

Canopy for VERAView Installation Guide

September 12, 2016



CASL-U-2016-1239-000











REVISION LOG

Revision	Date	Affected Pages	Revision Description
0		All	Initial Version

Document pages that are:

Export Controlled	_None			 	
IP/Proprietary/NDA Cor	trolled	None	 	 	
Sensitive Controlled	None				

Requested Distribution:

To: Unlimited distribution

Copy:



DOCUMENT AVAILABILITY

Reports produced after January 1, 1996, are generally available free via US Department of Energy (DOE) SciTech Connect.

Website http://www.osti.gov/scitech/

Reports produced before January 1, 1996, may be purchased by members of the public from the following source:

National Technical Information Service 5285 Port Royal Road Springfield, VA 22161 *Telephone* 703-605-6000 (1-800-553-6847) *TDD* 703-487-4639 *Fax* 703-605-6900 *E-mail* info@ntis.gov *Website* http://www.ntis.gov/help/ordermethods.aspx

Reports are available to DOE employees, DOE contractors, Energy Technology Data Exchange representatives, and International Nuclear Information System representatives from the following source:

Office of Scientific and Technical Information PO Box 62 Oak Ridge, TN 37831 *Telephone* 865-576-8401 *Fax* 865-576-5728 *E-mail* reports@osti.gov *Website* http://www.osti.gov/contact.html

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.



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.

岃 Enthought Canopy (64-bit) Setup	
End-User License Agreement	\sim
Please read the following license agreement carefully	CANOPY
LICENSE AGREEMENTS TO ENTHOU	GHT CANOPY
This document contains the license agreement for	each Enthought
Canopy product. The license applicable to your u	use, including the
terms, conditions and restrictions thereto, is deter	mined by the
Enthought's Canopy products and the license whi	ich applies to each
such product.	
Canony Product	Ticonso
$\overline{\mathbb{V}}$ I accept the terms in the License Agreement	
Print Back	Next Cancel

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

闄 Enthought Canopy (64-bit) Setup	- • •
Installation Scope	\sim
Choose the installation scope and folder	
Enthought Canopy (64-bit) will be installed in a per-user for your user account. You do not need local Administrat	folder and be available just or privileges.
Back	Next Cancel
谤 Enthought Canopy (64-bit) Setup	
Ready to install Enthought Canopy (64-bit)	CANOPY
Click Install to begin the installation. Click Back to review or installation settings. Click Cancel to exit the wizard.	change any of your
Back	Install Cancel

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 <code>%homepath%/AppData/Local/Enthought/Canopy</code>. If you change this location, you will need to manually edit the <code>veraview.run.bat</code> 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.

Package Manager - Canopy		
File Edit lools Window Help		
C Q h5py	CANOPY	Welcome to Canopy! Login
Verification of the second sec	Python interface to the HDF library	FREE
14378 packages available. 1 matches		

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.

Package Manager - Canopy		- • •
File Edit Tools Window Help		
C Q wxPython	CANOPY	Welcome to Canopy! Login
 Available Packages Installed Packages Updates 35 Kistory 	rthon 3.0.2.0-1 (installed 2.8.10.1) er around the wxWidgets C++ GUI library Version: 3.0.2.0 Size: 25.33 MB	FREE Instal
ote:		
VERAView fails with a message a 0.2.0-01 by selected that version by selected that version by selected that version by the selected by the selected that the	about image formats, you should downgrade on from the <i>Available</i> combo box and a	e to <i>wxPython</i> activating the

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 <code>%userprofile%\AppData\Local\Enthought\Canopy\User\python.exe</code> and "open" it by clicking or double-clicking as per your Folder options. This should bring up an interactive prompt window.

Install Canopy for VERAView, 2016-09-12

Digen 21 Stell k4 Bit "(hlub 2) on Ulin22 (yne "help", "copyright", Unit 2 (organize ▼ © Open Newfolder Corra Adobe Citrix Digenostics Doc 119/2016 10:28 AM File folder Doc 119/2016 10:28 AM File folder EGG-INFO Digenostics Dop PKE Enthought Local Canopy App Doc EGG-INFO System Doc Local-REPO Doc Local-REPO Doc Local-REPO Doc Local-REPO Doc Doc Local-REPO Doc Doc Doc Local-REPO Doc Doc Doc Local-REPO Doc Doc Doc Doc Doc Doc Doc Doc	C:\Users\re7\AppData\Local\Enthought\Canopy\User\python.exe	AppData > Local > Enthought	t → Canopy → User → 🗸 😽	Search User	
Image: Local Name Date modified Type Image: Local Image: Local	v.1500 64 htt (AMD64)] on win32 Type "help", "copyright", "credits" or "license" for >>>	Organize		8==	• 🔟 🔞
python.exe Date modified: 1/9/2016 9:57 AM Date created: 1/9/2016 9:57 AM		Urganize Urg	Name Doc EGG-INFO Examples Include Lib iiis COCAL-REPO Scripts share enpkg.hist python27.db python27.db python27.db pythonw.ee pythonw.ed pythonw.pdb pythonw.et Include Incl	B== Date modified 1/9/2016 10:02 AM 1/9/2016 10:28 AM 1/9/2016 10:02 AM 1/9/2016 10:01 AM 1/9/2016 9:57 AM 1/9/2016 10:27 AM 1/9/2016 10:28 AM 1/9/2016 10:28 AM 1/9/2016 10:28 AM 1/9/2016 10:28 AM 1/9/2016 9:57 AM 1/9/2016 9:5	Type File folder File folder File folder File folder File folder File folder File folder File folder File folder HIST File Application Source Browser D. Application Source Browser D. CFG File

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.

Copying "Canopy.app" to "Applications"	
2.4 MB of 684.8 MB - Estimating time remaining	

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.

	"Canopy.app" can't be opened because it is from an unidentified developer.
	Your security preferences allow installation of only apps from the Mac App Store and identified developers.
	Google Chrome.app downloaded this file on December 6, 2015 from store.enthought.com.
?	ок

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*.

•••			Gyatemir	references	\frown		
General	Desktop & Screen Saver	Dock	Mission Control	Language & Region	Security & Privacy	Spotlight	Notification
CDs & DVDs	Displays	Energy Saver	Keyboard	Mouse	Trackpad	Printers & Scanners	Sound
iCloud	Internet Accounts	Extensions	Network	Bluetooth	Sharing		
Users & Groups	Parental Controls	App Store	Dictation & Speech	Date & Time	Startup Disk	Time Machine	Accessibilit
DivX	Flash Player	Flip4Mac WMV	Java	Perian			

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

A login	asseword has how	n cot for this us	or Chan	ne Password	
	Require password	immediately	after sle	ep or screen sa	aver begins
	Show a message w	when the screen	is locked	Set Lock Mess	sage
\checkmark	Disable automatic	login			
Allow a	ops downloaded fr Mac App Store Mac App Store and Anywhere	om: d identified dev	elopers		
"Canop not fror	y.app" was blocke n an identified dev	d from opening eloper.	because it i	s Open Ar	nyway
_					

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

	Ohana Daamad
,	A login password has been set for this user Change Password
	Require password Immediatery after sleep or screen saver begins Show a message when the screen is locked. Set Lock Message
	Disable automatic login
,	Allow apps downloaded from:
	Mac App Store
	Mac App Store and identified developers
	Anywhere
r	'Canopy <mark>:app' w</mark> as blocked from opening because it is Upen Anyway not from an identified developer.

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.

• • •	Welcome to Canopy
CANOPY	Hi, welcome to Canopy! Log in to your Enthought account or create one.
Editor Doc Browser	Package Manager Package Manager Deckage Manager v2 (beta)
Recent files	Restore previous session C
	Open an existing file 👘
L	Version: 1.6.1.3253 No updates found.

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

		Package Manager - Canopy			
	•	Package Manager		2 Refresh • /	Not logged in.
CANO	ΡY	Install, update or remove your	r Python packages	Q h5py	0
Installed	1/94	Package Name	Latest Available	Version	
Available	1/480	9 h5py	2.6.0-2		
Updates	1/58	9			
History	В				
		No package selected.			

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

	Package Manager - Canopy		
C (h5py		CANOPY	Welcome to Canopy!
Image: Second system Image: Second system Image: Secon	h5py 2.5.0-4 Python Interface to the HDF library Version: 2.5.0 More Info Size: 1.02 MB		Install
14497 packages available. 1 matche	es		1

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.

	Package Manager - Canopy		
C a mayavi		CANOPY	Welcome to Canopy! Login
 Available Packages Installed Packages Updates 34 S History 	mayavi 4.4.3-2 interactive 3D visualization Wore into Size: 12.57 MB		Remove
4497 packages available. 1 matche	98		

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>.:

```
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.

	Canopy Environment Setup	×	
	Canopy System and User environment locations Your Canopy environment will be installed in the location shown below. You may change it, if you wish to. <u>What's this</u> Canopy environment directory Change		
/home/re7/Enthought/Canopy_64bit			
	Continue		

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

	Canopy	×	
Setting up your Canopy environment			
		67%	

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.

	We	lcome to Canopy	
<u>File Edit T</u> ools	<u>W</u> indow	<u>H</u> elp	
CANOPY	Hi, v Log ir	velcome to Canopy to your Enthought acc	/! ount or create one.
Editor		Package Manager	Package Manager v2 (beta)
Doc Browser		Training on Demand	
Recent files			
No recent files.			Restore previous session C
			Open an existing file 👘
			Version: 1.6.1.3253 No updates found.

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.

	Package Manager - Canopy			
<u>File E</u> dit <u>T</u> ools <u>W</u> indow <u>H</u> ools	elp			
	CANOPY	Welcome to Canopy! Login		
Available Packages Installed Packages Updates 37 S History	Python interface to the HDF library	FREE		
14645 packages available. 1 matches				

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

	Package Manager - Canopy	
<u>F</u> ile <u>E</u> dit <u>T</u> ools <u>W</u> indow <u>H</u> e	elp	
Ç Q h5py	CANOPY	Welcome to Canopy! Login
Constant Packages Constant Packages	Python interface to the HDF library Version: 2:5.0 Size: 2:55 MB	Install
14645 packages available. 1 match	nes	

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

			Package Manager - Canopy	
<u>F</u> ile	<u>E</u> dit <u>T</u> ools	<u>W</u> indow	Help	
Ç	🔍 h5py		CANOPY	Welcome to Canopy! Login
	Available Pa Installed Pa Updates 30 History	ackages ckages 5	hSpy 2:5.0-4 Python interface to the HDF library Version: 2:5.0 Size: 2:55 MB	Remove
14645	nackages ava	ilabla 1 m	atches	
14045	packages ava	nable. I m	attics	

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.

	Package Manager - Canopy	
<u>F</u> ile <u>E</u> dit <u>T</u> ools <u>W</u> indow	<u>H</u> elp	
C Q wxpython	CANOPY	Welcome to Canopy! Login
 ● Solution ● Available Packages ● O ● Installed Packages ● Updates 36 ● O ● History 	wxPython 3.0.2.0-1 (installed 2.8.10.1) wrapper around the wxWidgets C++ GUI library Version: 3.0.2.0 More Info Size: 39.88 MB	FREC
14645 packages available 1 ma	trhes	
14045 packages available. 1 ma		

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.

	Package Manager - Canopy	
<u>F</u> ile <u>E</u> dit <u>T</u> ools <u>W</u> indow	Help	
C 🔍 mayavi		Welcome to Canopy!
Available Packages Installed Packages Updates 35 History	More Info	Install
14645 packages available. 1 ma	atches	

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.