

```
In [1]: import seaborn as sns
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
from scipy.optimize import curve_fit
import os
```

```
In [2]: # Net Flow v.s. Desolvation Pressure Plot, PP1

fn = 'C:\\Users\\[REDACTED]\\BCfold

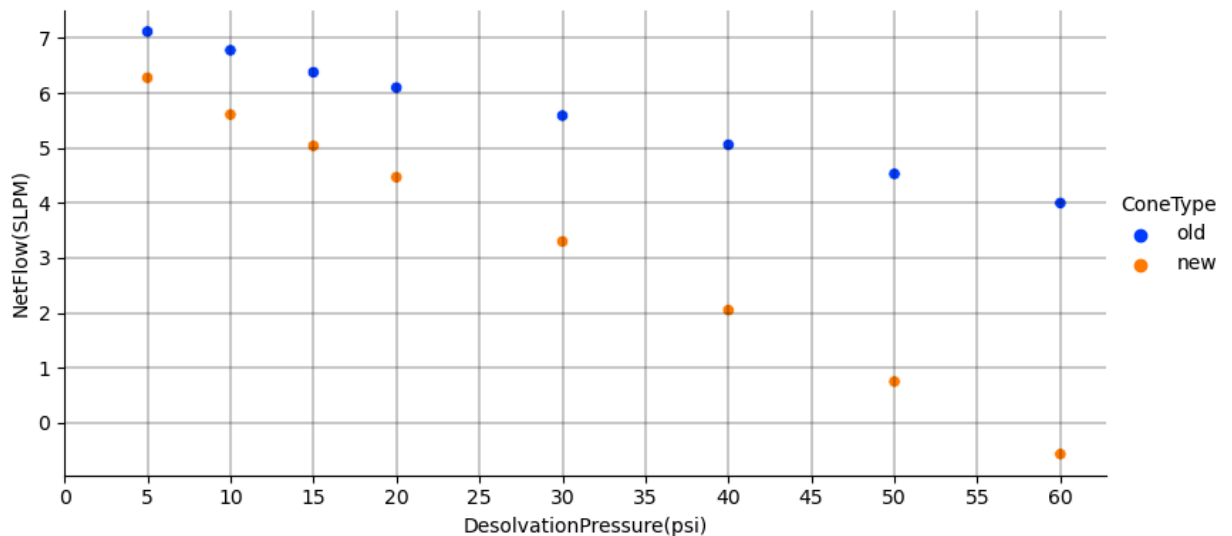
df = pd.read_csv(fn)
pp1 = df[df['System'] == 'PP1']
print(df.columns)

fig = sns.relplot(pp1, x= 'DesolvationPressure(psi)', y= 'NetFlow(SLPM)', palette = 'b
plt.suptitle('Net Flow vs. Pressure, PP1, Feb. 12, 2025',y=1.1, x=.46)

for ax in fig.axes.flatten():
    ax.grid(color = 'black', linewidth =.3)
    ax.set_xticks(np.arange(0, 61, 5))
    ax.set_yticks(np.arange(0, 8, 1))
```

```
Index(['DesolvationPressure(psi)', 'NetFlow(SLPM)', 'ForelinePressure(mbar)',
      'ConeType', 'System'],
      dtype='object')
```

Net Flow vs. Pressure, PP1, Feb. 12, 2025



```
In [3]: # Net Flow v.s. Desolvation Pressure Plot, PP2

fn = 'C:\\Users\\[REDACTED]\\BCfold

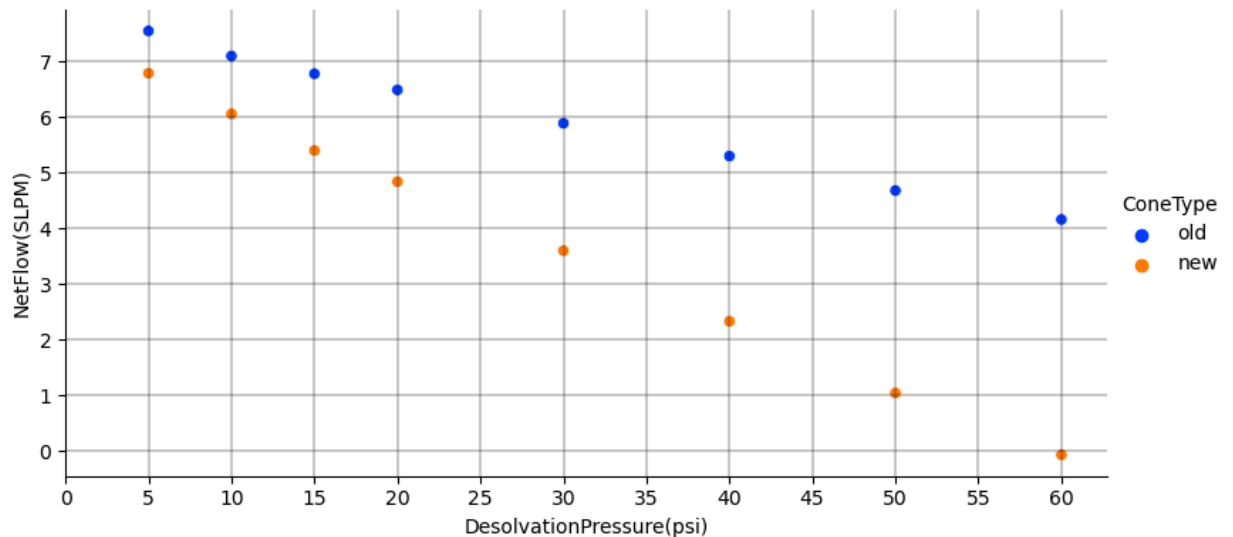
df = pd.read_csv(fn)
pp2 = df[df['System'] == 'PP2']
print(df.columns)

fig = sns.relplot(pp2, x= 'DesolvationPressure(psi)', y= 'NetFlow(SLPM)', palette = 'b
plt.suptitle('Net Flow vs. Pressure, PP2, Feb. 14, 2025',y=1.1, x=.46)
```

```
for ax in fig.axes.flatten():
    ax.grid(color = 'black', linewidth =.3)
    ax.set_xticks(np.arange(0, 61, 5))
    ax.set_yticks(np.arange(0, 8, 1))
```

```
Index(['DesolvationPressure(psi)', 'NetFlow(SLPM)', 'ForelinePressure(mbar)',
      'ConeType', 'System'],
      dtype='object')
```

Net Flow vs. Pressure, PP2, Feb. 14, 2025



```
In [4]: # Net Flow v.s. Desolvation Pressure Plot, PP6

fn = 'C:\\Users\\[REDACTED]\\BCfold

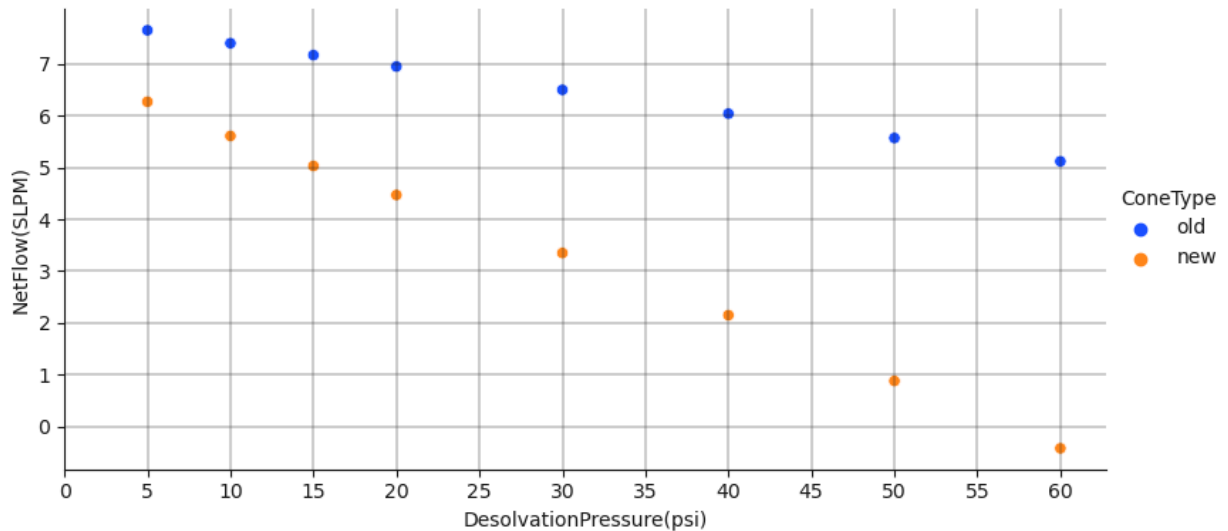
df = pd.read_csv(fn)
pp1 = df[df['System'] == 'PP6']
print(df.columns)

fig = sns.relplot(pp1, x= 'DesolvationPressure(psi)', y= 'NetFlow(SLPM)', palette = 't
plt.suptitle('Net Flow vs. Pressure, PP6, Feb. 18, 2025',y=1.1, x=.46)

for ax in fig.axes.flatten():
    ax.grid(color = 'black', linewidth =.3)
    ax.set_xticks(np.arange(0, 61, 5))
    ax.set_yticks(np.arange(0, 8, 1))
```

```
Index(['DesolvationPressure(psi)', 'NetFlow(SLPM)', 'ForelinePressure(mbar)',
      'ConeType', 'System'],
      dtype='object')
```

Net Flow vs. Pressure, PP6, Feb. 18, 2025



```
In [5]: # Net Flow v.s. Desolvation Pressure Plot, demo

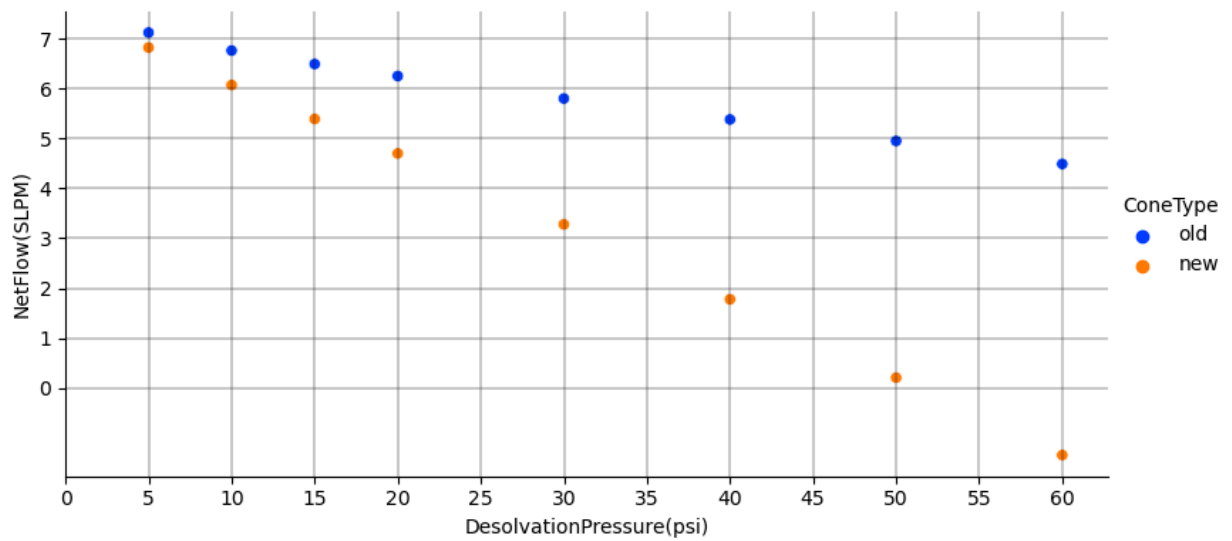
fn = 'C:\\Users\\[REDACTED]\\BCfolder

df = pd.read_csv(fn)
pp1 = df[df['System'] == 'demo']
print(df.columns)

fig = sns.relplot(pp1, x='DesolvationPressure(psi)', y='NetFlow(SLPM)', palette='k
plt.suptitle('Net Flow vs. Pressure, Demo, Feb. 13 2025',y=1.1, x=.46)

for ax in fig.axes.flatten():
    ax.grid(color='black', linewidth=.3)
    ax.set_xticks(np.arange(0, 61, 5))
    ax.set_yticks(np.arange(0, 8, 1))

Index(['DesolvationPressure(psi)', 'NetFlow(SLPM)', 'ForelinePressure(mbar)',
      'ConeType', 'System'],
      dtype='object')
```



```
In [6]: # Net Flow v.s. Desolvation Pressure Plot, Old Cones

fn = 'C:\\Users\\[REDACTED]\\BCfold

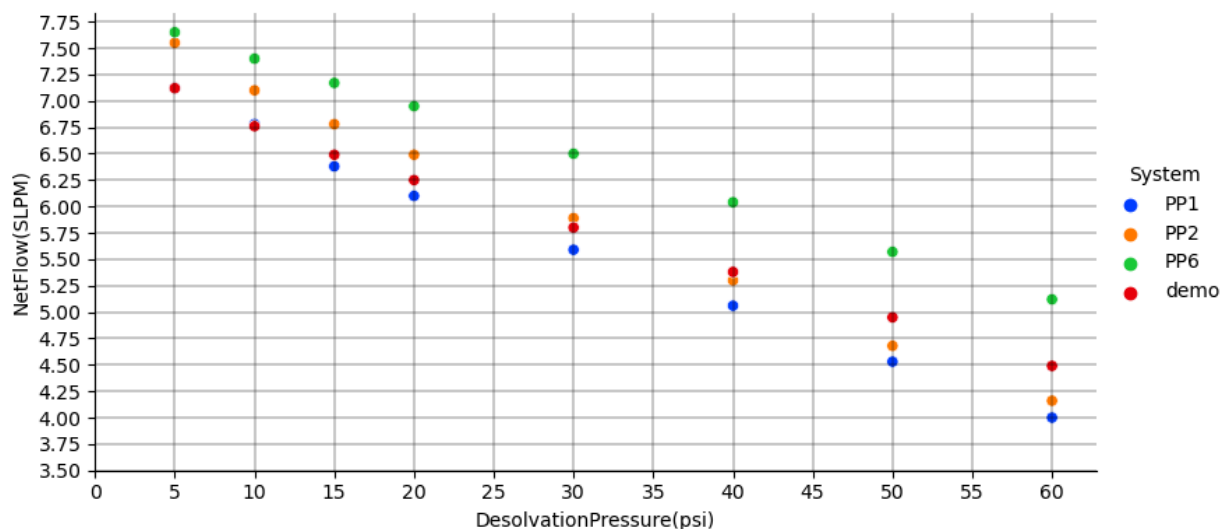
df = pd.read_csv(fn)
pp1 = df[df['ConeType'] == 'old']
print(df.columns)

fig = sns.relplot(pp1, x='DesolvationPressure(psi)', y='NetFlow(SLPM)', palette='k
plt.suptitle('Net Flow vs. Pressure, Old Cones',y=1.1, x=.46)

for ax in fig.axes.flatten():
    ax.grid(color = 'black', linewidth =.3)
    ax.set_xticks(np.arange(0, 61, 5))
    ax.set_yticks(np.arange(3.5, 8, .25))
```

```
Index(['DesolvationPressure(psi)', 'NetFlow(SLPM)', 'ForelinePressure(mbar)',
      'ConeType', 'System'],
      dtype='object')
```

Net Flow vs. Pressure, Old Cones



In [7]: #

Net Flow v.s. Desolvation Pressure Plot, New Cones

```
fn = 'C:\\Users\\[REDACTED]\\BCfold

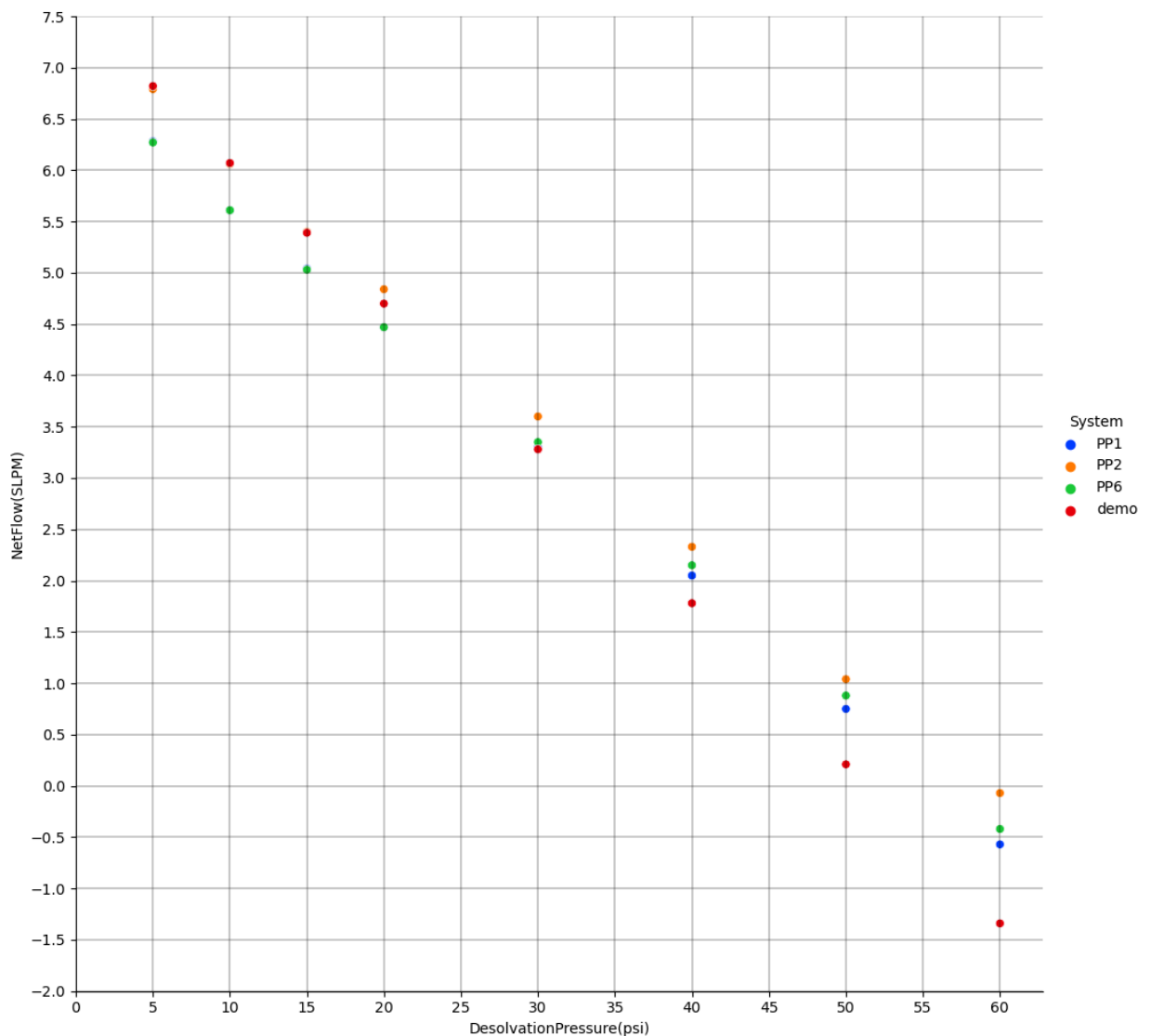
df = pd.read_csv(fn)
pp1 = df[df['ConeType'] == 'new']
print(df.columns)

fig = sns.relplot(pp1, x= 'DesolvationPressure(psi)', y= 'NetFlow(SLPM)', palette = 'b
plt.suptitle('Net Flow vs. Pressure, New Cones',y=1.1, x=.46)

for ax in fig.axes.flatten():
    ax.grid(color = 'black', linewidth =.3)
    ax.set_xticks(np.arange(0, 61, 5))
    ax.set_yticks(np.arange(-2, 8, .5))
```

```
Index(['DesolvationPressure(psi)', 'NetFlow(SLPM)', 'ForelinePressure(mbar)',
      'ConeType', 'System'],
      dtype='object')
```

Net Flow vs. Pressure, New Cones



In [8]: # Net Flow v.s. Desolvation Pressure Plot, Both Cones

```
fn = 'C:\\Users\\[REDACTED]\\BCfolde

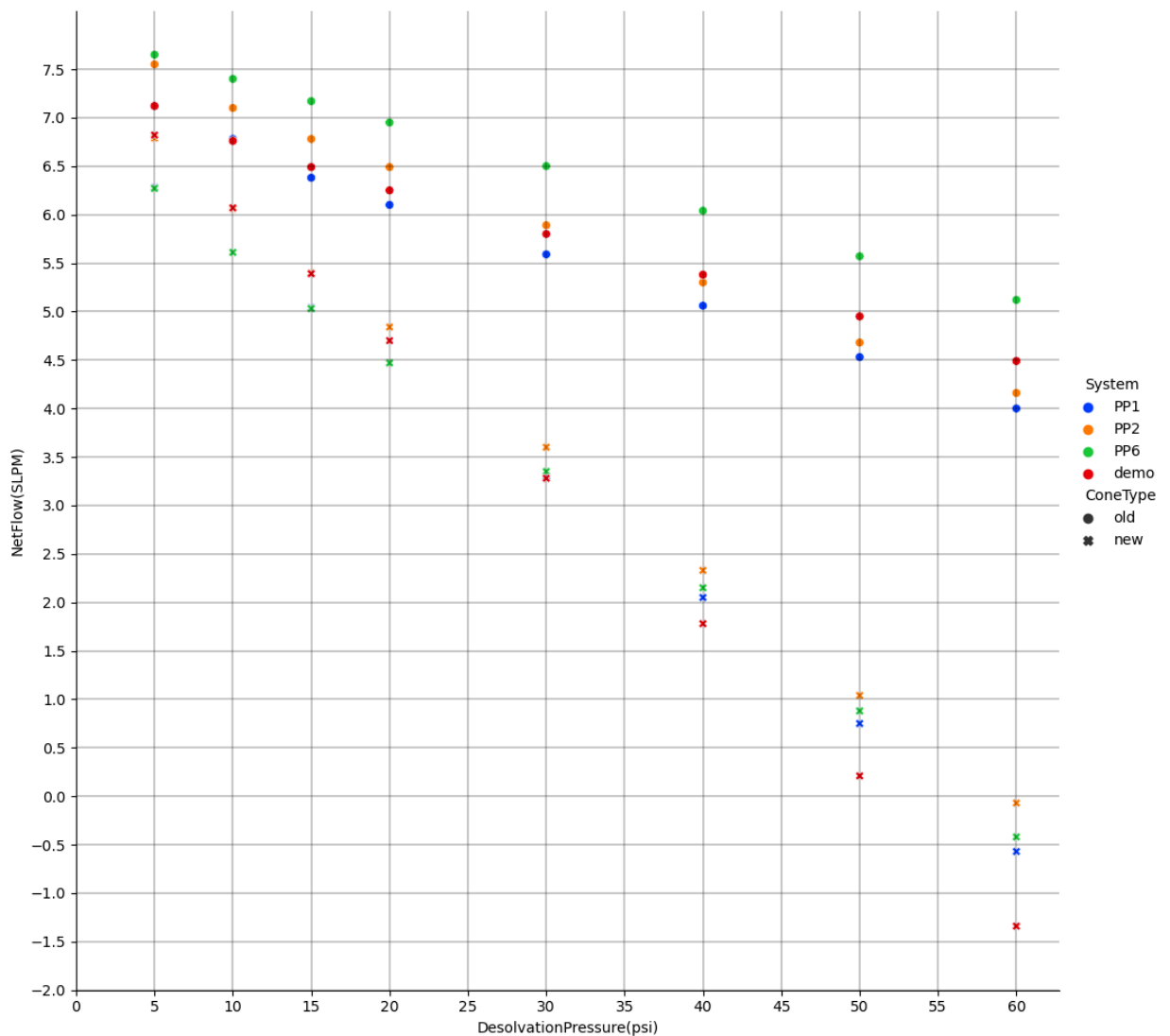
df = pd.read_csv(fn)
print(df.columns)

fig = sns.relplot(df, x= 'DesolvationPressure(psi)', y= 'NetFlow(SLPM)', palette = 'br
plt.suptitle('Net Flow vs. Pressure, Both Cones',y=1.1, x=.46)

for ax in fig.axes.flatten():
    ax.grid(color = 'black', linewidth =.3)
    ax.set_xticks(np.arange(0, 61, 5))
    ax.set_yticks(np.arange(-2, 8, .5))
```

```
Index(['DesolvationPressure(psi)', 'NetFlow(SLPM)', 'ForelinePressure(mbar)',
      'ConeType', 'System'],
      dtype='object')
```

Net Flow vs. Pressure, Both Cones

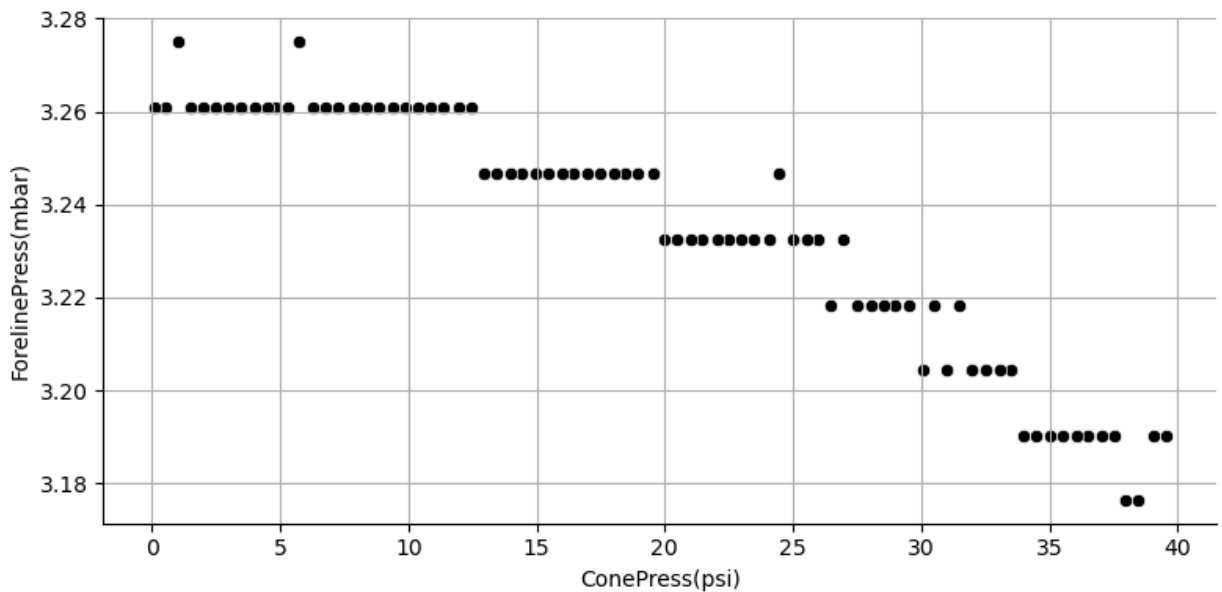


```
In [9]: # TEST CONE FLOW SCRIPT Demo, Old Cone  
# Foreline Stabilized at 350c and 40psi before running sc
```

```
fn = 'C:\\Users\\[REDACTED]\\BCfolde  
df = pd.read_csv(fn)  
print(df.columns)  
  
fig = sns.relplot(df,x = 'ConePress(psi)',y='ForelinePress(mbar)', kind = 'scatter', f  
plt.suptitle('Test Cone Flow Script, Demo, Old Cone, Feb. 12, 2025',y=1.1)  
  
for ax in fig.axes.flatten():  
    ax.grid()
```

```
Index(['ConePress(psi)', 'ForelinePress(mbar)', 'Instr.SN:39226000023',  
      'ConeTemp:350C '],  
      dtype='object')
```

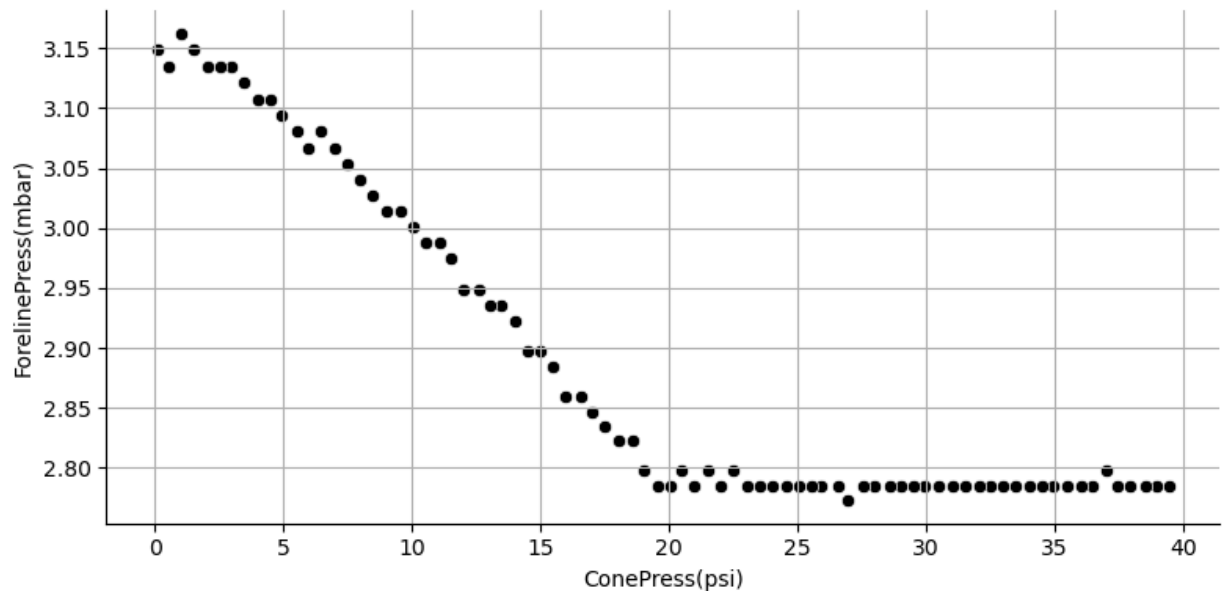
Test Cone Flow Script, Demo, Old Cone, Feb. 12, 2025



```
In [10]: # TEST CONE FLOW SCRIPT Demo, New Cone  
# Foreline Stabilized at 350c and 40psi before running sc
```

```
fn = 'C:\\Users\\[REDACTED]\\BCfolde  
df = pd.read_csv(fn)  
print(df.columns)  
  
fig = sns.relplot(df,x = 'ConePress(psi)',y='ForelinePress(mbar)', kind = 'scatter', f  
plt.suptitle('Test Cone Flow Script, Demo, New Cone, Feb. 13, 2025',y=1.1)  
  
for ax in fig.axes.flatten():  
    ax.grid()
```

```
Index(['ConePress(psi)', 'ForelinePress(mbar)', 'Instr.SN:39226000023',  
      'ConeTemp:350C '],  
      dtype='object')
```



```
In [11]: # TEST CONE FLOW SCRIPT PP1, Old Cone
# Foreline Stabilized at 350c and 40psi before running sc

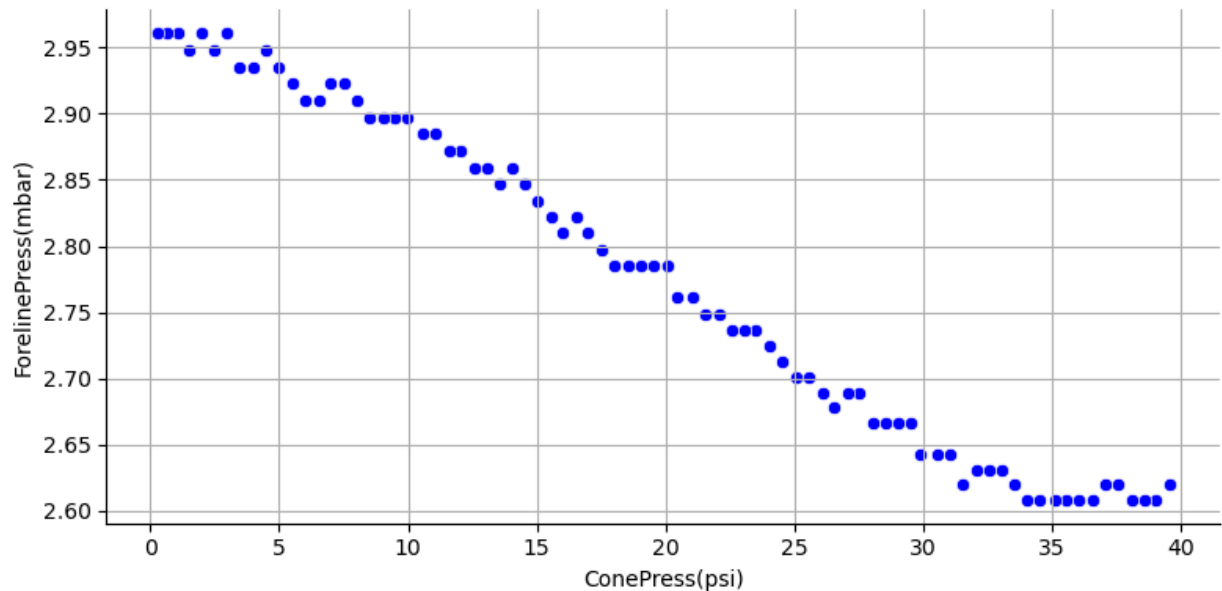
fn = 'C:\\Users\\[REDACTED]\\BCfold

df = pd.read_csv(fn)
print(df.columns)

fig = sns.relplot(df, x = 'ConePress(psi)', y='ForelinePress(mbar)', kind = 'scatter',
plt.suptitle('Test Cone Flow Script, PP1, Old Cone, Feb. 12, 2025', y=1.1)

for ax in fig.axes.flatten():
    ax.grid()

Index(['ConePress(psi)', 'ForelinePress(mbar)', 'Instr.SN:39226000001',
      'ConeTemp:350C '],
      dtype='object')
```

```
In [12]: # TEST CONE FLOW SCRIPT PP1, New Cone
# Foreline Stabilized at 350c and 40psi before running sc

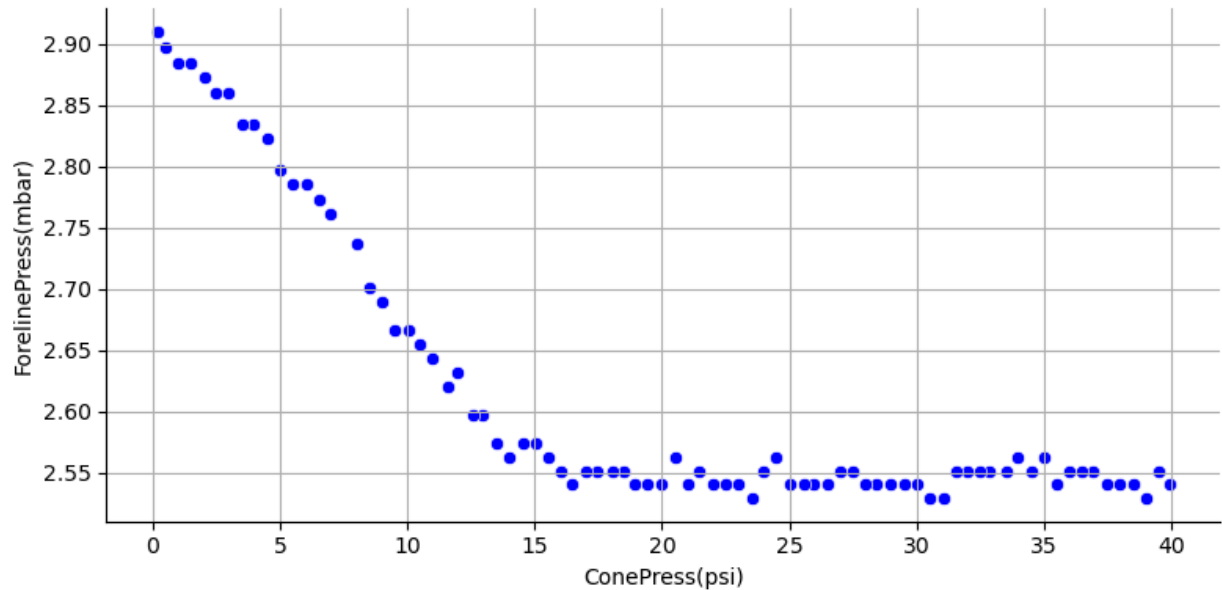
fn = 'C:\\Users\\[REDACTED]\\BCfolde

df = pd.read_csv(fn)
print(df.columns)

fig = sns.relplot(df,x = 'ConePress(psi)',y='ForelinePress(mbar)', kind = 'scatter', f
plt.suptitle('Test Cone Flow Script, PP1, New Cone, Feb. 13, 2025',y=1.1)

for ax in fig.axes.flatten():
    ax.grid()

Index(['ConePress(psi)', 'ForelinePress(mbar)', 'Instr.SN:392260000001',
      'ConeTemp:350C '],
      dtype='object')
```



```
In [13]: # TEST CONE FLOW SCRIPT PP2, Old Cone
# Foreline Stabilized at 350c and 40psi before running sc

fn = 'C:\\Users\\[REDACTED]\\BCfold

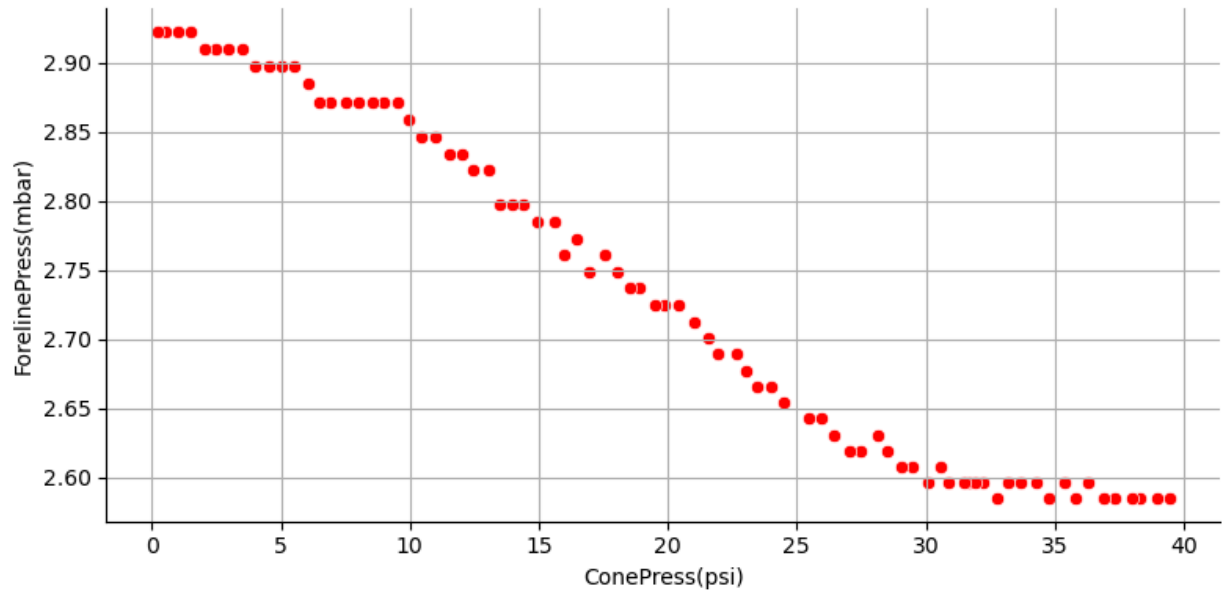
df = pd.read_csv(fn)
print(df.columns)

fig = sns.relplot(df,x = 'ConePress(psi)',y='ForelinePress(mbar)', kind = 'scatter', f
plt.suptitle('Test Cone Flow Script, PP2, Old Cone, Feb. 13, 2025',y=1.1)

for ax in fig.axes.flatten():
    ax.grid()

Index(['ConePress(psi)', 'ForelinePress(mbar)', 'Instr.SN:392260000002',
      'ConeTemp:350C '],
      dtype='object')
```

Test Cone Flow Script, PP2, Old Cone, Feb. 13, 2025



```
In [14]: # TEST CONE FLOW SCRIPT PP2, NEw Cone
# Foreline Stabilized at 350c and 40psi before running sc

fn = 'C:\\Users\\[REDACTED]\\BCfolde

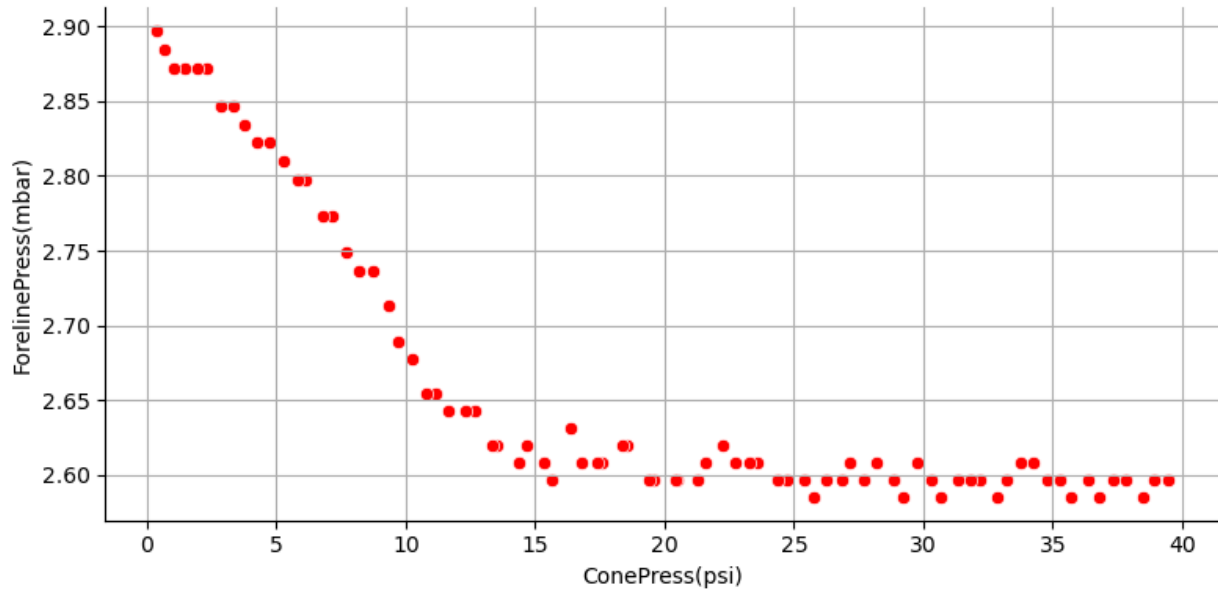
df = pd.read_csv(fn)
print(df.columns)

fig = sns.relplot(df,x = 'ConePress(psi)',y='ForelinePress(mbar)', kind = 'scatter', f
plt.suptitle('Test Cone Flow Script, PP2, New Cone, Feb. 14, 2025',y=1.1)

for ax in fig.axes.flatten():
    ax.grid()

Index(['ConePress(psi)', 'ForelinePress(mbar)', 'Instr.SN:392260000002',
       'ConeTemp:350C '],
      dtype='object')
```

Test Cone Flow Script, PP2, New Cone, Feb. 14, 2025



```
In [15]: # TEST CONE FLOW SCRIPT PP6, Old Cone
# Foreline Stabilized at 350c and 40psi before running sc

fn = 'C:\\Users\\[REDACTED]\\BCfolde

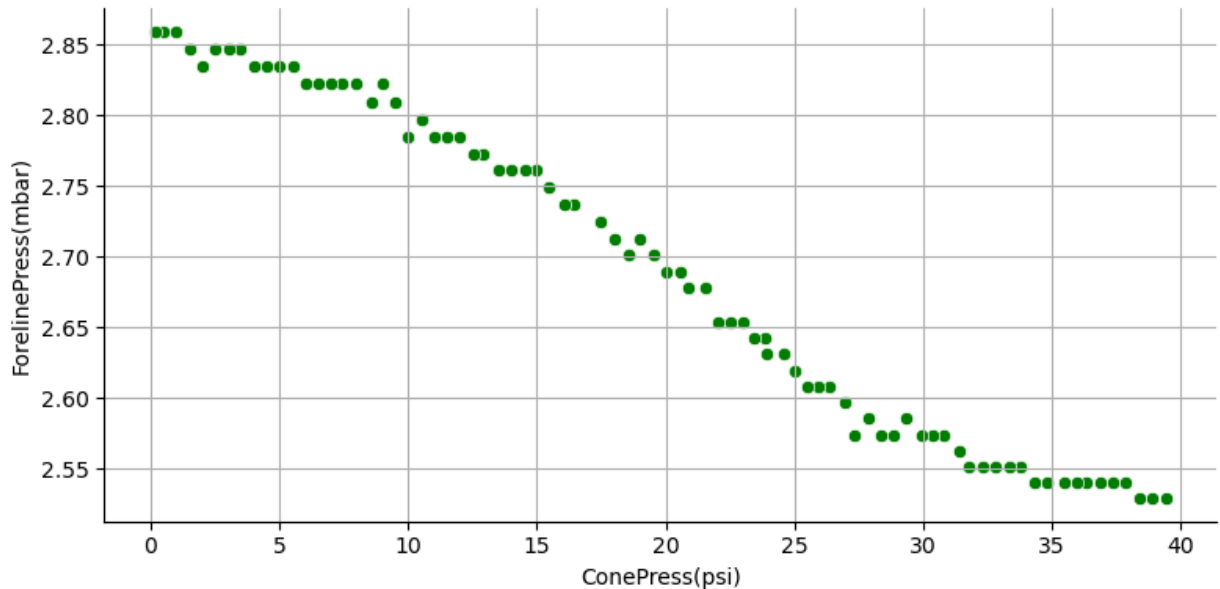
df = pd.read_csv(fn)
print(df.columns)

fig = sns.relplot(df,x = 'ConePress(psi)',y='ForelinePress(mbar)', kind = 'scatter', f
plt.suptitle('Test Cone Flow Script, PP6, Old Cone, Feb. 14, 2025',y=1.1)

for ax in fig.axes.flatten():
    ax.grid()

Index(['ConePress(psi)', 'ForelinePress(mbar)', 'Instr.SN:1234',
      'ConeTemp:350C '],
      dtype='object')
```

Test Cone Flow Script, PP6, Old Cone, Feb. 14, 2025



```
In [16]: # TEST CONE FLOW SCRIPT PP6, New Cone
# Foreline Stabilized at 350c and 40psi before running sc

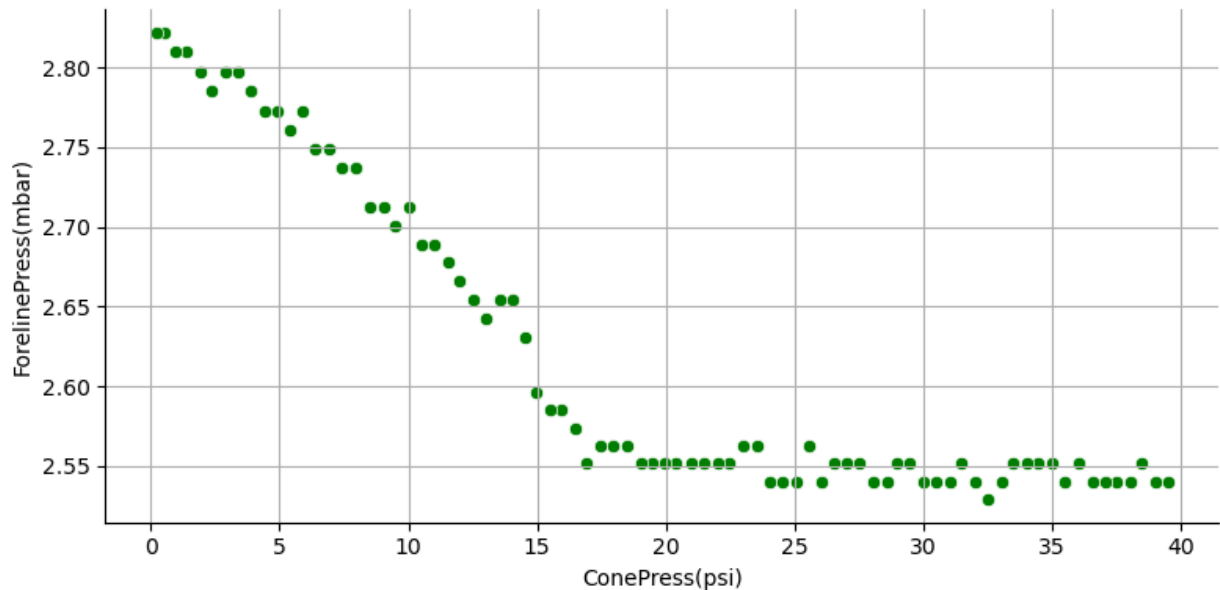
fn = 'C:\\Users\\[REDACTED]\\BCfold

df = pd.read_csv(fn)
print(df.columns)

fig = sns.relplot(df,x = 'ConePress(psi)',y='ForelinePress(mbar)', kind = 'scatter', h
plt.suptitle('Test Cone Flow Script, PP6, New Cone, Feb. 14, 2025',y=1.1)

for ax in fig.axes.flatten():
    ax.grid()

Index(['ConePress(psi)', 'ForelinePress(mbar)', 'Instr.SN:1234',
       'ConeTemp:350C '],
      dtype='object')
```



```
In [17]: # Foreline Pressure v.s. Desolvation Pressure Plot,

fn = 'C:\\Users\\[REDACTED]\\BCfolder

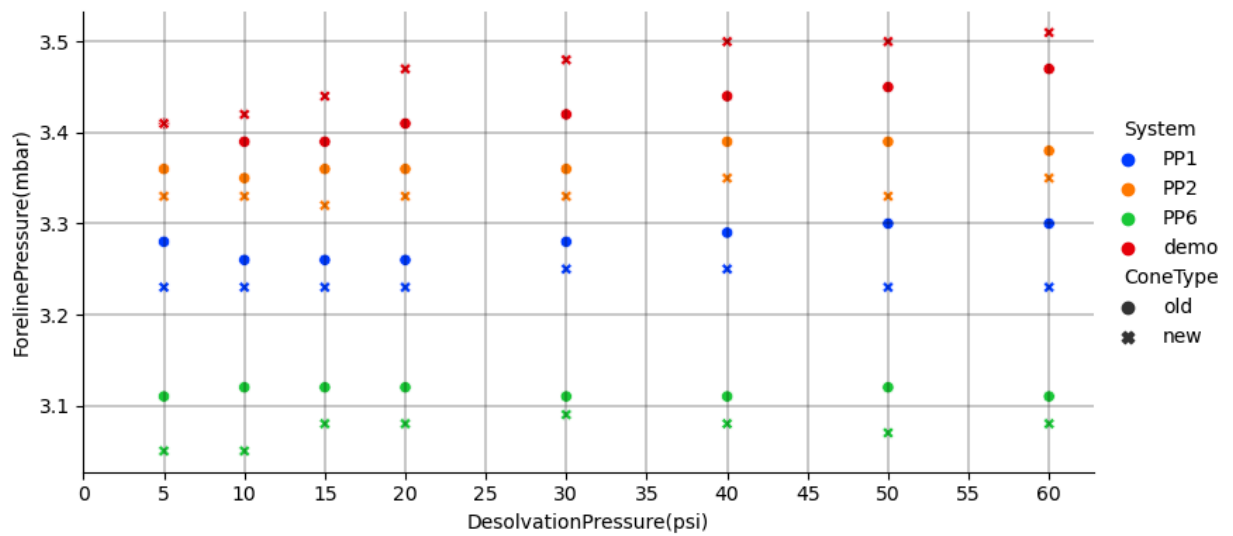
df = pd.read_csv(fn)
pp1 = df[df['ConeType'] == 'old']
print(df.columns)

fig = sns.relplot(df, x='DesolvationPressure(psi)', y='ForelinePressure(mbar)', palette='magma',
plt.suptitle('Foreline Pressure vs. Desolvation Pressure',y=1.1, x=.46)

for ax in fig.axes.flatten():
    ax.grid(color = 'black', linewidth =.3)
    ax.set_xticks(np.arange(0, 61, 5))
    # ax.set_yticks(np.arange(0, 3.6, .25))

Index(['DesolvationPressure(psi)', 'NetFlow(SLPM)', 'ForelinePressure(mbar)',
      'ConeType', 'System'],
      dtype='object')
```

Foreline Pressure vs. Desolvation Pressure



```
In [46]: # TEST CONE FLOW SCRIPT Demo, Both Cones
# Foreline Stabilized at 350c and 40psi before running sc

fn = 'C:\\Users\\[REDACTED]\\BCfold

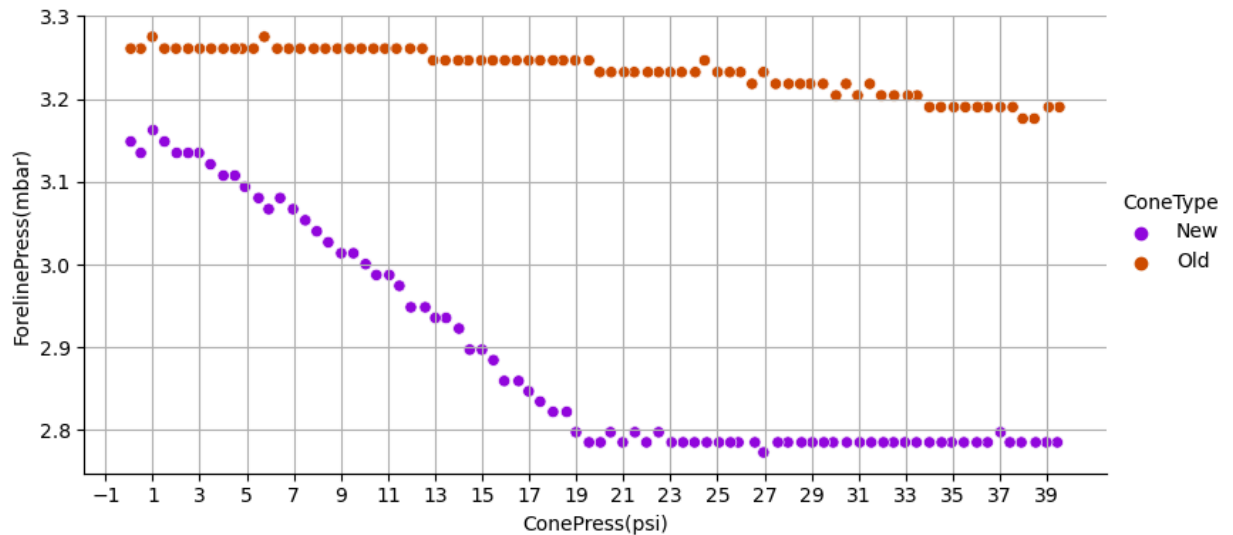
df = pd.read_csv(fn)
print(df.columns)

fig = sns.relplot(df, x = 'ConePress(psi)', y='ForelinePress(mbar)', hue = 'ConeType', k
plt.suptitle('Test Cone Flow Script, DemoLab, Both Cones', y=1.1)

for ax in fig.axes.flatten():
    ax.set_xticks(np.arange(-1, 40, 2))
    ax.grid()
```

Index(['ConePress(psi)', 'ForelinePress(mbar)', 'ConeType'], dtype='object')

Test Cone Flow Script, DemoLab, Both Cones



```
In [19]: # TEST CONE FLOW SCRIPT PP1, Both Cones
# Foreline Stabilized at 350c and 40psi before running sc
```

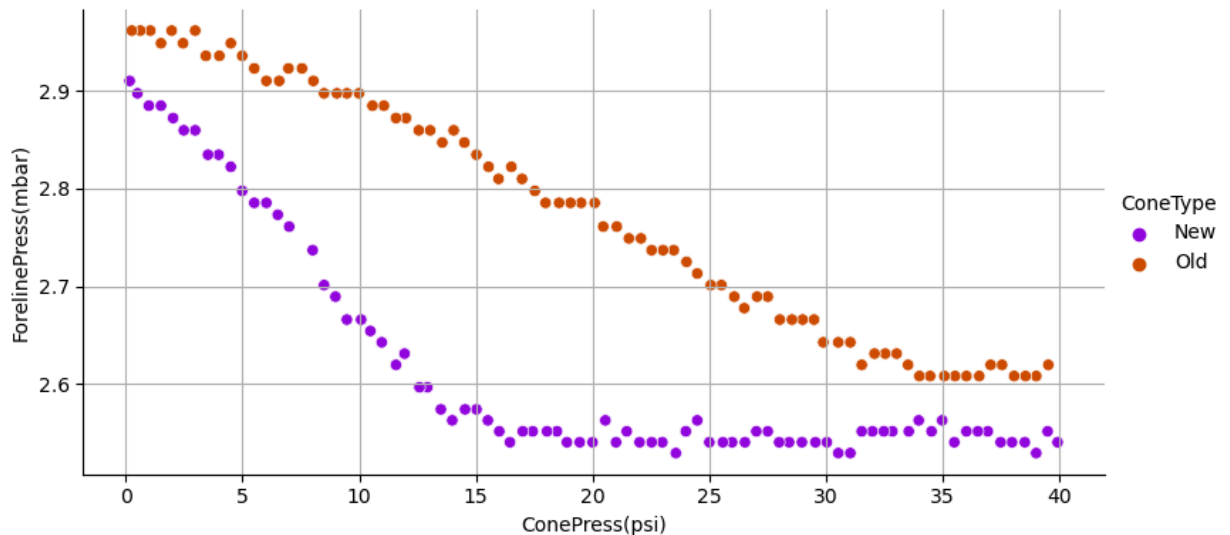
```
fn = 'C:\\Users\\[REDACTED]\\.BCfold

df = pd.read_csv(fn)
print(df.columns)

fig = sns.relplot(df,x = 'ConePress(psi)',y='ForelinePress(mbar)', hue = 'ConeType', k
plt.suptitle('Test Cone Flow Script, PP1, Both Cones',y=1.1)

for ax in fig.axes.flatten():
    ax.grid()
```

Index(['ConePress(psi)', 'ForelinePress(mbar)', 'ConeType'], dtype='object')
Test Cone Flow Script, PP1, Both Cones



```
In [42]: # TEST CONE FLOW SCRIPT PP2, Both Cones
# Foreline Stabilized at 350c and 40psi before running sc

fn = 'C:\\Users\\[REDACTED]\\.BCfold

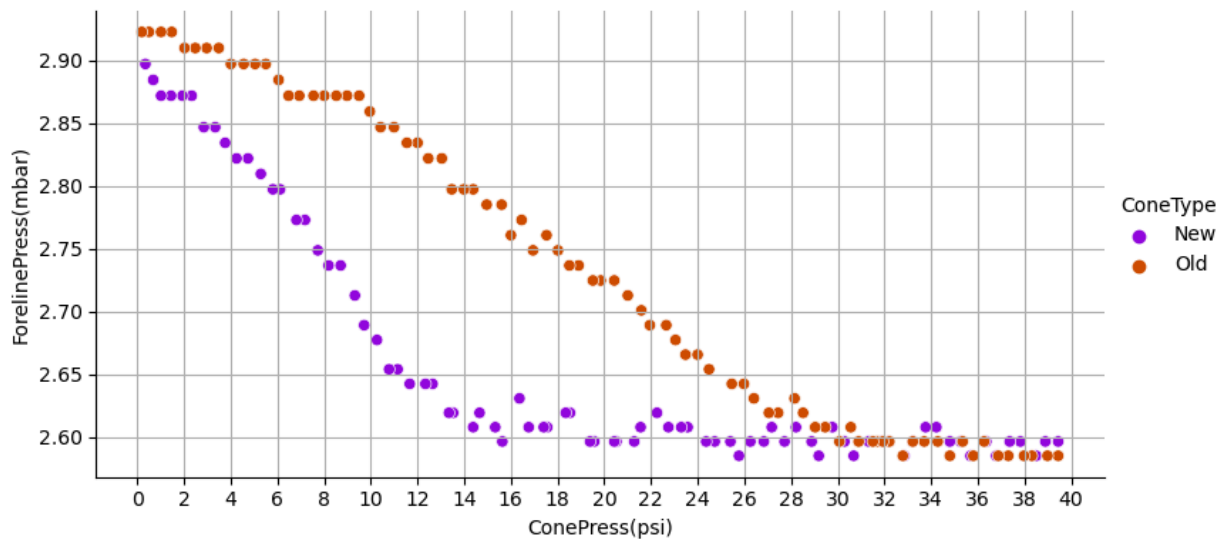
df = pd.read_csv(fn)
print(df.columns)

fig = sns.relplot(df,x = 'ConePress(psi)',y='ForelinePress(mbar)', hue = 'ConeType', k
plt.suptitle('Test Cone Flow Script, PP2, Both Cones',y=1.1)

for ax in fig.axes.flatten():
    ax.set_xticks(np.arange(0, 41, 2))
    ax.grid()
```

Index(['ConePress(psi)', 'ForelinePress(mbar)', 'ConeType'], dtype='object')

Test Cone Flow Script, PP2, Both Cones



```
In [21]: # TEST CONE FLOW SCRIPT PP6, Both Cones
# Foreline Stabilized at 350c and 40psi before running sc

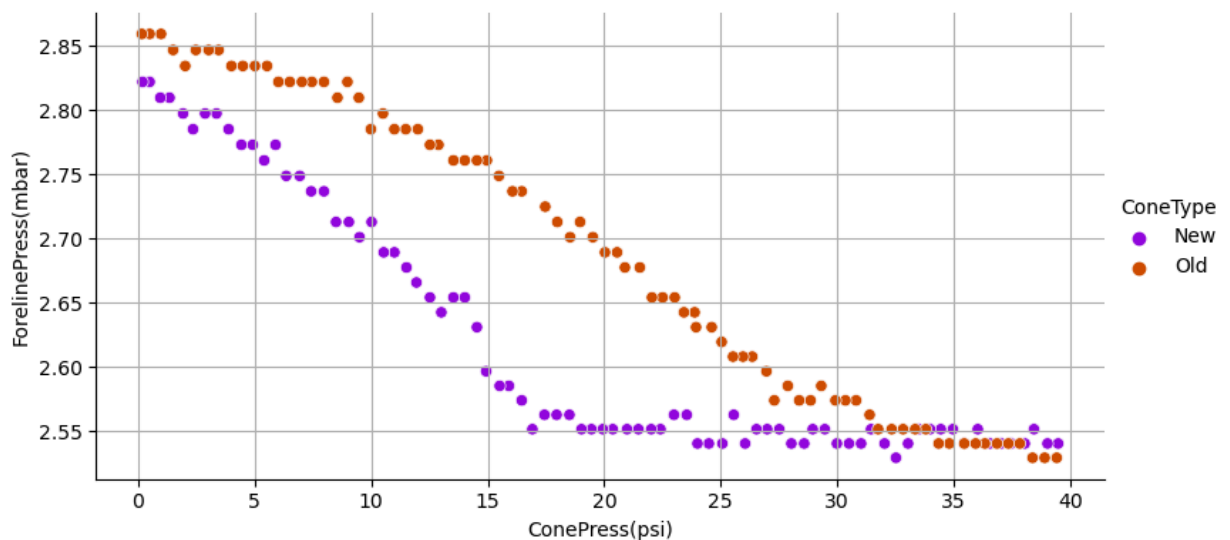
fn = 'C:\\Users\\[REDACTED]\\BCfold

df = pd.read_csv(fn)
print(df.columns)

fig = sns.relplot(df, x = 'ConePress(psi)', y='ForelinePress(mbar)', hue = 'ConeType', k
plt.suptitle('Test Cone Flow Script, PP6, Both Cones', y=1.1)

for ax in fig.axes.flatten():
    ax.grid()
```

Index(['ConePress(psi)', 'ForelinePress(mbar)', 'ConeType'], dtype='object')
Test Cone Flow Script, PP6, Both Cones



```
In [38]: fn = 'C:\\Users\\[REDACTED]\\BCfold

df = pd.read_csv(fn)
dfdemo = df[df['System'] == 'Demo']
```

```
print(df.columns)
```

```
fig = sns.relplot(df,x = 'DesolvationPressure(psi)',y='NetFlow(SLPM)', hue = 'System',  
plt.suptitle('NetFlow v.s. DesolvationPressure, ConeTemp = 350c, ExOFF',y=1.1)
```

```
for ax in fig.axes.flatten():  
    ax.set_xticks(np.arange(-1, 62, 2))  
    ax.set_yticks(np.arange(-10, 6, 1))  
    ax.grid()
```

```
Index(['DesolvationPressure(psi)', 'NetFlow(SLPM)', 'Foreline(mbar)',  
      'System'],  
      dtype='object')
```

NetFlow v.s. DesolvationPressure, ConeTemp = 350c, ExOFF

