

# **Install NEURON on Mac**

**The example here is for El Capitan (10.11)  
but anything  $\geq$  OSX 10.7 is fine.**

**Install NEURON.**

**Install XQuartz if neurondemo does not work.**

**Install "XCode command line tools".**

**Install Python 2.7 distribution.**

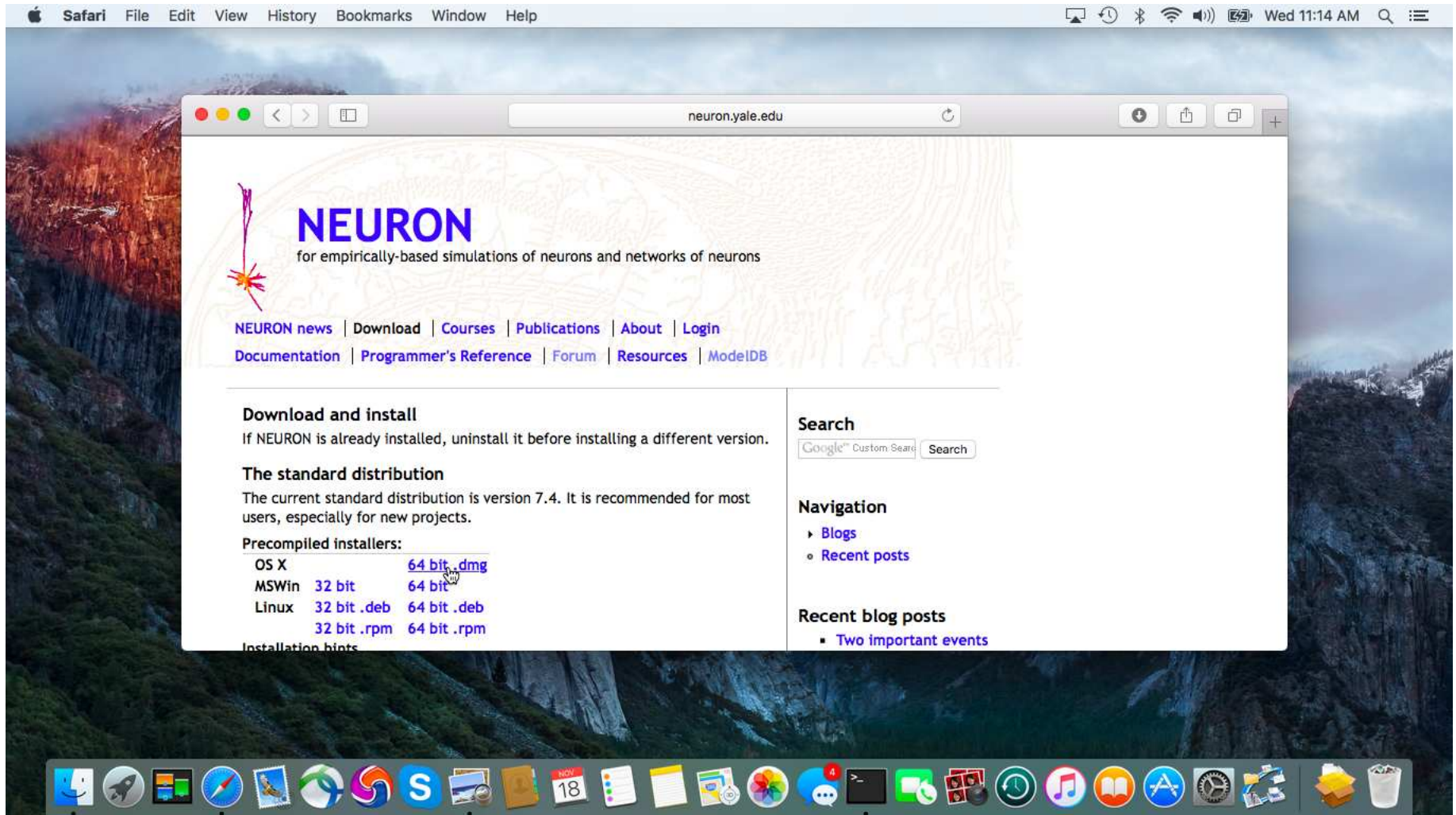
**Or use the one that comes with your mac.**

**Test NEURON + Python.**

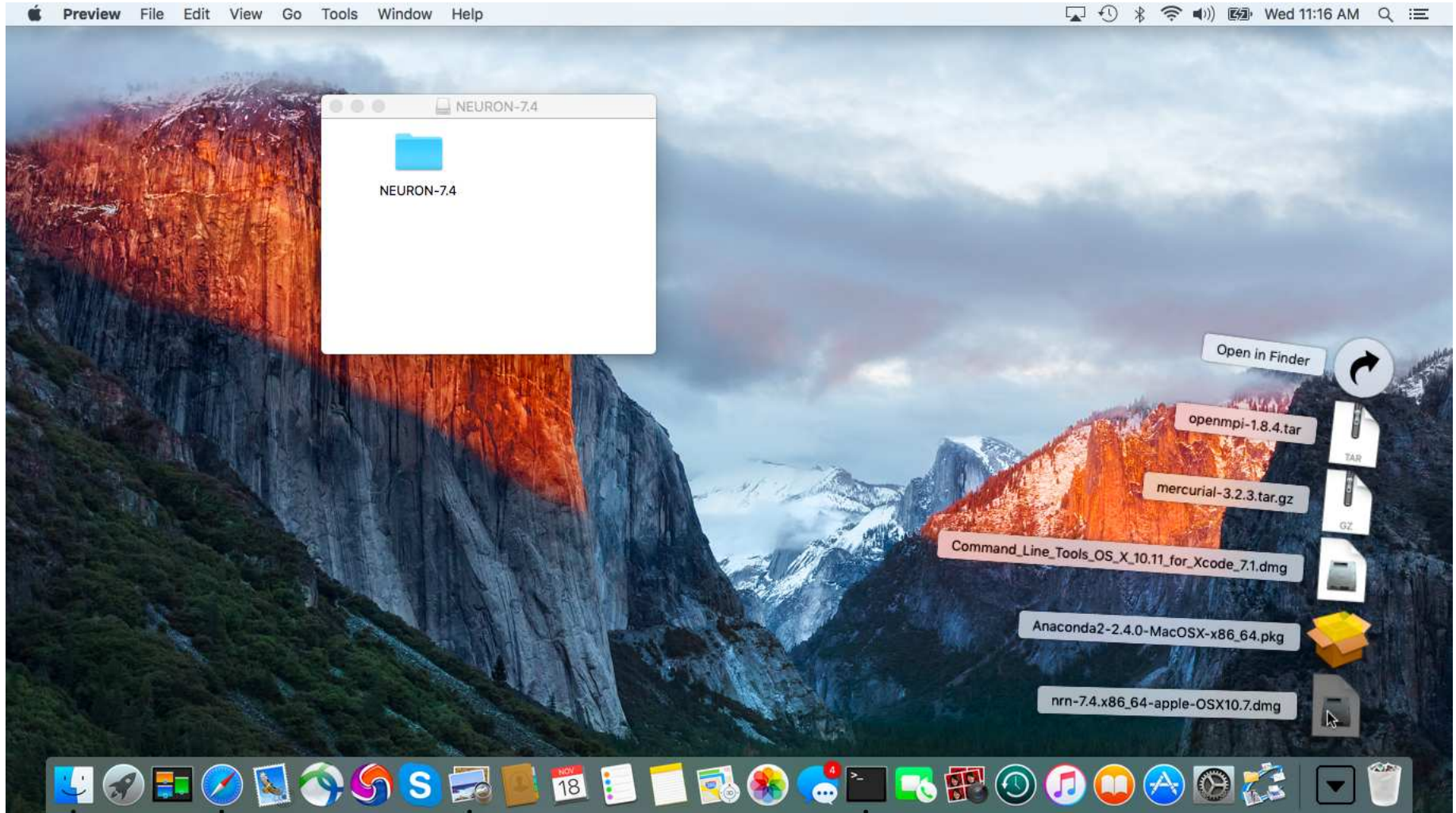
**Test MPI parallel from terminal.**

**git comes with "command line tools"**

# Install NEURON on Mac 64bit dmg

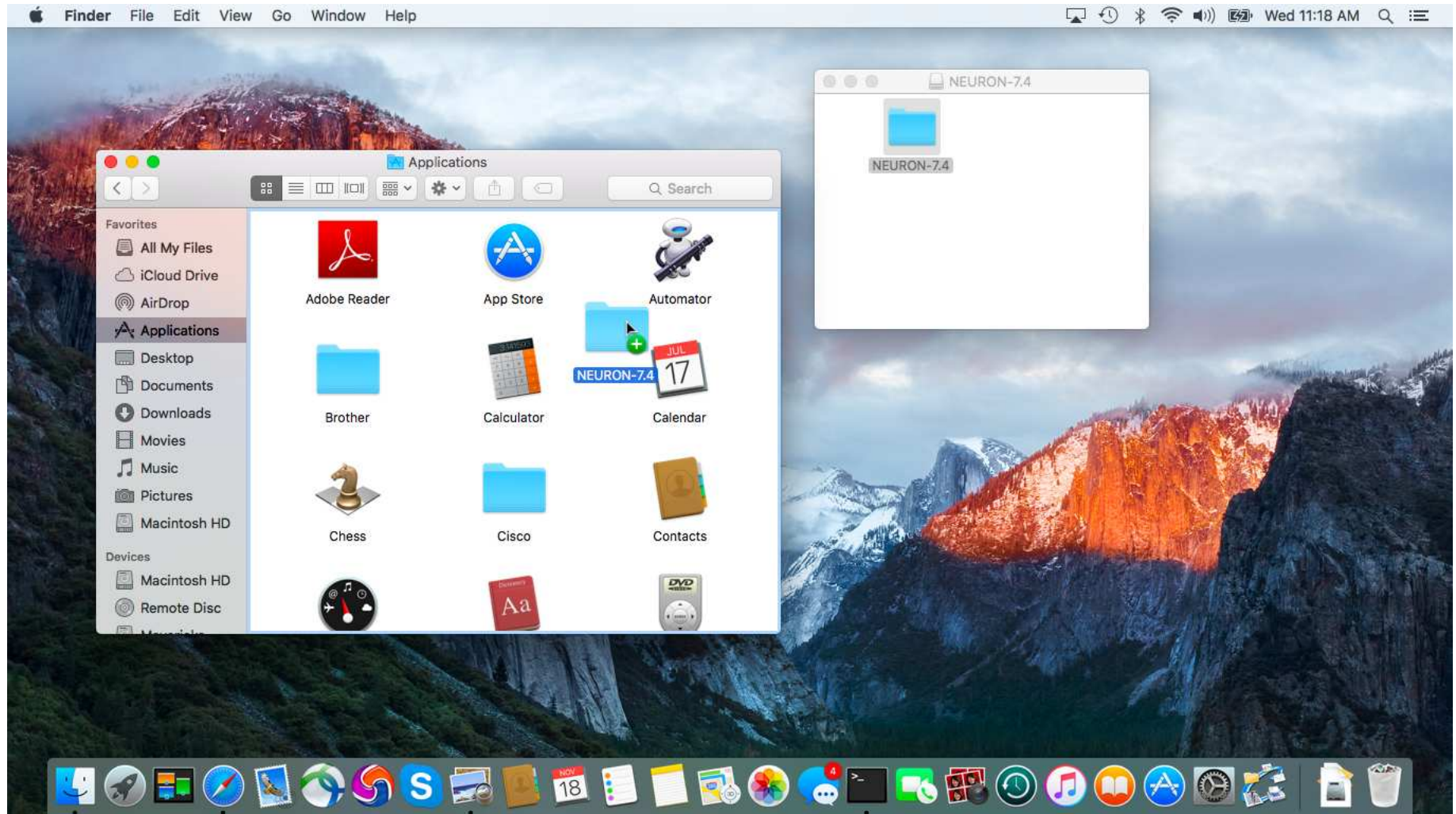


# Open the downloaded dmg

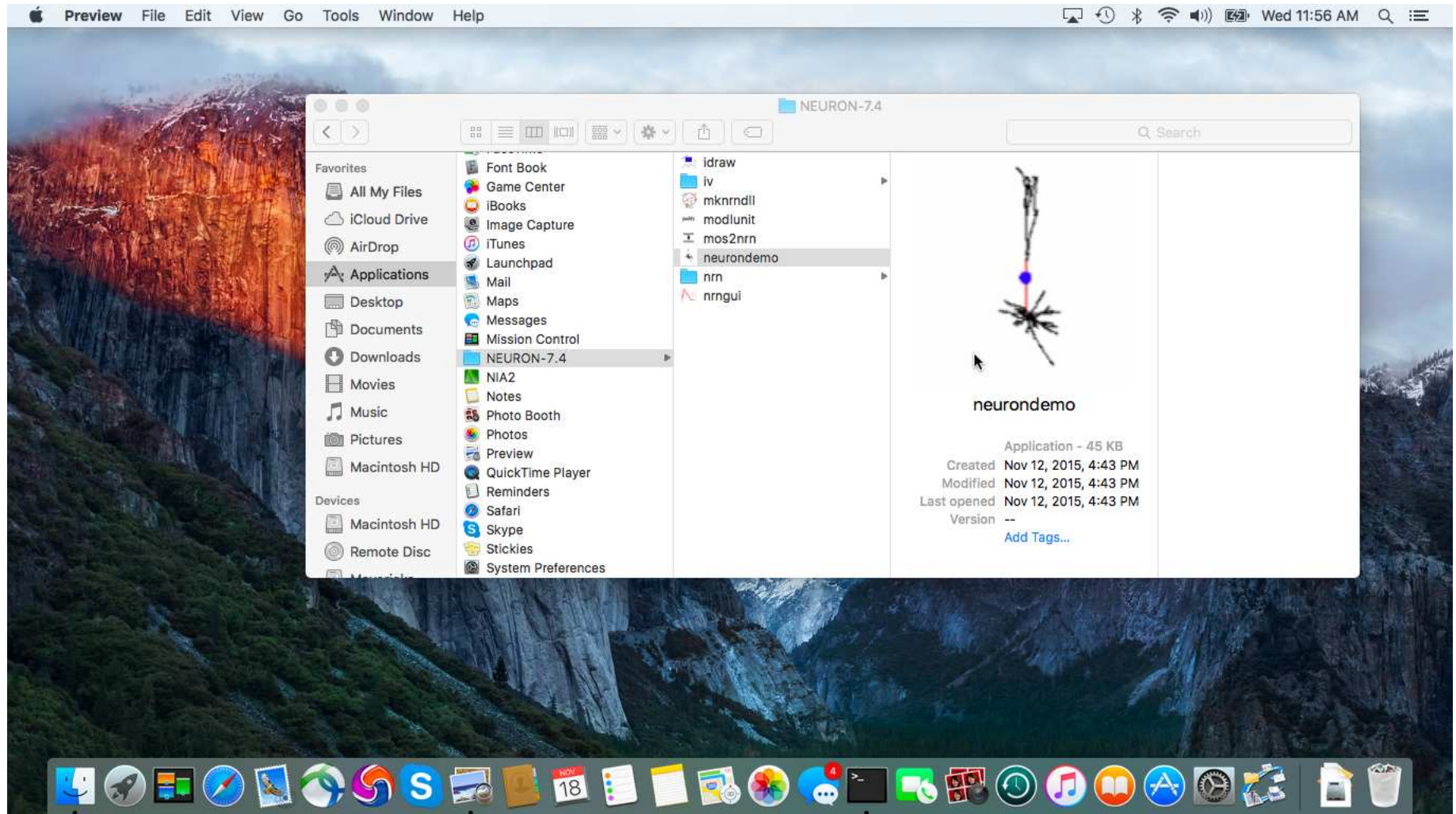




# and drag NEURON-7.4 folder into /Applications

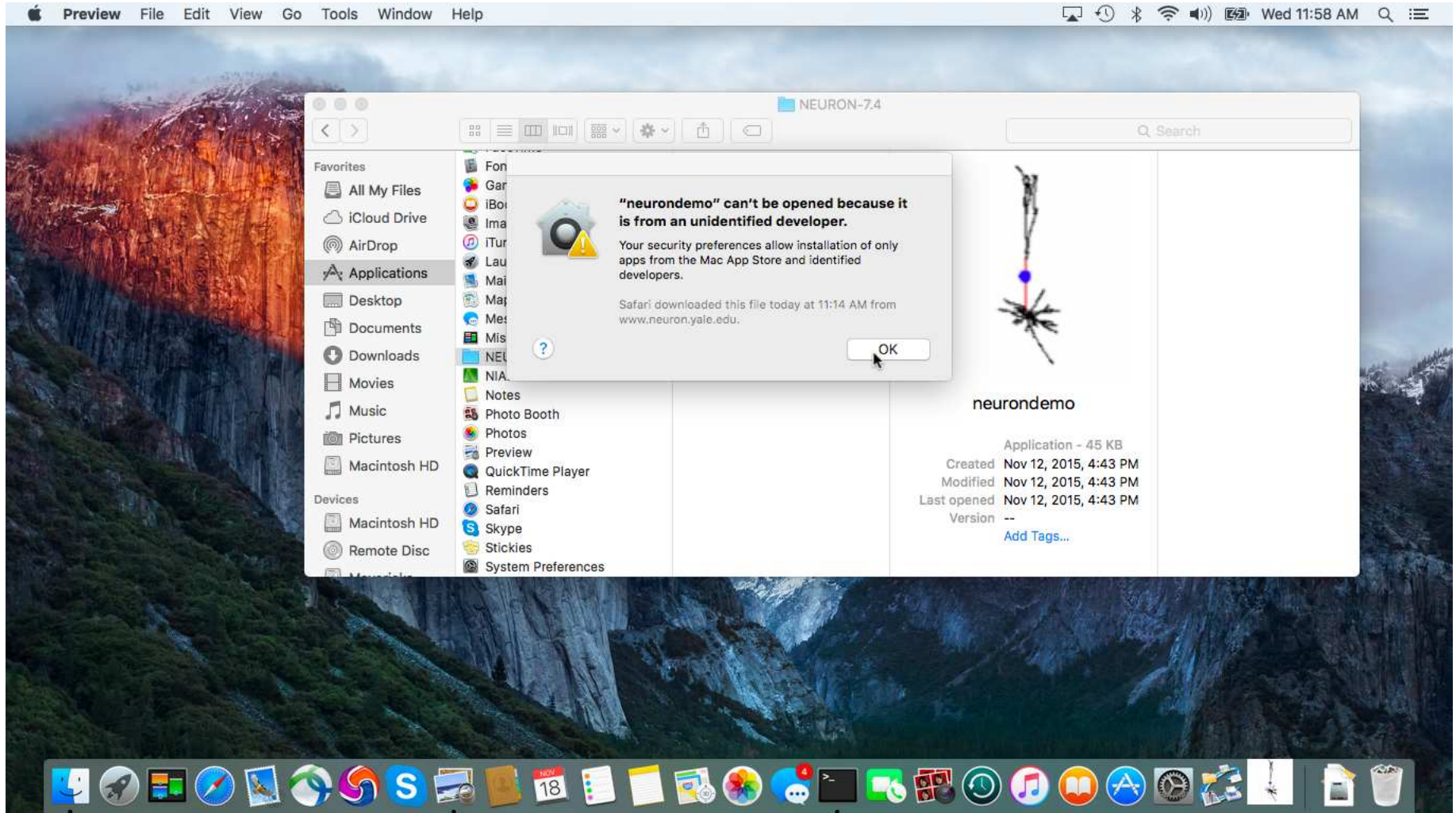


# The first time you run NEURON ...

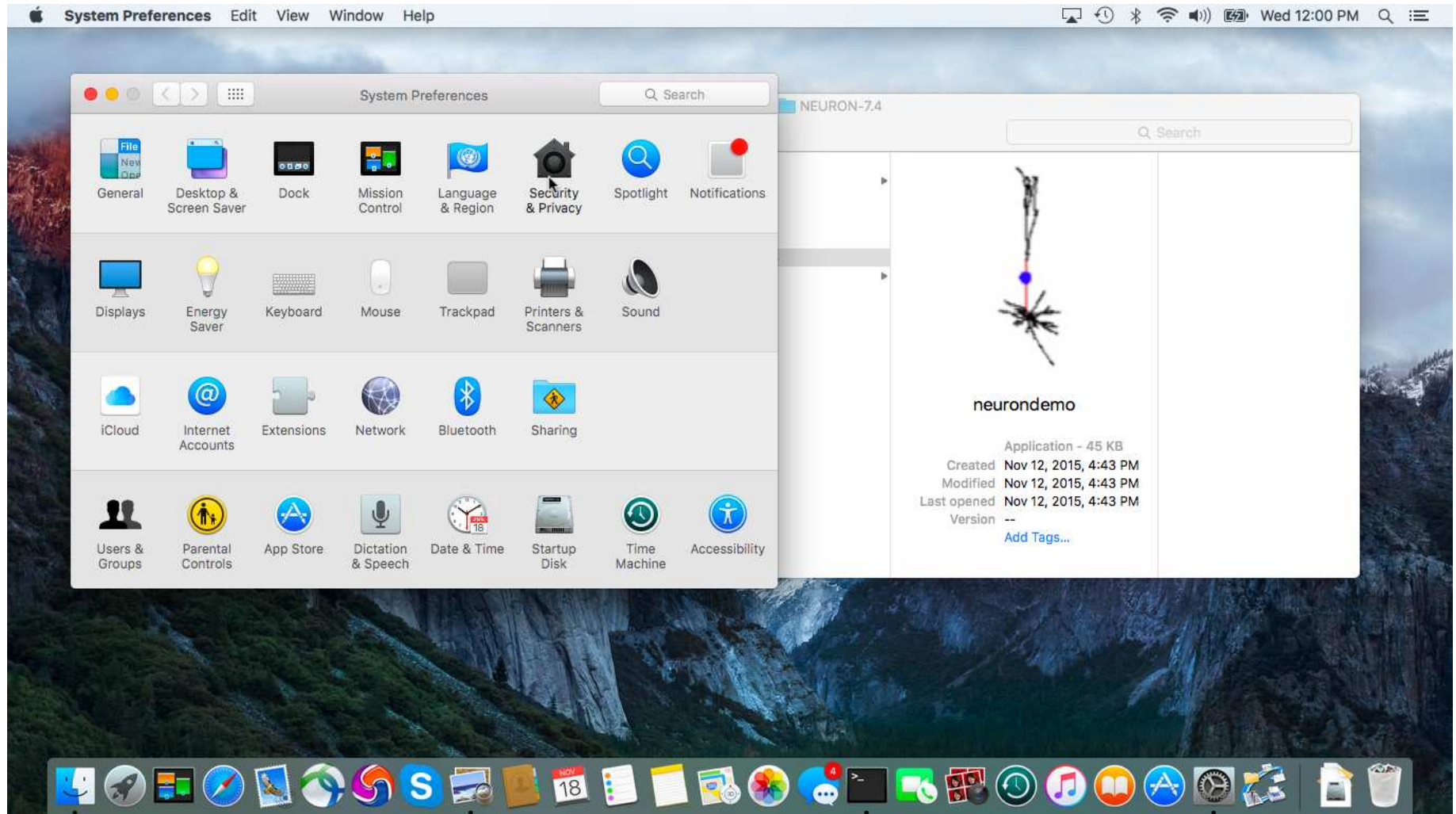




# the OS thinks the provenance is questionable.

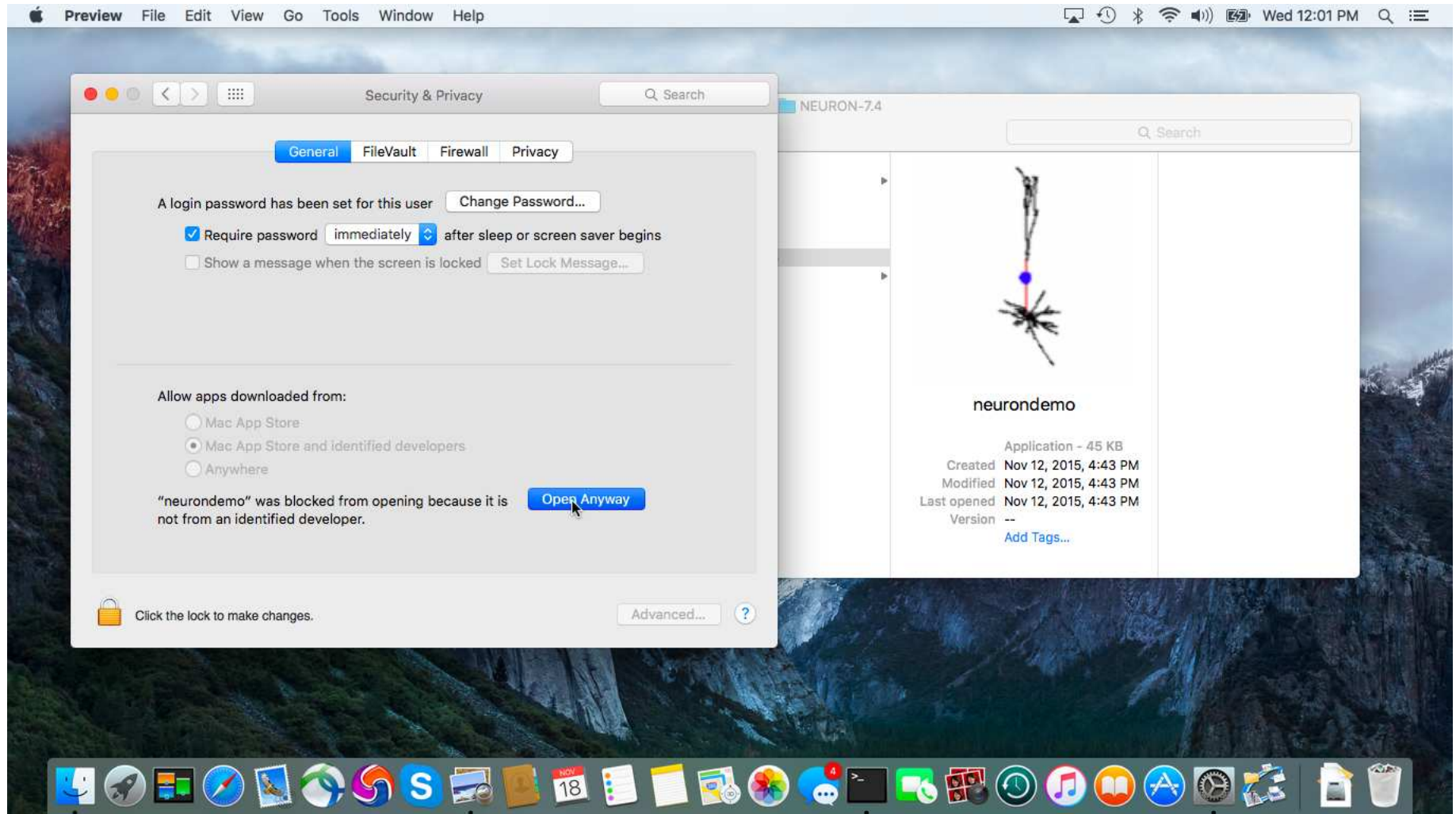


# Open "System Preferences". Select "Security and Privacy"



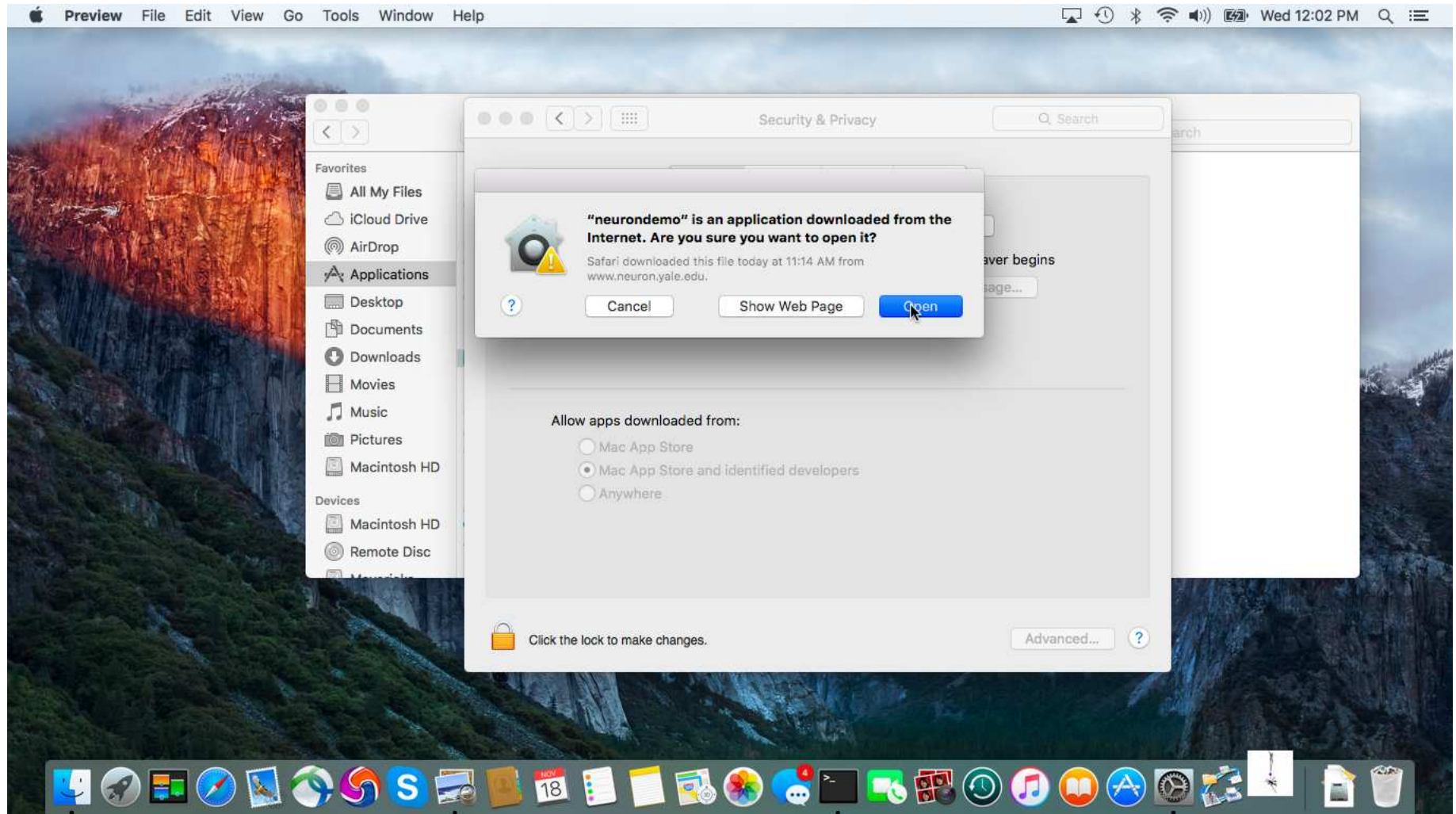


# turn off the blocking

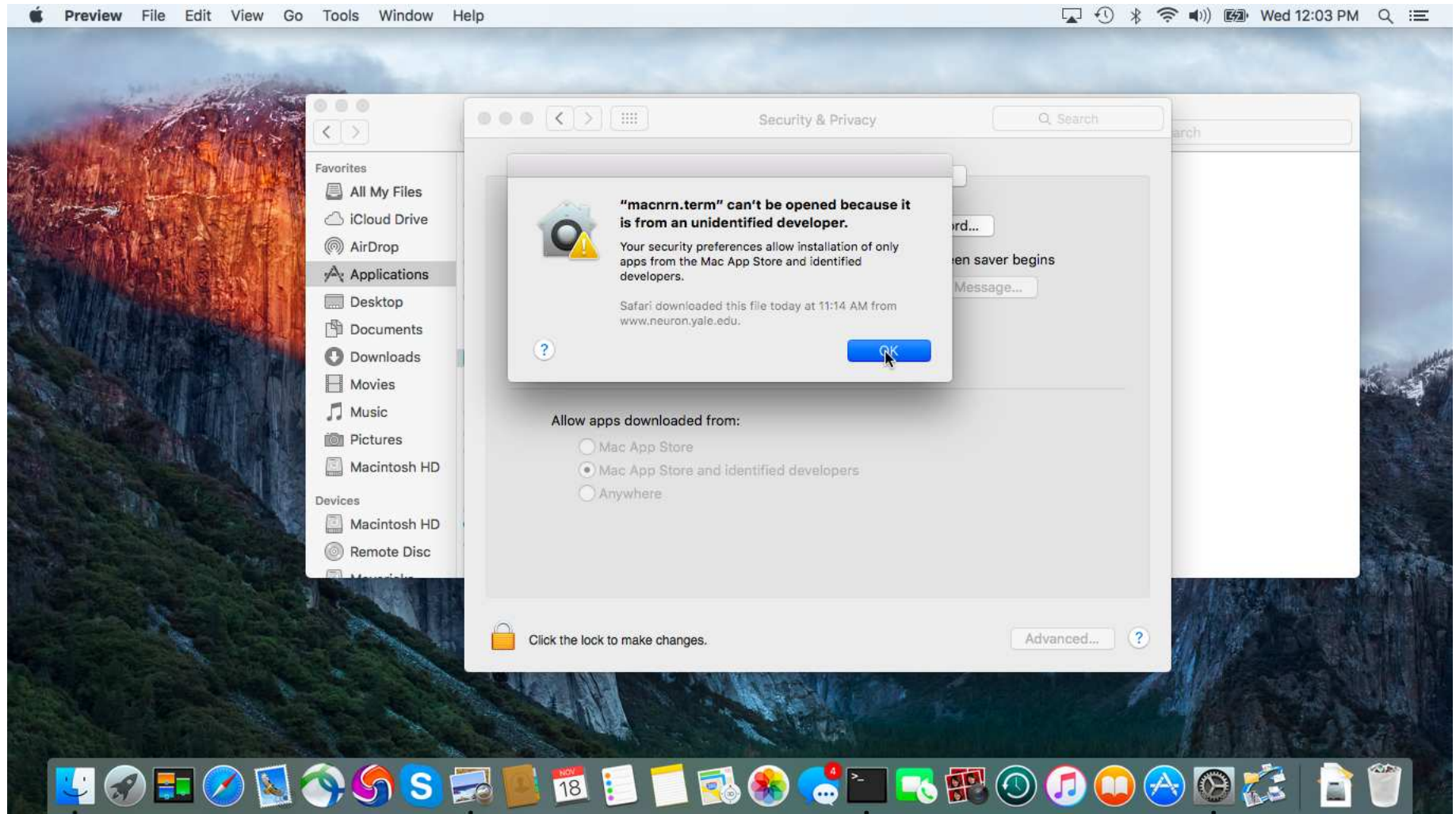




# Now it will run

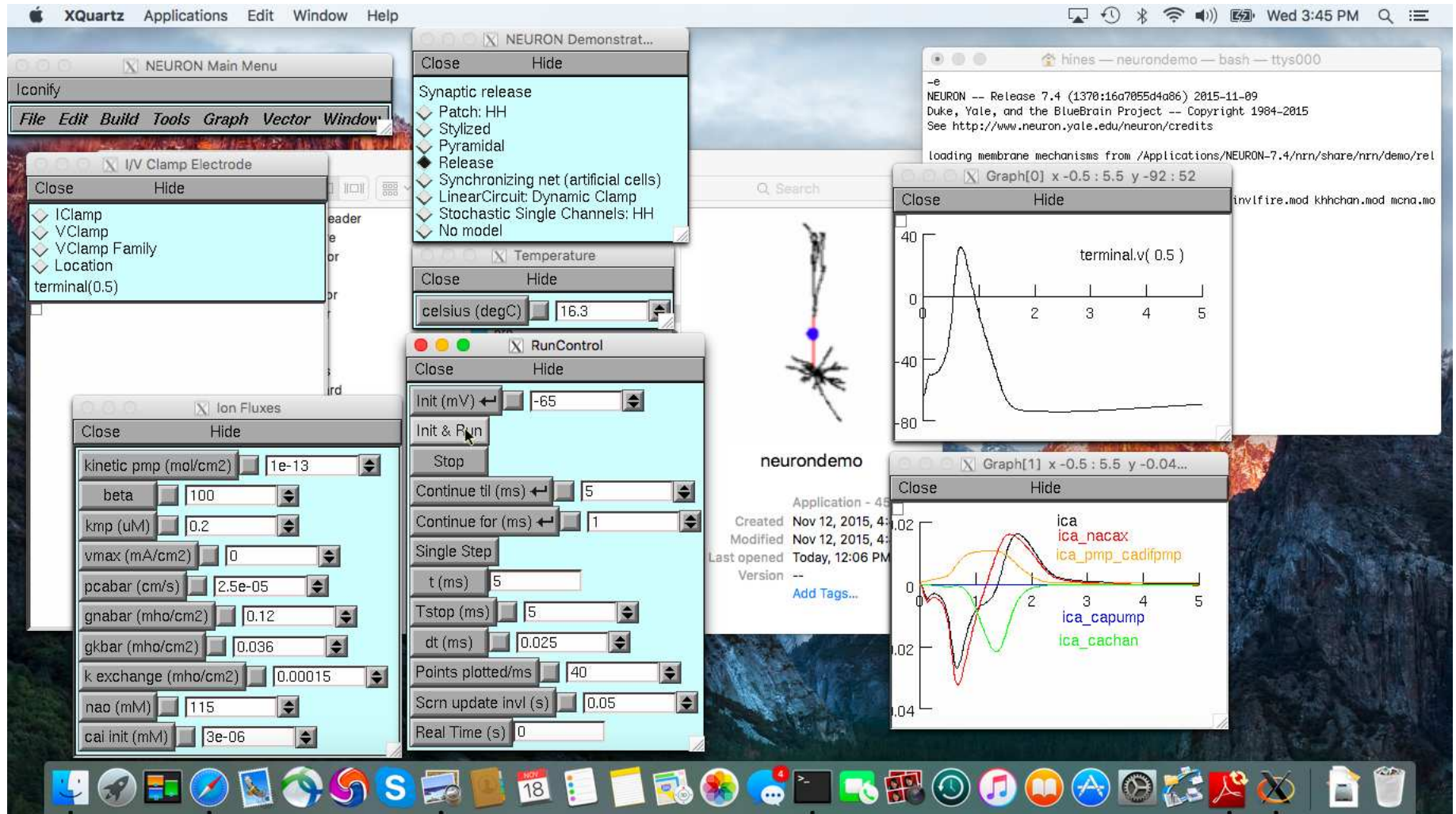


# you'll have to Ok a few other programs as well.



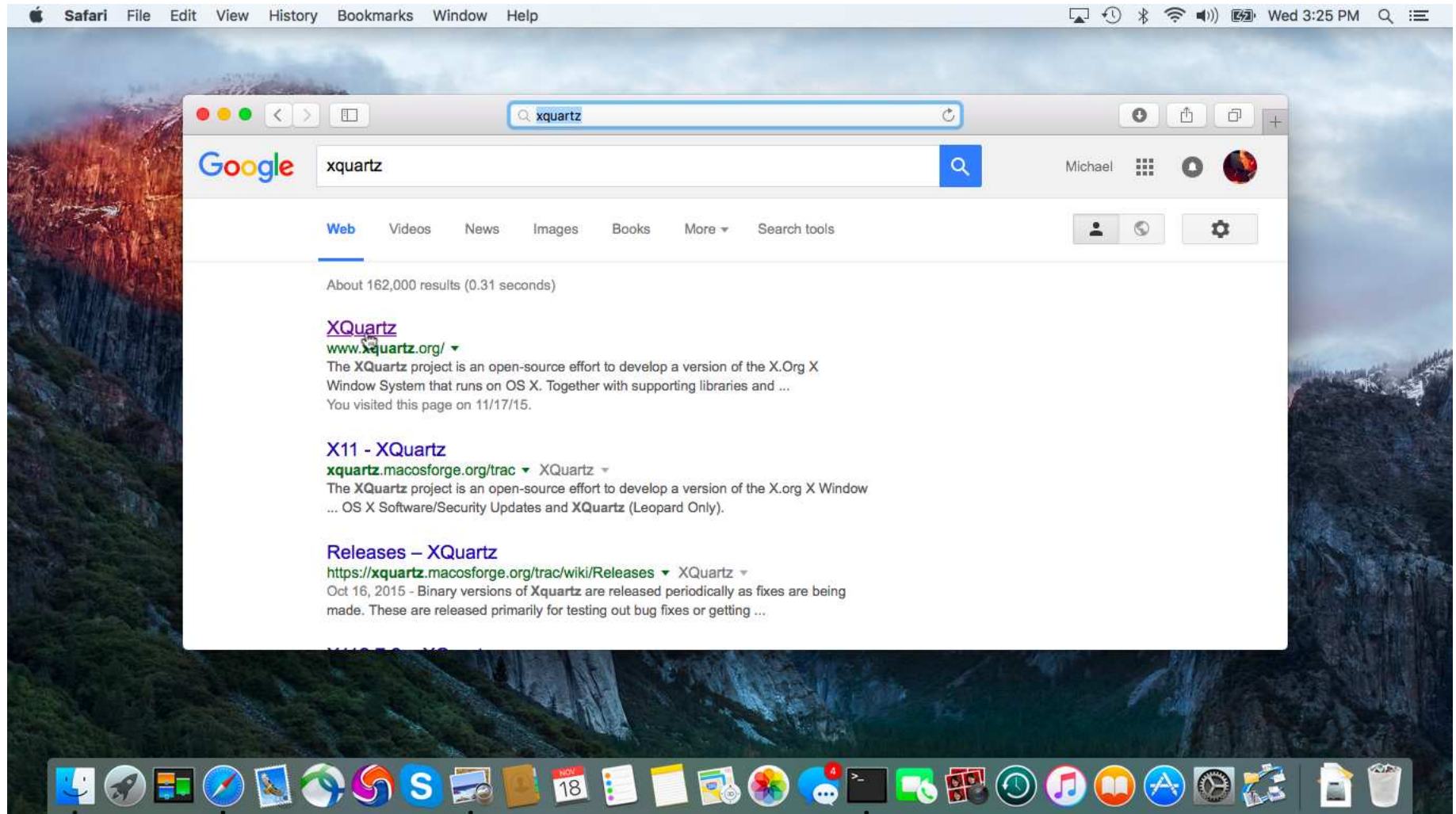


# But success only if you have XQuartz installed.

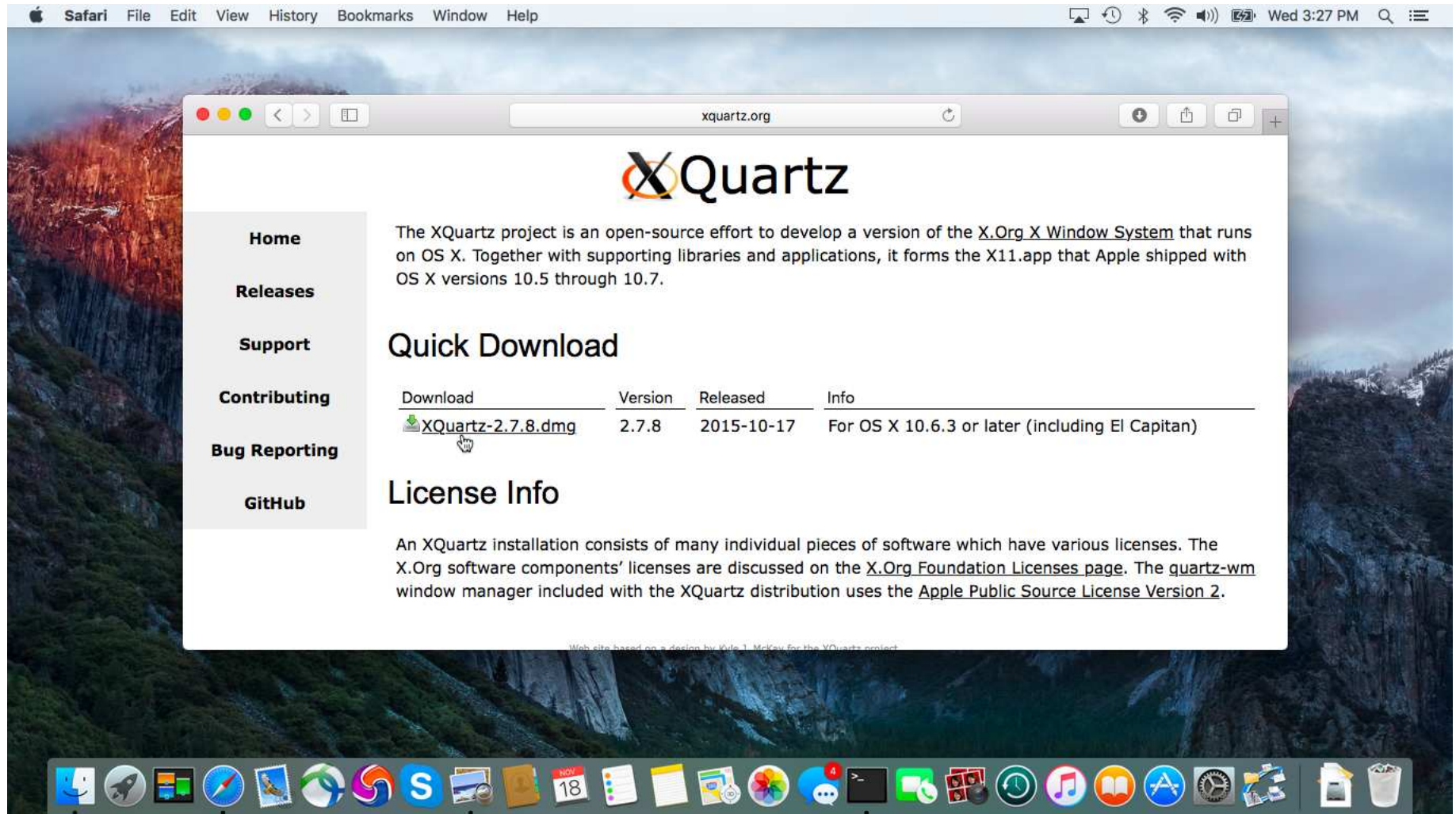




# Ignore if neurondemo was successful

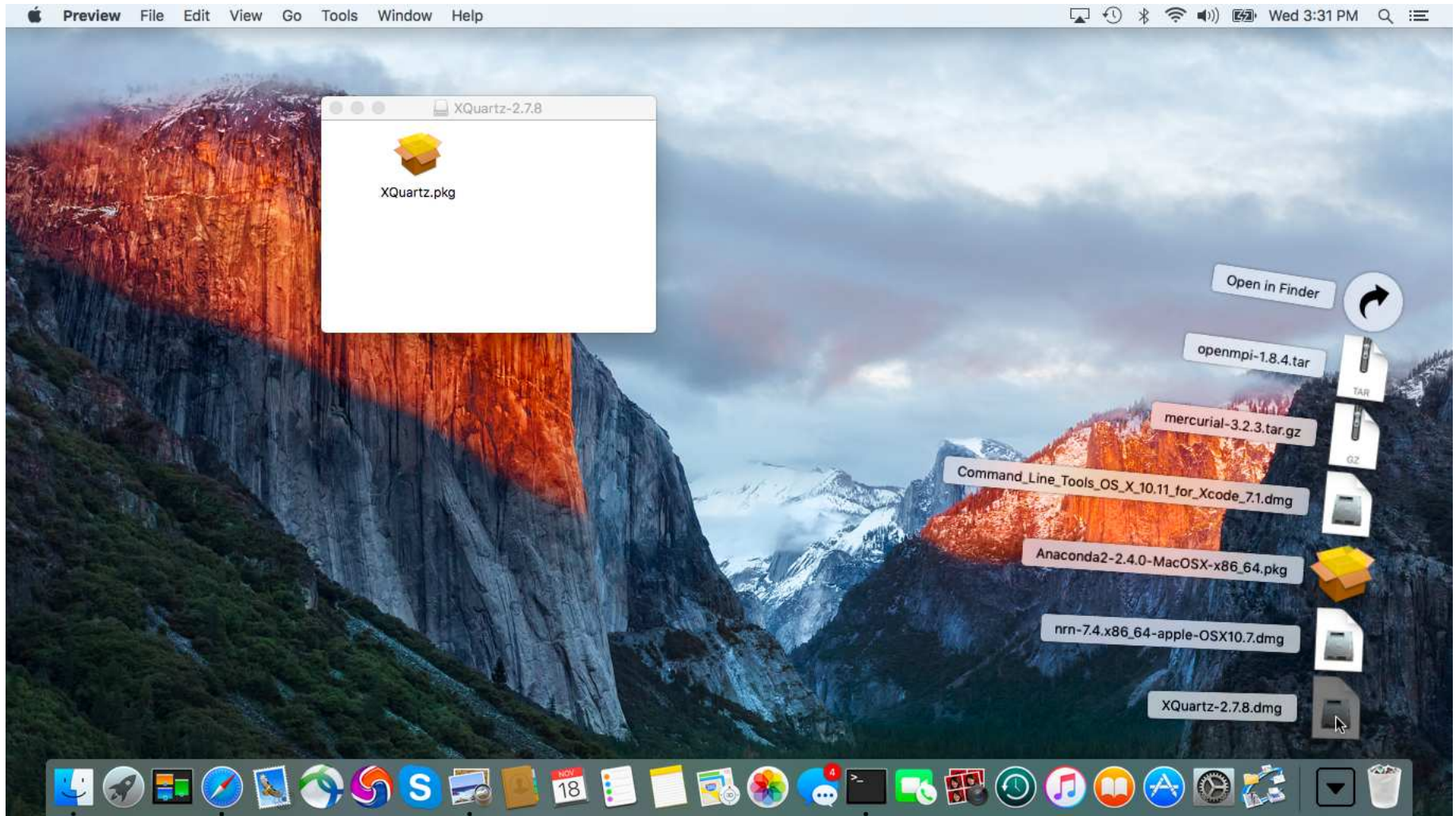


# Otherwise download XQuartz



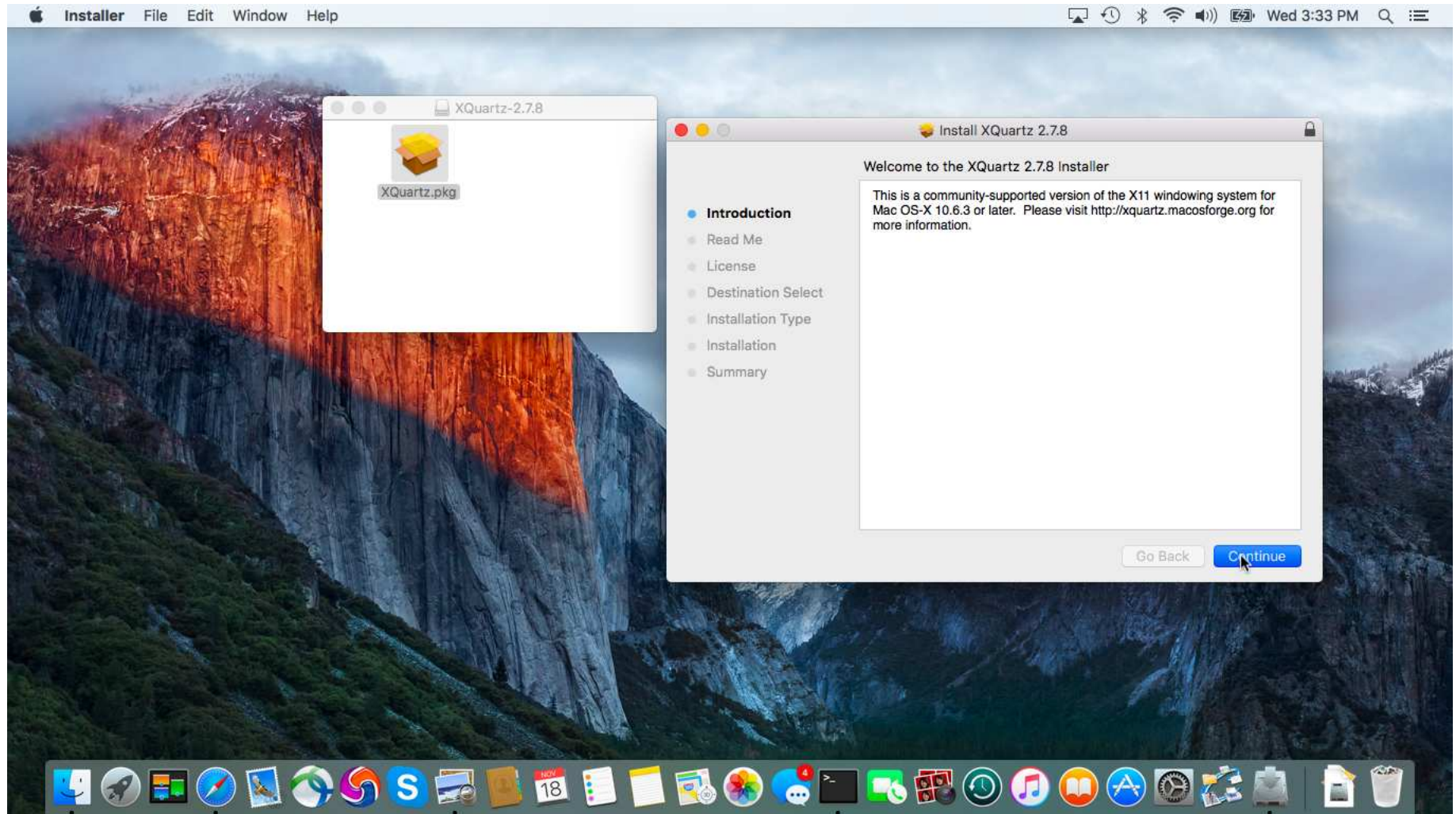


# Open the dmg

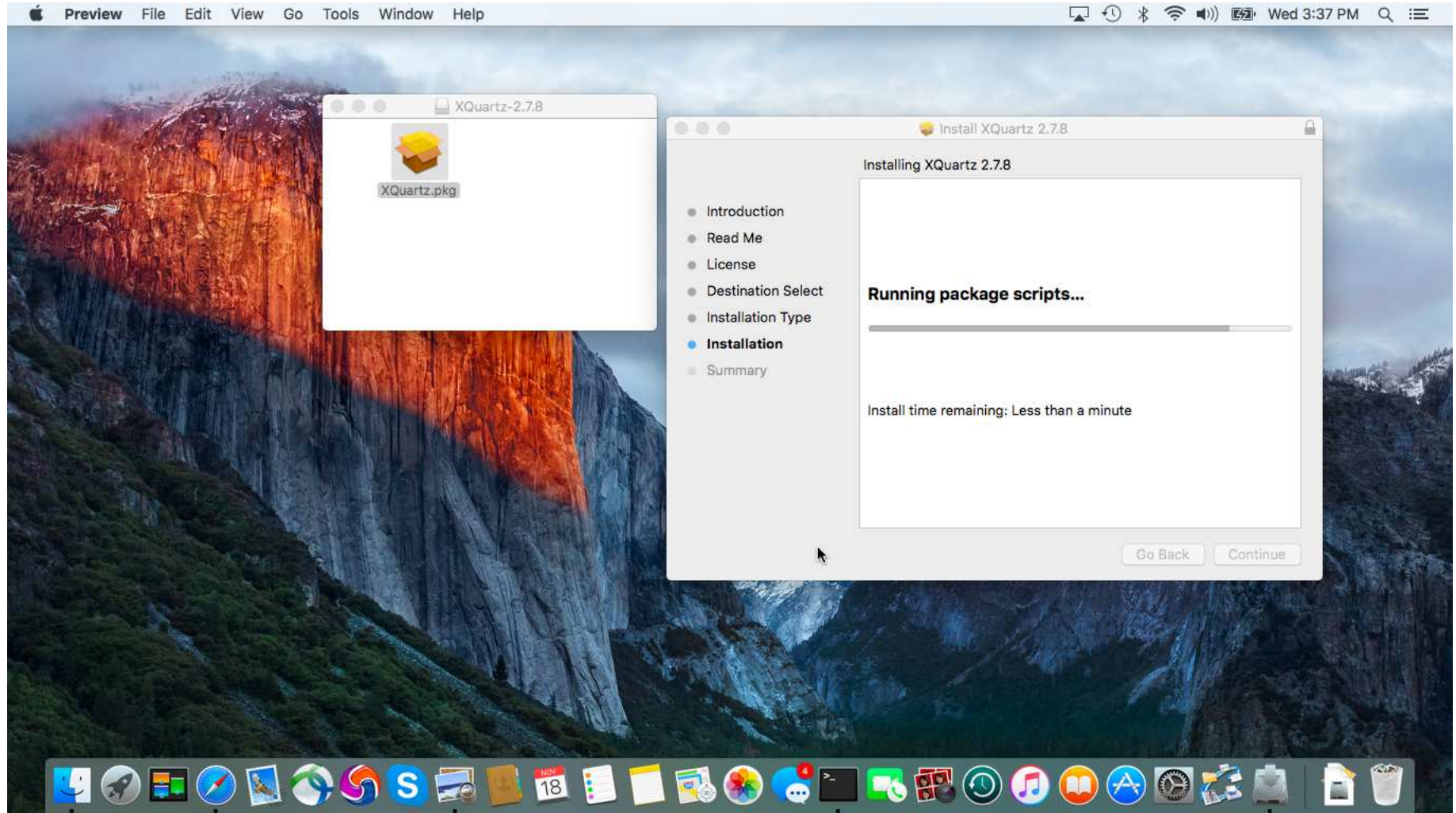




# and launch the XQuartz installer.

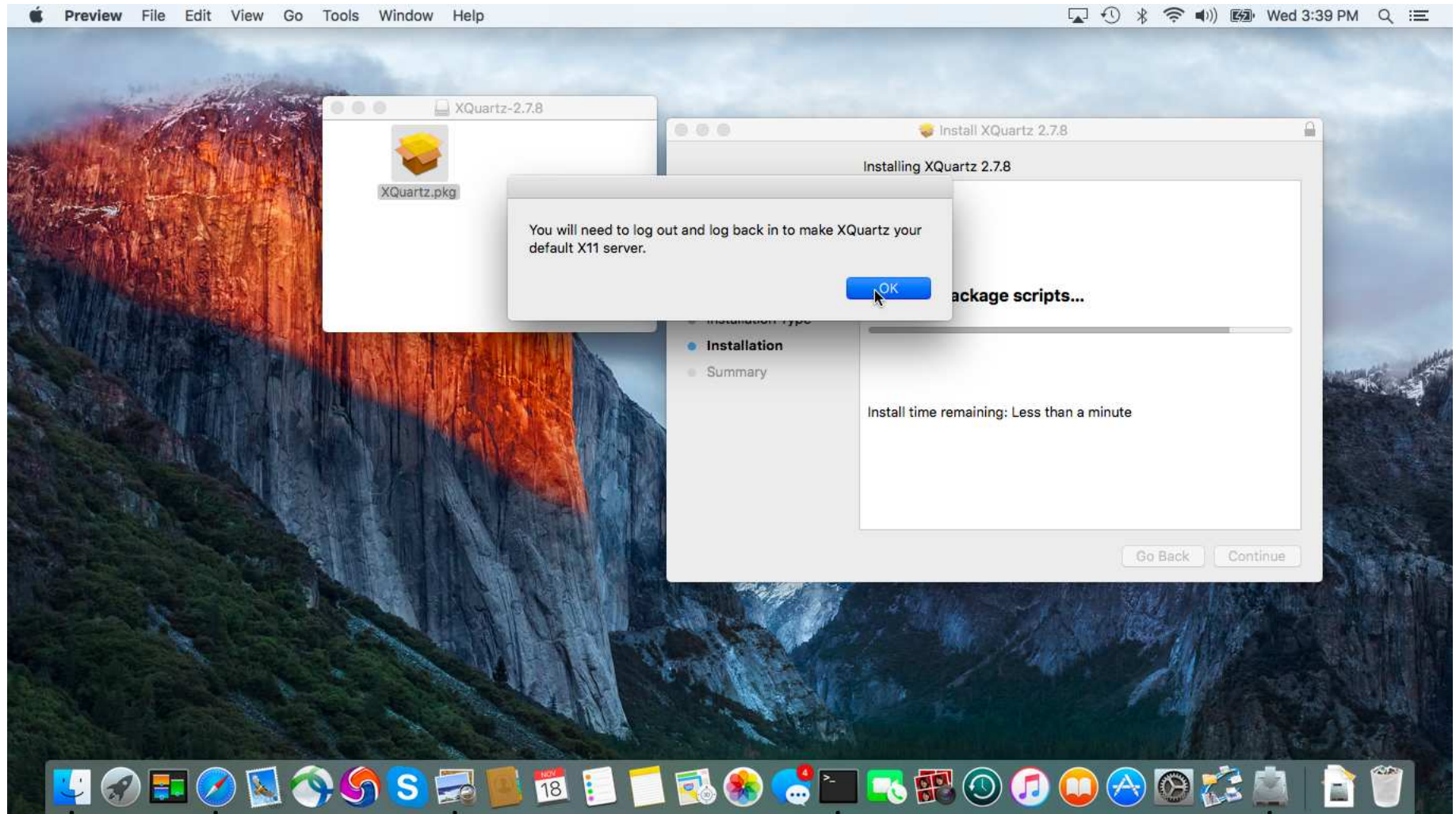


# it can take a few minutes



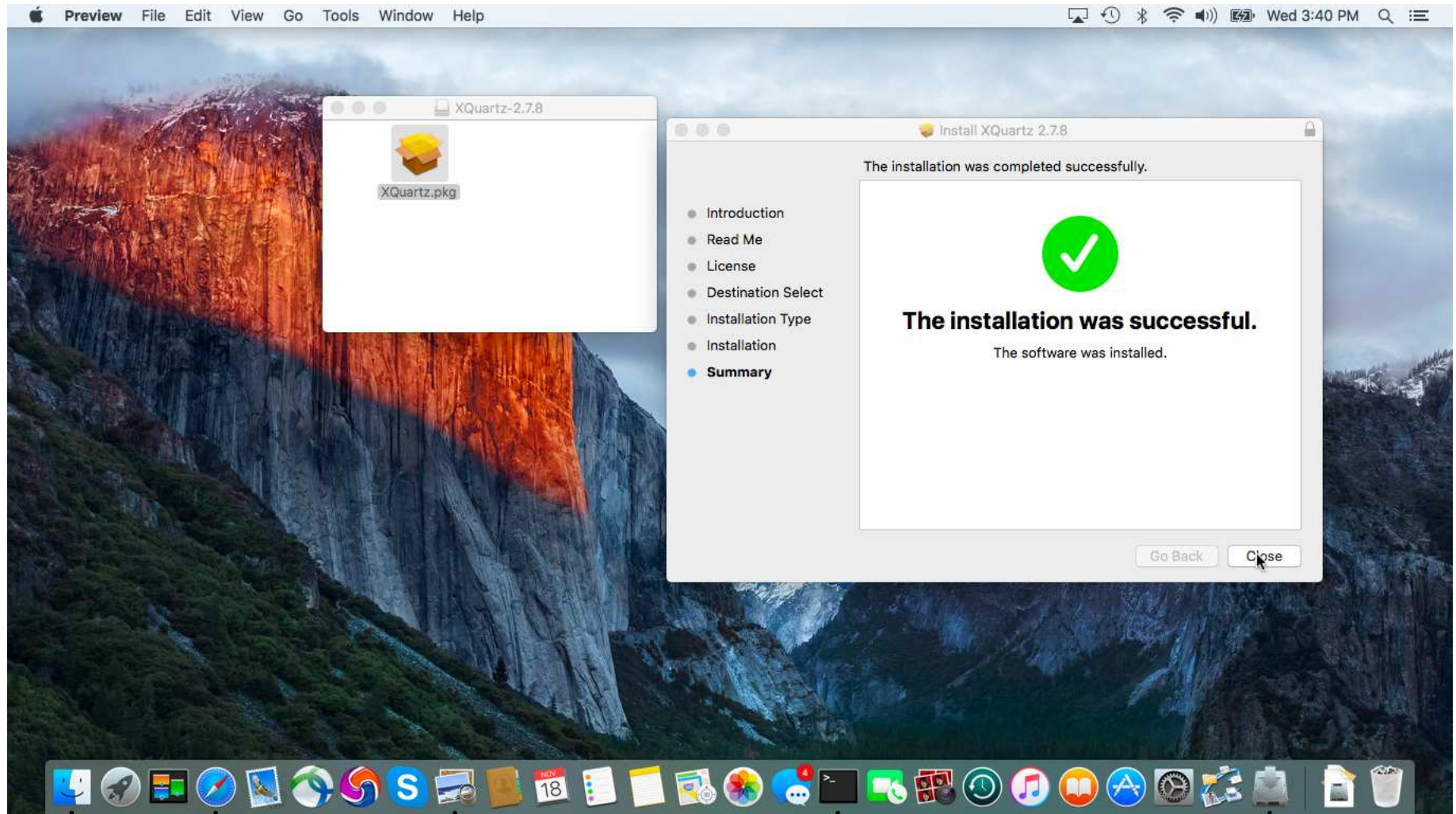


# Press OK, but something to remember ...





# XQuartz is installed

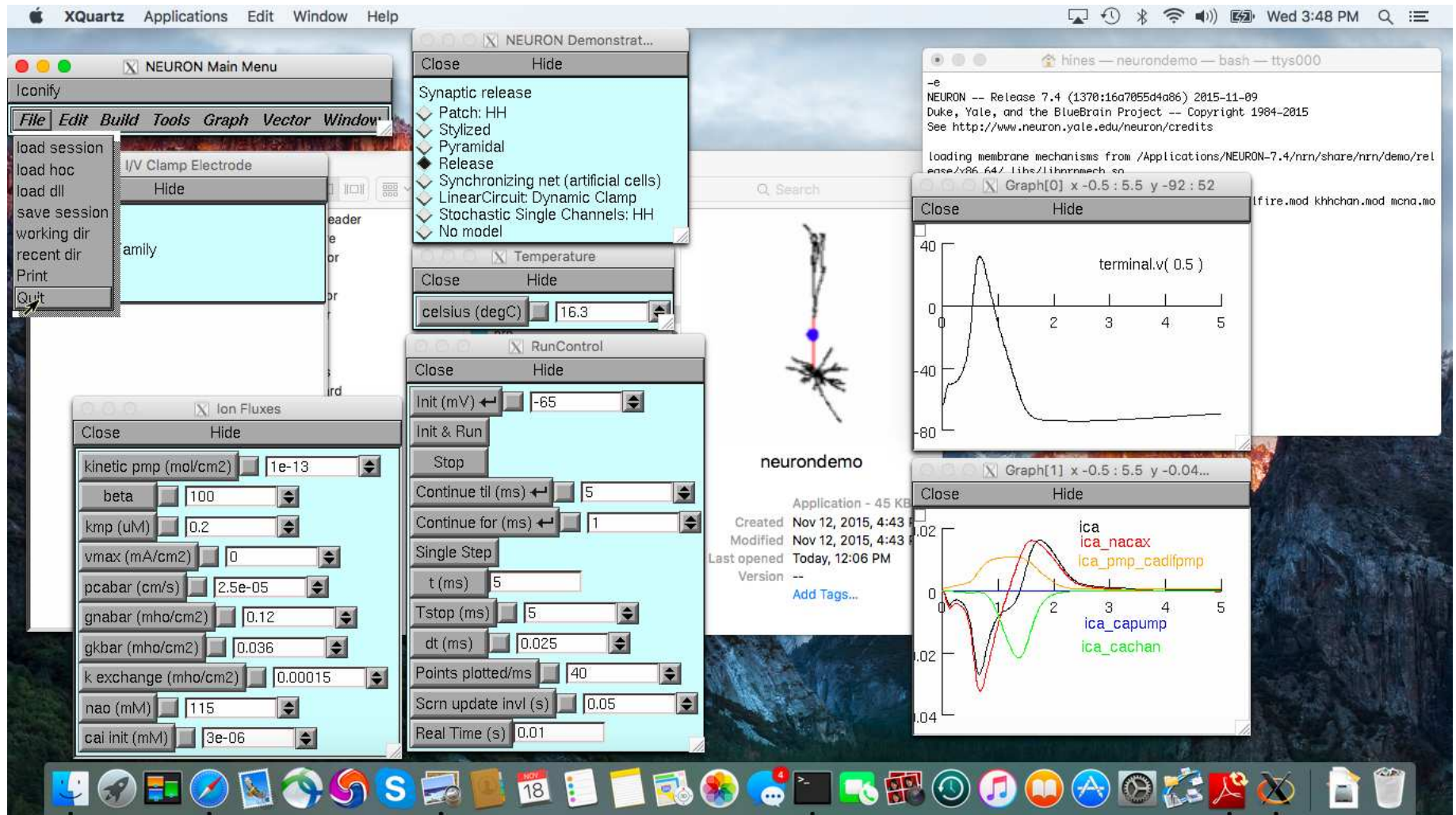


# but now log out and log back in.





# Now neurondemo should be successful. exit via NEURONMainMenu/File/Quit





# Command Line Tools depend on OSX version

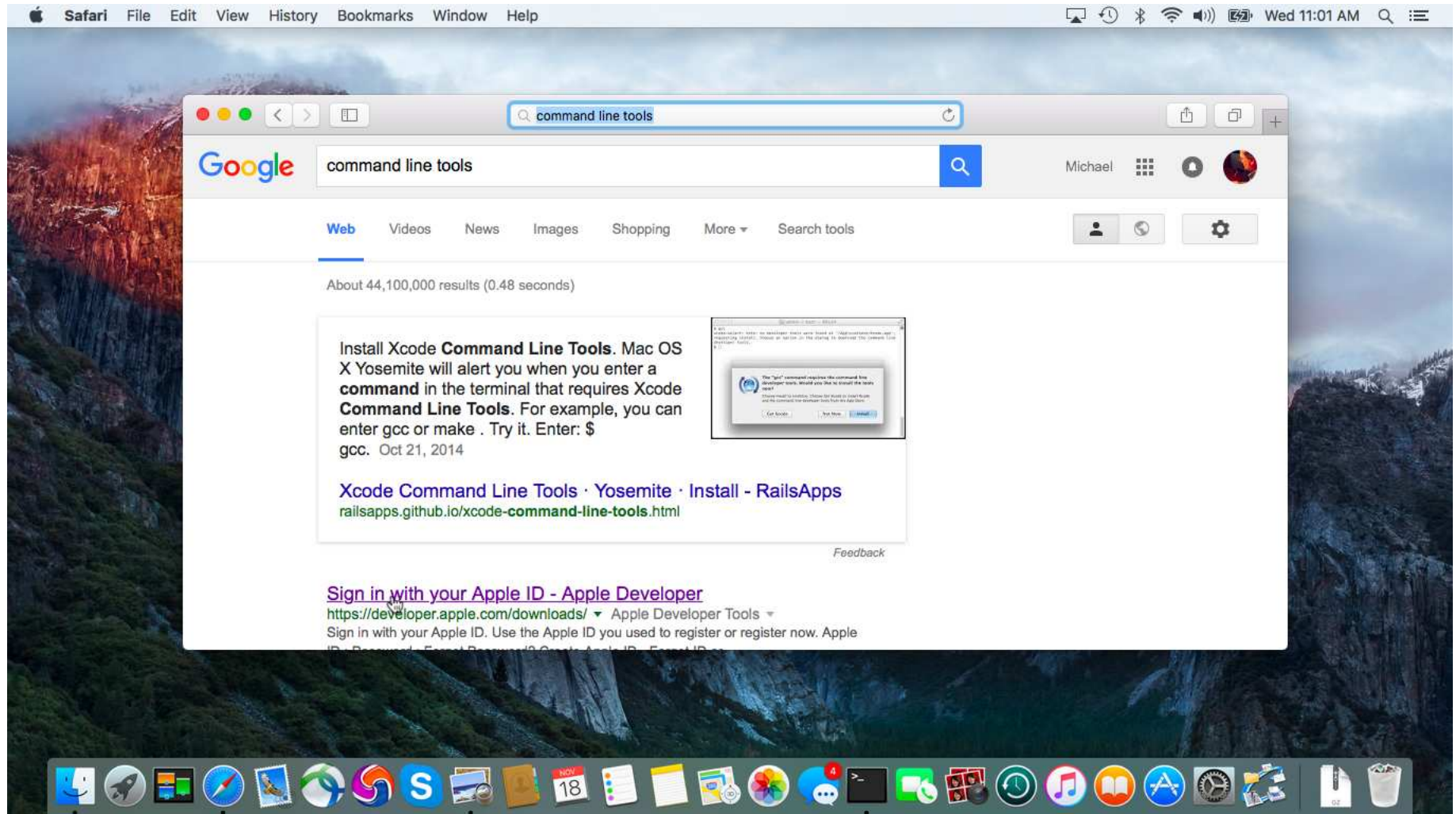


# El Capitan is 10.11

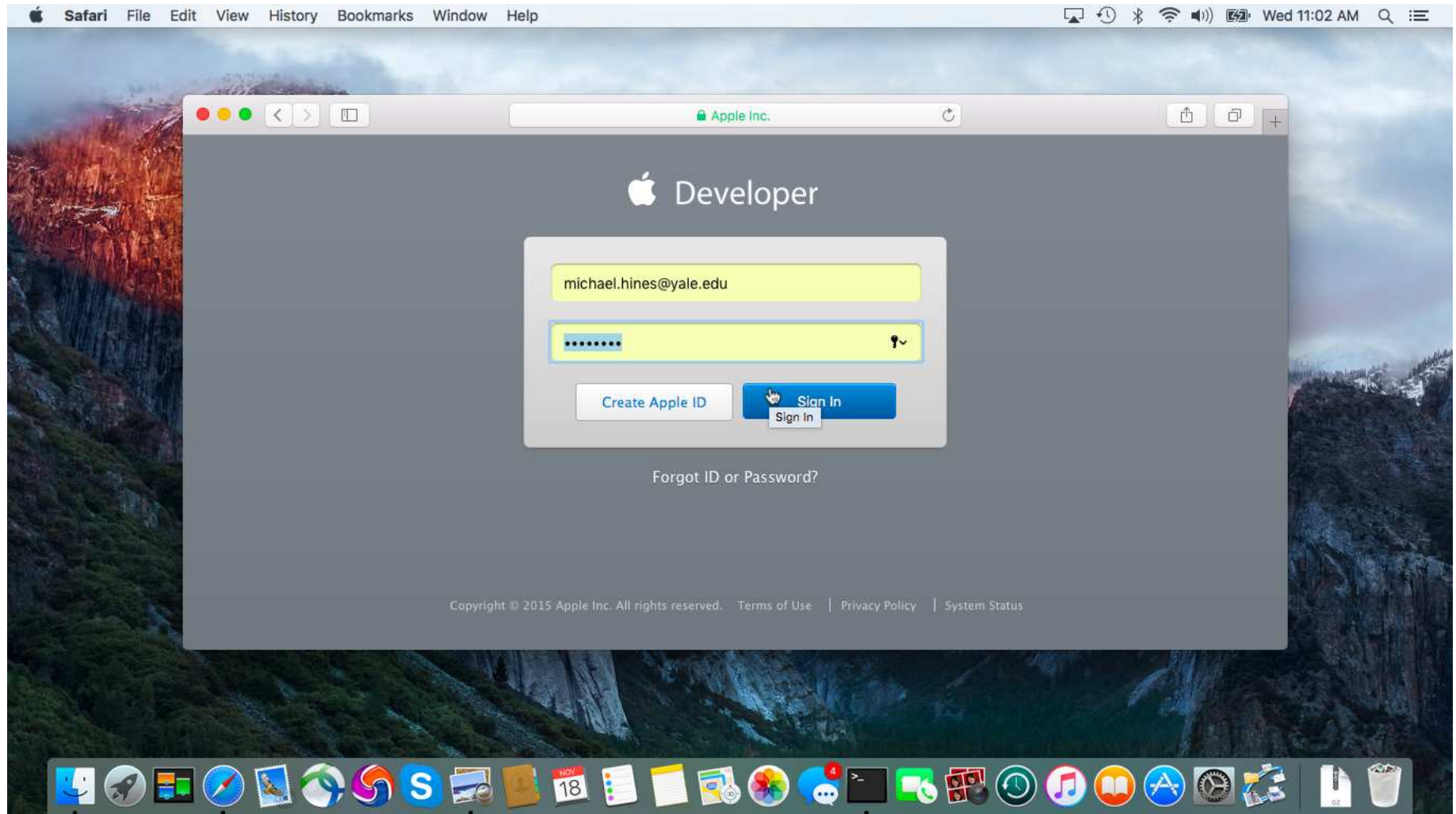




# Free, but need to sign in to Apple

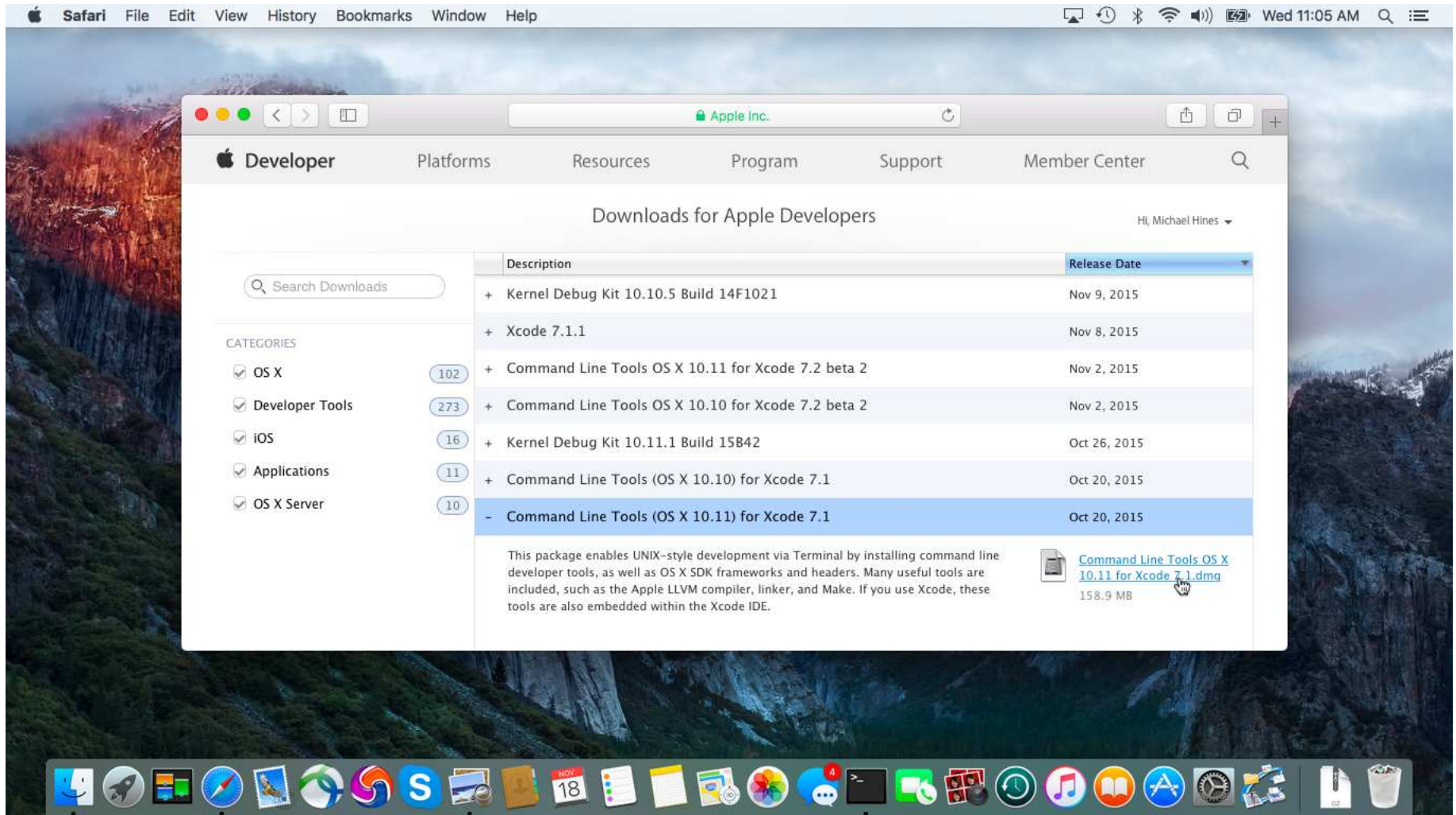


# Anyone can be a Developer

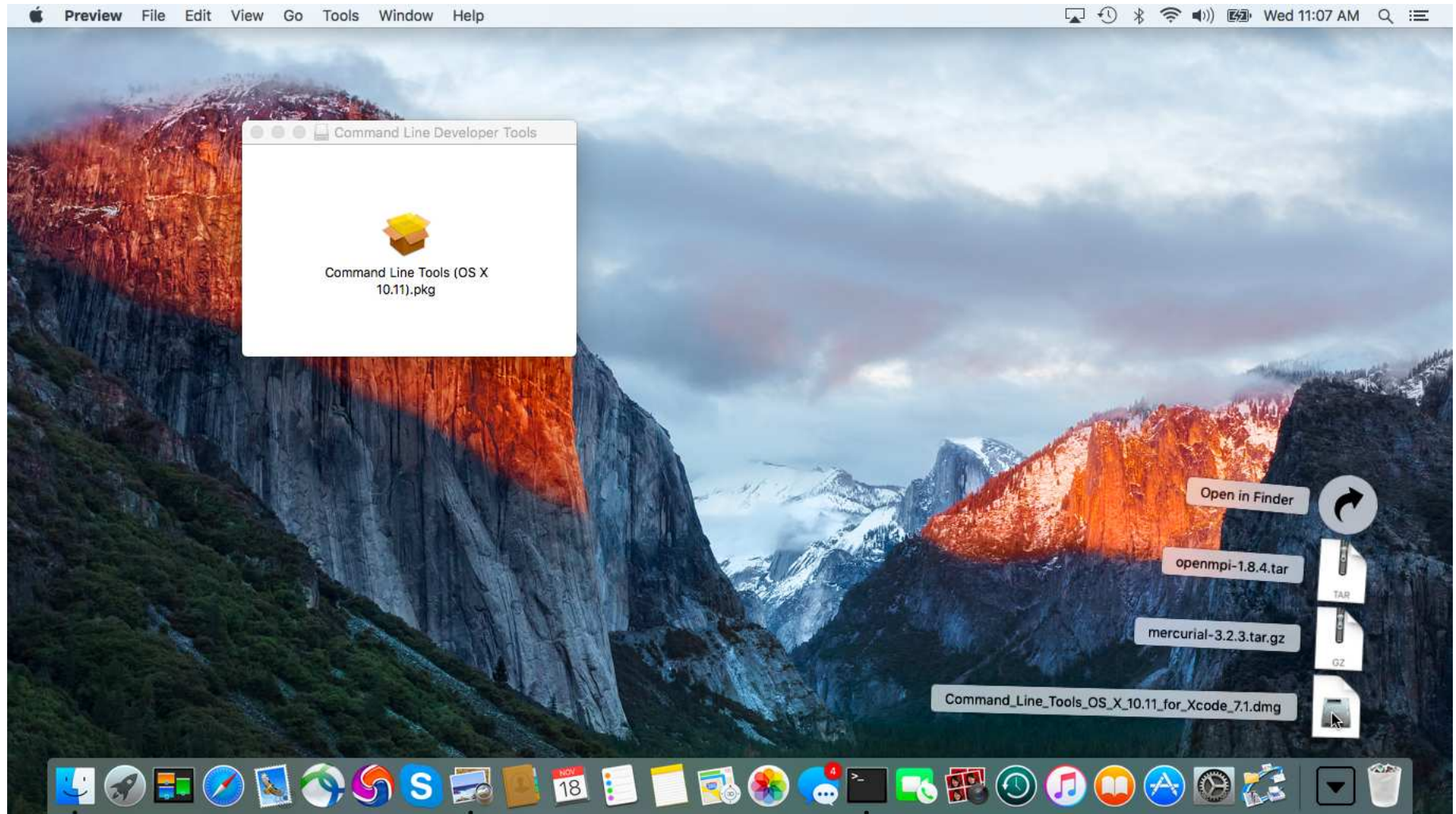




# Double click on the correct one ... and the download URL will be displayed.

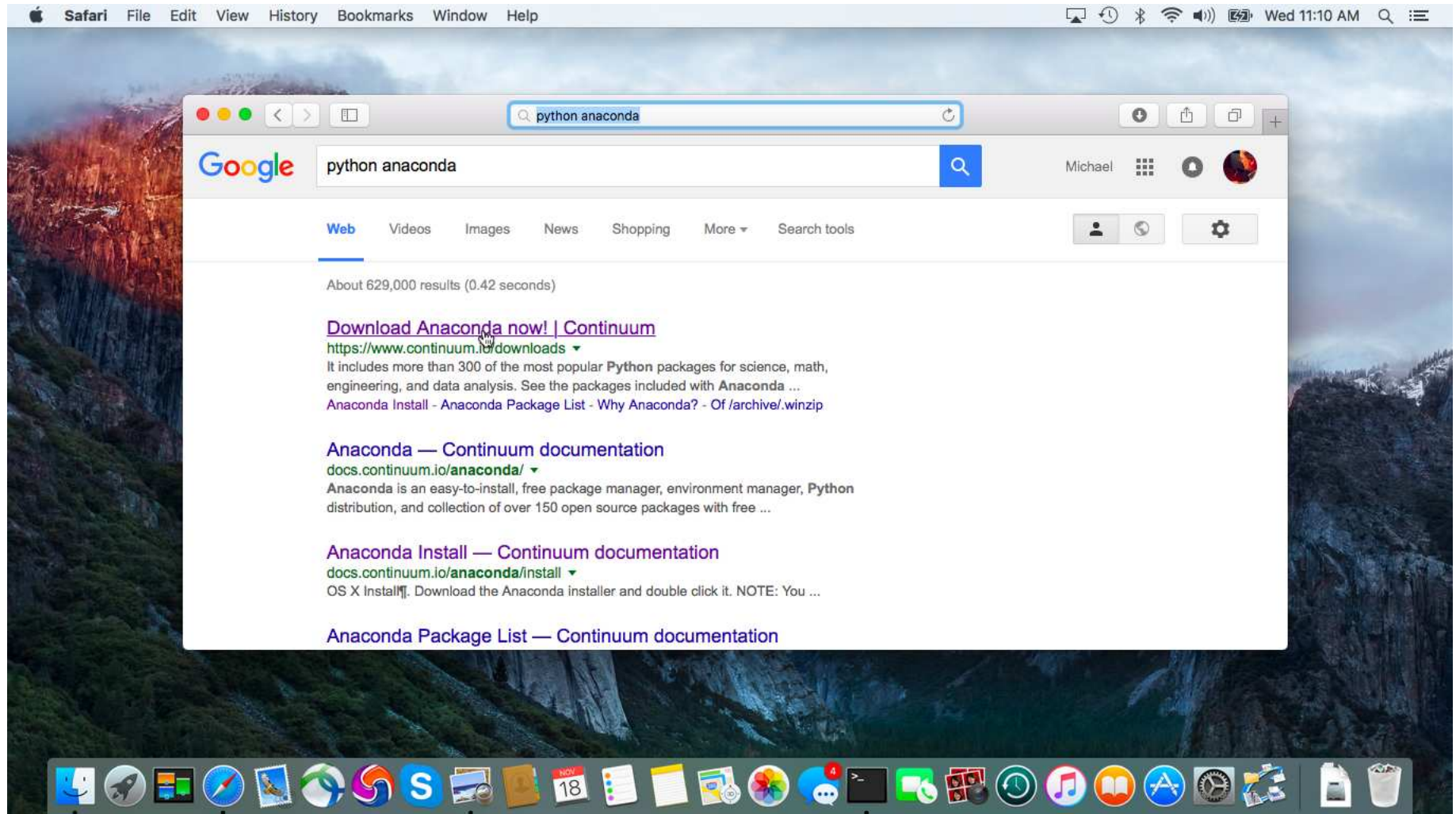


# Open and install in the usual way.

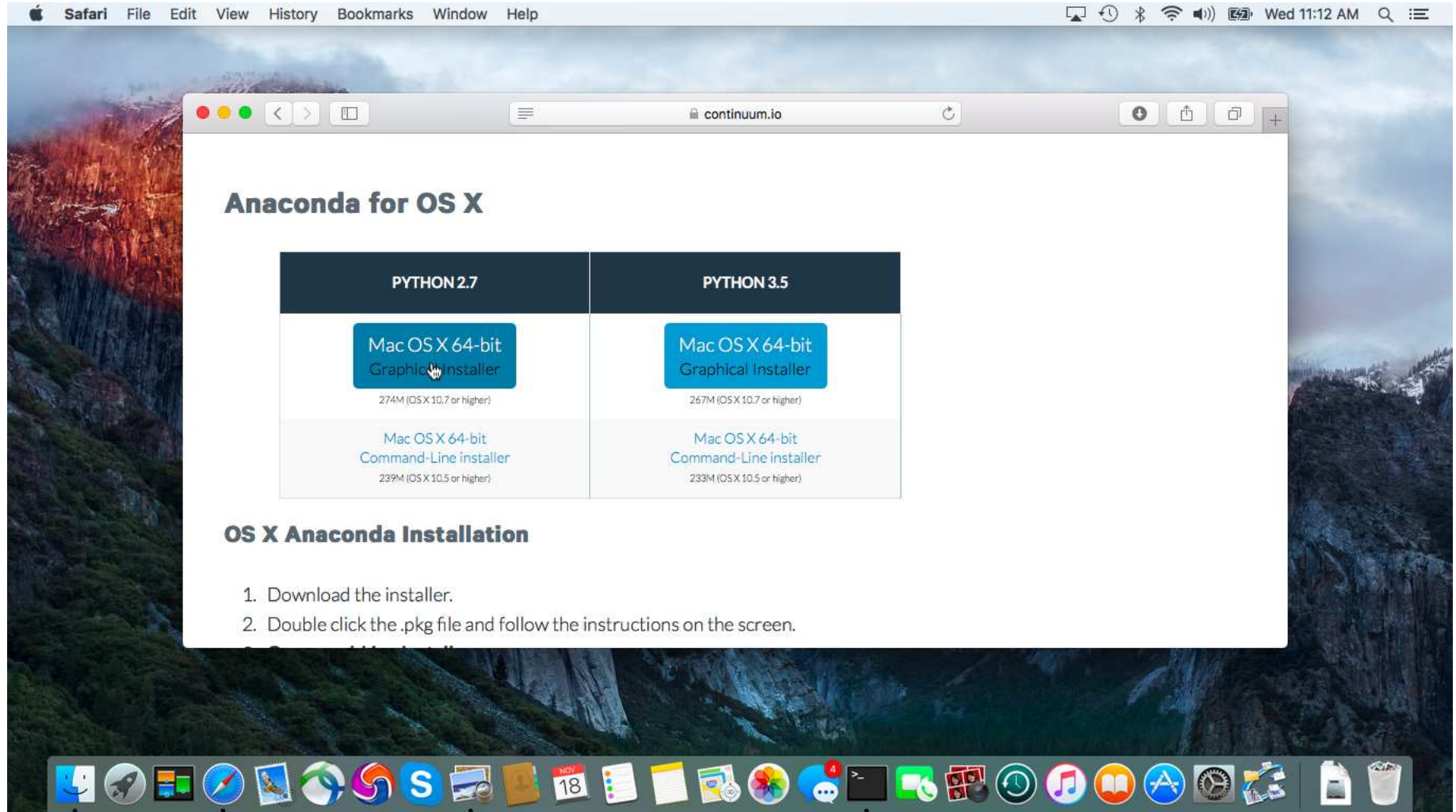




# Python and easy\_install come with the mac but...

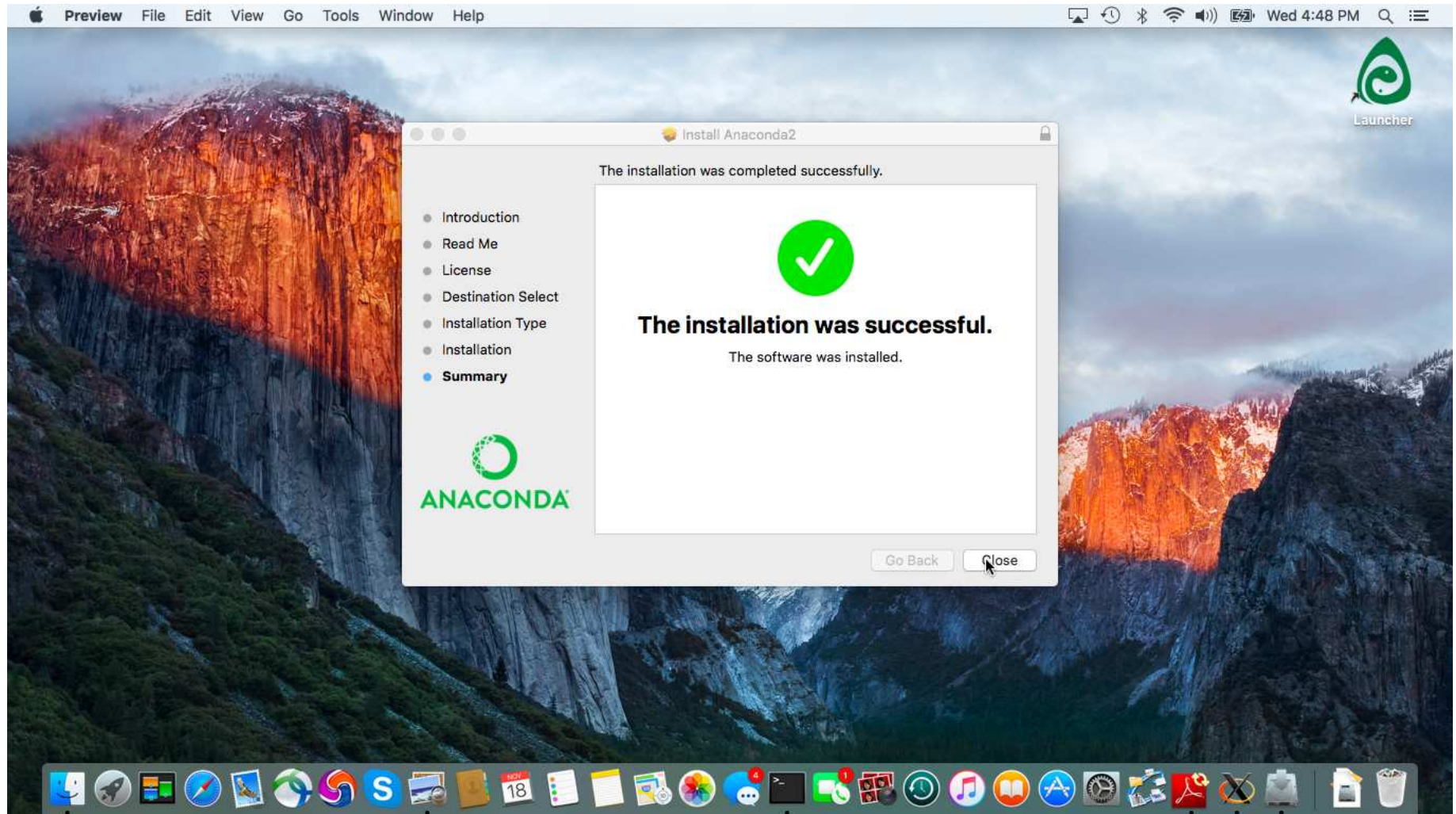


# this is an easy way to get OpenMPI and Mayavi



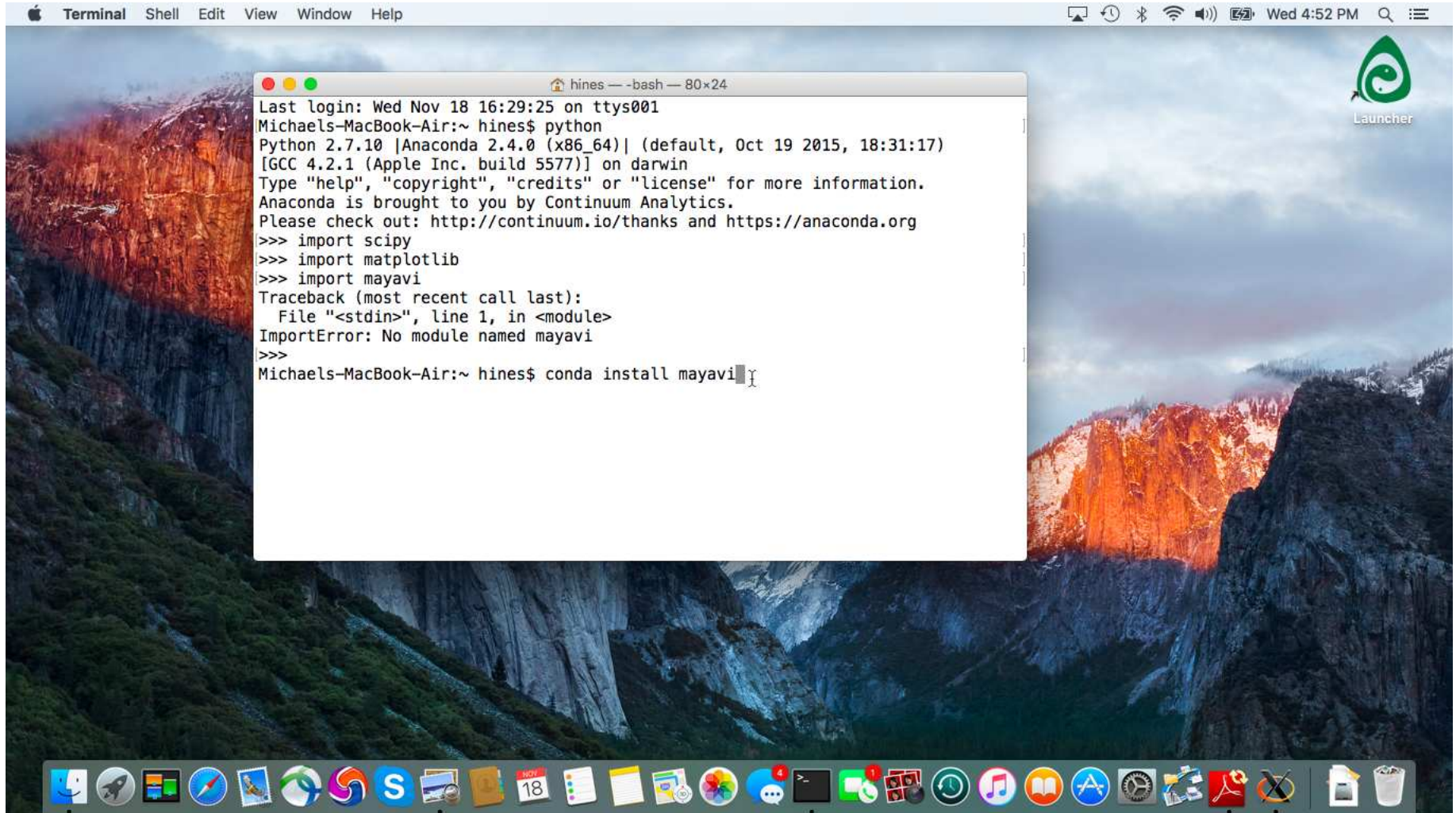


# So what do we have?



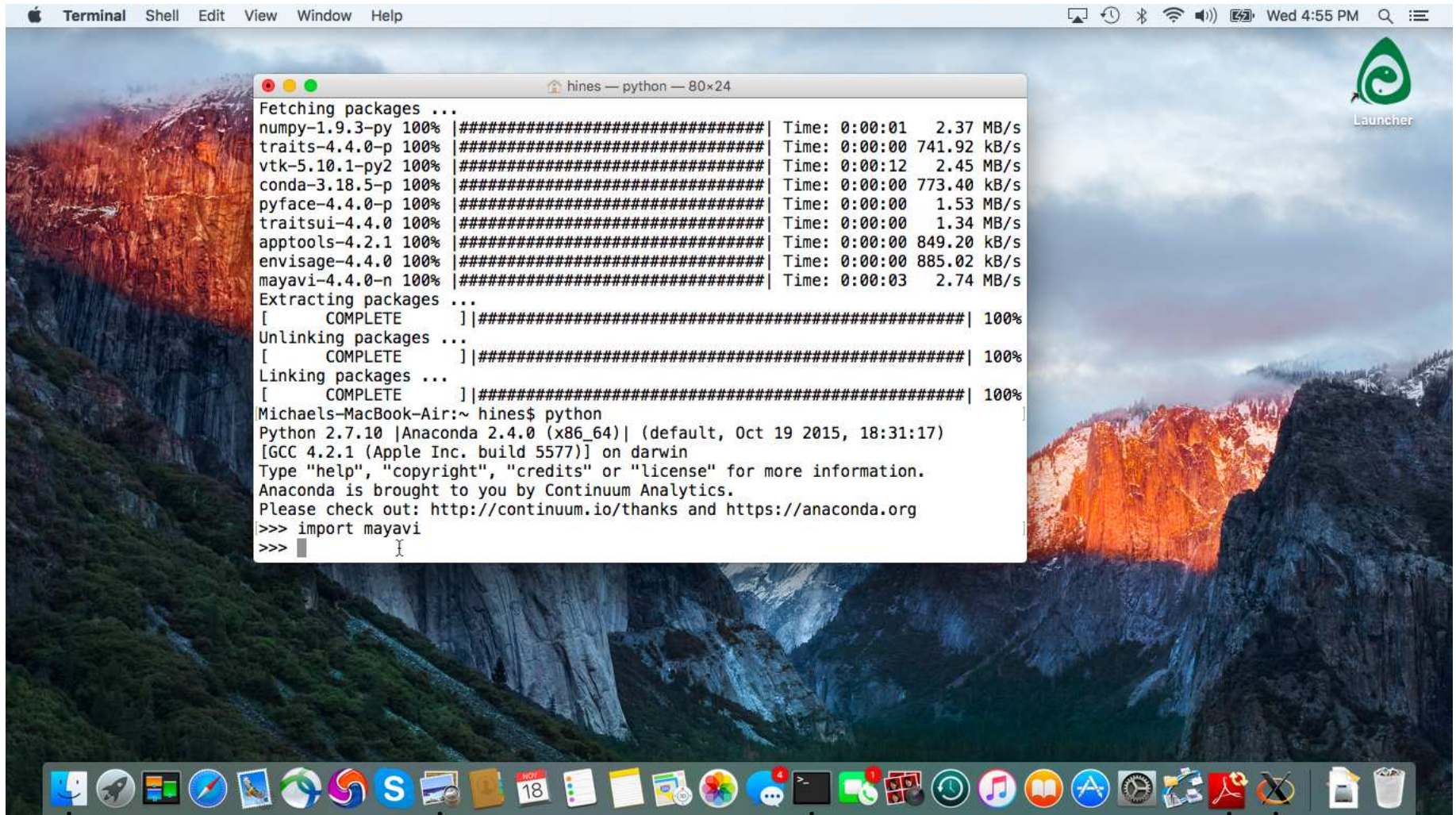
# Scipy, matplotlib, but not mayavi...

## conda install mayavi





# and now mayavi can be imported.



The screenshot shows a macOS desktop with a Terminal window open. The background is a scenic image of a mountain range. The Terminal window title is "hines — python — 80x24". The output shows the installation progress of various packages, including numpy, traits, vtk, conda, pyface, traitsui, apptools, envisage, and mayavi. The installation of mayavi-4.4.0-n is shown as 100% complete. Below the installation progress, the prompt "Michael's-MacBook-Air:~ hines\$ python" is shown, followed by the output of the python command, which displays the Anaconda environment information. Finally, the prompt ">>> import mayavi" is shown, indicating that the package was successfully imported.

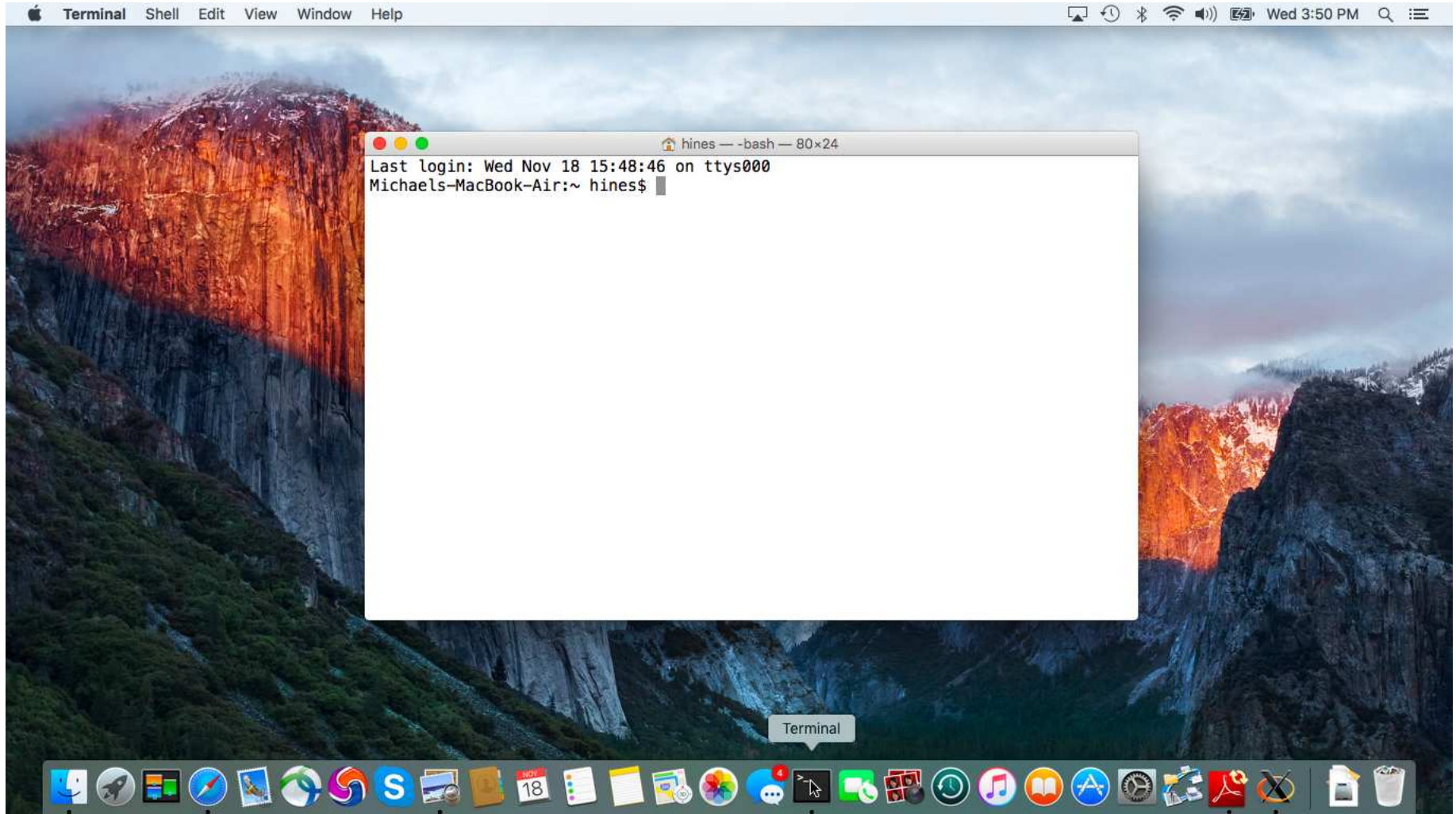
```
Terminal Shell Edit View Window Help Wed 4:55 PM

hines — python — 80x24

Fetching packages ...
numpy-1.9.3-py 100% ##### Time: 0:00:01 2.37 MB/s
traits-4.4.0-p 100% ##### Time: 0:00:00 741.92 kB/s
vtk-5.10.1-py2 100% ##### Time: 0:00:12 2.45 MB/s
conda-3.18.5-p 100% ##### Time: 0:00:00 773.40 kB/s
pyface-4.4.0-p 100% ##### Time: 0:00:00 1.53 MB/s
traitsui-4.4.0 100% ##### Time: 0:00:00 1.34 MB/s
apptools-4.2.1 100% ##### Time: 0:00:00 849.20 kB/s
envisage-4.4.0 100% ##### Time: 0:00:00 885.02 kB/s
mayavi-4.4.0-n 100% ##### Time: 0:00:03 2.74 MB/s
Extracting packages ...
[ COMPLETE ]##### 100%
Unlinking packages ...
[ COMPLETE ]##### 100%
Linking packages ...
[ COMPLETE ]##### 100%
Michael's-MacBook-Air:~ hines$ python
Python 2.7.10 |Anaconda 2.4.0 (x86_64)| (default, Oct 19 2015, 18:31:17)
[GCC 4.2.1 (Apple Inc. build 5577)] on darwin
Type "help", "copyright", "credits" or "license" for more information.
Anaconda is brought to you by Continuum Analytics.
Please check out: http://continuum.io/thanks and https://anaconda.org
>>> import mayavi
>>> 
```

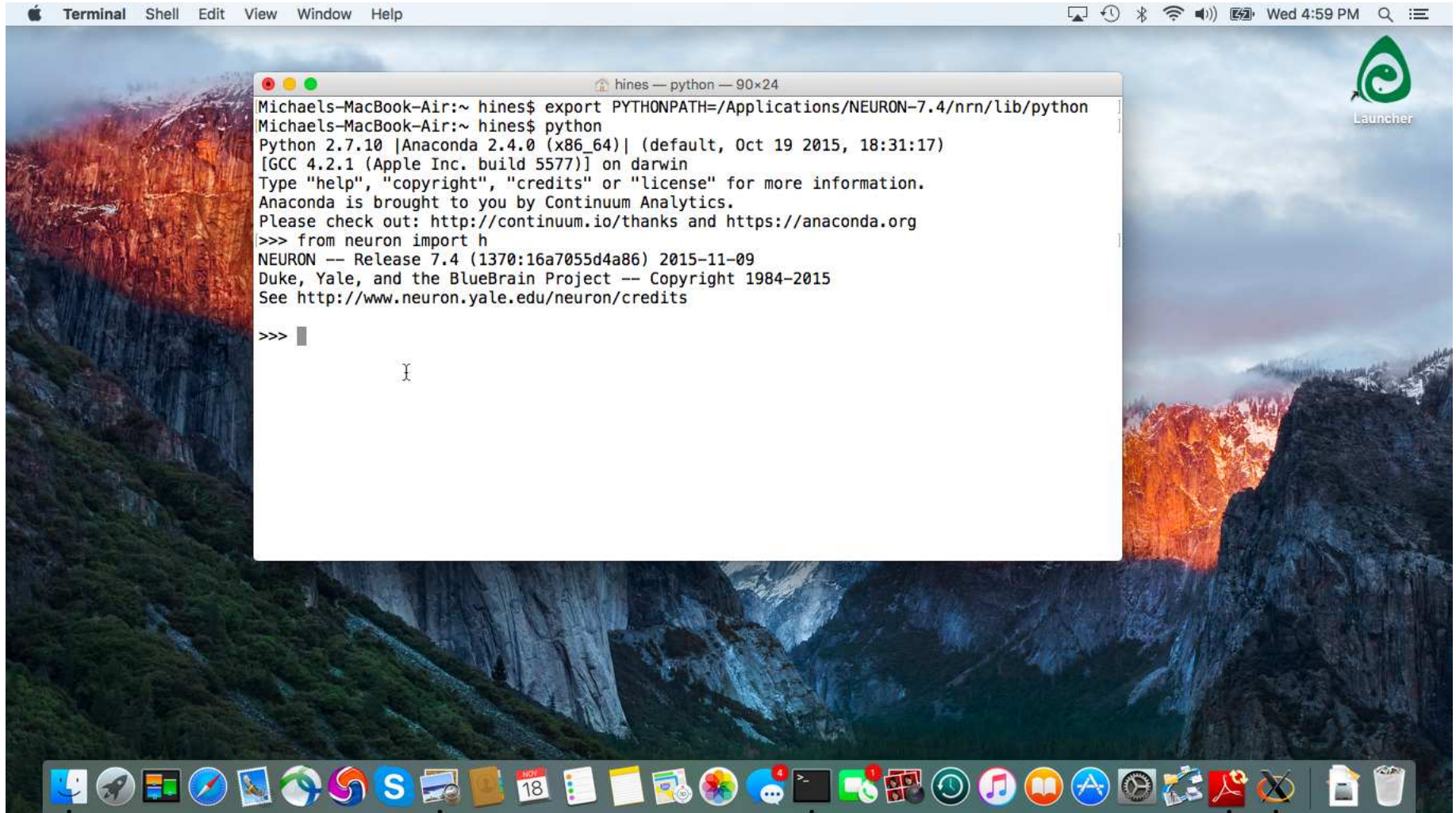
# Test a few things by opening a Terminal window.

## /Applications/Utilities/Terminal





# With PYTHONPATH, Python can import neuron /Applications/NEURON-7.4/nrn/lib/python

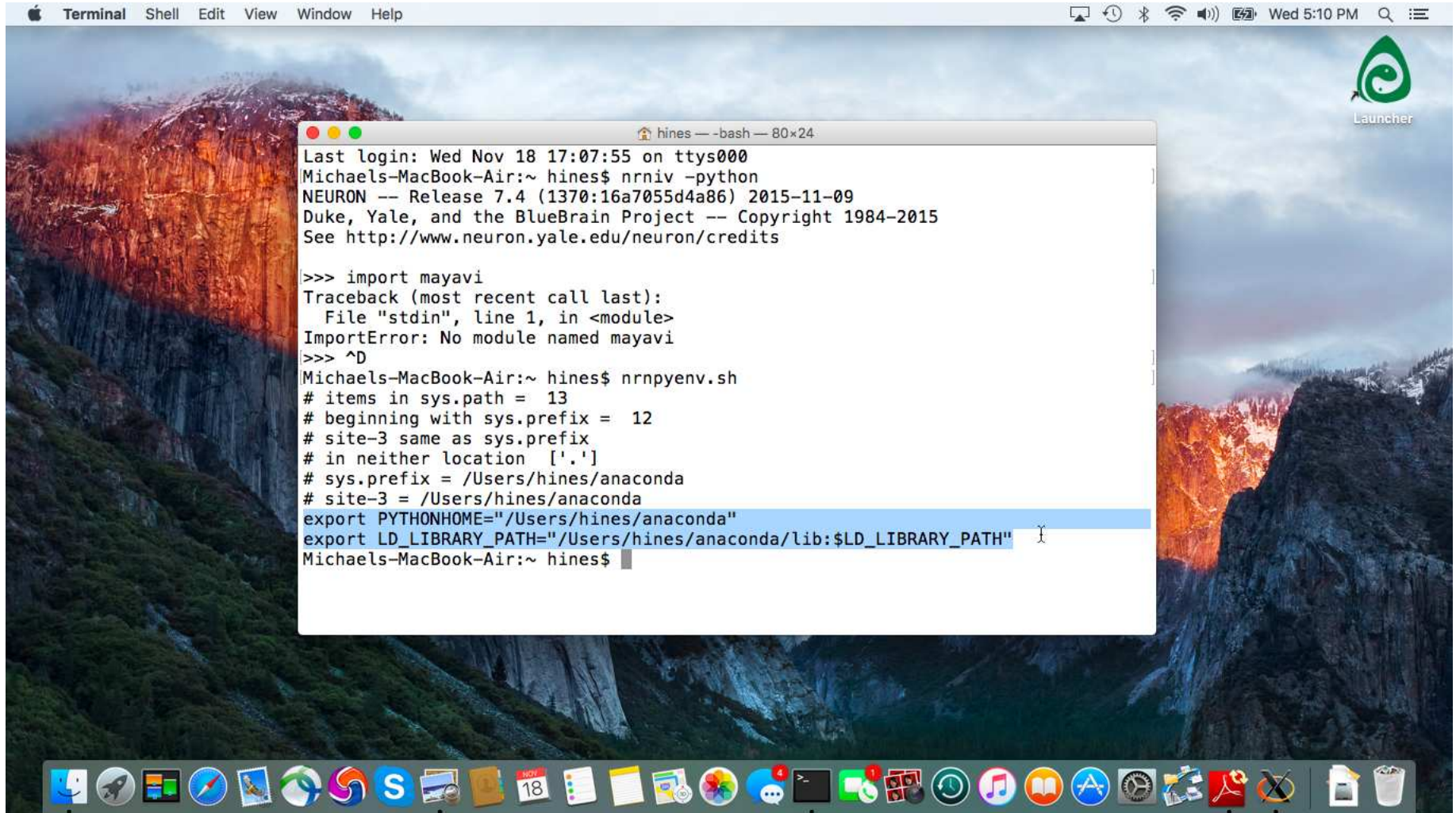


The screenshot shows a macOS desktop with a Terminal window open. The desktop background is a scenic image of a mountain valley. The Terminal window has a title bar that reads "hines — python — 90x24". The command prompt shows the user "hines" at the "Michaels-MacBook-Air" machine. The user enters the command `export PYTHONPATH=/Applications/NEURON-7.4/nrn/lib/python`, followed by `python`. The Python interpreter starts, displaying version 2.7.10 and Anaconda 2.4.0 information. The user then enters `from neuron import h`, which successfully imports the NEURON library. The output shows NEURON version 7.4 and copyright information.

```
Michaels-MacBook-Air:~ hines$ export PYTHONPATH=/Applications/NEURON-7.4/nrn/lib/python
Michaels-MacBook-Air:~ hines$ python
Python 2.7.10 |Anaconda 2.4.0 (x86_64)| (default, Oct 19 2015, 18:31:17)
[GCC 4.2.1 (Apple Inc. build 5577)] on darwin
Type "help", "copyright", "credits" or "license" for more information.
Anaconda is brought to you by Continuum Analytics.
Please check out: http://continuum.io/thanks and https://anaconda.org
>>> from neuron import h
NEURON -- Release 7.4 (1370:16a7055d4a86) 2015-11-09
Duke, Yale, and the BlueBrain Project -- Copyright 1984-2015
See http://www.neuron.yale.edu/neuron/credits

>>> 
```

# nrnpyenv.sh helps with environment variables

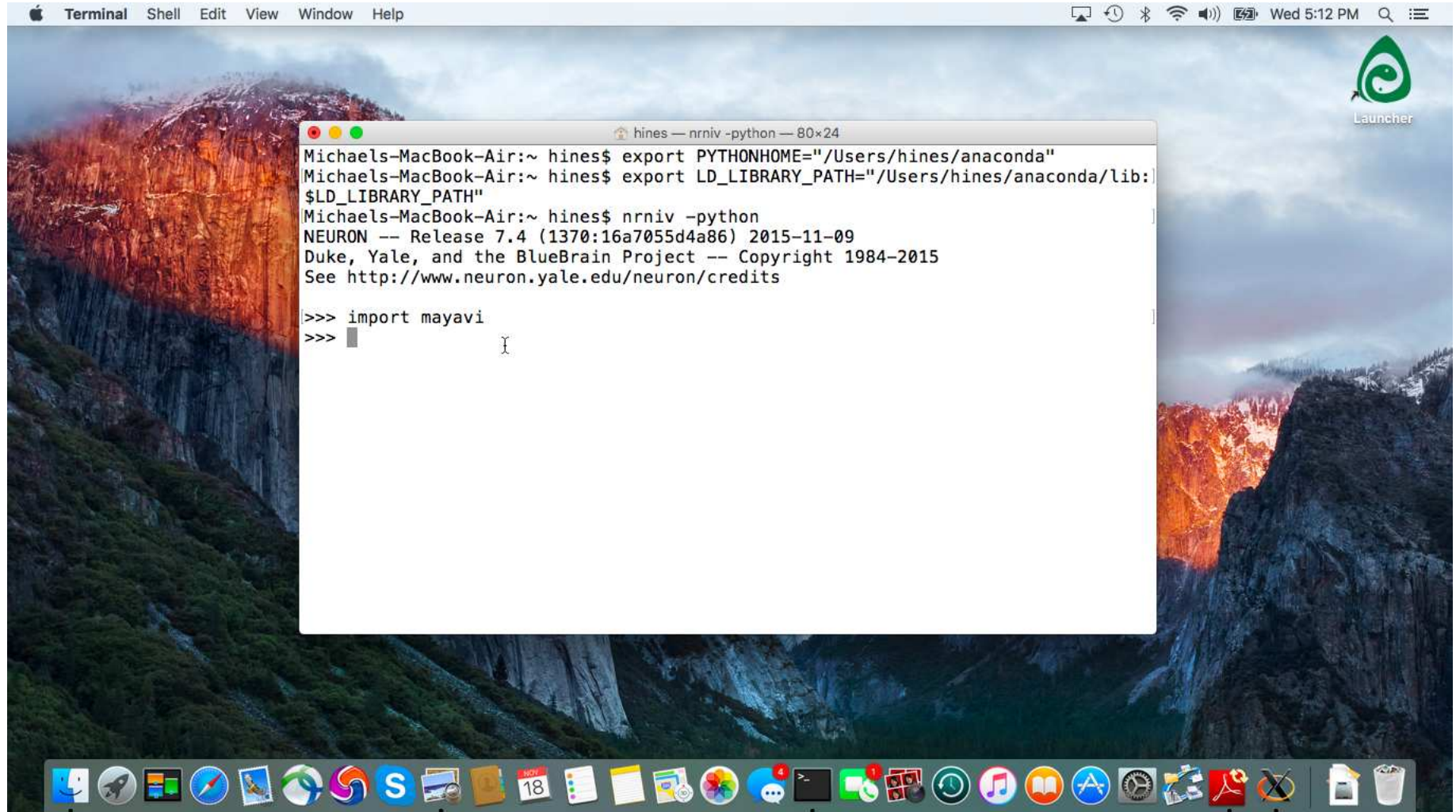


```
Terminal Shell Edit View Window Help
hines --bash-- 80x24
Last login: Wed Nov 18 17:07:55 on ttys000
Michaels-MacBook-Air:~ hines$ nrniv -python
NEURON -- Release 7.4 (1370:16a7055d4a86) 2015-11-09
Duke, Yale, and the BlueBrain Project -- Copyright 1984-2015
See http://www.neuron.yale.edu/neuron/credits

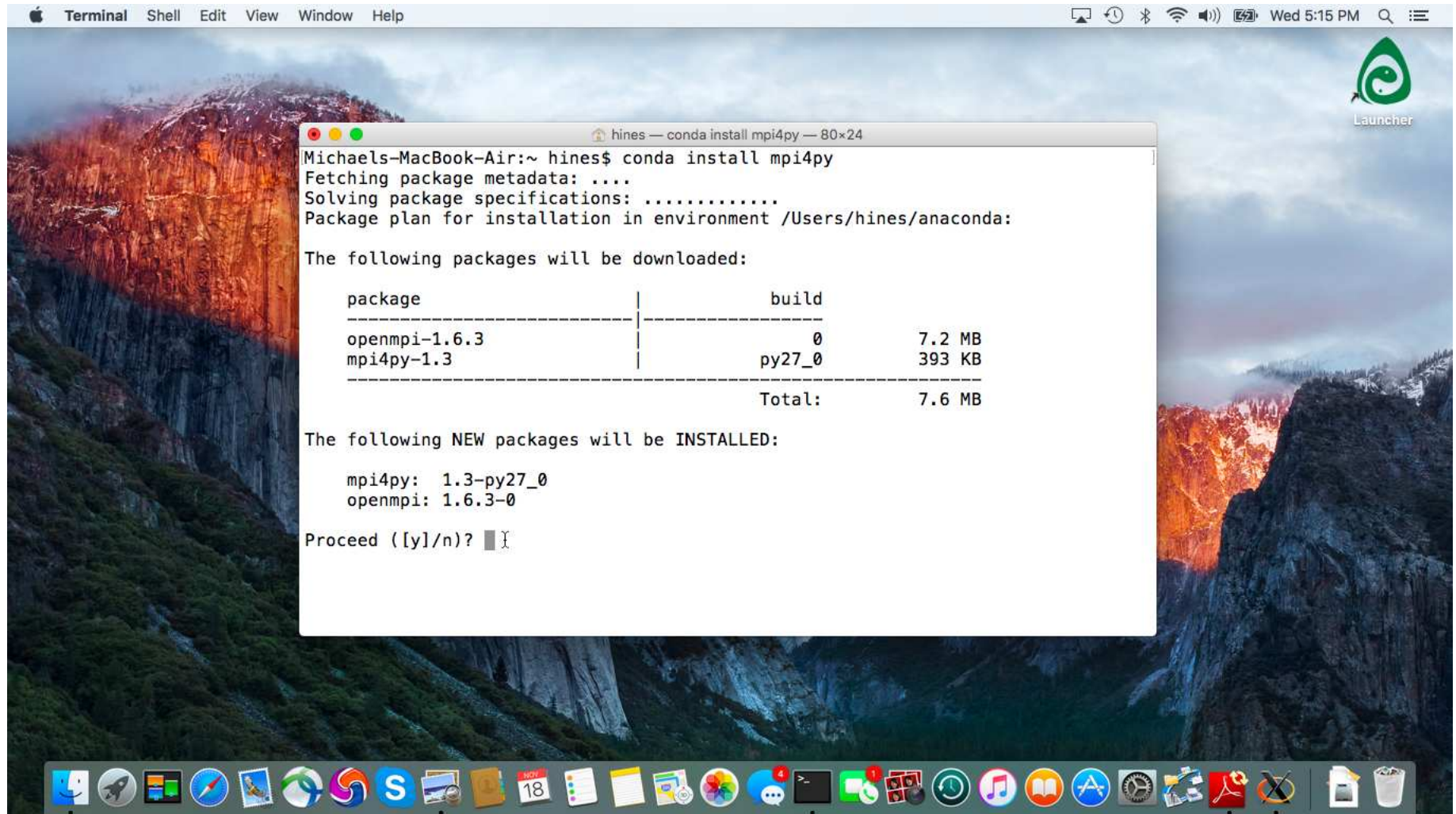
>>> import mayavi
Traceback (most recent call last):
  File "stdin", line 1, in <module>
ImportError: No module named mayavi
>>> ^D
Michaels-MacBook-Air:~ hines$ nrnpyenv.sh
# items in sys.path = 13
# beginning with sys.prefix = 12
# site-3 same as sys.prefix
# in neither location ['.']
# sys.prefix = /Users/hines/anaconda
# site-3 = /Users/hines/anaconda
export PYTHONHOME="/Users/hines/anaconda"
export LD_LIBRARY_PATH="/Users/hines/anaconda/lib:$LD_LIBRARY_PATH"
Michaels-MacBook-Air:~ hines$
```



# copy/paste allows nrniv to find anaconda packages.



# "conda install mpi4py" also installs openmpi

A screenshot of a macOS desktop environment. The desktop background is a scenic image of a mountain range with a large, orange, rocky peak. In the top right corner, there is a green circular icon with a white 'e' and the word 'Launcher' below it. The top of the screen shows the macOS menu bar with the Apple logo, the word 'Terminal', and several system status icons (Wi-Fi, Bluetooth, battery, etc.) along with the time 'Wed 5:15 PM'. A terminal window is open in the center, titled 'hines — conda install mpi4py — 80x24'. The terminal output shows the command 'conda install mpi4py' being executed, followed by metadata fetching, solving specifications, and a package plan. The plan lists 'openmpi-1.6.3' (7.2 MB) and 'mpi4py-1.3' (393 KB) to be downloaded, totaling 7.6 MB. It also lists the new packages to be installed: 'mpi4py: 1.3-py27\_0' and 'openmpi: 1.6.3-0'. The prompt 'Proceed ([y]/n)?' is shown at the bottom of the terminal window.

```
Michael's-MacBook-Air:~ hines$ conda install mpi4py
Fetching package metadata: ....
Solving package specifications: .....
Package plan for installation in environment /Users/hines/anaconda:

The following packages will be downloaded:



| package       | build  | size   |
|---------------|--------|--------|
| openmpi-1.6.3 | 0      | 7.2 MB |
| mpi4py-1.3    | py27_0 | 393 KB |
| Total:        |        | 7.6 MB |



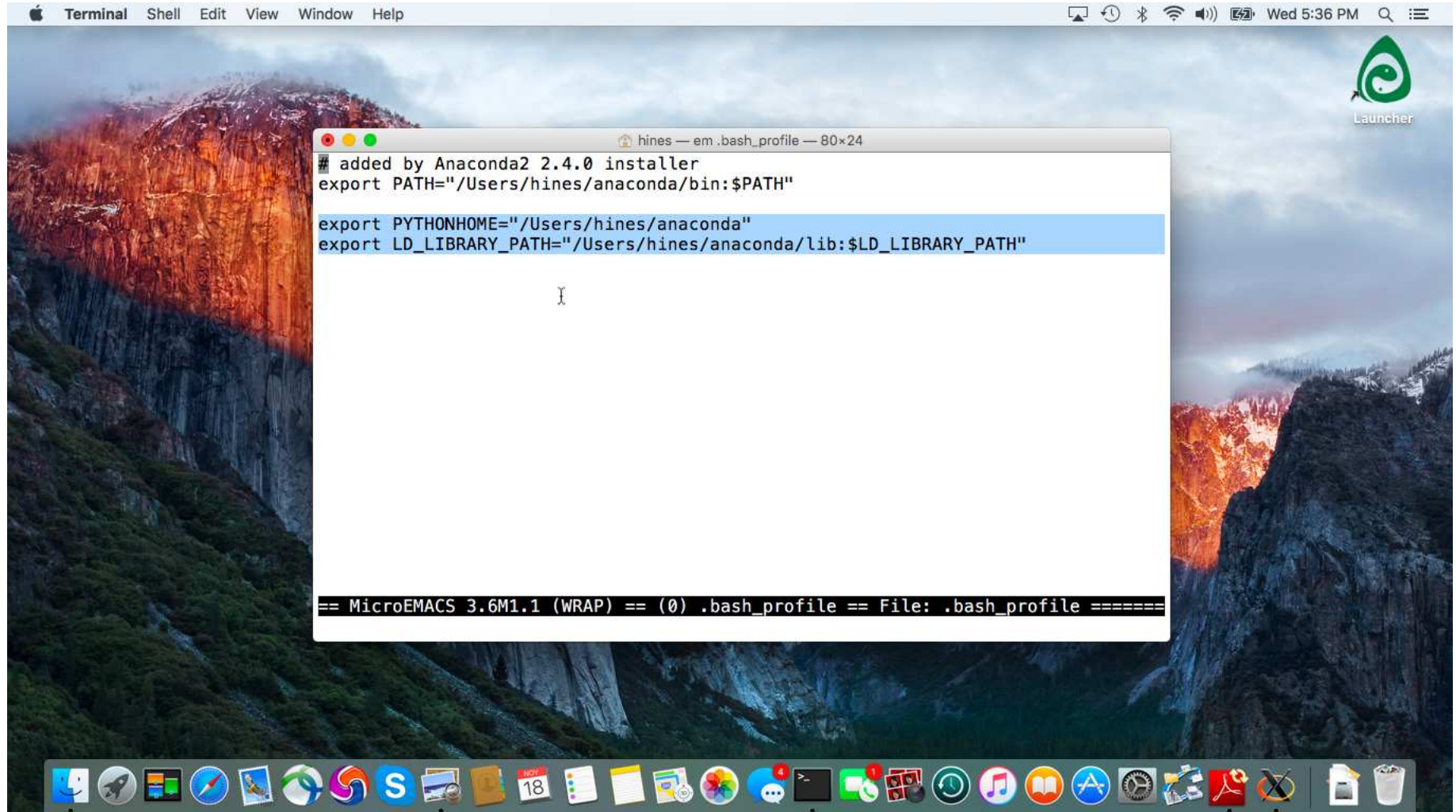
The following NEW packages will be INSTALLED:

mpi4py: 1.3-py27_0
openmpi: 1.6.3-0

Proceed ([y]/n)?
```



# Add the exports to your \$HOME/.bash\_profile



# MPI works.

