Untitled

February 24, 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 60 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. Further investigation is required.

[17]:
```
import numpy as np
import seaborn as sns
import pandas as pd
import matplotlib.pyplot as plt
%matplotlib inline
```

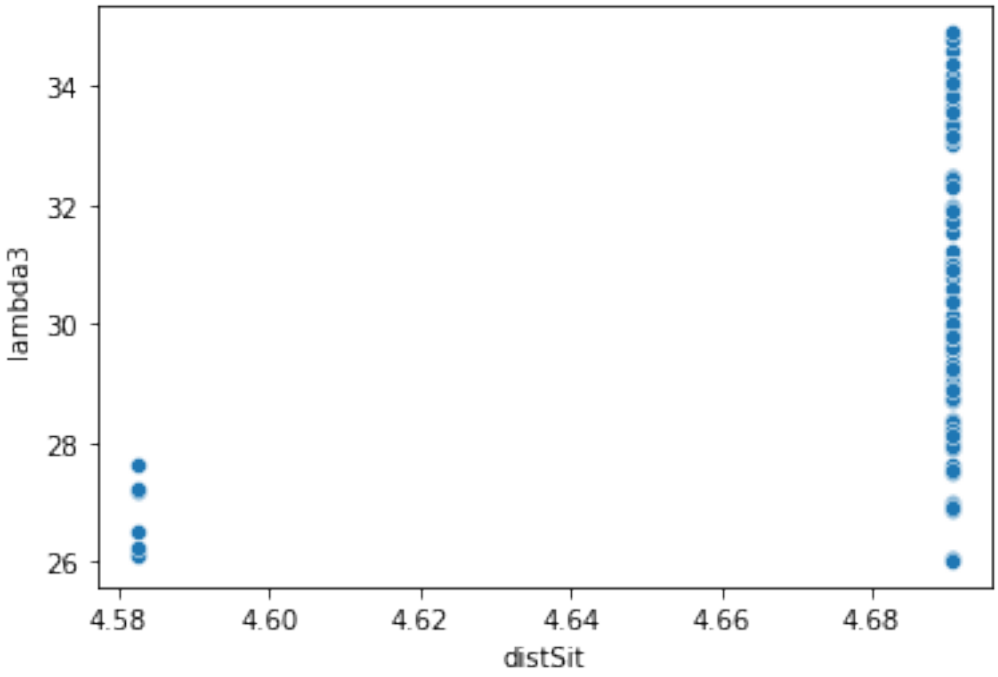
[18]:
```
headers =['lambda1', 'lambda2', 'lambda3', 'xi_1', 'xi_2', 'xi_3', 'tau_1',␣
↪'tau_2', 'tau_3', 'distSit', 'distSitAss']
```

[34]:
```
lam = pd.read_csv('lam_avg.csv', names = headers)
xi = pd.read_csv('xi_avg.csv', names = headers)
tau = pd.read_csv('tau_avg.csv', names = headers)
```

[35]:
```
################################## ATTEMPT 1␣
↪################################################
# runtime = 63.4893 seconds
# Test Lambda3

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

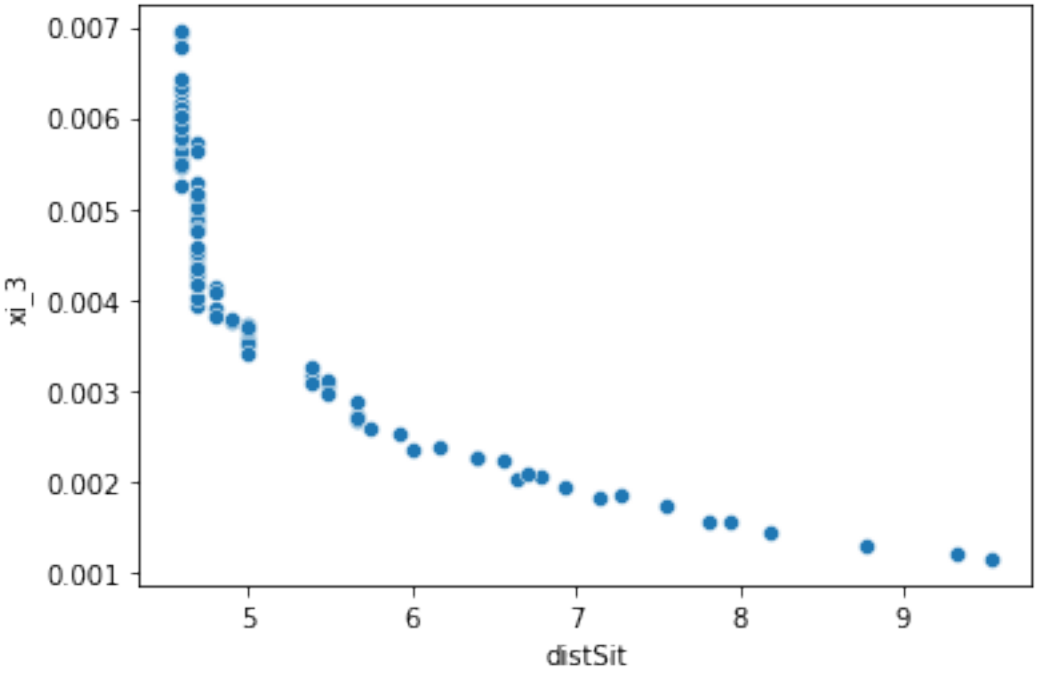
[35]:
```
<AxesSubplot:xlabel='distSit', ylabel='lambda3'>
```



[36]:
```
# Test xi_3

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

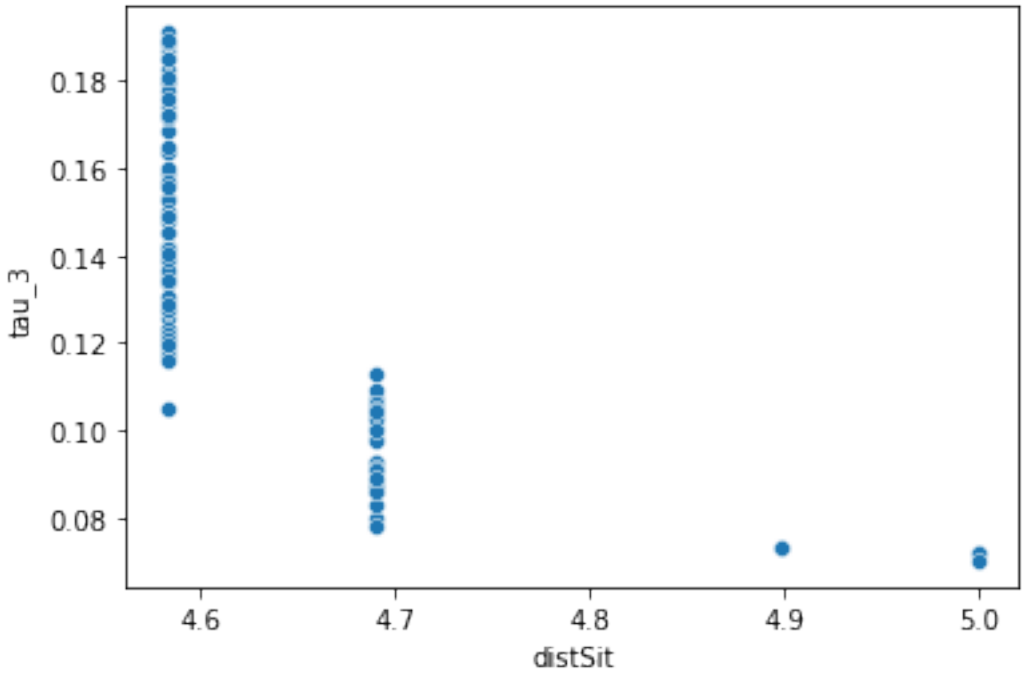
[36]: <AxesSubplot:xlabel='distSit', ylabel='xi_3'>



[37]:
```
# Test tau_3

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

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



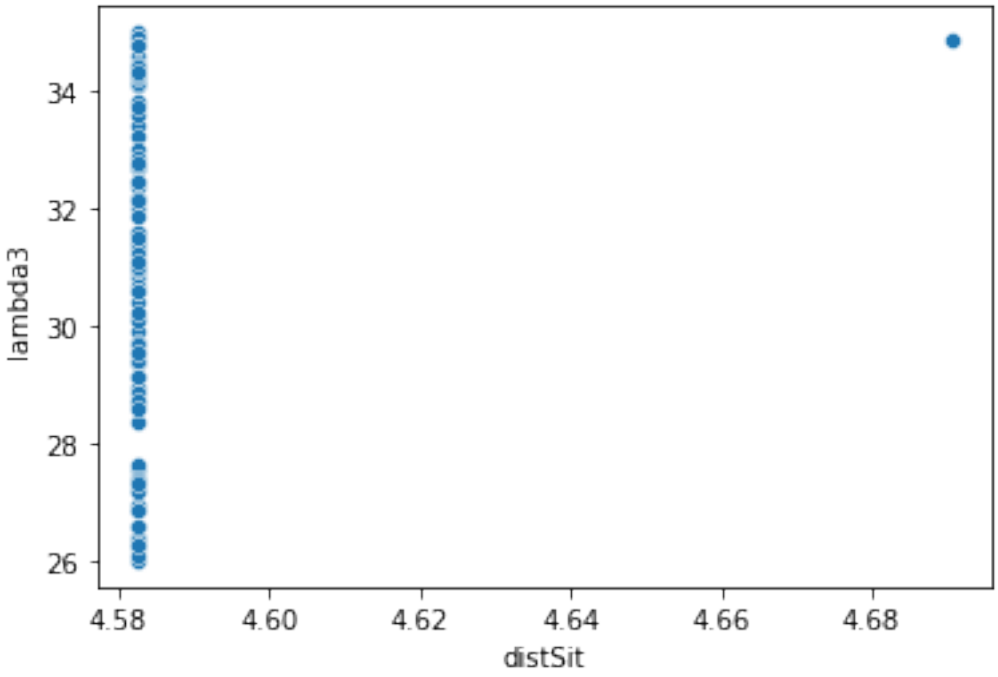
[39]:
```
#################### ATTEMPT 2 ################
# runtime = 64.4319 seconds

lam = pd.read_csv('lam_avg.csv', names = headers)
xi = pd.read_csv('xi_avg.csv', names = headers)
tau = pd.read_csv('tau_avg.csv', names = headers)
```

[46]:
```
# Test Lambda3

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

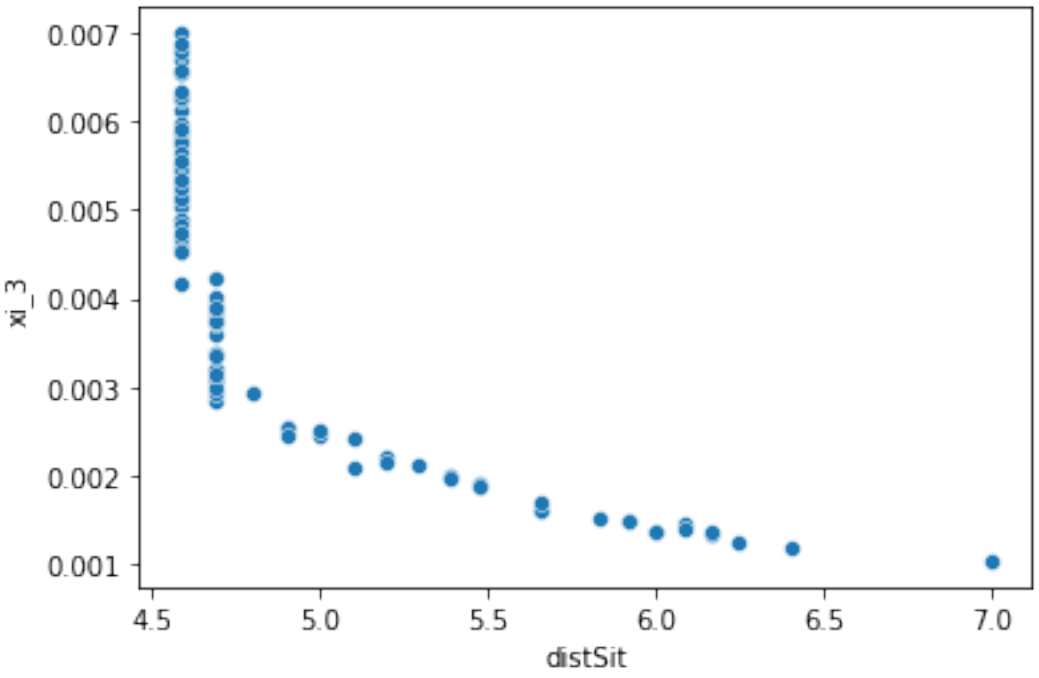
[46]: <AxesSubplot:xlabel='distSit', ylabel='lambda3'>



[47]:
```
# Test xi_3

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

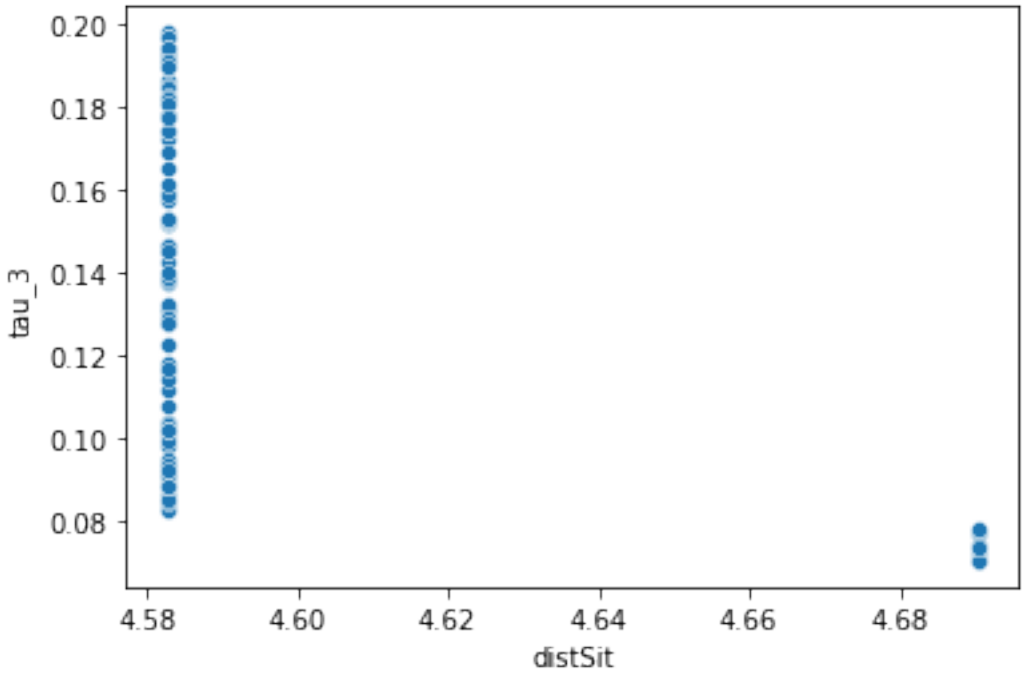
[47]: <AxesSubplot:xlabel='distSit', ylabel='xi_3'>



[48]:
```
# Test tau_3

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

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



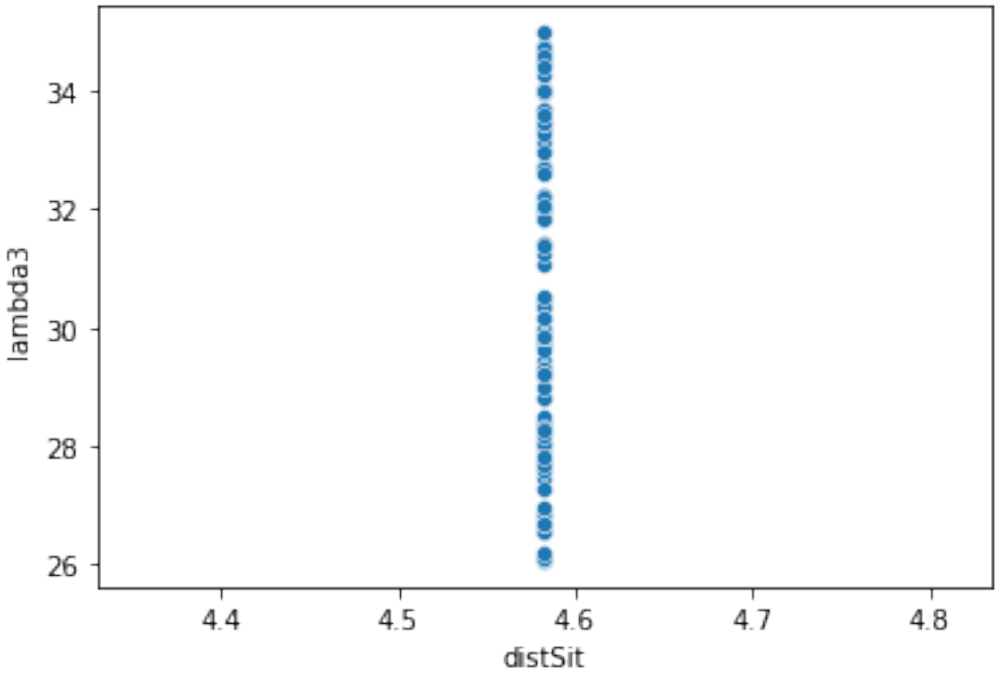
[49]:
```
##################### ATTEMPT 3 ################
# runtime = 55.719 seconds

lam = pd.read_csv('lam_avg.csv', names = headers)
xi = pd.read_csv('xi_avg.csv', names = headers)
tau = pd.read_csv('tau_avg.csv', names = headers)
```

[50]:
```
# Test Lambda3

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

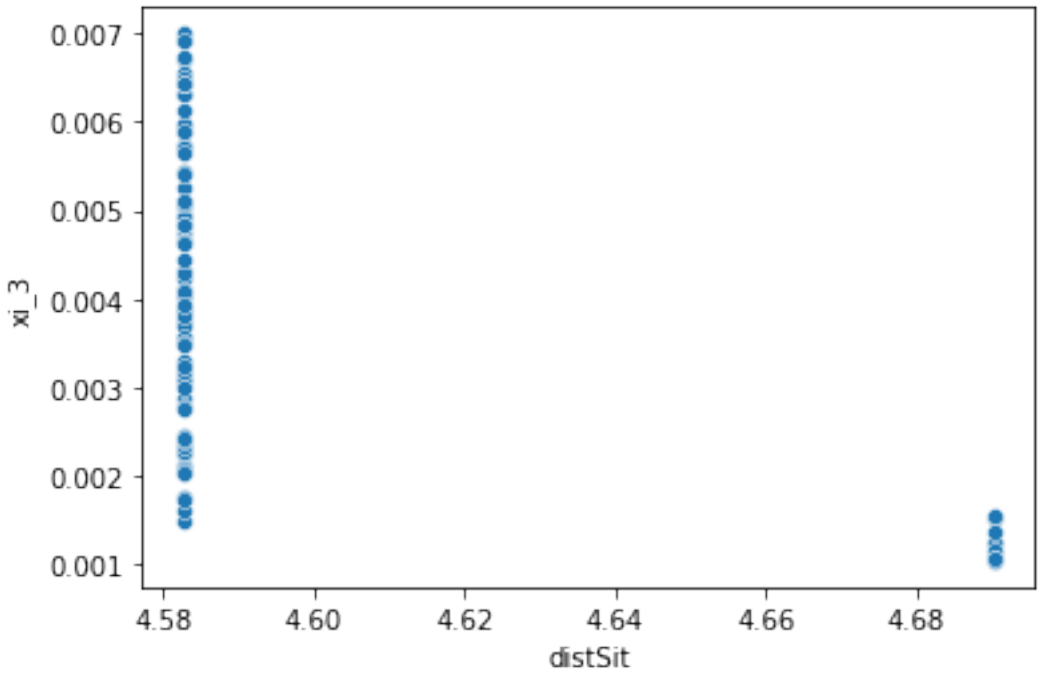
[50]: <AxesSubplot:xlabel='distSit', ylabel='lambda3'>



[51]:
```
# Test xi_3

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

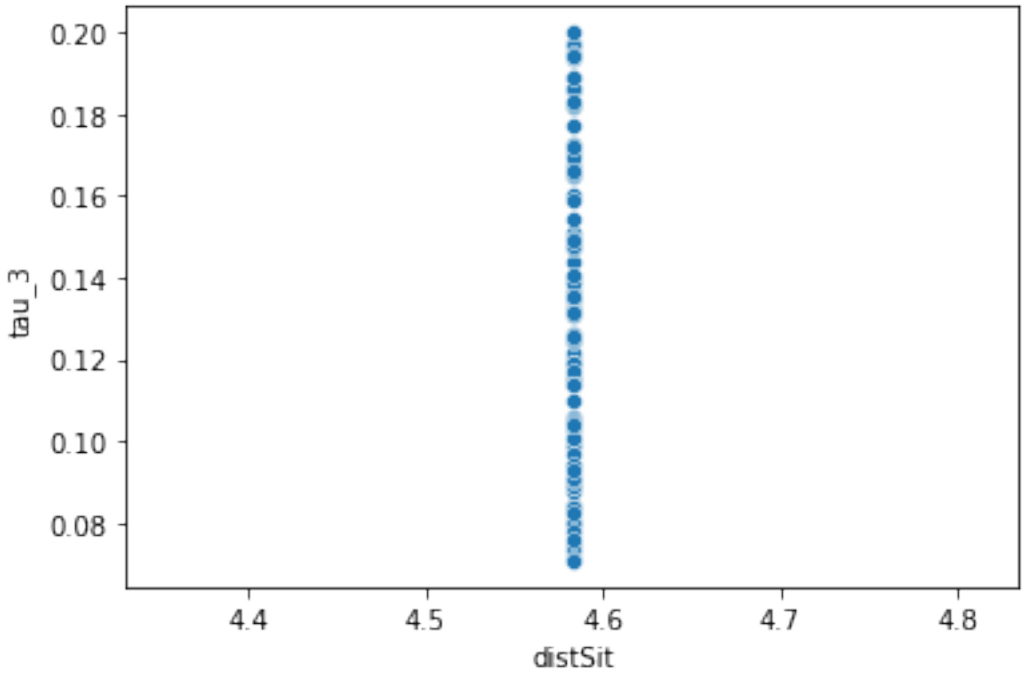
[51]: <AxesSubplot:xlabel='distSit', ylabel='xi_3'>



[52]:
```
# Test tau_3

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

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



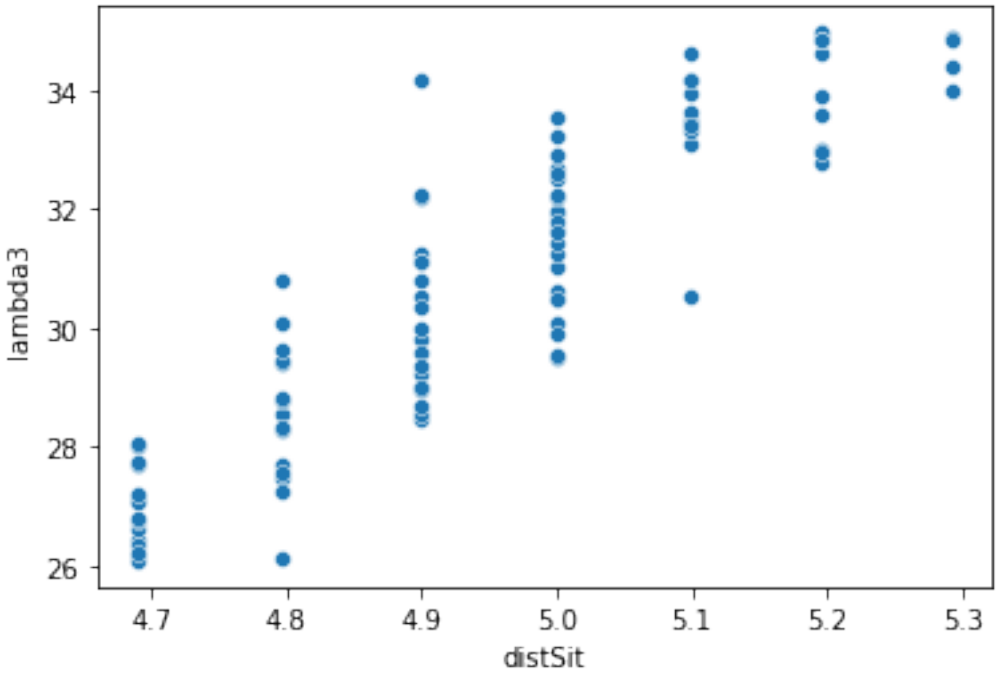
[53]:
```
#################### ATTEMPT 4 ################
# runtime = 69.4834 seconds

lam = pd.read_csv('lam_avg.csv', names = headers)
xi = pd.read_csv('xi_avg.csv', names = headers)
tau = pd.read_csv('tau_avg.csv', names = headers)
```

[54]:
```
# Test Lambda3

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

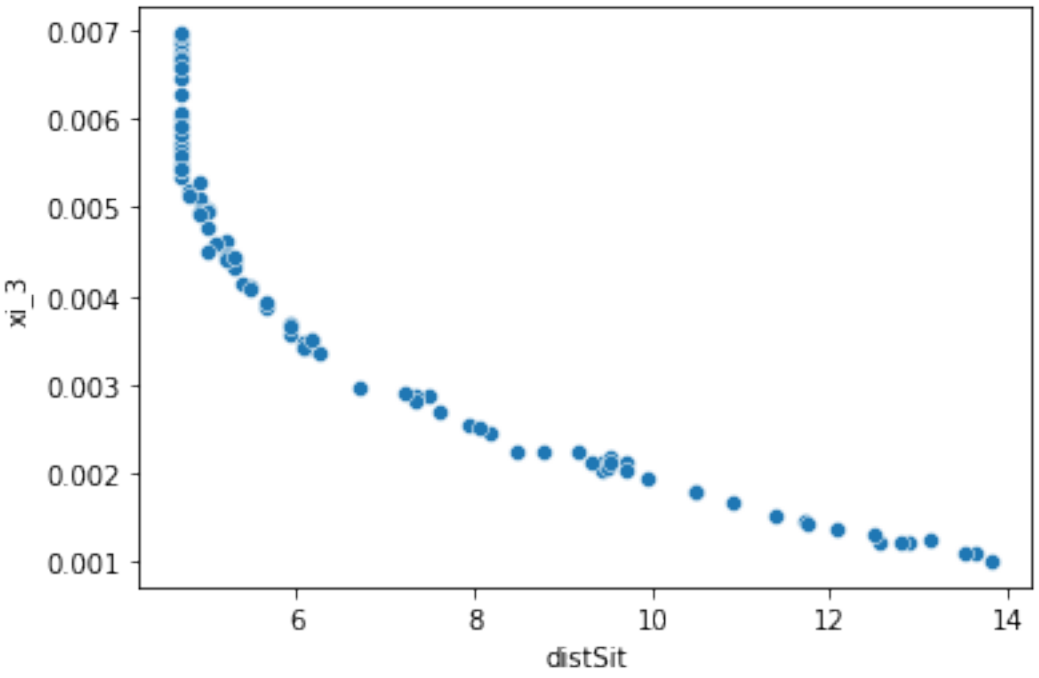
[54]: <AxesSubplot:xlabel='distSit', ylabel='lambda3'>



[55]:
```
# Test xi_3

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

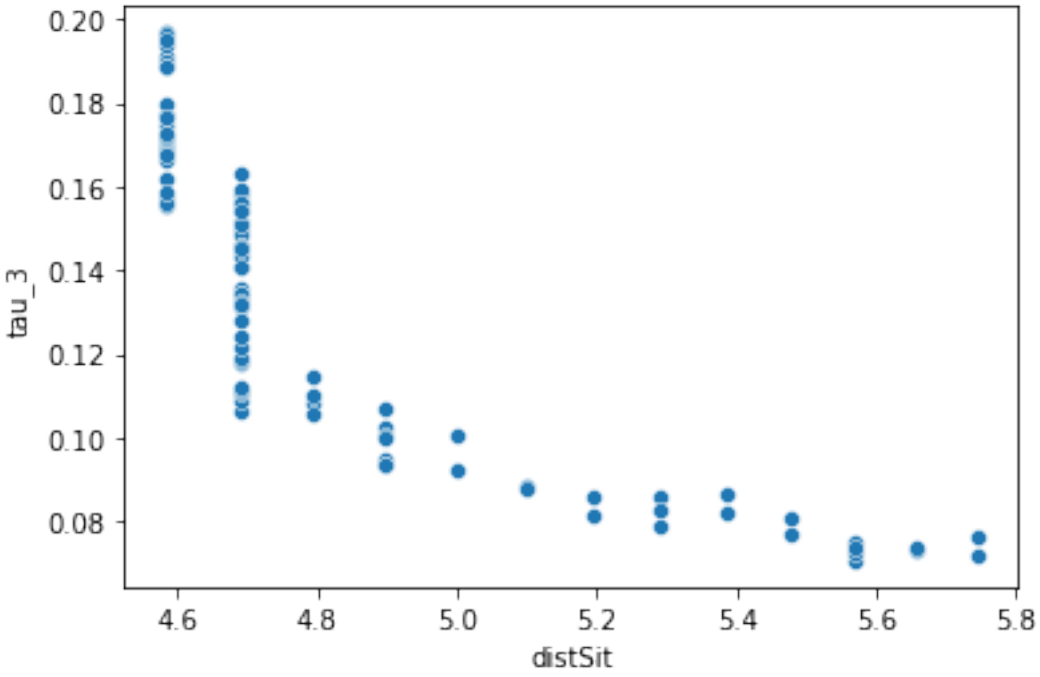
[55]: <AxesSubplot:xlabel='distSit', ylabel='xi_3'>



[56]:
```
# Test tau_3

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

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



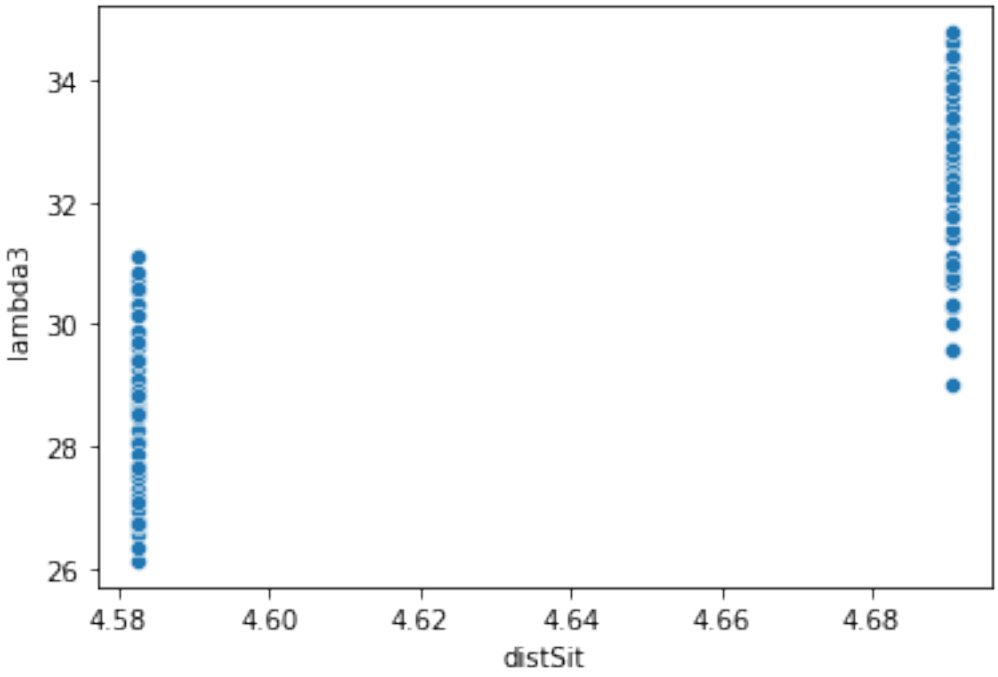
[57]:
```
##################### ATTEMPT 5 ################
# runtime = 59.236 seconds

lam = pd.read_csv('lam_avg.csv', names = headers)
xi = pd.read_csv('xi_avg.csv', names = headers)
tau = pd.read_csv('tau_avg.csv', names = headers)
```

[58]:
```
# Test Lambda3

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

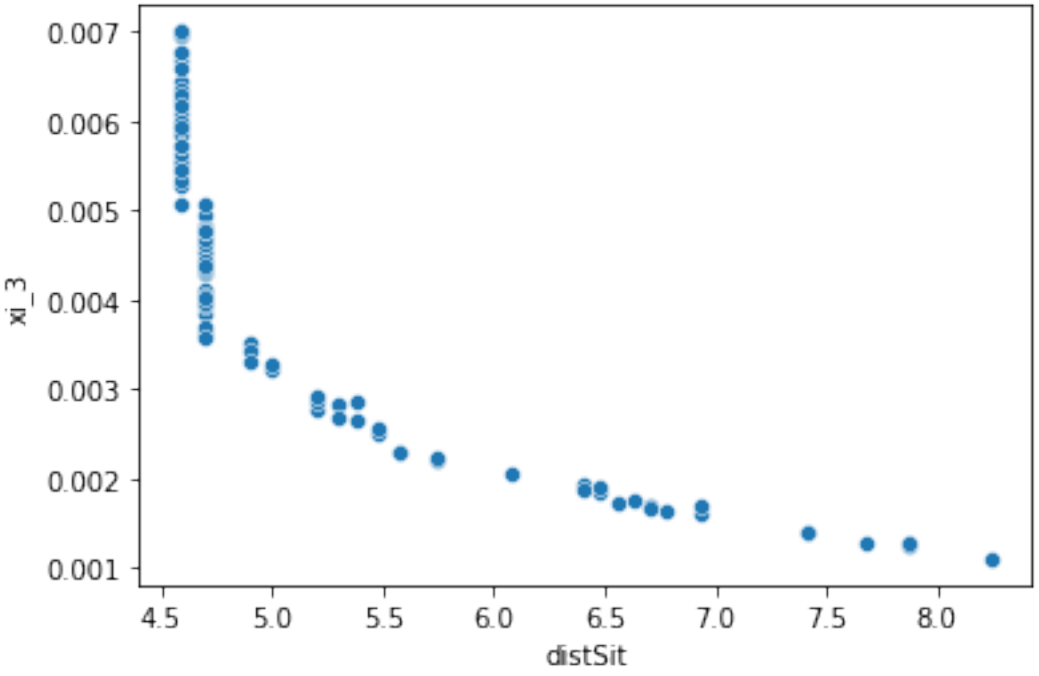
[58]: <AxesSubplot:xlabel='distSit', ylabel='lambda3'>



[59]:
```
# Test xi_3

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

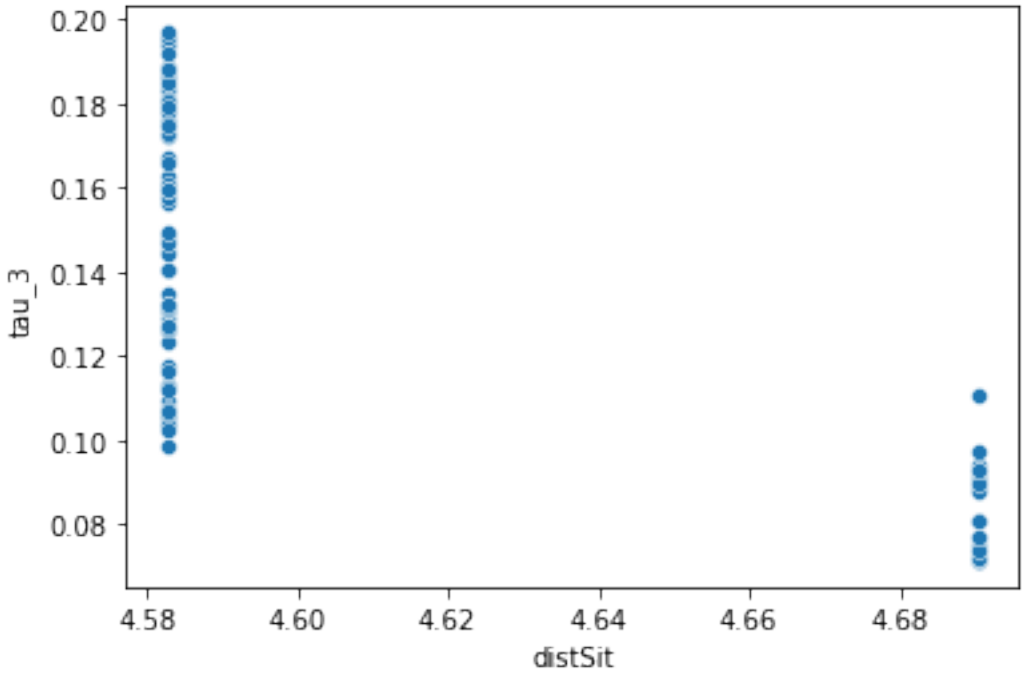
[59]: <AxesSubplot:xlabel='distSit', ylabel='xi_3'>



[60]:
```
# Test tau_3

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

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



[ ]: