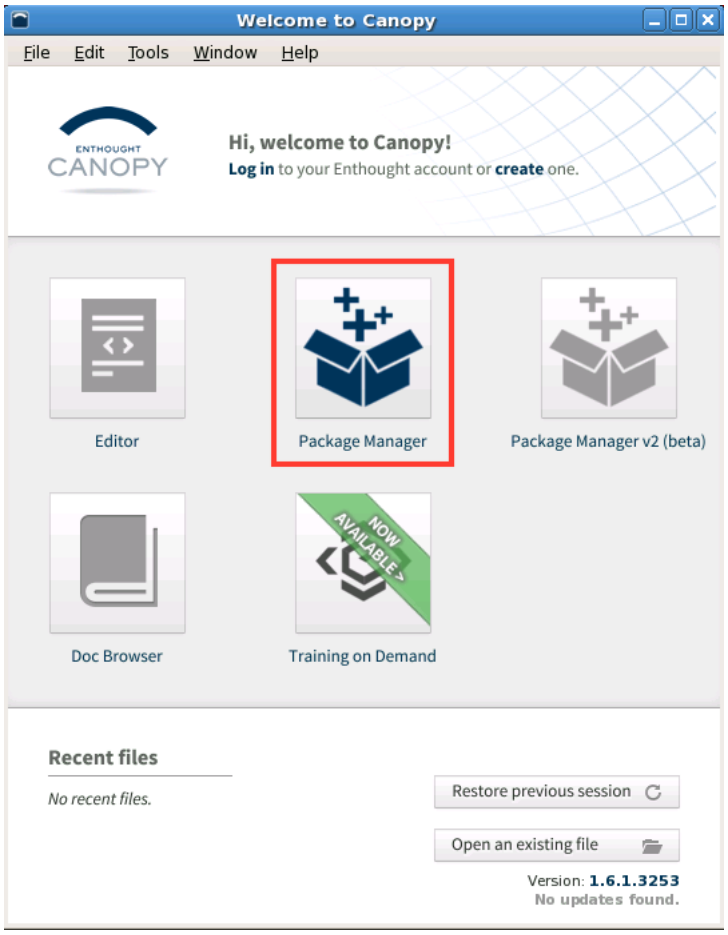


When the setup completes, you will be prompted to make Canopy's Python your default Python environment. This is completely up to you, for the VERAView launch script will reference Canopy directly. Activate the *Starting using Canopy* button to launch the Canopy application.

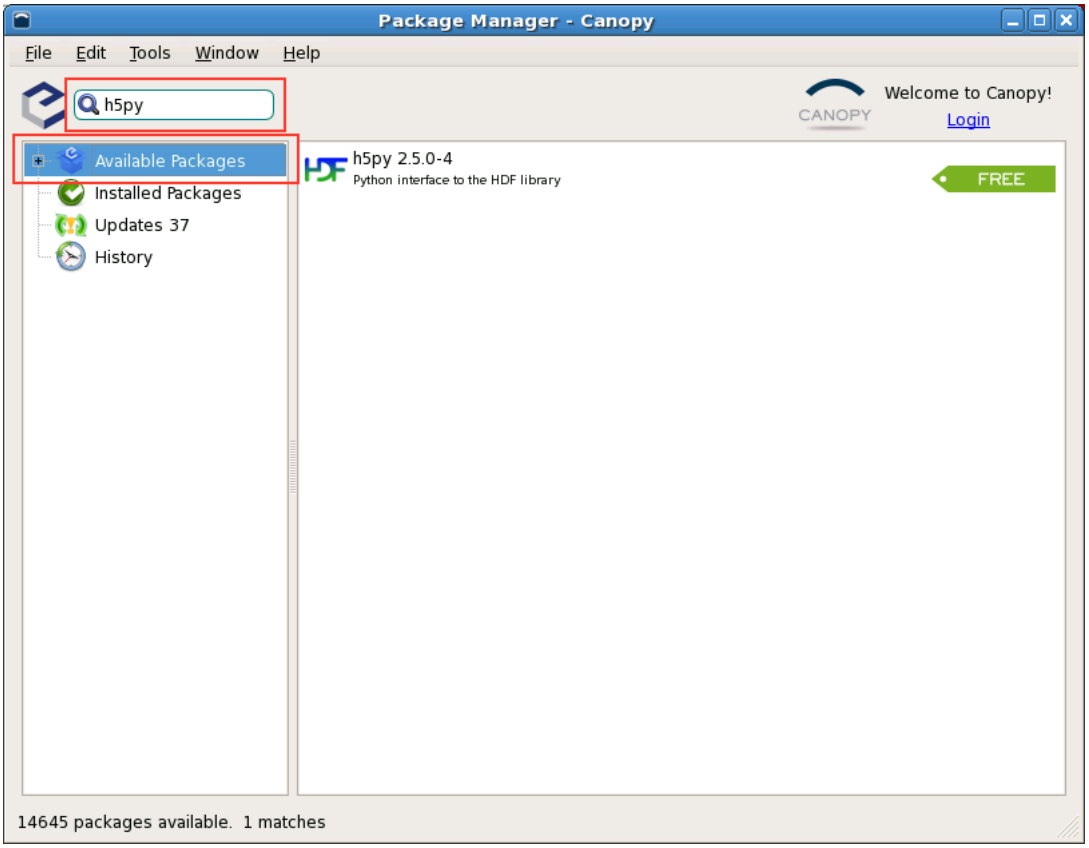


4.3 Step 3: Install the h5py Module

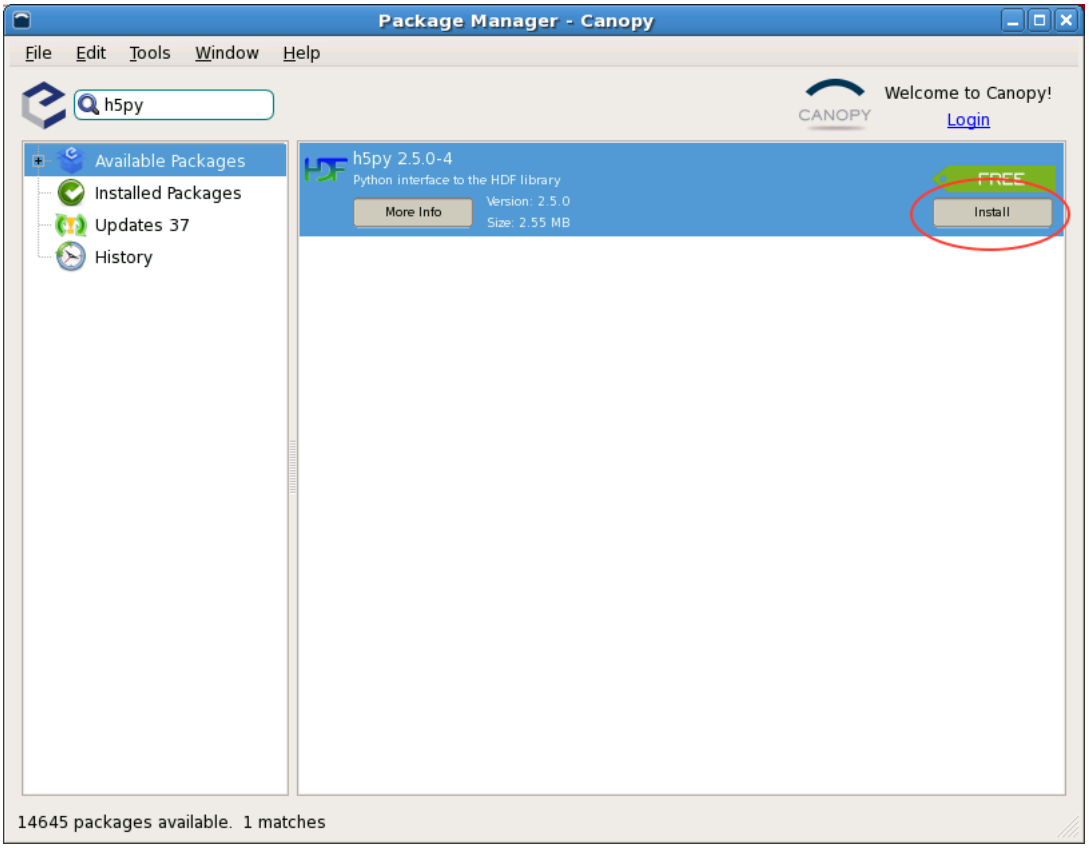
From the Canopy application, launch the *Package Manager* by clicking on the icon.



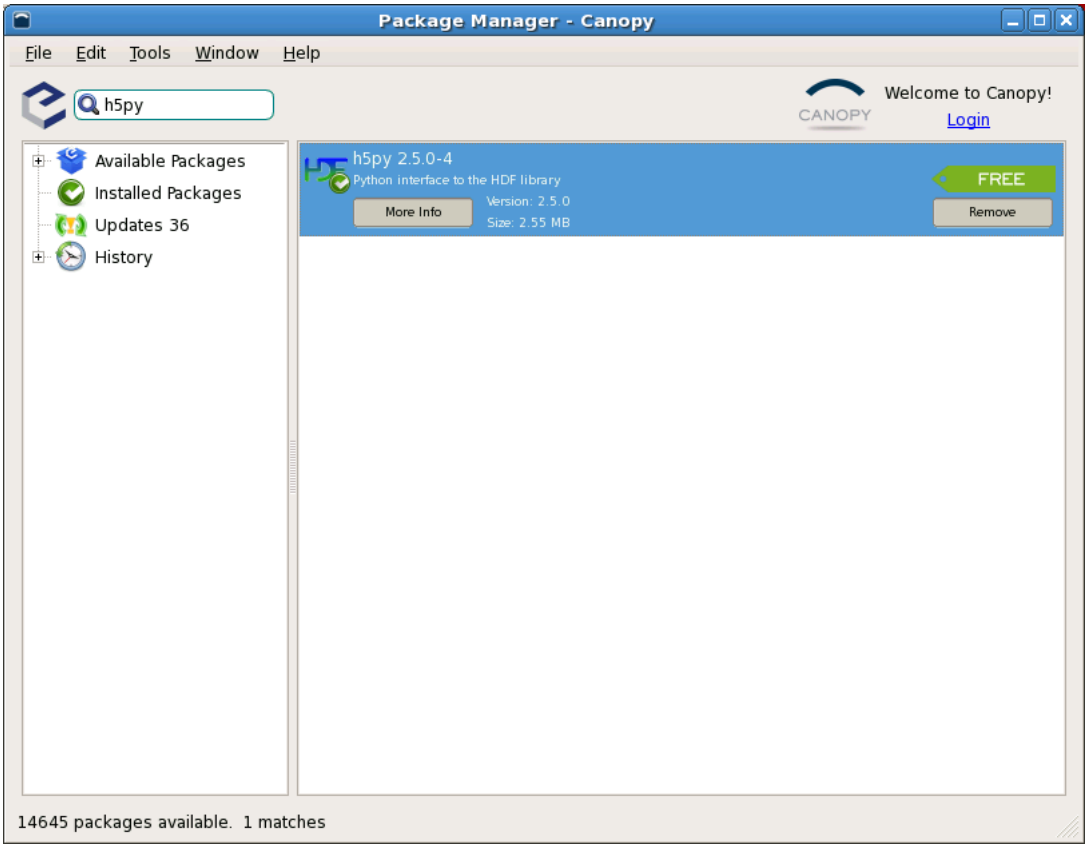
With *Available Packages* selected, enter "h5py" in the search box. The package named "h5py 2.6.0-2" will appear in the package list panel.



Click *h5py 2.6.0-2* in the list panel to select it. Activate the *Install* (or *Upgrade to*) button to install it.

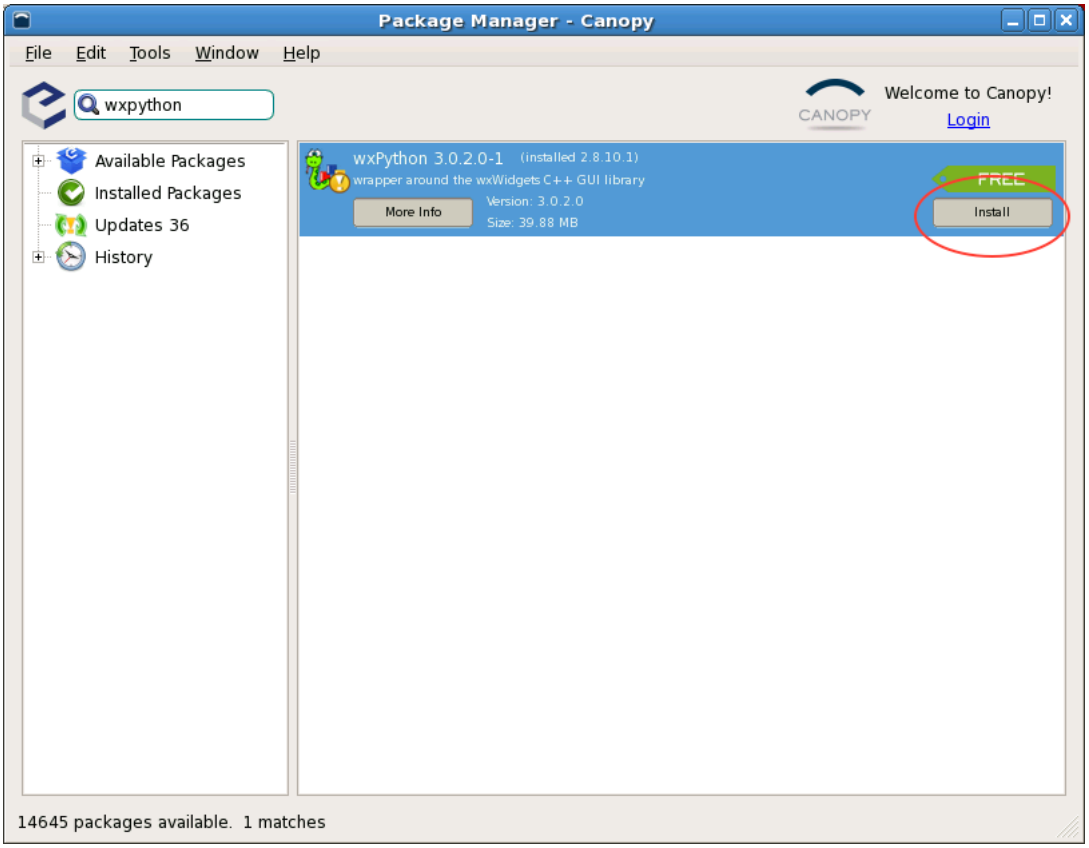


The module and dependency eggs will be downloaded and installed. When complete, the *Install* button will be renamed to *Remove*.



4.4 Step 4: Install the wxPython-3.0.2 Module

As per Step 3, seach for "wxPython" in *Available Packages*. This will result in *wxPython 3.0.2.0-3* appearing in the list panel. Click *wxPython 3.0.2.0-3* and activate the *Install* button to install wxPython and all its dependencies.

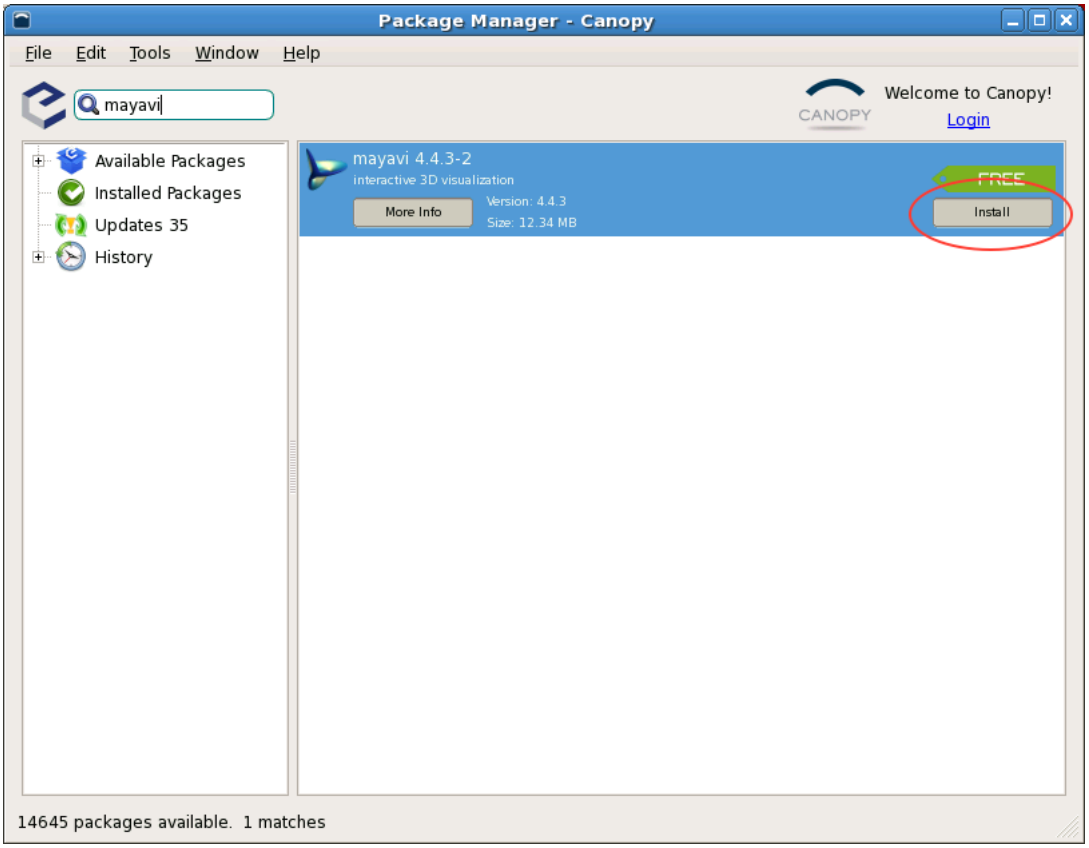


Note:

If VERAView fails with a message about image formats, you should downgrade to *wxPython 3.0.2.0-1* by selected that version from the *Available* combo box and activating the *Downgrade to v3.0.2.0-1* button.

4.5 Step 5: Install the mayava-4.4.3-2 Module

As per Steps 3 and 4, search for "mayavi" in *Available Packages*. This will result in *mayavi 4.4.3-10* appearing in the list panel. Click *mayavi 4.4.3-10* and activate the *Install* button.



4.6 Step 6: Test the Environment

This is an optional but recommended step that involves launching a Python shell and interactively entering *import* statements. Run the Python shell by entering the path to the Python executable in a bash shell. If you installed to the default location, the path will be as shown below.:

```
$ ~/Enthought/Canopy_64bit/User/bin/python
Enthought Canopy Python 2.7.11 | 64-bit | (default, Jun 11 2016, 10:32:30)
[GCC 4.1.2 20080704 (Red Hat 4.1.2-55)] on linux2
Type "help", "copyright", "credits" or "license" for more information.
>>>
```

Download the following script to test that needed modules are available.:

```
https://casl:rocks@newton.ornl.gov/~re7/xfer/casl/test/test-install.py
```

Run the test script from the command line.:

```
$ ~/Enthought/Canopy_64bit/User/bin/python test-install.py

Importing h5py and wx...
wx.version= 3.0.2.0 gtk2 (classic)
Importing numpy...
Importing mayavi...
```

```
Good to go!
```

> ***Note:***
>
> There are many Linux distributions for which the Linux Canopy install will just not work. We will address this in a future version with a Docker image that can be run on most distros.