RunCrossCorrelations_AcrossSmallArray_PlotAndMapResults-forStudents-AfterCompletingRunning

July 16, 2020

1 A Little Array Processing & Mapping

1.1 Goals:

1. Use Cross-Correlation Techniques Learned & Apply to Many Stations

2. Look through Cross-Correlations Results at Many Stations quickly

3. Look through Results and see if can spy surface wave from virtual source to all other stations

```python
[2]: # imports..

import numpy as np
import obspy
import obspy.signal.filter
import pandas as pd
import sys
import os
import glob

import matplotlib.pyplot as plt

import scipy
import scipy.signal as scisignal
from scipy import fftpack
```

```python
[3]: # go through station list and set up dict

#IRIS link for station info
#http://ds.iris.edu/gmap/
↪#network=1B&channel=DPZ&starttime=2014-03-23&endtime=2014-03-24&maxlat=32.
↪7874&maxlon=-100.4644&minlat=32.7116&minlon=-100.
↪5149&drawingmode=box&planet=earth

mdir='/uufs/chpc.utah.edu/common/home/flin-group4/emberg/ROSES/Unit4_XCorr'
datadir=mdir+'/RawData'
stafile=datadir+'/DownloadedStations_SWTX.csv'
```

```
stainfo=pd.read_csv(stafile,sep=' ')
display(stainfo)
```

```
     Network Station   Latitude   Longitude  Elevation  Sitename  \
0        1B    67368  32.718899 -100.509499      645.6    223368
1        1B    67404  32.725899 -100.511497      627.4    223404
2        1B    67425  32.730000 -100.512703      619.8    223425
3        1B    67446  32.734200 -100.513901      615.2    223446
4        1B    69359  32.717499 -100.506897      649.5    225359
..       ...      ...        ...         ...        ...       ...
226      1B    79560  32.764599 -100.480698      598.9    261560
227      1B    79581  32.768700 -100.481903      601.7    261581
228      1B    79602  32.772900 -100.483002      609.2    261602
229      1B    79623  32.777000 -100.484200      609.8    261623
230      1B    79644  32.781101 -100.485397      603.9    261644

               StartTime               EndTime
0    2014-01-01T00:00:00   2014-12-12T23:59:59
1    2014-01-01T00:00:00   2014-12-12T23:59:59
2    2014-01-01T00:00:00   2014-12-12T23:59:59
3    2014-01-01T00:00:00   2014-12-12T23:59:59
4    2014-01-01T00:00:00   2014-12-12T23:59:59
..                   ...                   ...
226  2014-01-01T00:00:00   2014-12-12T23:59:59
227  2014-01-01T00:00:00   2014-12-12T23:59:59
228  2014-01-01T00:00:00   2014-12-12T23:59:59
229  2014-01-01T00:00:00   2014-12-12T23:59:59
230  2014-01-01T00:00:00   2014-12-12T23:59:59

[231 rows x 8 columns]
```

```
[4]:  # Cross-Correlate and append results to dictionary for EVERY station as a
      →receiver

      #### WARNING: This takes a while to run, so decide what settings you want
      →before running ... ####

      #### NOTE: Change the pre-processing settings here...
      #    try adding temporal normalization, spectral whitening, etc #######




      #initialize the xcorrsum
      #data=np.empty()

      srcsta='6R509'
```

```python
srcst=obspy.read(datadir+'/'+srcsta+'.BHZ.mseed')

tr1    = srcst[0]
src    = tr1.data
dt4    = tr1.stats.delta
nx4    = tr1.stats.npts
t      = np.arange(nx4)*dt4

# Create a Butterworth filter
#   Define nyquist and scale frequencies
fmin = 0.01
fmax = 0.4
fnyq = 0.5/dt4
f0   = fmin/fnyq
f1   = fmax/fnyq
wn   = [f0,f1]

#used to decide how much of the crosscorrelation to keep..
beginningtime=-9
endingtime=9

#Loop over 1 hour segments, correlate, and stack
corrlen=100 #total delay for the correlation
nminutes=60 #number of minutes in cross-correlation
winlen=int(nminutes*60/dt4) #convert from minutes to nsamples

hourinds=np.arange(0,len(src),winlen)
outsamples=int(corrlen/dt4)

#an extra function
def find_nearest(array,value):
    #find nearest,but go to lower val..
    idx=(np.abs(array-value)).argmin();
    #return array[idx],idx
    return idx

fig=plt.figure(6,figsize=[10,5])

for recidx in np.arange(len(stainfo['Station'])):
    rec=stainfo.loc[recidx,'Station']

    print('working on: ',rec)


    #ok, let's do the cross-correlation
    recst=obspy.read(datadir+'/'+rec+'.BHZ.mseed')
```

```python
    tr2     = recst[0]
    rec     = tr2.data

    if recidx==0:
        sumxc=np.nan #safety catch

    for ii in range(len(hourinds)-1):
        #print('on time index: ',ii)
        starti=hourinds[ii]
        stopi=hourinds[ii+1]

        #Cut the traces to winlen
        #ttsrc=src[starti:stopi]
        #ttrec=rec[starti:stopi]
        ttx=src[starti:stopi]
        tty=rec[starti:stopi]




        ## Pre-Processing (demean, detrend, temporal normalization, spectral␣
→whitening, etc) ##
        #1. Demean
        x4      = scisignal.detrend(ttx,type='constant')
        y4      = scisignal.detrend(tty, type='constant')

        #print('demean complete')

        #2. Detrend
        x4      = scisignal.detrend(x4,type='linear')
        y4      = scisignal.detrend(y4, type='linear')

        #print('demean and detrend complete')

        # Calculate hanning taper info, with padding.
        if ii==0:
            #no sense in getting these more than the inital run-through as␣
→should not change
            npts    = len(ttx)#nx4
            npts2   = 2*npts+1    # make padding odd.
            npts2=scipy.fftpack.next_fast_len(npts2) #get faster array length␣
→for fft purposes

            nf4     = int((npts2+1)/2)   #cross-correlation window length
            hann    = np.hanning(npts)
            #freq4   = np.fft.fftfreq(npts2,dt4) #return discrete fourier␣
→transform sample frequencies
```

```python
    #df4      = freq4[1]


    #3. Taper signals, add padding
    dat_x4          = np.zeros(npts2)
    dat_x4[0:npts] = x4*hann
    dat_y4          = np.zeros(npts2)
    dat_y4[0:npts] = y4*hann

    #print('taper complete..')

    # FFT of data
    fx4   = np.fft.fft(dat_x4,npts2)
    fy4   = np.fft.fft(dat_y4,npts2)


    #let's try spectral whitening
    Px4   = abs(fx4)**2
    Py4   = abs(fy4)**2

    # Apply a smoothing operator, improve variance.
    nsmooth = 10
    Px4_smooth = np.convolve(Px4, np.ones(nsmooth)/nsmooth)
    Py4_smooth = np.convolve(Py4, np.ones(nsmooth)/nsmooth)

    #print('applying fft complete')

    #Correlate
    Sxy    = np.conj(fx4)*fy4
    cohe = Sxy/(np.sqrt(Px4_smooth[0:npts2])*np.sqrt(Py4_smooth[0:npts2]))
    xycorr = np.real(scipy.fft.ifft(cohe))
    xycorr = scipy.fft.ifftshift(xycorr)



    #print('applying fft complete')

    #Correlate
    #Sxy     = fx4*np.conj(fy4)
    #xycorr = np.real(scipy.fft.ifft(Sxy))
    #xycorr = scipy.fft.ifftshift(xycorr)

    #print('correlation complete')

    # Delay time vector, same as above.. only run on the first round
    if recidx==0 and ii==0:
        tdel  = np.linspace(-nf4*dt4,nf4*dt4,npts2)
```

```python
            #find -10 to +10 indices
            idxstart=find_nearest(tdel,beginningtime)
            idxend=find_nearest(tdel,endingtime)

        if ii==0:
            sumxc=np.array(xycorr)*0


        if recidx==0 and ii==0:

            #where to put the results..
            datatmp=np.empty(len(tdel[idxstart:idxend]))
            datatmp[:]=np.nan
            data=[datatmp for x in stainfo['Station']]
            stainfo['XCorr_Sum']=data

            display(stainfo)


        sumxc=sumxc+np.multiply(1/np.max(np.abs(xycorr)),xycorr)

    #normalize sum
    sumxc=np.multiply(1/np.max(np.abs(sumxc)),sumxc)
    sumtmp=sumxc[idxstart:idxend]

    #this will throw a warning, but it's fine..
    stainfo['XCorr_Sum'].iloc[recidx]=np.array(sumtmp)


    #plot results..
    sumtmp2=obspy.signal.filter.bandpass(np.array(sumtmp),freqmin=1.5,freqmax=2.
 ↪5,df=25,corners=4,zerophase=True)
    plt.plot(tdel[idxstart:idxend],sumtmp2,alpha=0.5)

#    break

plt.show() #heads up, this will be a mess -- which is good! We just want to see␣
 ↪things ran :)
```

```
working on:  67368

     Network Station   Latitude    Longitude  Elevation  Sitename  \
0        1B    67368  32.718899  -100.509499      645.6    223368
1        1B    67404  32.725899  -100.511497      627.4    223404
2        1B    67425  32.730000  -100.512703      619.8    223425
3        1B    67446  32.734200  -100.513901      615.2    223446
4        1B    69359  32.717499  -100.506897      649.5    225359
```

```
..       ...     ...         ...            ...           ...           ...
226      1B    79560   32.764599   -100.480698         598.9        261560
227      1B    79581   32.768700   -100.481903         601.7        261581
228      1B    79602   32.772900   -100.483002         609.2        261602
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..                    ...                   ...
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228   2014-01-01T00:00:00   2014-12-12T23:59:59
229   2014-01-01T00:00:00   2014-12-12T23:59:59
230   2014-01-01T00:00:00   2014-12-12T23:59:59


                                              XCorr_Sum
0      [nan, nan, nan, nan, nan, nan, nan, nan, nan, ...
1      [nan, nan, nan, nan, nan, nan, nan, nan, nan, ...
2      [nan, nan, nan, nan, nan, nan, nan, nan, nan, ...
3      [nan, nan, nan, nan, nan, nan, nan, nan, nan, ...
4      [nan, nan, nan, nan, nan, nan, nan, nan, nan, ...
..                                                  ...
226    [nan, nan, nan, nan, nan, nan, nan, nan, nan, ...
227    [nan, nan, nan, nan, nan, nan, nan, nan, nan, ...
228    [nan, nan, nan, nan, nan, nan, nan, nan, nan, ...
229    [nan, nan, nan, nan, nan, nan, nan, nan, nan, ...
230    [nan, nan, nan, nan, nan, nan, nan, nan, nan, ...


[231 rows x 9 columns]


/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame


See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   67404

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 67425

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 67446

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 69359

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 69401

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 69422

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-

```
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)
```

working on: 69446

```
/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)
```

working on: 69467

```
/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)
```

working on: 69491

```
/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)
```

working on: 6B368

```
/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)
```

working on: 6B404

```
/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)
```

working on: 6B425

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

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  self._setitem_with_indexer(indexer, value)

working on: 6B446

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
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See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6B467

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6B488

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6B509

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6B530

```
/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
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See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   6D371

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   6D407

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   6D428

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   6D449

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   6D470

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame
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See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6D491

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
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  self._setitem_with_indexer(indexer, value)

working on: 6D512

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
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  self._setitem_with_indexer(indexer, value)

working on: 6D533

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6D554

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6D575

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-

```
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:  6F377

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:  6F398

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:  6F419

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:  6F440

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:  6F461

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)
```

working on: 6F482

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6F503

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6F524

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6F545

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6F566

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6F587

```
/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   6F608

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   6H377

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   6H401

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   6H446

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   6H467

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6H491

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6H515

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6H536

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6H560

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6H584

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-

```
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)
```

working on: 6H605

```
/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)
```

working on: 6H629

```
/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)
```

working on: 6J362

```
/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)
```

working on: 6J383

```
/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)
```

working on: 6J404

```
/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)
```

working on: 6J425

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6J446

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6J467

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6J488

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6J509

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6J530

```
/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   6J551

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   6J572

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   6J593

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   6J614

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   6J635

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6L368

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6L389

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6L410

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6L431

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6L452

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-

docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6L473

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6L494

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6L515

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6L536

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6L557

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6L578

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6L599

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6L620

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6L641

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6N374

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6N395

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6N416

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6N437

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6N458

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6N479

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6N500

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6N521

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6N542

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6N563

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6N584

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6N605

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-

```
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)
```

working on: 6N626

```
/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)
```

working on: 6P359

```
/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)
```

working on: 6P383

```
/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)
```

working on: 6P407

```
/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)
```

working on: 6P428

```
/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)
```

working on: 6P452

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6P476

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6P497

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6P521

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6P545

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6P566

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6P590

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6P611

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6P635

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6R368

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6R389

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6R410

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6R431

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6R452

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6R473

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6R494

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-

docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6R509

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6R515

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6R536

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6R557

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6R578

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6R599

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6R620

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6R641

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6T374

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6T395

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6T416

```
/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   6T437

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   6T458

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   6T479

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   6T500

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   6T521

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6T542

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6T563

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6T584

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6T605

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6T626

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-

```
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)
```

working on: 6V431

```
/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)
```

working on: 6V452

```
/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)
```

working on: 6V473

```
/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)
```

working on: 6V494

```
/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)
```

working on: 6V515

```
/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)
```

```
working on:   6V536

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   6V557

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   6V578

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   6V599

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   6V620

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   6V641
```

```
/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   6X449

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   6X473

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   6X494

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   6X518

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   6X539

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6X563

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6X587

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6X608

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6X632

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6Z437

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-

docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6Z458

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6Z479

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6Z500

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6Z521

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6Z542

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6Z563

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6Z584

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6Z626

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 6Z629

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 71356

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 71377

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 71398

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 71419

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 71440

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 71461

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 71482

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 71503

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 71524

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 71545

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 71566

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 71587

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-

docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 71608

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 71629

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 73359

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 73380

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 73401

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 73422

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 73443

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 73464

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 73485

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 73506

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 73527

```
/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:  73548

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:  73569

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:  73590

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:  73611

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:  73632

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 75365

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 75386

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 75410

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 75431

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 75455

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-

docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 75479

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 75500

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 75548

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 75569

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 75593

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

```
working on:   75617

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   75638

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   77368

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   77389

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   77410

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   77431
```

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 77452

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 77473

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 77494

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 77515

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 77536

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 77557

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 77578

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 77599

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 77620

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 77641

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-

docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 79371

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 79392

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 79413

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 79434

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 79455

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

```
working on:   79476

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   79497

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   79518

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   79539

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   79560

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on:   79581
```

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 79602

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 79623

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

working on: 79644

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/site-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)
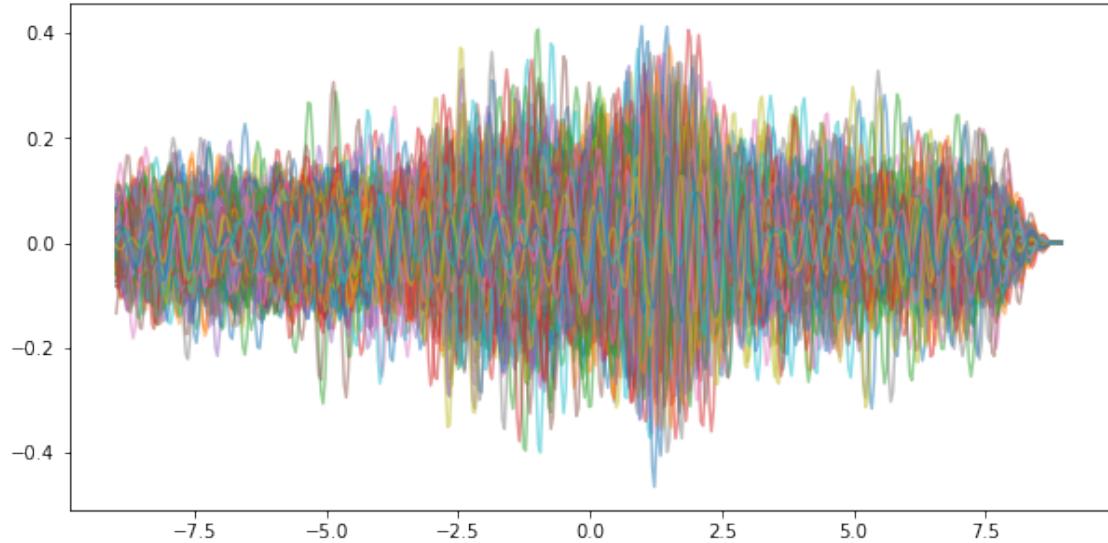
[8]:
```python
# Loop through and plot results..
#Making a series of images showing the cross-correlation for each receiver␣
 ↪station (no particular order..)


#output fig files after each hour of stacking
outfigdir=datadir+'/StackHoursCoherency_AllStas'
if not os.path.isdir(outfigdir):
    os.mkdir(outfigdir)

#remove previous files -- CAREFUL!
pngfiles=glob.glob(outfigdir+'/*png')
for f in pngfiles:
    os.remove(f)



#bandpass info (applied when plotting, not in stack)
fmin = 1.5 #2.5s
fmax=2.5
fnyq = 0.5/dt4
f0   = fmin/fnyq
f1   = fmax/fnyq
wn   = [f0,f1]
b, a = scisignal.butter(4, wn,'bandpass')

# count the hours
ic=0
```

```python
fig=plt.figure(3,figsize=[10,5])
for recidx in np.arange(len(stainfo['Station'])):
    recsta=stainfo['Station'].iloc[recidx]
    #great! Now bandpass this signal...
    sumxctmp = scisignal.filtfilt(b, a, stainfo['XCorr_Sum'].iloc[recidx])
    #sumxctmp=obspy.signal.filter.bandpass(np.array(sumxc),freqmin=1.
 →5,freqmax=2.5,df=25,corners=4,zerophase=True)


    #sumxctmp=np.multiply(1/np.max(np.abs(sumxctmp)),sumxctmp) #normalize

    plt.plot(tdel[idxstart:idxend],sumxctmp,alpha=0.5)
    #plt.plot(tdel,sumxctmp);
    #plt.ylim( -1*(max(abs(sumxctmp))), max(abs(sumxctmp)))
    plt.ylim(-1,1) #good to be consistent in comparing overall signal amplitude
    plt.xlim(-9,9)
    ic=ic+1;
    plt.title('Cross-Correlation Stacked '+srcsta+' '+recsta+' recidx:
 →'+str(recidx))
    outf=outfigdir+'/corr_'+recsta.zfill(3)+'.png'
    plt.savefig(outf)
    plt.clf()


print('all images created! conintue on :)')
```

all images created! conintue on :)

<Figure size 720x360 with 0 Axes>

```python
[9]: #convert from png's to a gif
from PIL import Image

frames=[]
imgs=glob.glob(outfigdir+'/*.png')
for i in imgs:
    new_frame=Image.open(i)
    frames.append(new_frame)

frames[0].save(outfigdir+'/Src_Rec_Loops.
 →gif',format='GIF',append_images=frames[1:],save_all=True,duration=300,loop=0)


print('gif located: ',outfigdir+'/Src_Rec_Loops.gif')
```

gif located: /uufs/chpc.utah.edu/common/home/flin-group4/emberg/ROSES/Unit4_XCo
rr/RawData/StackHoursCoherency_AllStas/Src_Rec_Loops.gif

```
[10]:  #Look at the gif
       from IPython.display import Image

       #insert gif location & name into the stream, as output above
       stream='/uufs/chpc.utah.edu/common/home/flin-group4/emberg/ROSES/Unit4_XCorr/
        ↪RawData/StackHoursCoherency_AllStas/Src_Rec_Loops.gif'#'/uufs/chpc.utah.edu/
        ↪common/home/flin-group4/emberg/ROSES/Unit4_XCorr/RawData/
        ↪StackHoursCoherency_AllStas/Src_Rec_Loops.gif'
       Image(stream)
```

```
[10]: <IPython.core.display.Image object>
```

```
[11]:  #Let's glance at the table and see how it's been updated...


       display(stainfo)
```

	Network	Station	Latitude	Longitude	Elevation	Sitename	\
0	1B	67368	32.718899	-100.509499	645.6	223368	
1	1B	67404	32.725899	-100.511497	627.4	223404	
2	1B	67425	32.730000	-100.512703	619.8	223425	
3	1B	67446	32.734200	-100.513901	615.2	223446	
4	1B	69359	32.717499	-100.506897	649.5	225359	
..	...	...	...	...	...	...	
226	1B	79560	32.764599	-100.480698	598.9	261560	
227	1B	79581	32.768700	-100.481903	601.7	261581	
228	1B	79602	32.772900	-100.483002	609.2	261602	
229	1B	79623	32.777000	-100.484200	609.8	261623	
230	1B	79644	32.781101	-100.485397	603.9	261644	

	StartTime	EndTime	\
0	2014-01-01T00:00:00	2014-12-12T23:59:59	
1	2014-01-01T00:00:00	2014-12-12T23:59:59	
2	2014-01-01T00:00:00	2014-12-12T23:59:59	
3	2014-01-01T00:00:00	2014-12-12T23:59:59	
4	2014-01-01T00:00:00	2014-12-12T23:59:59	
..	...	...	
226	2014-01-01T00:00:00	2014-12-12T23:59:59	
227	2014-01-01T00:00:00	2014-12-12T23:59:59	
228	2014-01-01T00:00:00	2014-12-12T23:59:59	
229	2014-01-01T00:00:00	2014-12-12T23:59:59	
230	2014-01-01T00:00:00	2014-12-12T23:59:59	

	XCorr_Sum
0	[-0.04665509750739268, -0.02750947538298701, 0...
1	[0.02963589588571354, 0.07208855208428898, -0....
2	[-0.308300216031186, 0.0015147208781930471, 0....

```
3      [-0.068716060225539, 0.2711057152066481, 0.018...
4      [-0.12365371654742816, 0.21557309095872018, -0...
..                                                       ...
226    [-0.1299870030313654, 0.21471639138127588, 0.1...
227    [0.06010049417692747, -0.27100022888869685, -0...
228    [-0.17405177346561956, 0.0350206860994497, -0....
229    [0.07378820519593897, -0.09360811345762321, 0....
230    [0.0032564424144638873, -0.11431263262013527, ...

[231 rows x 9 columns]
```

2 Map up the Stations

We will use the Cartopy package here, but in a few weeks we will all learn about pyGMT!

```python
[12]: import cartopy
      import matplotlib.pyplot as plt

      from cartopy import config
      import cartopy.feature as cfeature
      import cartopy.crs as ccrs
      from cartopy.mpl.ticker import LongitudeFormatter, LatitudeFormatter
      from matplotlib import gridspec
      from matplotlib import gridspec
      import cartopy.io.img_tiles as cimgt
```

```python
[13]: #some cartopy map parameters...

      states_provinces=cfeature.NaturalEarthFeature(category='cultural',
      name='admin_1_states_provinces_lines',
      scale='50m',
      facecolor='none')

      lakes=cfeature.NaturalEarthFeature(category='physical',name='lakes',␣
       ↪scale='10m', edgecolor='black', facecolor='cornflowerblue',alpha='0.3')

      #unsure about stamen terrain? It's useful, so check it out:
      #http://maps.stamen.com/terrain/#10/33.9394/-99.6075

      #stamen_terrain = cimgt.Stamen('terrain-background') #only terrain
      stamen_terrain = cimgt.Stamen('terrain') #we want roads and things!
```

```python
[14]: ## plot up the stations...

      # this is a basic map to highlight the exciting features (or lack thereof) at␣
       ↪this site
```

```python
#make the figure non-interactive (just make it and show us...)
#%matplotlib inline

fig=plt.figure(1,figsize=(12, 8), facecolor="none")
gs=gridspec.GridSpec(1, 1)#,hspace=0.1, height_ratios=[10, 1])
# create mercator projection
ax = plt.axes(projection=ccrs.Mercator())

## Reset Zoom level ###
lonlow=-100.545; lonhi=-100.45; latlow=32.71; lathi=32.8

ax.cla()
ax.set_extent([lonlow,lonhi,latlow,lathi],crs=ccrs.Geodetic())

ax.add_image(stamen_terrain,12)
#choose zoom levels: http://maps.stamen.com/terrain/#9/32.7515/-100.4507

ax.add_feature(lakes) #won't add anything.. truly middle-of-nowhere!

ax.add_feature(states_provinces,edgecolor='k')

lonticks=[-100.5, -100.45]
latticks=[32.75,32.8]


ax.set_xticks(lonticks, crs=ccrs.PlateCarree())
ax.set_yticks(latticks, crs=ccrs.PlateCarree())

lon_formatter = LongitudeFormatter(number_format='.2f', degree_symbol='')
lat_formatter = LatitudeFormatter(number_format='.2f', degree_symbol='')
ax.xaxis.set_major_formatter(lon_formatter)
ax.yaxis.set_major_formatter(lat_formatter)
ax.xlabel_style = {'size': 15, 'color': 'gray'}
ax.ylabel_style = {'size': 15, 'color': 'gray'}
#ax.stock_img() #plot general earth, won't work here...

ax.scatter(stainfo['Longitude'],stainfo['Latitude'],zorder=7, c='r', s=10,␣
 ↪marker='o', edgecolor='k',alpha=0.85,transform=ccrs.PlateCarree())

ax.set_title('All Stations')

plt.show()
```
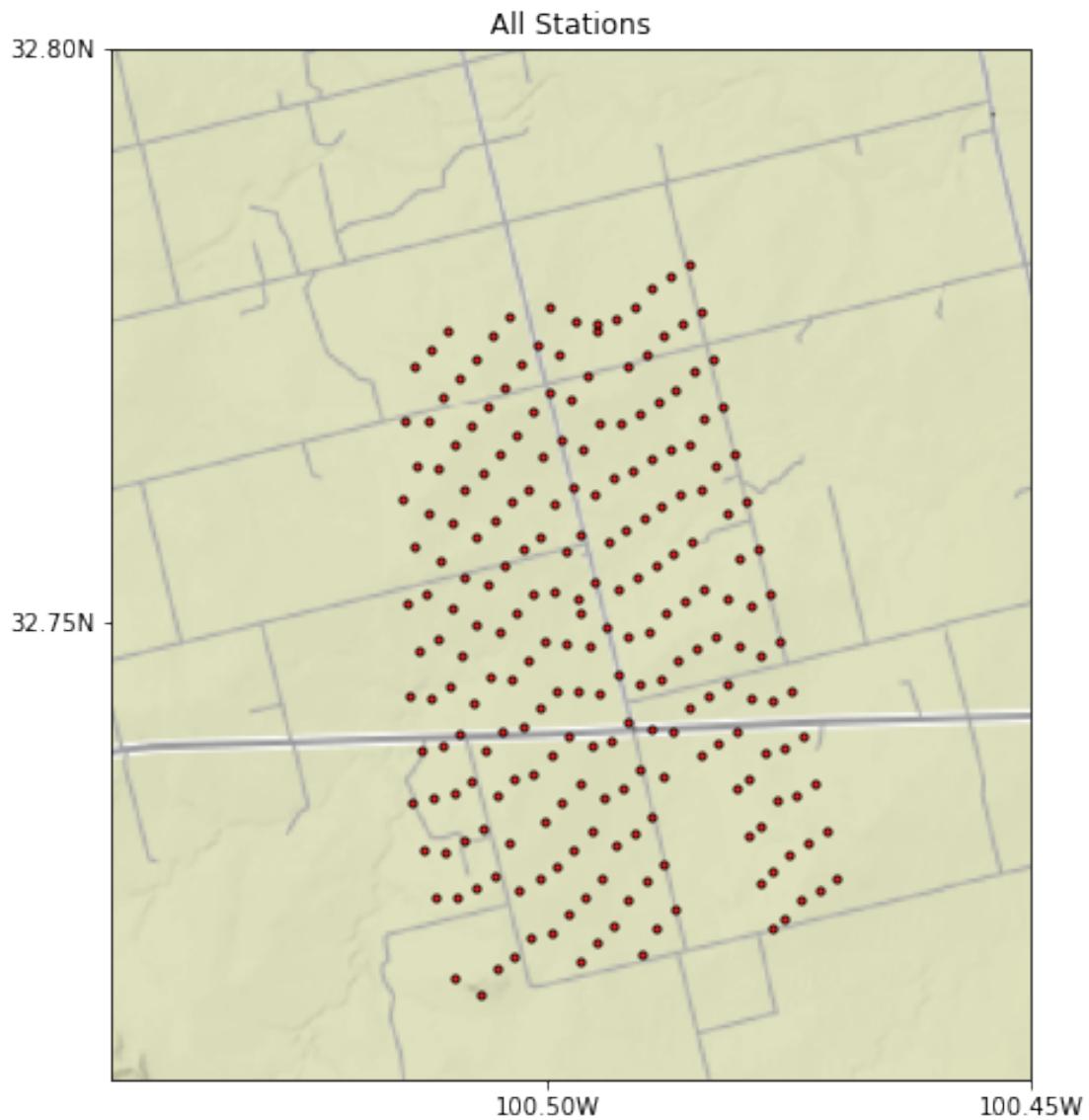
All Stations

[15]: ```
Create a map of the stations... (interactive)
plot up the stations...

#make the figure interactive.. oooooo!
%matplotlib notebook

#note that if you switch back to 'inline' mode, you need to switch this here,␣
 ↪kind of only goes 1-way
#you may need to restart the kernel if things aren't working

#make the figure non-interactive (use this if it's not cooperating)
```

```python
#%matplotlib inline

#print(len(substainfo['Station']))
fig=plt.figure(52,figsize=(12, 12), facecolor="none")
gs=gridspec.GridSpec(1, 1)#,hspace=0.1, height_ratios=[10, 1])
# create mercator projection
ax = plt.axes(projection=ccrs.Mercator())

## Reset Zoom level ###
lonlow=-100.545; lonhi=-100.45; latlow=32.71; lathi=32.8

ax.cla()
ax.set_extent([lonlow,lonhi,latlow,lathi],crs=ccrs.Geodetic())

ax.add_image(stamen_terrain,12)
#choose zoom levels: http://maps.stamen.com/terrain/#9/32.7515/-100.4507

ax.add_feature(lakes) #won't add anything.. truly middle-of-nowhere!

ax.add_feature(states_provinces,edgecolor='k')

lonticks=[-100.5, -100.45]
latticks=[32.75,32.8]


ax.set_xticks(lonticks, crs=ccrs.PlateCarree())
ax.set_yticks(latticks, crs=ccrs.PlateCarree())

lon_formatter = LongitudeFormatter(number_format='.2f', degree_symbol='')
lat_formatter = LatitudeFormatter(number_format='.2f', degree_symbol='')
ax.xaxis.set_major_formatter(lon_formatter)
ax.yaxis.set_major_formatter(lat_formatter)
ax.xlabel_style = {'size': 15, 'color': 'gray'}
ax.ylabel_style = {'size': 15, 'color': 'gray'}
#ax.stock_img() #plot general earth, won't work here...

ax.scatter(stainfo['Longitude'],stainfo['Latitude'],zorder=7, c='r', s=10,
 ↪marker='o', edgecolor='k',alpha=0.85,transform=ccrs.PlateCarree())

#include station names...
for staidx in np.arange(len(stainfo['Station'])):
    ax.text(stainfo['Longitude'].iloc[staidx],stainfo['Latitude'].
 ↪iloc[staidx],stainfo['Station'].iloc[staidx],zorder=7,transform=ccrs.
 ↪PlateCarree())


ax.set_title('Stations & Names')
```

```
plt.show()
```

<IPython.core.display.Javascript object>

<IPython.core.display.HTML object>

```
[16]: # Back to our Cross-Correlation Results!!!

      # Let's bandpass our results and add this to a new part of our pandas dataframe

      #add bp array to stainfo
      skipval=2 #map up result at every other point in time

      #add to dataframe... (but a shortened amount)
      datatmp=np.empty(len(stainfo['XCorr_Sum'][0]))
      datatmp[:]=np.nan
      datatmp=datatmp[::skipval]

      data=[datatmp for x in stainfo['Station']]
      stainfo['XCorr_Sub_BP']=data

      subtime=tdel[idxstart:idxend]
      subtime=subtime[::skipval]


      #loop through and add bandpass result to stainfo..
      #bandpass info (applied when plotting, not in stack)
      fmin = 1.5 #2.5s
      fmax=2.5
      fnyq = 0.5/dt4
      f0   = fmin/fnyq
      f1   = fmax/fnyq
      wn   = [f0,f1]
      b, a = scisignal.butter(4, wn,'bandpass')

      for recidx in np.arange(len(stainfo['Station'])):
          recsta=stainfo['Station'].iloc[recidx]
          print(recsta)
          #great! Now bandpass this signal...
          sumxctmp = scisignal.filtfilt(b, a, stainfo['XCorr_Sum'].iloc[recidx])
          sumxctmp=sumxctmp[::skipval]
          stainfo['XCorr_Sub_BP'].iloc[recidx]=sumxctmp
```

67368
67404

```
67425
67446
69359
69401
69422
69446
69467
69491
6B368
6B404
6B425
6B446
6B467
6B488
6B509
6B530
6D371
6D407
6D428
6D449
6D470
6D491
6D512
6D533
6D554
6D575
6F377
6F398
6F419
6F440
6F461
6F482
6F503
6F524
6F545
6F566
6F587
6F608
6H377
6H401
6H446
6H467
6H491
6H515
6H536
6H560
6H584
6H605
```

```
6H629
6J362
6J383
6J404
6J425
6J446
6J467
6J488
6J509
6J530
6J551
6J572
6J593
6J614
6J635
6L368
6L389
6L410
6L431
6L452
6L473
6L494
6L515
6L536
6L557
6L578
6L599
6L620
6L641
6N374
6N395
6N416
6N437
6N458
6N479
6N500
6N521
6N542
6N563
6N584
6N605
6N626
6P359
6P383
6P407
6P428
6P452
6P476
```

```
6P497
6P521
6P545
6P566
6P590
6P611
6P635
6R368
6R389
6R410
6R431
6R452
6R473
6R494
6R509
6R515
6R536
6R557
6R578
6R599
6R620
6R641
6T374
6T395
6T416
6T437
6T458
6T479
6T500
6T521
6T542
6T563
6T584
6T605
6T626
6V431
6V452
6V473
6V494
6V515
6V536
6V557
6V578
6V599
6V620
6V641
6X449
6X473
```

```
6X494
6X518
6X539
6X563
6X587
6X608
6X632
6Z437
6Z458
6Z479
6Z500
6Z521
6Z542
6Z563
6Z584
6Z626
6Z629
71356
71377
71398
71419
71440
71461
71482
71503
71524
71545
71566
71587
71608
71629
73359
73380
73401
73422
73443
73464
73485
73506
73527
73548
73569
73590
73611
73632
75365
75386
75410
```

```
75431
75455
75479
75500
75548
75569
75593
75617
75638
77368
77389
77410
77431
77452
77473
77494
77515
77536
77557
77578
77599
77620
77641
79371
79392
79413
79434
79455
79476
79497
79518
79539
79560
79581
79602
79623
79644
```

/uufs/chpc.utah.edu/common/home/u1015716/miniconda3/envs/roses/lib/python3.7/sit
e-packages/pandas/core/indexing.py:671: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  self._setitem_with_indexer(indexer, value)

[17]: *# let's make a simple map at a single point in time within the results..*

```python
#Play with the colormap! I'll use the default in the next section, but see what
 →you like!

%matplotlib inline


#get src lat and lon
srclat=stainfo.loc[stainfo['Station']==srcsta]['Latitude'].iloc[0]
srclon=stainfo.loc[stainfo['Station']==srcsta]['Longitude'].iloc[0]

recsta='6D371'
recamps=stainfo.loc[stainfo['Station']==recsta]['XCorr_Sub_BP'].iloc[0]

mincolorval=-0.2
maxcolorval=0.2

tidx=200 #CHANGE this if you choose to skip to fewer results.. could be beyond
 →your subtimes length

fig=plt.figure(2,figsize=(12, 12), facecolor="none")
gs=gridspec.GridSpec(2, 1, height_ratios=[10, 1])

ax = fig.add_subplot(gs[0],projection=ccrs.Mercator())

# create mercator projection
#ax = plt.axes(projection=ccrs.Mercator())

## Reset Zoom level ###
lonlow=-100.545; lonhi=-100.45; latlow=32.71; lathi=32.8

ax.cla()
ax.set_extent([lonlow,lonhi,latlow,lathi],crs=ccrs.Geodetic())


#this isn't exciting or needed, so let's skip it!
#ax.add_image(stamen_terrain,12)
#choose zoom levels: http://maps.stamen.com/terrain/#9/32.7515/-100.4507
#ax.add_feature(lakes) #won't add anything.. truly middle-of-nowhere!
#ax.add_feature(states_provinces,edgecolor='k')

lonticks=[-100.5, -100.45]
latticks=[32.75,32.8]


ax.set_xticks(lonticks, crs=ccrs.PlateCarree())
ax.set_yticks(latticks, crs=ccrs.PlateCarree())
```

```python
lon_formatter = LongitudeFormatter(number_format='.2f', degree_symbol='')
lat_formatter = LatitudeFormatter(number_format='.2f', degree_symbol='')
ax.xaxis.set_major_formatter(lon_formatter)
ax.yaxis.set_major_formatter(lat_formatter)
ax.xlabel_style = {'size': 15, 'color': 'gray'}
ax.ylabel_style = {'size': 15, 'color': 'gray'}


for staidx in np.arange(len(stainfo['Station'])):
    if staidx==0:
        points=ax.scatter([stainfo.loc[staidx,'Longitude']],[stainfo.
 ↪loc[staidx,'Latitude']],
                    c=[stainfo.
 ↪loc[staidx,'XCorr_Sub_BP'][tidx]],vmin=mincolorval,vmax=maxcolorval,
                          #cmap='seismic',
                    zorder=7, s=50, marker='o', edgecolor='k',transform=ccrs.
 ↪PlateCarree())
    elif stainfo['Station'].iloc[staidx]!=recsta:
        ax.scatter([stainfo.loc[staidx,'Longitude']],[stainfo.
 ↪loc[staidx,'Latitude']],
                    c=[stainfo.
 ↪loc[staidx,'XCorr_Sub_BP'][tidx]],vmin=mincolorval,vmax=maxcolorval,
                    #cmap='seismic',
                    zorder=7, s=50, marker='o', edgecolor='k',transform=ccrs.
 ↪PlateCarree())
    else:
        ax.scatter([stainfo.loc[staidx,'Longitude']],[stainfo.
 ↪loc[staidx,'Latitude']],
                    c=[stainfo.
 ↪loc[staidx,'XCorr_Sub_BP'][tidx]],vmin=mincolorval,vmax=maxcolorval,
                    #cmap='seismic',
                    zorder=7, s=200, marker='^', edgecolor='k',transform=ccrs.
 ↪PlateCarree())



ax.
 ↪scatter([srclon],[srclat],s=250,marker='*',edgecolor='k',c='w',transform=ccrs.
 ↪PlateCarree(),zorder=7)

plt.colorbar(points,ax=ax,pad=0.
 ↪1,extend='both',ticks=[mincolorval,0,maxcolorval],shrink=0.75,fraction=0.046)

ax1=fig.add_subplot(gs[1])
ax1.plot(subtime,recamps)
```

```
ax1.scatter(subtime[tidx],0,marker='|',s=1000,color='r',lw=3,zorder=5,alpha=0.5)
ax1.set_ylim(mincolorval,maxcolorval)
plt.show()
```
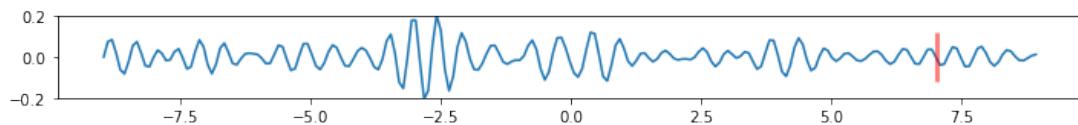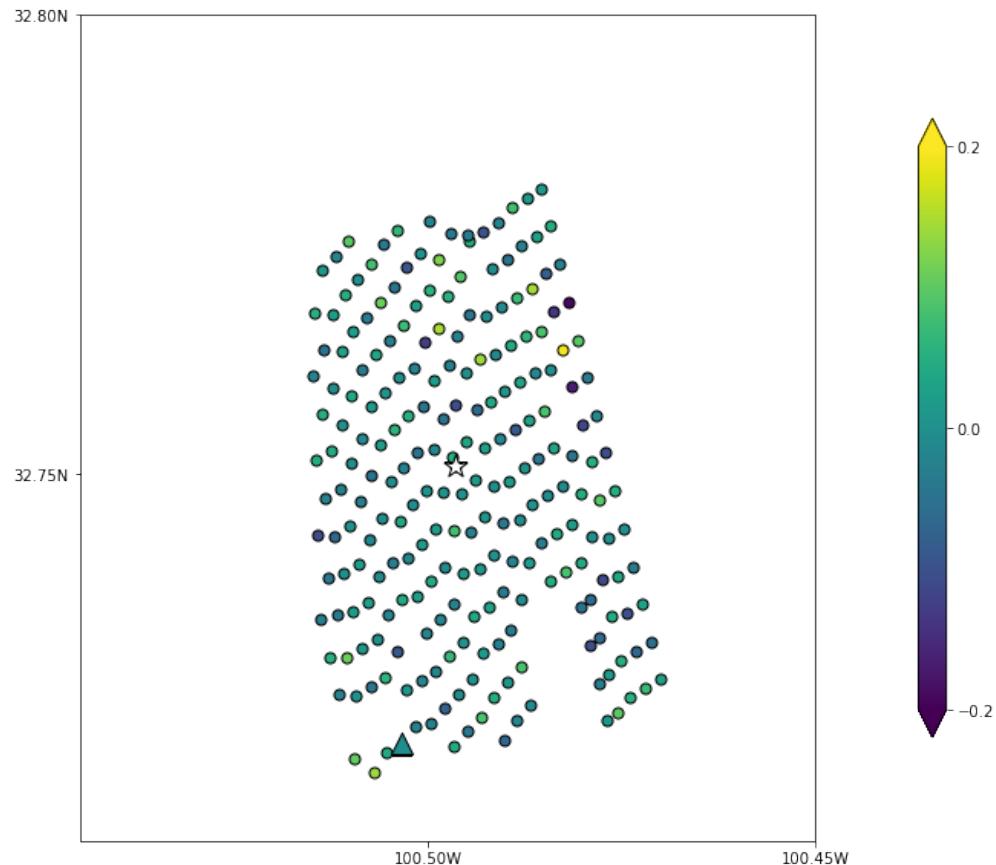


```
[18]:  #loop though all times and make into a gif!
       #Note this takes a while!!!!!


       #### CAREFUL!!!!!! #####
       #output fig files after each hour of stacking
       outfigdir=datadir+'/StackHoursCoherency_AllStas_Maps'
       if not os.path.isdir(outfigdir):
           os.mkdir(outfigdir)

       #### PROCEED WITH CAUTION! ####
```

```python
#remove previous files -- CAREFUL!
pngfiles=glob.glob(outfigdir+'/*png')
for f in pngfiles:
    os.remove(f)




# let's make a simple map at one time within the results..

#get src lat and lon
srclat=stainfo.loc[stainfo['Station']==srcsta]['Latitude'].iloc[0]
srclon=stainfo.loc[stainfo['Station']==srcsta]['Longitude'].iloc[0]

recsta='6D371'
recamps=stainfo.loc[stainfo['Station']==recsta]['XCorr_Sub_BP'].iloc[0]

mincolorval=-0.2
maxcolorval=0.2

tidx=200

## Reset Zoom level ###
lonlow=-100.545; lonhi=-100.45; latlow=32.71; lathi=32.8
lonticks=[-100.5, -100.45]
latticks=[32.75,32.8]
lon_formatter = LongitudeFormatter(number_format='.2f', degree_symbol='')
lat_formatter = LatitudeFormatter(number_format='.2f', degree_symbol='')


for tidx in np.arange(len(subtime)):
    print('on time: ',subtime[tidx])

    fig=plt.figure(2,figsize=(12, 12), facecolor="none")
    #gs=gridspec.GridSpec(1, 1)#,hspace=0.1, height_ratios=[10, 1])
    gs=gridspec.GridSpec(2, 1, height_ratios=[10, 1])

    ax = fig.add_subplot(gs[0],projection=ccrs.Mercator())

    ax.cla()
    ax.set_extent([lonlow,lonhi,latlow,lathi],crs=ccrs.Geodetic())



    ax.set_xticks(lonticks, crs=ccrs.PlateCarree())
    ax.set_yticks(latticks, crs=ccrs.PlateCarree())
```

```python
    ax.xaxis.set_major_formatter(lon_formatter)
    ax.yaxis.set_major_formatter(lat_formatter)
    ax.xlabel_style = {'size': 15, 'color': 'gray'}
    ax.ylabel_style = {'size': 15, 'color': 'gray'}



    for staidx in np.arange(len(stainfo['Station'])):
        if staidx==0:
            points=ax.scatter([stainfo.loc[staidx,'Longitude']],[stainfo.
↪loc[staidx,'Latitude']],
                        c=[stainfo.
↪loc[staidx,'XCorr_Sub_BP'][tidx]],vmin=mincolorval,vmax=maxcolorval,
                            #cmap='seismic',
                        zorder=7, s=50, marker='o', edgecolor='k',transform=ccrs.
↪PlateCarree())
        elif stainfo['Station'].iloc[staidx]!=recsta:
            ax.scatter([stainfo.loc[staidx,'Longitude']],[stainfo.
↪loc[staidx,'Latitude']],
                        c=[stainfo.
↪loc[staidx,'XCorr_Sub_BP'][tidx]],vmin=mincolorval,vmax=maxcolorval,
                        #cmap='seismic',
                        zorder=7, s=50, marker='o', edgecolor='k',transform=ccrs.
↪PlateCarree())
        else:
            ax.scatter([stainfo.loc[staidx,'Longitude']],[stainfo.
↪loc[staidx,'Latitude']],
                        c=[stainfo.
↪loc[staidx,'XCorr_Sub_BP'][tidx]],vmin=mincolorval,vmax=maxcolorval,
                        #cmap='seismic',
                        zorder=7, s=200, marker='^',␣
↪edgecolor='k',transform=ccrs.PlateCarree())



    ax.
↪scatter([srclon],[srclat],s=250,marker='*',edgecolor='k',c='w',transform=ccrs.
↪PlateCarree(),zorder=7)

    plt.colorbar(points,ax=ax,pad=0.
↪1,extend='both',ticks=[mincolorval,0,maxcolorval],shrink=0.75,fraction=0.046)

    ax1=fig.add_subplot(gs[1])
    ax1.plot(subtime,recamps)
```

```
    ax1.
→scatter(subtime[tidx],0,marker='|',s=1000,color='r',lw=3,zorder=5,alpha=0.5)

    #plt.show()

    tstr='%.2f' % (subtime[tidx])
    idxstr='%5.0f' % (tidx)

    plt.title('Cross-Correlations Source: '+srcsta+'  Time :'+tstr+' s')
    outf=outfigdir+'/Map_00'+idxstr+'.png'
    plt.savefig(outf)
    plt.clf()

print('done making figures!')
```

```
on time:  -8.980049273247005
on time:  -8.90004883428719
on time:  -8.820048395327376
on time:  -8.740047956367562
on time:  -8.660047517407293
on time:  -8.580047078447478
on time:  -8.500046639487664
on time:  -8.42004620052785
on time:  -8.340045761568035
on time:  -8.26004532260822
on time:  -8.180044883648407
on time:  -8.100044444688137
on time:  -8.020044005728323
on time:  -7.940043566768509
on time:  -7.860043127808694
on time:  -7.78004268884888
on time:  -7.700042249889066
on time:  -7.620041810928797
on time:  -7.540041371968982
on time:  -7.460040933009168
on time:  -7.380040494049354
on time:  -7.300040055089539
on time:  -7.220039616129725
on time:  -7.140039177169456
on time:  -7.0600387382096415
on time:  -6.980038299249827
on time:  -6.900037860290013
on time:  -6.820037421330198
on time:  -6.740036982370384
on time:  -6.66003654341057
on time:  -6.580036104450301
on time:  -6.500035665490486
```

```
on time:   -6.420035226530672
on time:   -6.340034787570858
on time:   -6.260034348611043
on time:   -6.180033909651229
on time:   -6.10003347069096
on time:   -6.0200330317311455
on time:   -5.940032592771331
on time:   -5.860032153811517
on time:   -5.780031714851702
on time:   -5.700031275891888
on time:   -5.620030836932074
on time:   -5.540030397971805
on time:   -5.46002995901199
on time:   -5.380029520052176
on time:   -5.300029081092362
on time:   -5.220028642132547
on time:   -5.140028203172733
on time:   -5.060027764212464
on time:   -4.9800273252526495
on time:   -4.900026886292835
on time:   -4.820026447333021
on time:   -4.740026008373206
on time:   -4.660025569413392
on time:   -4.580025130453578
on time:   -4.500024691493309
on time:   -4.420024252533494
on time:   -4.34002381357368
on time:   -4.260023374613866
on time:   -4.180022935654051
on time:   -4.100022496694237
on time:   -4.020022057733968
on time:   -3.9400216187741535
on time:   -3.860021179814339
on time:   -3.7800207408545248
on time:   -3.7000203018947104
on time:   -3.620019862934896
on time:   -3.5400194239750817
on time:   -3.4600189850148126
on time:   -3.3800185460549983
on time:   -3.300018107095184
on time:   -3.2200176681353696
on time:   -3.1400172291755553
on time:   -3.060016790215741
on time:   -2.980016351255472
on time:   -2.9000159122956575
on time:   -2.820015473335843
on time:   -2.740015034376029
on time:   -2.6600145954162144
```

```
on time:   -2.5800141564564
on time:   -2.5000137174965857
on time:   -2.4200132785363166
on time:   -2.3400128395765023
on time:   -2.260012400616688
on time:   -2.1800119616568736
on time:   -2.1000115226970593
on time:   -2.020011083737245
on time:   -1.9400106447769758
on time:   -1.8600102058171615
on time:   -1.7800097668573471
on time:   -1.7000093278975328
on time:   -1.6200088889377184
on time:   -1.540008449977904
on time:   -1.4600080110180897
on time:   -1.3800075720578207
on time:   -1.3000071330980063
on time:   -1.220006694138192
on time:   -1.1400062551783776
on time:   -1.0600058162185633
on time:   -0.9800053772587489
on time:   -0.9000049382984798
on time:   -0.8200044993386655
on time:   -0.7400040603788511
on time:   -0.6600036214190368
on time:   -0.5800031824592224
on time:   -0.5000027434994081
on time:   -0.42000230453959375
on time:   -0.34000186557932466
on time:   -0.2600014266195103
on time:   -0.18000098765969597
on time:   -0.10000054869988162
on time:   -0.020000109740067273
on time:   0.06000032921974707
on time:   0.14000076818001617
on time:   0.2200012071398305
on time:   0.30000164609964486
on time:   0.3800020850594592
on time:   0.46000252401927355
on time:   0.5400029629790879
on time:   0.6200034019389022
on time:   0.7000038408991713
on time:   0.7800042798589857
on time:   0.8600047188188
on time:   0.9400051577786144
on time:   1.0200055967384287
on time:   1.100006035698243
on time:   1.1800064746585122
```

```
on time:   1.2600069136183265
on time:   1.3400073525781409
on time:   1.4200077915379552
on time:   1.5000082304977695
on time:   1.580008669457584
on time:   1.6600091084173982
on time:   1.7400095473776673
on time:   1.8200099863374817
on time:   1.900010425297296
on time:   1.9800108642571104
on time:   2.0600113032169247
on time:   2.140011742176739
on time:   2.220012181137008
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on time:   2.380013059056637
on time:   2.460013498016451
on time:   2.5400139369762655
on time:   2.62001437593608
on time:   2.7000148148958942
on time:   2.7800152538561633
on time:   2.8600156928159777
on time:   2.940016131775792
on time:   3.0200165707356064
on time:   3.1000170096954207
on time:   3.180017448655235
on time:   3.260017887615504
on time:   3.3400183265753185
on time:   3.420018765535133
on time:   3.500019204494947
on time:   3.5800196434547615
on time:   3.660020082414576
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on time:   3.8200209603346593
on time:   3.9000213992944737
on time:   3.980021838254288
on time:   4.060022277214102
on time:   4.140022716173917
on time:   4.220023155133731
on time:   4.300023594094
on time:   4.3800240330538145
on time:   4.460024472013629
on time:   4.540024910973443
on time:   4.6200253499332575
on time:   4.700025788893072
on time:   4.780026227853341
on time:   4.860026666813155
on time:   4.94002710577297
on time:   5.020027544732784
```

```
on time:    5.100027983692598
on time:    5.180028422652413
on time:    5.260028861612227
on time:    5.340029300572496
on time:    5.4200297395323105
on time:    5.500030178492125
on time:    5.580030617451939
on time:    5.6600310564117535
on time:    5.740031495371568
on time:    5.820031934331837
on time:    5.900032373291651
on time:    5.980032812251466
on time:    6.06003325121128
on time:    6.140033690171094
on time:    6.220034129130909
on time:    6.300034568090723
on time:    6.380035007050992
on time:    6.4600354460108065
on time:    6.540035884970621
on time:    6.620036323930435
on time:    6.7000367628902495
on time:    6.780037201850064
on time:    6.860037640810333
on time:    6.940038079770147
on time:    7.020038518729962
on time:    7.100038957689776
on time:    7.18003939664959
on time:    7.260039835609405
on time:    7.340040274569219
on time:    7.420040713529488
on time:    7.5000411524893025
on time:    7.580041591449117
on time:    7.660042030408931
on time:    7.7400424693687455
on time:    7.82004290832856
on time:    7.900043347288829
on time:    7.980043786248643
on time:    8.060044225208458
on time:    8.140044664168272
on time:    8.220045103128086
on time:    8.3000455420879
on time:    8.38045981047715
on time:    8.460046420007984
on time:    8.540046858967798
on time:    8.620047297927613
on time:    8.700047736887427
on time:    8.780048175847242
on time:    8.860048614807056
```

```
on time:   8.940049053767325
done making figures!

<Figure size 864x864 with 0 Axes>
```

```
[19]:  #convert from png's to a gif
       from PIL import Image

       frames=[]
       imgs=glob.glob(outfigdir+'/*.png')
       for i in imgs:
           new_frame=Image.open(i)
           frames.append(new_frame)

       frames[0].save(outfigdir+'/Maps_Loops.gif',format='GIF',append_images=frames[1:
        ↪],save_all=True,duration=300,loop=0)

       print('GIF complete! see: ',outfigdir+'/Maps_Loops.gif')
```

```
GIF complete! see:  /uufs/chpc.utah.edu/common/home/flin-group4/emberg/ROSES/Uni
t4_XCorr/RawData/StackHoursCoherency_AllStas_Maps/Maps_Loops.gif
```

```
[21]:  #Look at the gif
       from IPython.display import Image

       #as usual, insert the path & name to the gif you made..
       stream='/uufs/chpc.utah.edu/common/home/flin-group4/emberg/ROSES/Unit4_XCorr/
        ↪RawData/StackHoursCoherency_AllStas_Maps/Maps_Loops.gif'#'/uufs/chpc.utah.
        ↪edu/common/home/flin-group4/emberg/ROSES/Unit4_XCorr/RawData/
        ↪StackHoursCoherency_AllStas_Maps/Maps_Loops.gif'

       Image(stream)
```

```
[21]:  <IPython.core.display.Image object>
```

```
[ ]:  print(outfigdir)
```

```
[ ]:
```