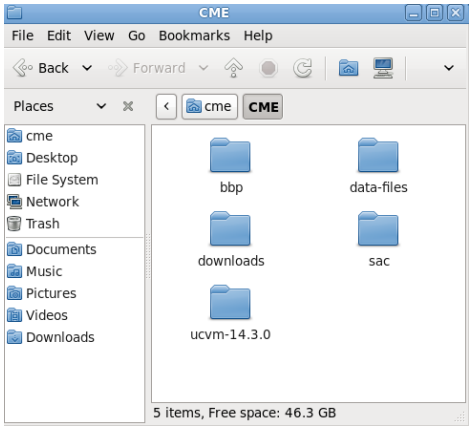
Procedure for Executing on the Broadband Platform (subject to changes)

1. Click on Green Arrow to Start the SCEC CME
2. Double click on cme's Home Icon
3. Double click on CME Folder



4. Double click on Terminal Icon
5. cd CME (you will see a list with the same folders as shown above in 3.
6. cd bbp and the use ls to see the folders: **14.3.0 bbp_files bbp_gf bbp_sims bbp_val**
    - 14.3.0: contains the source codes
    - bbp_files: contains the station list for the examples we will run
      also contains the xml files for each method
    - bbp_gf: contains the Green's functions
    - bbp_sims: contains the input data for the simulation, **logs** which contains information about the run (if you have a problem, you want to look into the logs folder to debug the error that caused the run to fail); **outdata** this will have the results for each realization of a rupture, including bbp text files, png files, etc.; **start** has the station list for the summer school exercise; **tmpdata** contains the internal files that each method generates; **xml** contains xml files which can be used for running the broadband simulation.

7. cd bbp_val to look at the earthquakes that will be simulated and associated with each will be an SRC file. The input files are in the folder **input_files**. The SRC is the file that gives the geometry of the source and key parameters. It is different for different methods.

8. Before proceeding let's take a look at an SRC file for Northridge.
   FAULT_WIDTH = 27.00
   HYPO_ALONG_STK = 6.00
   DLEN = 0.5
   HYPO_DOWN_DIP = 19.40
   DWID = 0.5
   RAKE = 105.00
   FAULT_LENGTH = 20.00
   DEPTH_TO_TOP = 5.00
   CORNER_FREQ = 0.2
   MAGNITUDE = 6.73
   LAT_TOP_CENTER = 34.344
   STRIKE = 122
   LON_TOP_CENTER = -118.515
   DIP = 40
   SEED = 1343642
   - This sets the geometry and the hypocenter.
   - The geometry has (0,0) at the midpoint of the top of the fault. The hypocenter is relative to this point. The geometry relative to the stations is set by the latitude and longitude of (0,0).
   - It sets particular parameters such as corner frequency for UCSB. This parameter is not used by GP, SDSU, etc. The codes that read the SRC are smart enough to ignore parameters that are not needed.
   - The SEED is the parameter that can make for a different realization. Change the seed and an entirely different rupture will occur. The hypocenter and the fault will remain fixed.
9. For each earthquake, the station list is inside the **input_files** folder.
10. In general cd /home/cme/CME/bbp/14.3.0
    - This will have 11 different folders and a README, LICENSE and manifest files.

11. Let's now execute a simulation. cd comps
    - This is the folder that has the python scripts that execute the different methods.
    - To execute: python run_bbp.py

```
[cme@scec-cme comps]$ python run_bbp.py
Welcome to the SCEC Broadband Platform.
Please select the modules you want to run.
Do you want to perform a validation run (y/n)? n

Please select a velocity model (number or name are ok):

(1) LABasin
? 1
Choose a Method to use in a Broadband forward simulation:
(1) GP (Graves & Pitarka)
(2) UCSB
(3) SDSU
(4) EXSIM
(5) CSM
(6) Irikura
? 2
Do you want to run a rupture generator (y/n)? y
Do you want to
(1) select a source description in /home/cme/CME/bbp/bbp_sims/start
(2) enter a path of a source description file
? 2
Enter path and filename of source description: /home/cme/CME/bbp/bbp_val/NR/ucsb/nr_v14_02_1_ucsb.sr
c
Do you want to
(1) select a BBP station list in /home/cme/CME/bbp/bbp_sims/start
(2) enter a path of a BBP station list file
? 2
Enter path and filename of BBP station list: /home/cme/CME/data-files/nr_v13_3_1-summerschool.stl
Do you want to run the site response module (y/n)? n
Do you want to plot velocity seismograms (y/n)? y
Do you want to plot acceleration seismograms (y/n)? y
Running UCrmg
```

12. The output will be in the folder cd /home/cme/CME/bbp/bbp_sims/outdata
    - You will see files with suffix such as .bbp (text files); .png (plots); .rsp (response spectra); rd50 (RotD50-two horizontals rotated to the median maximum response)

13. To analyze the synthetics you need to convert the .bbp files to .SAC files. The image below is now slightly modified. To convert bbp files to sac files, simply type bbp2sac.

```
Exiting Gen_HTML ....
SCEC Broadband Platform run completed.
You can find results in /home/cme/CME/bbp/bbp_sims/outdata/1520234
[cme@scec-cme comps]$ cd /home/cme/CME/bbp/bbp_sims/outdata/1520234
[cme@scec-cme 1520234]$ ls
1520234.2005-LDM.acc.bbp                1520234.2016-H12_acceleration_seis.png
1520234.2005-LDM_acceleration_seis.png  1520234.2016-H12.rd50
1520234.2005-LDM.rd50                   1520234.2016-H12.rsp
1520234.2005-LDM.rsp                    1520234.2016-H12.vel.bbp
1520234.2005-LDM.vel.bbp                1520234.2016-H12_velocity_seis.png
1520234.2005-LDM_velocity_seis.png      1520234.2017-SSU.acc.bbp
1520234.2006-PAC.acc.bbp                1520234.2017-SSU_acceleration_seis.png
1520234.2006-PAC_acceleration_seis.png  1520234.2017-SSU.rd50
1520234.2006-PAC.rd50                   1520234.2017-SSU.rsp
1520234.2006-PAC.rsp                    1520234.2017-SSU.vel.bbp
1520234.2006-PAC.vel.bbp                1520234.2017-SSU_velocity_seis.png
1520234.2006-PAC_velocity_seis.png      1520234.xml
1520234.2012-WON.acc.bbp                index-1520234.html
1520234.2012-WON_acceleration_seis.png  nr_v14_02_1_ucsb.png
1520234.2012-WON.rd50                   nr_v14_02_1_ucsb.srf
1520234.2012-WON.rsp                    software_status-1520234.txt
1520234.2012-WON.vel.bbp                station_map.kml
1520234.2012-WON_velocity_seis.png      station_map.png
1520234.2016-H12.acc.bbp                system_status-1520234.txt
[cme@scec-cme 1520234]$ bbp2sac 15*WON.vel.bbp
bash: bbp2sac: command not found...
[cme@scec-cme 1520234]$ python /home/cme/CME/bbp/
14.3.0/    bbp_files/ bbp_gf/    bbp_sims/  bbp_val/
[cme@scec-cme 1520234]$ python /home/cme/CME/bbp/
14.3.0/    bbp_files/ bbp_gf/    bbp_sims/  bbp_val/
[cme@scec-cme 1520234]$ python /home/cme/CME/bbp/14.3.0/comps/bbp
bbp2sac.py         bbp_formatter.py   bbp_s2p.pyc        bbp_tools.py
bbp_batch_sim.py   bbp_formatter.pyc  bbp_status.py      bbp_tools.pyc
bbp_batch_sim.pyc  bbp_s2p.py         bbp_status.pyc
[cme@scec-cme 1520234]$ python /home/cme/CME/bbp/14.3.0/comps/bbp
bbp2sac.py         bbp_formatter.py   bbp_s2p.pyc        bbp_tools.py
bbp_batch_sim.py   bbp_formatter.pyc  bbp_status.py      bbp_tools.pyc
bbp_batch_sim.pyc  bbp_s2p.py         bbp_status.pyc
[cme@scec-cme 1520234]$ python /home/cme/CME/bbp/14.3.0/comps/bbp2sac.py 1520234.2006-PAC.acc.bbp
Running: echo '1520234.2006-PAC.acc.000' > tmp
Running: toSAC < tmp >> /dev/null 2>&1
Running: echo '1520234.2006-PAC.acc.090' > tmp
Running: toSAC < tmp >> /dev/null 2>&1
Running: echo '1520234.2006-PAC.acc.ver' > tmp
Running: toSAC < tmp >> /dev/null 2>&1
[cme@scec-cme 1520234]$
```

This will generate 3 files: 1520234.2006-PAC.acc.000.sac, 1520234.2006-PAC.acc.090.sac and 1520234.2006-PAC.acc.ver.sac

14. To execute SAC, simply type SAC.