Untitled

February 26, 2021

1 Grando ABC - Estimating single parameters

Calculations here were made using the same variables as used by grando.

lambdaE = {10, 20, 30} xiE = {0.05, 0.01, 0.005} tauE = {1.1, 0.5, 0.1}

if we are estimating lambda, we set lambdaE[3] = uniform(26,35) if we are estimating xiE, we set xiE[3] = uniform(0.001,0.007) if we are estimating tauE, we set tauE[3] = uniform(0.07,0.2)

The data includes 100 iterations, again as per Grando.

Computation took approx 175 seconds.

The graphs below correspond to the ones found in Grando's paper pages 78-80.

The results do not match grandos. They do not have a consitent pattern. The pattern observed in Grando's Results is occasionally observed here but there is no consistentcy.

Attempt 4 somewhat shows the pattern for all 3 parameters. This is most likely close to the outcome Grando has obsereved.

[1]:
```
import numpy as np
import seaborn as sns
import pandas as pd
import matplotlib.pyplot as plt
%matplotlib inline
```

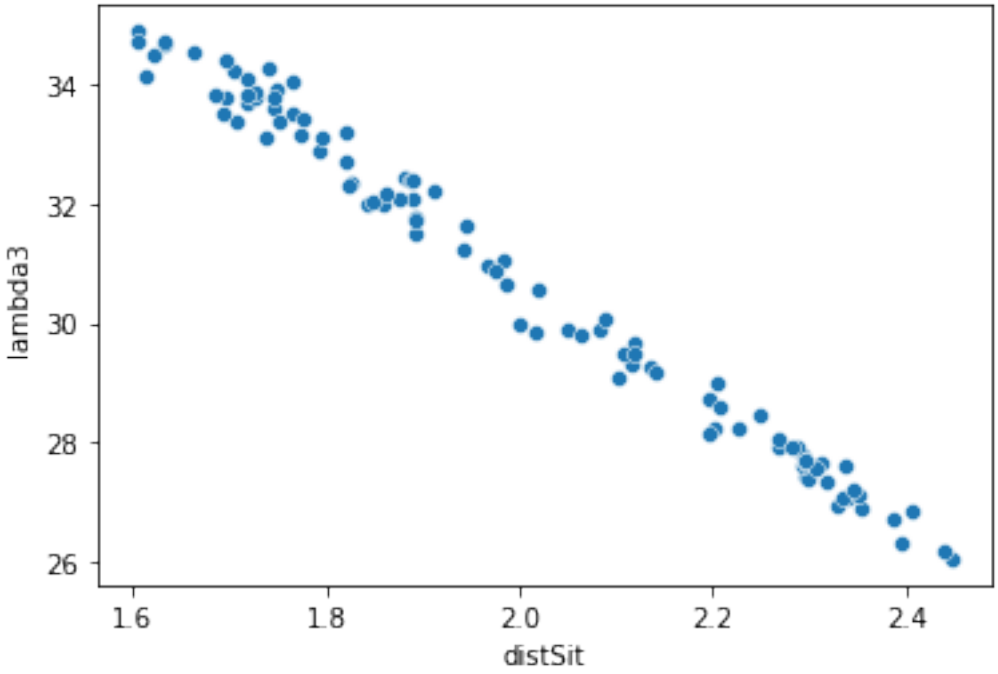
[2]:
```
headers =['lambda1', 'lambda2', 'lambda3', 'xi_1', 'xi_2', 'xi_3', 'tau_1',␣
↪'tau_2', 'tau_3', 'distSit', 'distSitAss']
```

[3]:
```
lam = pd.read_csv('lam_avg1.csv', names = headers)
xi = pd.read_csv('xi_avg1.csv', names = headers)
tau = pd.read_csv('tau_avg1.csv', names = headers)
```

[4]:
```
################################  ATTEMPT 1␣
↪################################################
# runtime = 152.725 seconds
# Test Lambda3

sns.scatterplot(x = lam['distSit'],y = lam['lambda3'])
```

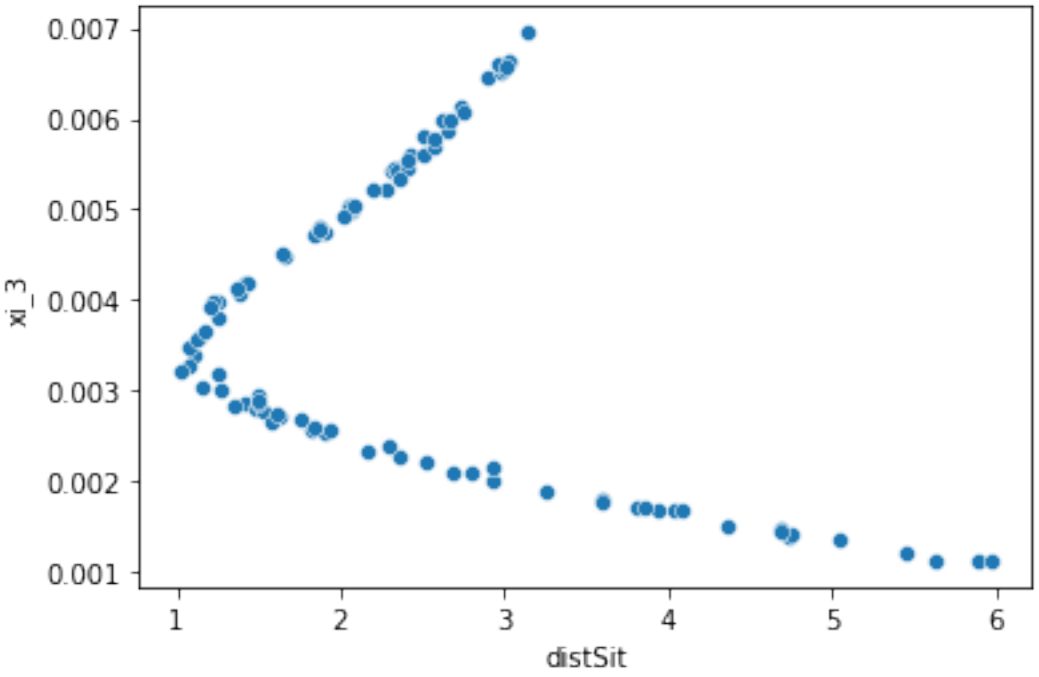
[4]: <AxesSubplot:xlabel='distSit', ylabel='lambda3'>



[5]:
```
# Test xi_3

sns.scatterplot(x = xi['distSit'],y = xi['xi_3'])
```

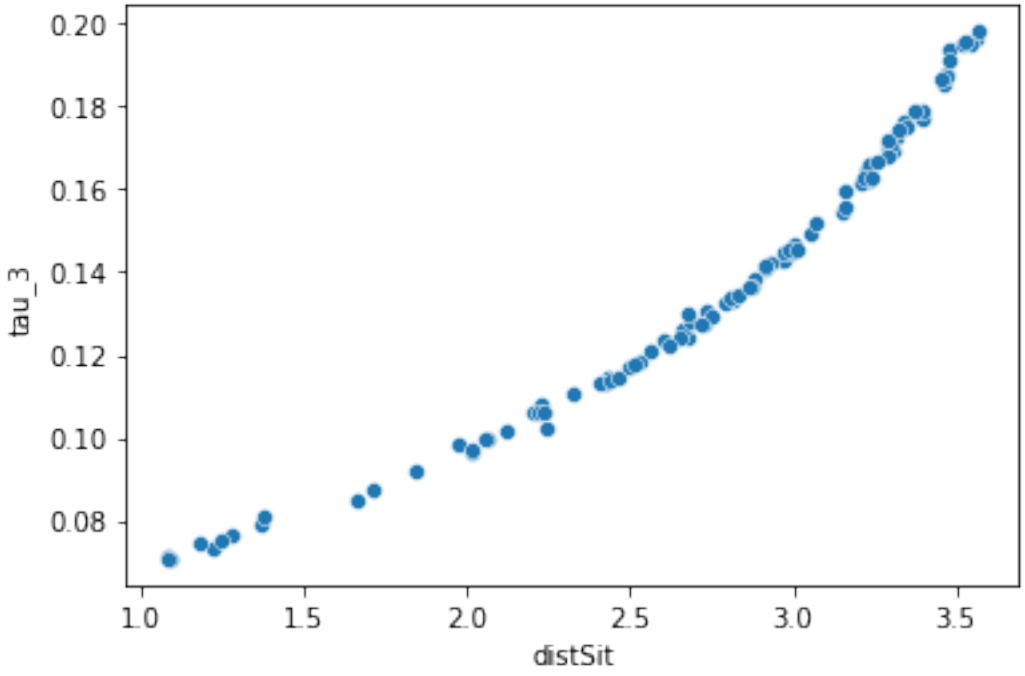
[5]: <AxesSubplot:xlabel='distSit', ylabel='xi_3'>



[6]:
```
# Test tau_3

sns.scatterplot(x = tau['distSit'],y = tau['tau_3'])
```

[6]: <AxesSubplot:xlabel='distSit', ylabel='tau_3'>



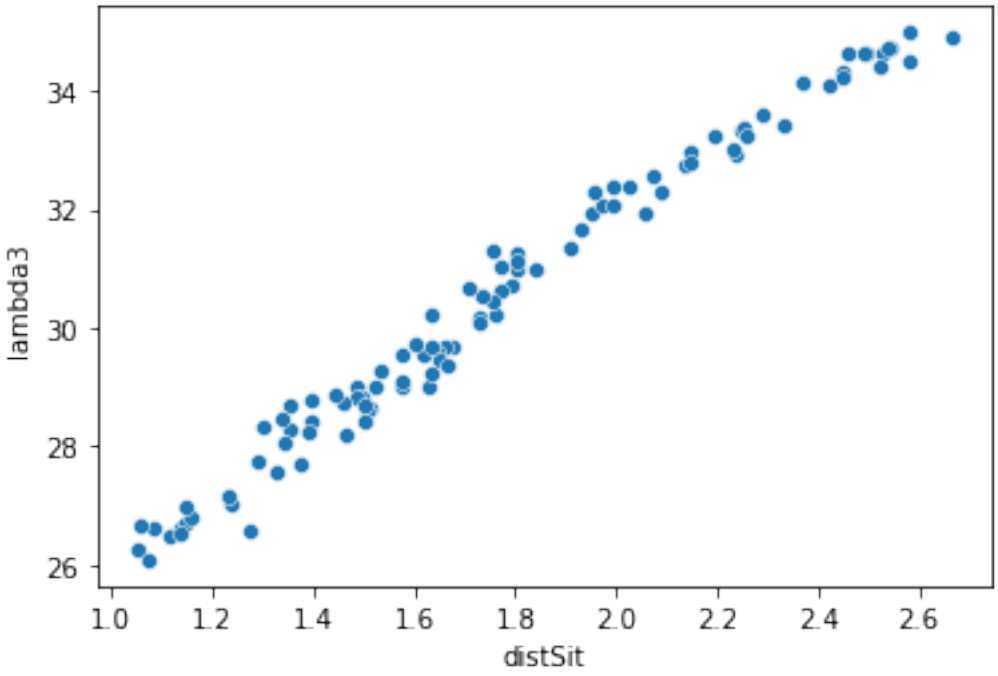
[7]:
```
#################### ATTEMPT 2 ################
# runtime = 171.837 seconds

lam = pd.read_csv('lam_avg2.csv', names = headers)
xi = pd.read_csv('xi_avg2.csv', names = headers)
tau = pd.read_csv('tau_avg2.csv', names = headers)
```

[8]:
```
# Test Lambda3

sns.scatterplot(x = lam['distSit'],y = lam['lambda3'])
```

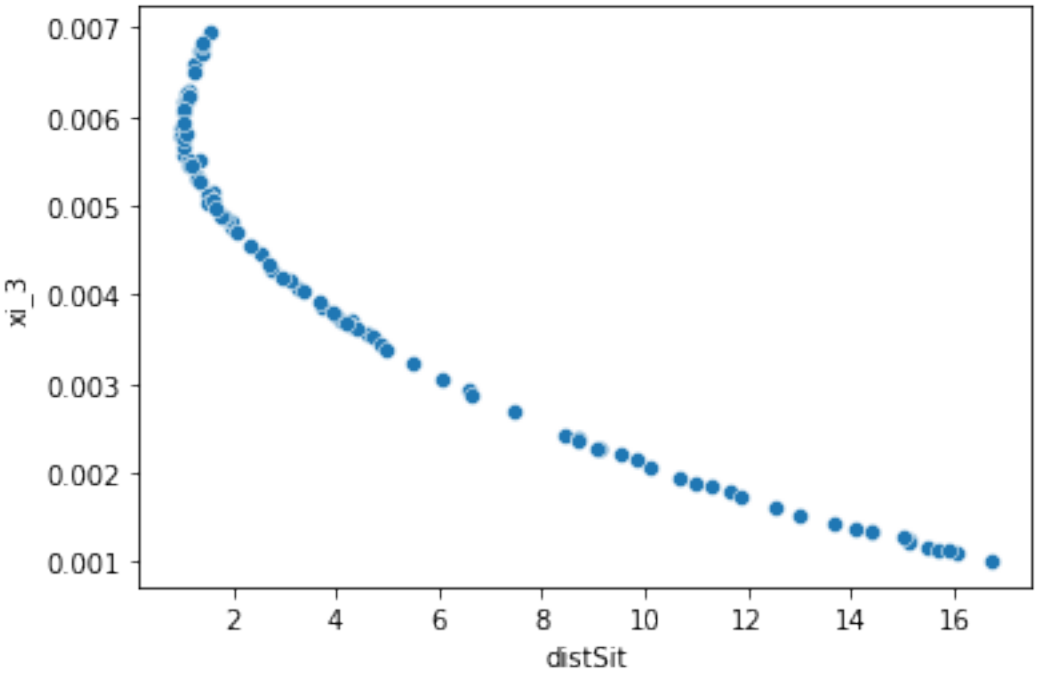
[8]: <AxesSubplot:xlabel='distSit', ylabel='lambda3'>



[9]:
```
# Test xi_3

sns.scatterplot(x = xi['distSit'],y = xi['xi_3'])
```

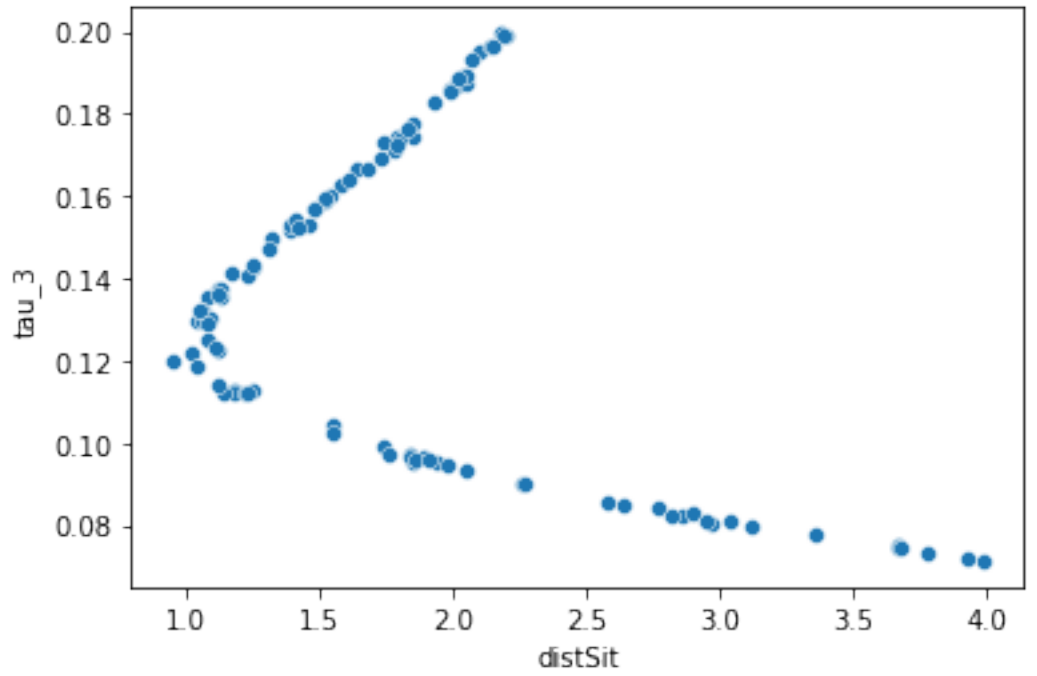
[9]: <AxesSubplot:xlabel='distSit', ylabel='xi_3'>



[10]:
```
# Test tau_3

sns.scatterplot(x = tau['distSit'],y = tau['tau_3'])
```

[10]: <AxesSubplot:xlabel='distSit', ylabel='tau_3'>



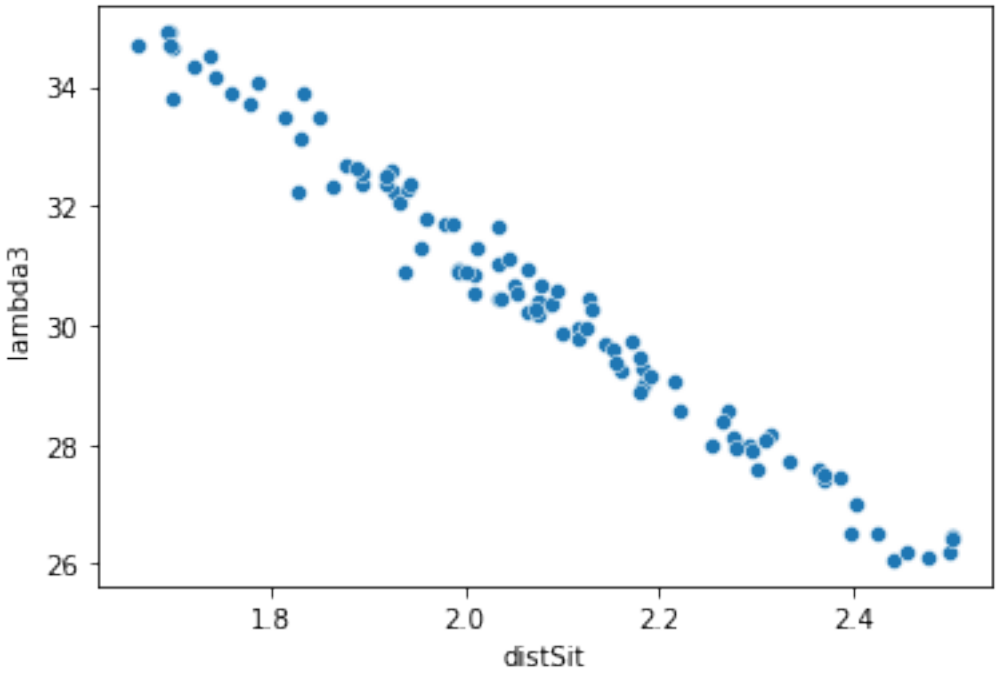
[11]:
```
##################### ATTEMPT 3 ################
# runtime = 155.48 seconds

lam = pd.read_csv('lam_avg3.csv', names = headers)
xi = pd.read_csv('xi_avg3.csv', names = headers)
tau = pd.read_csv('tau_avg3.csv', names = headers)
```

[12]:
```
# Test Lambda3

sns.scatterplot(x = lam['distSit'],y = lam['lambda3'])
```

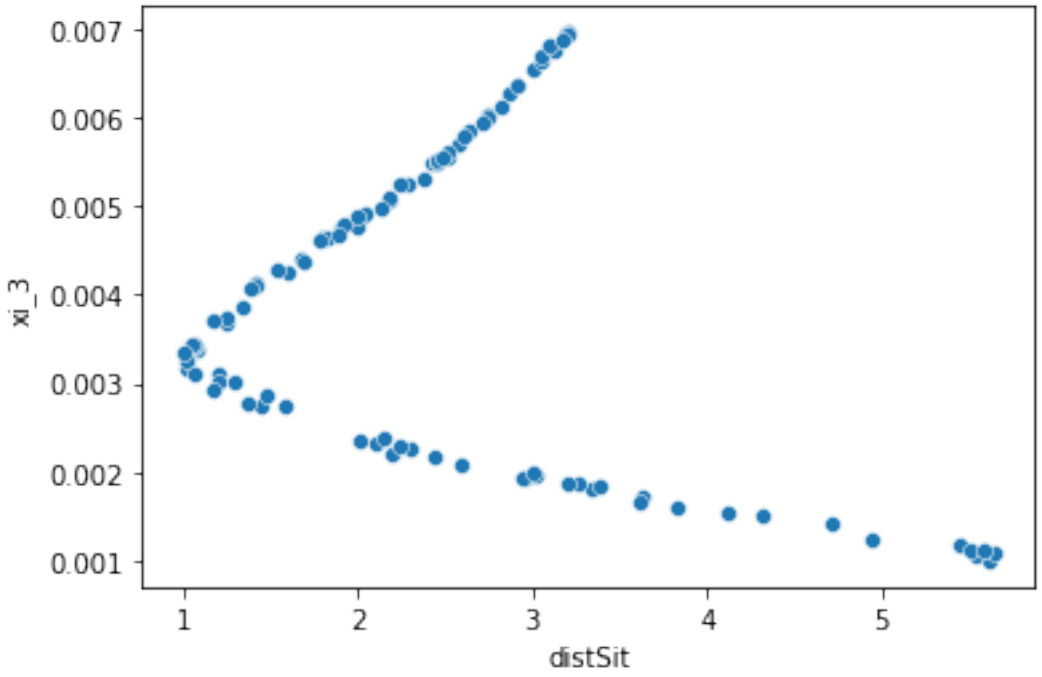
[12]: <AxesSubplot:xlabel='distSit', ylabel='lambda3'>



[13]:
```
# Test xi_3

sns.scatterplot(x = xi['distSit'],y = xi['xi_3'])
```

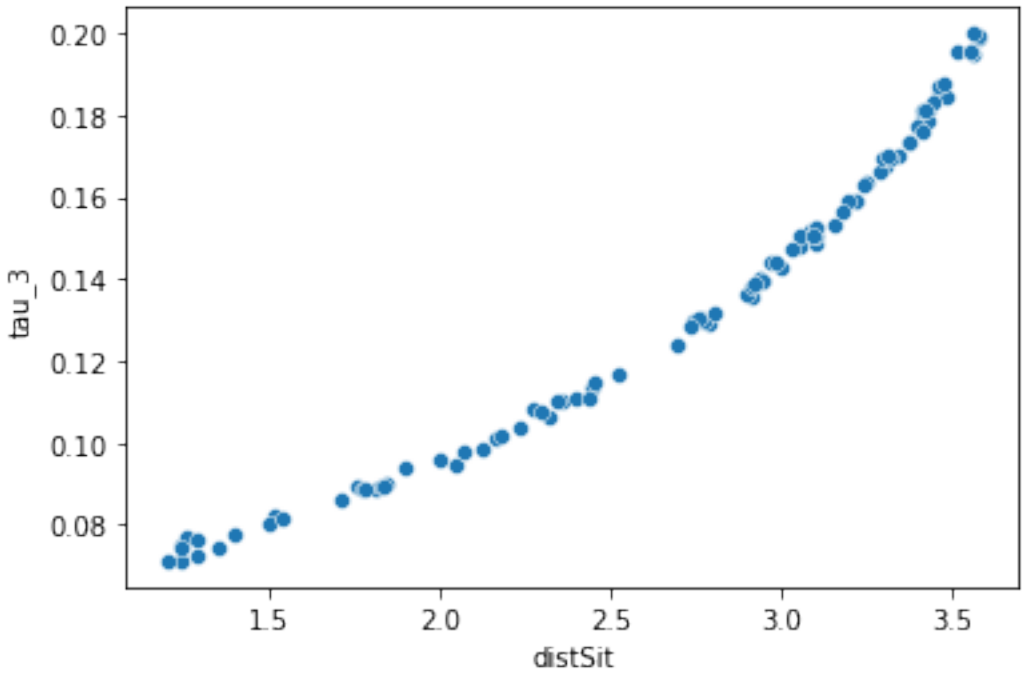
[13]: <AxesSubplot:xlabel='distSit', ylabel='xi_3'>



[14]:
```
# Test tau_3

sns.scatterplot(x = tau['distSit'],y = tau['tau_3'])
```

[14]: <AxesSubplot:xlabel='distSit', ylabel='tau_3'>



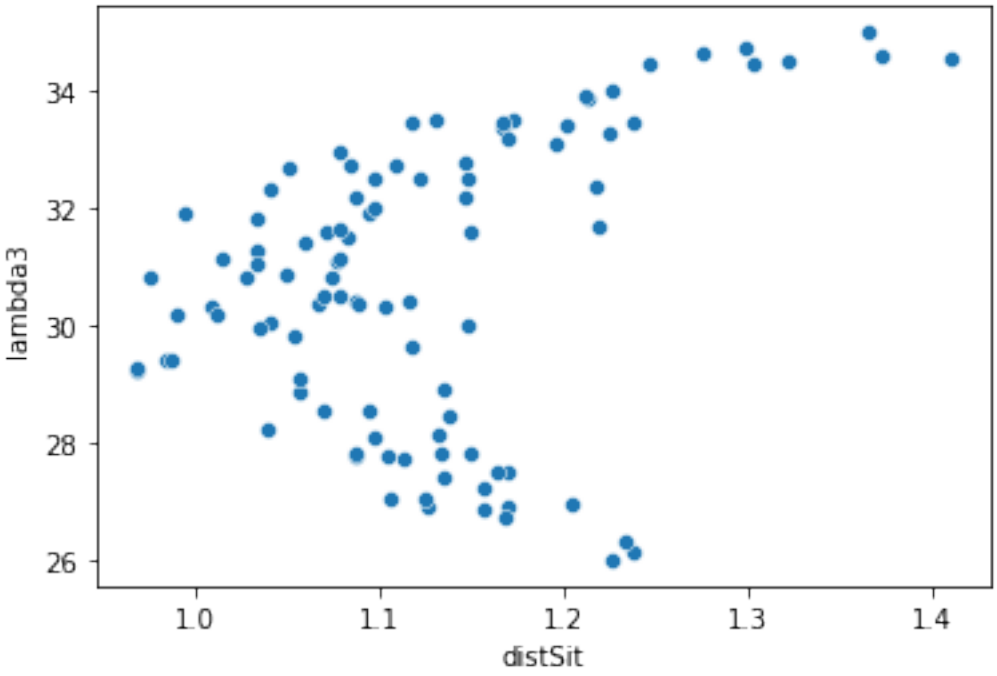
[15]:
```
#################### ATTEMPT 4 ################
# runtime = 166.065 seconds

lam = pd.read_csv('lam_avg4.csv', names = headers)
xi = pd.read_csv('xi_avg4.csv', names = headers)
tau = pd.read_csv('tau_avg4.csv', names = headers)
```

[16]:
```
# Test Lambda3

sns.scatterplot(x = lam['distSit'],y = lam['lambda3'])
```

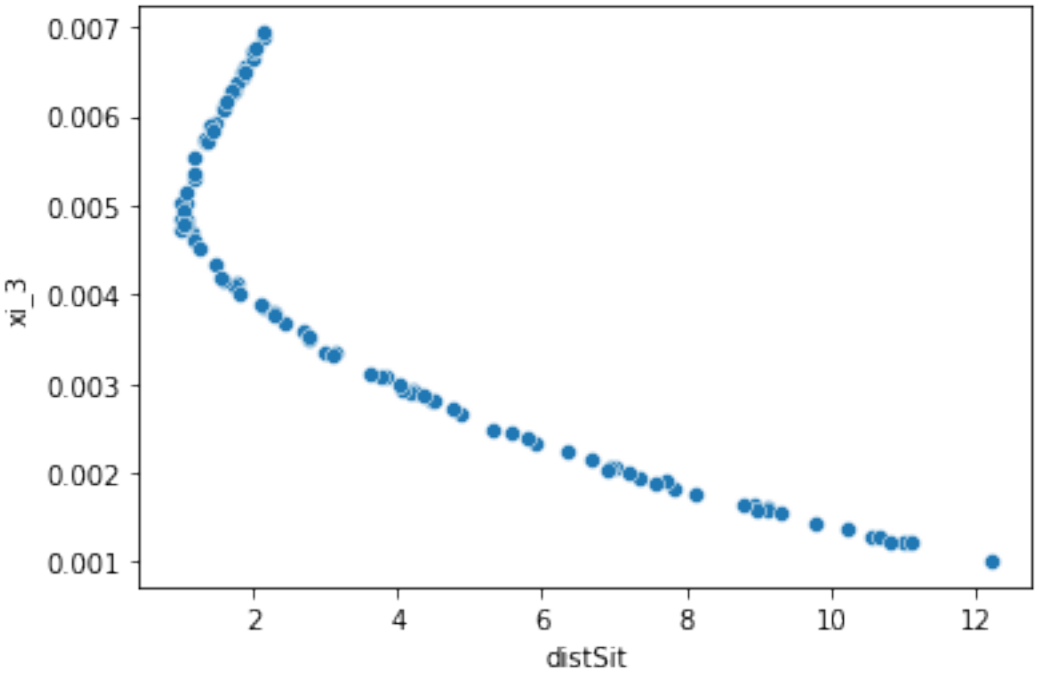
[16]: <AxesSubplot:xlabel='distSit', ylabel='lambda3'>



[17]:
```
# Test xi_3

sns.scatterplot(x = xi['distSit'],y = xi['xi_3'])
```

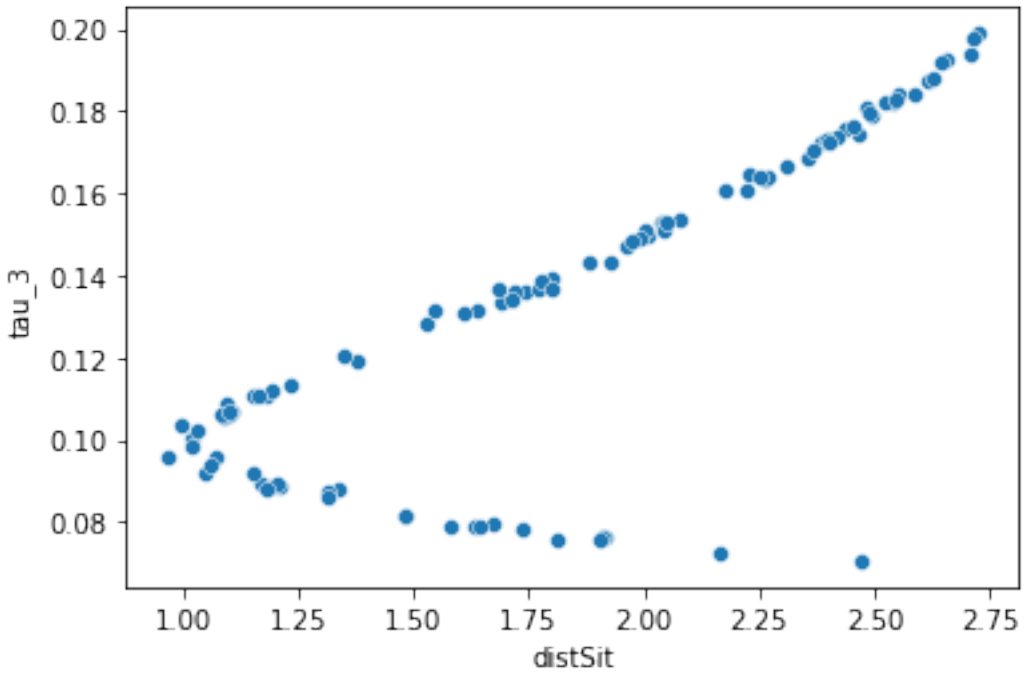
[17]: <AxesSubplot:xlabel='distSit', ylabel='xi_3'>



[18]:
```
# Test tau_3

sns.scatterplot(x = tau['distSit'],y = tau['tau_3'])
```

[18]: <AxesSubplot:xlabel='distSit', ylabel='tau_3'>



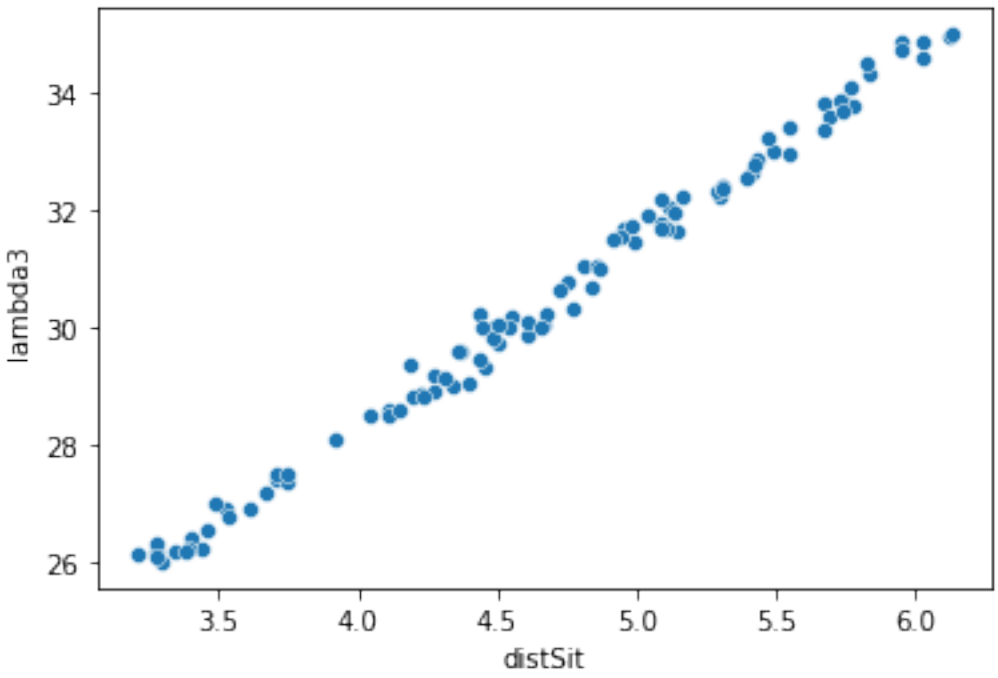
[19]:
```
##################### ATTEMPT 5 ################
# runtime = 199.386 seconds

lam = pd.read_csv('lam_avg5.csv', names = headers)
xi = pd.read_csv('xi_avg5.csv', names = headers)
tau = pd.read_csv('tau_avg5.csv', names = headers)
```

[20]:
```
# Test Lambda3

sns.scatterplot(x = lam['distSit'],y = lam['lambda3'])
```

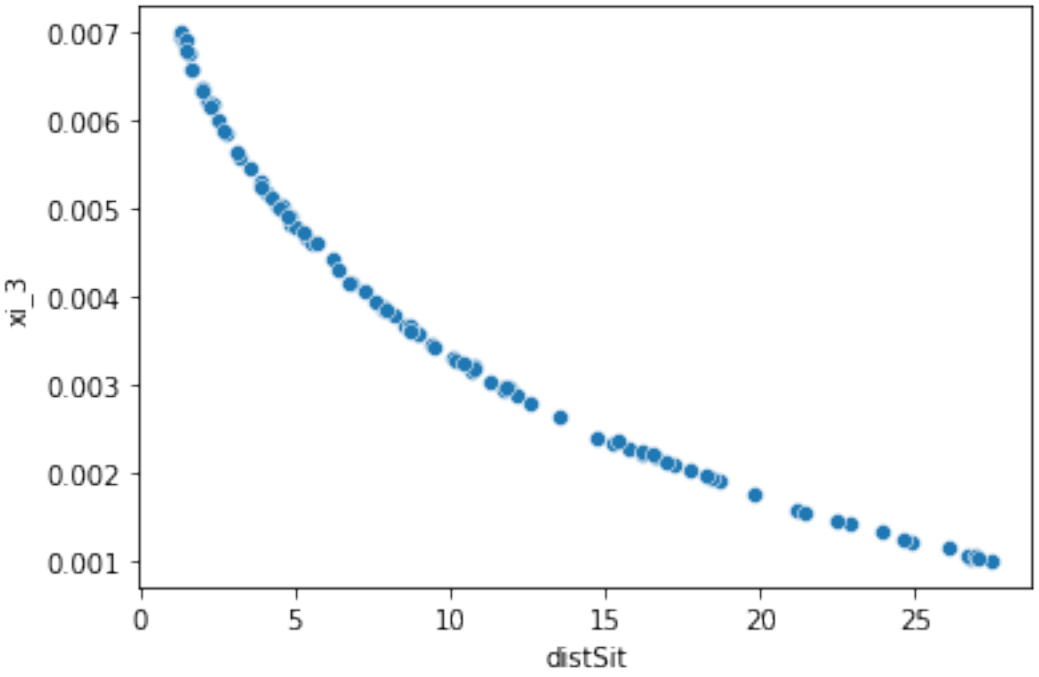
[20]: <AxesSubplot:xlabel='distSit', ylabel='lambda3'>



[21]:
```
# Test xi_3

sns.scatterplot(x = xi['distSit'],y = xi['xi_3'])
```

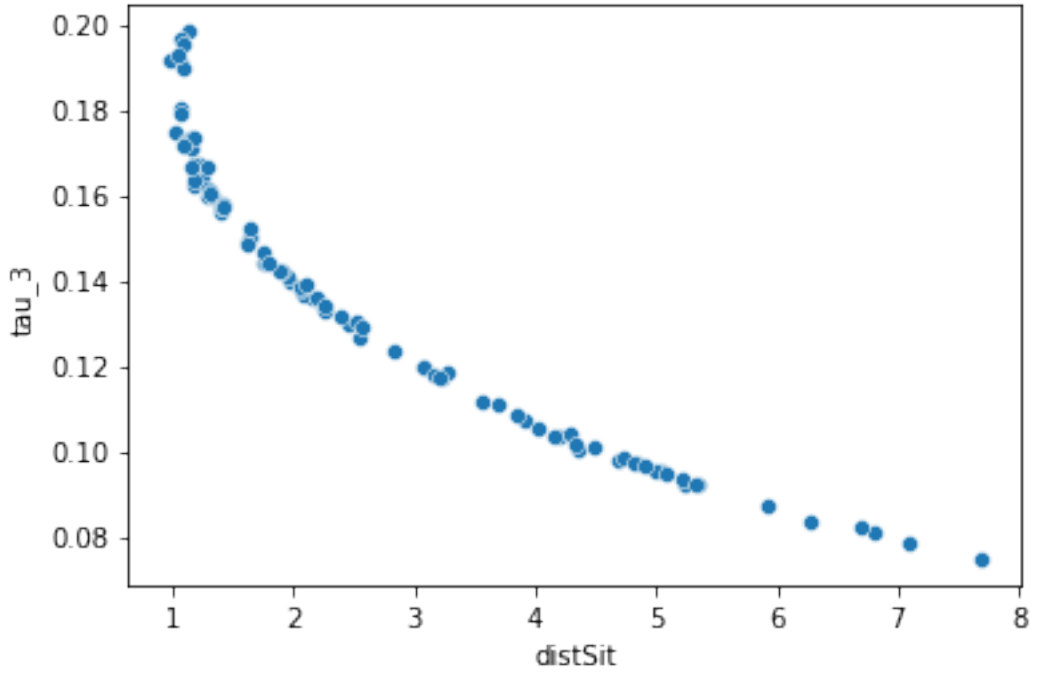
[21]: <AxesSubplot:xlabel='distSit', ylabel='xi_3'>



[22]:
```
# Test tau_3

sns.scatterplot(x = tau['distSit'],y = tau['tau_3'])
```

[22]: <AxesSubplot:xlabel='distSit', ylabel='tau_3'>



[ ]: