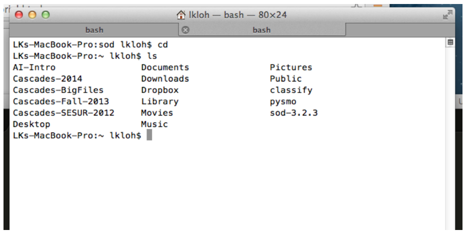
# Standing Order for Data

Northwestern Seismology

May 9, 2014

## 1 Installation

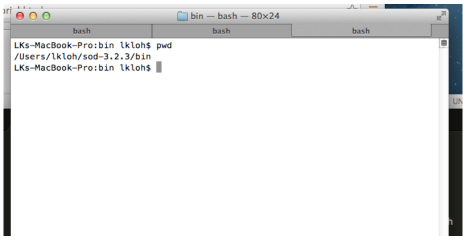
You can get SOD from here: `http://www.seis.sc.edu/sod/index.html`. Once you have gotten the folder for SOD, put it somewhere where you won't touch it too much. What I did was put the SOD folder in my home directory, though other places are acceptable as well, as long as its not too easy to delete it by accident.



```
LKs-MacBook-Pro:sod lkloh$ cd
LKs-MacBook-Pro:~ lkloh$ ls
AI-Intro               Documents              Pictures
Cascades-2014          Downloads              Public
Cascades-BigFiles      Dropbox                classify
Cascades-Fall-2013     Library                pysmo
Cascades-SESUR-2012    Movies                 sod-3.2.3
Desktop                Music
LKs-MacBook-Pro:~ lkloh$
```

Figure 1: Path to sod bin

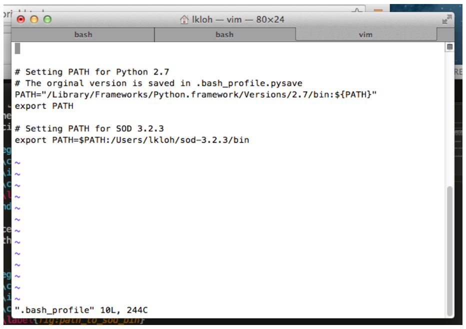
Once you have it there, get the path to the sod folder's bin and put it in your path folder.



```
LKs-MacBook-Pro:bin lkloh$ pwd
/Users/lkloh/sod-3.2.3/bin
LKs-MacBook-Pro:bin lkloh$
```

Figure 2: Path to sod bin

Inside my home directory's bash profile (you get the by typing `cd`), you put the path to `sod-3.2.3/bin` by adding in either the `bash` or `bash_profile` or `profile` files:



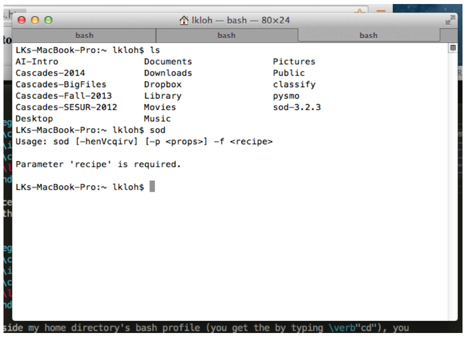
```
# Setting PATH for Python 2.7
# The orginal version is saved in .bash_profile.pysave
PATH="/Library/Frameworks/Python.framework/Versions/2.7/bin:${PATH}"
export PATH

# Setting PATH for SOD 3.2.3
export PATH=$PATH:/Users/lkloh/sod-3.2.3/bin

~
~
~
~
~
~
~
~
~
~
~
~
~
".bash_profile" 10L, 244C
```

Figure 3: bash profile

To check if SOD has been installed properly, close the terminal, restart it, and type `sod`. If that works, we should see something like this:



```
LKs-MacBook-Pro:~ lkloh$ ls
AI-Intro                Documents               Pictures
Cascades-2014           Downloads               Public
Cascades-BigFiles       Dropbox                 classify
Cascades-Fall-2013      Library                 pysmo
Cascades-SESUR-2012     Movies                  sod-3.2.3
Desktop                 Music
LKs-MacBook-Pro:~ lkloh$ sod
Usage: sod [-henVcqirv] [-p <props>] -f <recipe>

Parameter 'recipe' is required.

LKs-MacBook-Pro:~ lkloh$
```

Figure 4: Is SOD installed?

## 2 Downloading Data with SOD

By Trevor Bollman

1. Create a sod recipe and place it in the folder that you would like the data to download to.

   ```
   sod -f <recipename>.xml
   ```

2. Run `sodcut.sh` to cut the seismogram around phase wanted
   - check model within `cutevseis.sh`
   - run using `sodcut.sh <name>`

- watch sdir = processed seismograms
- Run over the entire downloaded directory (the files sod downloaded)

3. Run `sodpkl.sh` (converts `.sac` files to python pickles)

   (a) run using `sodpkl.sh [options] <directory>`”

   (b) output will automatically be zipped

   (c) run in DATA directory

4. run `ttpick.py` (does travel time picking with plotting)

   (a) can use `iccs.py` but it does not have plotting capabilities

   (b) run using `ttpick.py [options] <pkl.gz file>`

   (c) do this one event at a time

   (d) use `sacp2` to look at the stacking of the seismograms

   (e) you can sort the seismograms using the `s` flag

5. run `getsta.py` (creates a `loc.sta` file)

   ```
   getsta.py [options] <pkl.gz files>
   ```

6. Run EITHER of these:

   (a)
   - run `mccc2delay.py` (converts mccc delays to actual delays)

     ```
     mccc2delay.py [option] <.mcp files>
     ```

   - run `getdelay.py` (creates a delay file)

     ```
     getdelay.py [options] <*.px>
     ```

   - Can possibly use `doplotsta.sh`, plots all of the events and their station delays

   (b) Run `evmcdelay.sh`

7. `ttcheck.py` to compare the delay times of the p and s waves. Should form a nice cloud with the mean value in line with the cloud.

8. If you need to remove a station from an event you can use `pklsel.py`

   - Run using `pklsel.py [pkl file] d [stnm]` to remove one station
   - Only works for one event at a time

9. If you need to filter the data to be able to pick use `evsacbp.sh`

   - run using `evsacbp.sh [pkl file] bp1 bp2`
   - Automatically uses two corners
   - run in the whole downloaded directory (the one with the sac directory)