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Supplement of

Exploring the distance between nitrogen and phosphorus limitation in mesotrophic surface waters using a sensitive bioassay

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Matlab code used to fit the APA response surfaces and generate graphs of the type shown in Figs. 2 A and B.

```
 For use in other contexts one will need to modify
   1. The two vectors AddedP and AddedN, giving the added concentrations of P and N, respectively.
   2. The vector APAmeasured of measured APA-values.

cla
% Initial parameter guesses
A = 130.1799155                 %APA without extra production on N
B = 1.950694468                 %Background
k = 0       %APA produced per µmol/L added N NB! NOT FITTED
r = 43.02415989                 % Slope of fitted border line µmol N:µmol P
s = 62.87095762                 %steepness of fitted response surface
No = -0.549424261               % Intersect of border line with N-axis µmol-N/L
Po =    0.012770133             % Intersect of border line with P-axis µmol-P/L
par=[A B r k s No];


AddedP=[0 0.015 0.03 0.045 0.06 0.075 0.09 0.105]   % Added concentrations of PO4
AddedN=[0 0.3 0.6 0.9 1.2 1.5 1.8 2.1]              % Added concentrations of NH4
NrofPadds = length(AddedP)
NrofNadds = length(AddedN)

P=[0 0 0 0 0 0 0 0 0.015 0.015 0.015 0.015 0.015 0.015 0.015 0.015 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03
0.045 0.045 0.045 0.045 0.045 0.045 0.045 0.045 0.06 0.06 0.06 0.06 0.06 0.06 0.06 0.06 0.075 0.075 0.075
0.075 0.075 0.075 0.075 0.075 0.09 0.09 0.09 0.09 0.09 0.09 0.09 0.09 0.105 0.105 0.105 0.105 0.105 0.105
0.105 0.105]
N= [AddedN AddedN AddedN AddedN AddedN AddedN AddedN AddedN]
APAmeasured = [72.79761905  95.14190476 105.3511905 124.9847619 114.3890476 111.9697619 118.752619
121.5654762 42.77761905 93.90261905 85.17761905 93.82119048 91.81761905 120.5990476 106.6133333 115.4547619
26.6497619  33.64047619 53.19190476 65.38190476 79.57190476 91.04261905 114.257619  114.917619 16.8697619
32.88404762 26.7247619  48.00047619 65.89619048 66.56119048 98.4497619  72.16047619 3.177619048 11.96547619
17.22190476 14.71404762 27.85047619 29.10404762 52.87333333 51.79047619 0.486190476 1.279761905 -2.020238095
0.349047619 5.314761905 11.9197619  8.079047619 36.41261905  0.821666667    -2.050238095    -1.673095238
0.078333333 -0.420952381    11.71261905 21.26904762 34.26619048 -0.661666667    -0.275238095    -0.883095238
-0.060238095    -1.518809524    -0.618809524    5.439761905 3.502619048]
SSQ=0;
for i=1:64
```

```
    SSQ=SSQ+(APAmeasured(i)-mean(APAmeasured))^2;
end

figure(1)
colormap=('Summer');
hold off
% Dr measured points
scatter3(P,N,APAmeasured,'filled','r')

% Draw axes dependind on whether N- limited (positive No) or P-limited
% (negative No)
Fontsize = 12;
xlim([min([-0.001 Po*1.1]) 0.110]);
ylim([min([-0.01 No*1.1]) 2.15])
zlim([-10 round(max(APAmeasured)*10)/10])
xlabel('\fontname{Arial}Added P (\fontname{Symbol}m\fontname{Arial}M)','FontSize',Fontsize)
ylabel('\fontname{Arial}Added N (\fontname{Symbol}m\fontname{Arial}M)','FontSize',Fontsize)
zlabel('\fontname{Arial}APA (RFU hr^-^1)','FontSize',Fontsize)

hold
view(20,20);

%fit surface to data
x =P';
y = N';
z=APAmeasured';

myfittype=fittype('A/(1+exp(s*(1/sqrt(1+r^2))*(r*x+No-y)))-B','dependent',{'z'},'independent',{'x'
'y'},'coefficients',{'A' 's' 'r' 'No' 'B'});
startpoints = [A s r No B];
myfit = fit([P' N'],APAmeasured',myfittype,'Start',startpoints,'Robust','on');

A=myfit.A;
r=myfit.r;
s=myfit.s;
No=myfit.No;
B=myfit.B;
Po=-myfit.No/myfit.r;

par =[A B k r s No Po];
```

```
%Draw droplines
RSSQ=0;
for l=1:8
    for c=1:8
    p(l,c)=P((c-1)*8+1);
    n(l,c)= N(l);
    E(l,c)= APA(p(l,c),n(l,c),par);
    resid=APAmeasured(l+8*(c-1))-E(l,c);
    RSSQ=RSSQ+resid*resid;
    line([p(l,c) p(l,c)],[n(l,c) n(l,c)],[E(l,c) APAmeasured(l+8*(c-1))],'LineStyle','-
','LineWidth',2,'Marker','.');
    hold
    end %for
end %for
RSQ=1-(RSSQ/SSQ);
line([0 0.110 0.110 0 0],[0 0 2.15 2.15 min(ylim)],[0 0 0 0 0],'color','Black','LineWidth',1)
line([0 (2.15-No)/r],[No 2.15],[0 0],'color','Black','LineWidth',2,'LineStyle','-')
%line([0 0],[0 0],zlim, 'color','Black','Linewidth',1)

%draw surface
[p n]= meshgrid(0:0.110/100:0.110,0:2.15/100:2.15);

for i=1:101
    for j=1:101
    %p(i,j)=P((j-1)*8+1);
    %n(i,j)= N(i);
    Z(i,j)= APA(p(i,j),n(i,j),par);
    end %for
end %for
% colormap=('Cool');
surf(p,n,Z,'FaceAlpha',0.4,'LineStyle','none');
%'Facecolor',[0.5 0.5 0.5],'LineStyle','none')
%surfnorm(p,n,Z)
%contour(p,n,Z)

for i=1:11
    y1(i)=2.15*(i-1)/10;
    x1(i)=(y1(i)-No)/r;
    z1(i)=APA(x1(i),y1(i),par);
```

```
end
line(x1,y1,z1,'color','Black','LineWidth',1,'LineStyle','-.')
line([max([-No/r 0]) max([-No/r 0])],[max([0 No]) max([0 No])],[0 APA(max([-No/r 0]),max([0
No]),par)],'color','Black','Linestyle','-.','LineWidth',1);
line([(2.15-No)/r (2.15-No)/r],[2.15 2.15],[0 APA((2.15-No)/r,2.15,par)],'color','Black','Linestyle','-.');
text(0.1,1,100,strcat('R^{2}=',num2str(round(RSQ*1000)/1000)),'FontSize',Fontsize)
text(0,No,-5,strcat('No=',num2str(No,2)),'FontSize',Fontsize-1)
text((-No/r)+0.001,0,10,strcat('Po=',num2str(Po,3)),'FontSize',Fontsize-1)

myfit
Po=-No/r
RSQ
```

Data:

Addition vectors:

For Espegrend samples:

```
AddedP=[0 0.015 0.03 0.045 0.06 0.075 0.09 0.105]   % Added concentrations of PO4
AddedN=[0 0.3 0.6 0.9 1.2 1.5 1.8 2.1]              % Added concentrations of NH4
```

For Tvärminne samples:

```
AddedP=[0 0.032258065 0.064516129 0.096774194 0.129032258 0.161290323 0.193548387 0.225806452 0.258064516
0.290322581]
AddedN=[0   0.107142857 0.214285714 0.321428571 0.428571429 0.535714286 0.642857143 0.75 0.857142857
0.964285714]
```

Data:

For Espegrend samples:

772 Mesocosm Day 1

```
APAmeasured = [72.79761905  95.14190476 105.3511905 124.9847619 114.3890476 111.9697619 118.752619
121.5654762 42.77761905 93.90261905 85.17761905 93.82119048 91.81761905 120.5990476 106.6133333 115.4547619
26.6497619  33.64047619 53.19190476 65.38190476 79.57190476 91.04261905 114.257619  114.917619 16.8697619
32.88404762 26.7247619  48.00047619 65.89619048 66.56119048 98.4497619  72.16047619 3.177619048 11.96547619
17.22190476 14.71404762 27.85047619 29.10404762 52.87333333 51.79047619 0.486190476 1.279761905 -2.020238095
0.349047619 5.314761905 11.9197619  8.079047619 36.41261905  0.821666667    -2.050238095    -1.673095238
0.078333333 -0.420952381    11.71261905 21.26904762 34.26619048 -0.661666667    -0.275238095    -0.883095238
-0.060238095    -1.518809524    -0.618809524    5.439761905 3.502619048]
```

774 Mesocosm Day 2

```
APAmeasured = [108.8    125.5457143 135.7164286 144.8985714 3.45    124.7392857 134.47  171.0607143
63.20142857 120.1185714 122.4442857 111.0414286 109.0142857 131.7335714 123.5664286 146.8328571 50.07714286
```

```
70.21214286 87.57857143 92.55142857 178.5807143 119.8871429 30.36857143 139.8421429 20.81428571 49.22
39.96928571 65.98428571 99.14285714 107.655 143.7385714 97.09714286 4.005   22.26928571 37.42928571 29.405
45.54857143 66.65357143 87.64785714 100.1035714 1.322857143 6.220714286 2.928571429 18.22642857 25.98642857
54.12857143 33.19428571 76.43285714 -0.205  -0.613571429    0.813571429 10.05285714 12.56142857 41.71142857
53.71571429 71.18 -0.882142857  -2.123571429    -2.567142857    3.534285714 0.456428571 21.87285714
33.12357143 37.79714286]
```

776 Mesocosm Day 3

```
APAmeasured = [105.3166667  140.1302381 148.1238095 35.43880952 91.57166667 141.9230952 137.7102381
153.3530952 16.59595238 102.7430952 104.7466667 95.74380952 94.70238095 125.2352381 132.8538095 162.7830952
38.70880952 54.75452381 64.71380952 84.36952381 101.6438095 54.15380952 170.6995238 131.9895238 15.2902381
29.22166667 30.3552381  50.23380952 69.30952381 97.11238095 138.337381  119.677381 5.750952381  18.25595238
27.06380952 18.13880952 32.69452381 55.36166667 87.8202381  99.15880952 1.930238095 6.485952381 6.433809524
12.78666667 19.97809524 41.10166667 49.8252381  69.07238095 -0.19047619 -1.414047619    2.682380952
9.966666667 9.921666667 29.11166667 45.42738095 64.2952381  2.675952381 0.620952381 0.50452381  3.835952381
1.073809524 22.03738095 27.41238095 27.33452381]
```

778 Mesocosm Day 4

```
APAmeasured = [67.98380952  79.15880952 121.9702381 89.48809524 94.48809524 101.2030952 114.0766667
119.9830952 37.15809524 69.08380952 76.92738095 83.24738095 71.92738095 116.2102381 100.0009524 110.4638095
26.77166667 39.64952381 45.90595238 57.21380952 72.6352381  83.49809524 146.062381  114.8166667 9.806666667
20.64166667 21.64380952 29.9602381  40.8602381  79.54809524 97.04238095 87.28952381 0.645952381 10.6252381
15.19095238 30.47309524 19.77952381 39.94309524 61.5402381  73.02095238 -2.643333333    0.641666667
1.500952381 6.458809524 9.378809524 26.95595238 32.99809524 55.92166667 -2.121190476    -2.003333333    -
0.731904762    3.676666667 3.736666667 21.62738095 20.19166667 53.28452381 -2.28547619 -3.371904762    -
2.83547619 0.116666667 -1.356904762    13.56952381 14.49666667 32.51952381]
```

780 Mesocosm Day 4.5

```
APAmeasured = [34.9702381   57.78666667 54.90952381 60.2802381  75.90452381 77.95595238 107.0738095
86.98166667 23.68095238 46.37880952 39.17738095 44.25952381 54.7802381  95.68666667 61.90238095 78.89595238
13.36309524 34.42166667 19.5152381  27.98952381 41.16309524 55.3102381  91.74738095 95.26666667 3.050952381
6.230238095 9.250952381 23.98738095 42.56380952 65.29666667 63.95880952 68.39380952 -0.311190476
4.820238095 9.763095238 19.54238095 12.31166667 25.05880952 33.7802381  41.18952381 -1.05047619 1.743809524
3.080238095 7.697380952 10.70880952 31.15666667 29.10095238 40.66595238 -1.59547619 -1.644047619
0.063095238 2.851666667 3.908095238 11.13666667 17.83666667 22.24452381 -1.802619048    -0.43547619 -
0.76047619 0.455952381 0.09952381  6.496666667 10.19309524 16.71595238]
```

781 Mesocosm Day 5

```
APAmeasured = [34.9702381   57.78666667 54.90952381 60.2802381  75.90452381 77.95595238 107.0738095
86.98166667 23.68095238 46.37880952 39.17738095 44.25952381 54.7802381  95.68666667 61.90238095 78.89595238
13.36309524 34.42166667 19.5152381  27.98952381 41.16309524 55.3102381  91.74738095 95.26666667 3.050952381
6.230238095 9.250952381 23.98738095 42.56380952 65.29666667 63.95880952 68.39380952 -0.311190476
4.820238095 9.763095238 19.54238095 12.31166667 25.05880952 33.7802381  41.18952381 -1.05047619 1.743809524
3.080238095 7.697380952 10.70880952 31.15666667 29.10095238 40.66595238 -1.59547619 -1.644047619
0.063095238 2.851666667 3.908095238 11.13666667 17.83666667 22.24452381 -1.802619048    -0.43547619 -
0.76047619 0.455952381 0.09952381  6.496666667 10.19309524 16.71595238]
```

786 Kviturspollen Day 2

```
APAmeasured = [54.06071429  78.27571429 92.22571429 90.77857143 90.28142857 116.1335714 87.125  114.87
54.99   79.58142857 95.49785714 88.76   95.09071429 118.7992857 94.42928571 115.6285714 39.91642857
68.76642857 85.31571429 87.49285714 99.88928571 101.8807143 108.9878571 117.2764286 27.165  59.23571429
70.33285714 88.205  96.34071429 104.1885714 111.2335714 116.0721429 15.48785714 43.65928571 58.39142857
78.535  102.84  92.20357143 102.8221429 118.6171429 9.030714286 26.04714286 44.61714286 64.25428571
89.60785714 104.1578571 97.45642857 113.0314286 8.774285714 18.06285714 33.19714286 49.22428571 77.33857143
92.89285714 94.76142857 107.165 15.07785714 21.28071429 35.98857143 52.74642857 74.315  92.50428571
112.4057143 129.3321429]
```

788 Kviturspollen Day 3

```
APAmeasured = [28.14285714  49.62857143 72.93142857 86.58285714 93.80785714 115.6185714 103.2271429
127.2507143 27.61928571 52.55214286 62.97428571 72.72785714 98.45142857 116.04  117.9692857 142.6692857
22.55642857 30.36857143 50.62642857 70.88428571 85.65928571 90.35642857 108.415 132.6035714 13.41285714
28.95071429 43.63928571 54.56428571 80.40142857 94.12928571 108.7264286 115.1892857 11.07071429 18.94571429
30.52857143 45.59857143 65.72285714 82.47214286 98.90928571 132.1264286 4.032857143 14.07785714 22.74071429
32.04785714 47.74428571 67.42857143 74.19   91.99857143 4.674285714 8.415714286 16.48357143 23.62142857
44.50428571 58.94571429 78.15857143 92.84071429 9.930714286 13.465  19.80071429 28.06357143 42.47
53.49357143 68.79571429 85.65357143]
```

790 Kviturspollen Day 4

```
APAmeasured = [32.43738095  52.79809524 105.0338095 81.25095238 125.4445238 148.5945238 154.7630952
183.5938095 22.04238095 49.39452381 58.4052381  69.57738095 83.34952381 113.657381  133.7180952 141.5545238
17.69738095 25.22738095 44.51595238 59.51095238 69.54238095 99.43309524 106.012381  168.0038095 11.2952381
```

```
23.73666667 26.2652381  41.22952381 58.89666667 70.47595238 69.89809524 125.1180952 13.32309524 13.00452381
30.16166667 33.57666667 50.79095238 80.94380952 101.9116667 107.8102381 3.930952381 10.6302381  20.82380952
29.66166667 32.12380952 41.20595238 73.24595238 80.24166667 4.822380952 6.752380952 18.87309524 23.38738095
46.56238095 47.09809524 71.35880952 69.91309524 8.770238095 10.65238095 18.13666667 19.68666667 31.8252381
38.02166667 55.79238095 62.8552381]
```

792 Kviturspollen Day 5

```
APAmeasured = [18.77904762  39.78190476 70.66619048 60.19761905 121.1997619 126.8783333 177.3783333
187.6190476 16.95047619 27.01404762 36.29190476 44.98761905 77.07404762 113.4340476 137.5083333 169.6461905
11.58619048 20.69404762 25.24404762 31.99690476 56.78261905 78.1447619  109.0397619 133.2004762 9.544761905
23.1147619  15.54261905 35.22404762 76.1047619  60.05047619 80.4397619  119.3133333 5.519047619 10.4697619
15.62333333 41.75047619 29.6247619  45.7947619  67.68190476 97.58333333 9.034047619 9.993333333 15.05333333
32.49047619 23.21333333 31.48833333 50.15333333 66.27761905 1.608333333 3.606904762 11.50047619 15.59547619
32.14619048 29.1747619  39.13261905 49.11404762 4.202619048 3.179047619 10.84333333 18.08333333 24.43190476
20.91047619 48.68690476 44.07404762]
```

794 Kviturspollen Day 7

```
APAmeasured = [30.52309524  41.9902381  103.722381  54.06952381 85.32380952 112.6788095 222.852381
213.6459524 11.26809524 22.9252381  34.32095238 42.2052381  57.48095238 98.09952381 136.9252381 131.7788095
7.576666667 18.4802381  31.89380952 42.99738095 56.05738095 55.92595238 87.13595238 149.487381  7.515952381
16.31309524 19.46309524 36.5852381  117.312381  55.35809524 90.39166667 111.3559524 6.253095238 5.753095238
12.48095238 23.73952381 20.86952381 36.69809524 76.66095238 142.5030952 9.331666667 9.030952381 18.7052381
38.97666667 21.39880952 31.42238095 62.01452381 92.52595238 2.500952381 2.673095238 8.672380952 13.16880952
14.7102381  26.25952381 25.55238095 38.62309524 6.175952381 5.385952381 18.37595238 18.05952381 18.46166667
30.92595238 49.6402381  36.40166667]
```

Tvärminne

M1

```
APAmeasured = [ -0.1426 -0.0681 -0.0485 1.2545  1.519   3.0298  2.7167  2.30    4.2702  3.5697  -0.1178 -
0.0788 0.0009  -0.0261 1.45    2.045   2.2847  2.59    2.8255  3.3273  -0.0678 -0.1168 -0.1429 0.0696
0.4485  1.4694  2.3504  2.22    2.7182  2.8453  -0.0717 0.016   -0.0731 -0.0304 -0.0935 0.6575  0.2527  2.33
2.6118  3.1993  -0.162  -0.0833 -0.1198 -0.0969 -0.0352 0.0953  0.6248  2.13    1.7654  2.9256  -0.1102 -
0.1216 -0.1361 -0.1211 -0.0603 -0.105  0.291   1.53    0.1174  3.1691  -0.1476 -0.0654 -0.1826 -0.0703 -
0.0924 0.1277  0.0415  0.15    0.3361  2.4445  -0.1131 -0.0398 -0.1283 -0.1235 -0.1023 -0.0967 -0.0914 0.07
```

```
0.2113  0.9546  -0.1353 -0.1238 -0.1815 -0.0683 -0.1188 -0.1115 -0.0484 0.08    0.1245  0.5877  -0.1098 -
0.0715 -0.0322 -0.0923 -0.0632 -0.1001 -0.0607 0.04    0.0503  0.4347]
```

M3

```
APAmeasured = [ -0.2479 -0.1859 -0.2019 -0.1461 -0.0064 0.5404  2.0262  2.59    3.3538  4.5679      -0.2722
-0.2133 -0.2996 -0.244  -0.0376 0.3885  0.7227  2.70    2.5539  2.9914  -0.2902 -0.2427 -0.2189 -0.2233 -
0.1763 -0.0157 0.4763  1.15    1.9352  2.9363  -0.2704 -0.2207 -0.2036 -0.2175 -0.2176 -0.1535 0.0825  0.52
1.0298  2.1442  -0.2209 -0.236  -0.2677 -0.2035 -0.2707 -0.1466 -0.0794 0.13    1.0089  1.6768  -0.1963 -
0.2285 -0.2943 -0.2769 -0.2248 -0.2133 -0.1468 0.20    0.3837  0.8837  -0.3124 -0.3364 -0.2741 -0.3347 -
0.2956 -0.1689 -0.2274 -0.09   -0.0044 0.8874  -0.3248 -0.3251 0.1246  -0.1747 -0.2764 -0.2546 -0.1284 -0.02
0.0064  0.2095  -0.2451 -0.3249 -0.2595 -0.2945 -0.2896 -0.2561 -0.2303 -0.09   -0.1077 0.0271  -0.1632 -
0.2317 -0.2128 -0.2367 -0.299  -0.1386 -0.242  -0.24   -0.2128 -0.0629]
```

M6

```
APAmeasured = [-0.1873  -0.1434 -0.2405 -0.214  -0.1057 0.2649  1.2305  1.17    1.0259  1.2432  -0.2994 -
0.2331 -0.1402 -0.2341 -0.0858 0.0957  0.5918  0.86    0.9925  1.1636  -0.2453 -0.104  -0.1902 -0.1383 -
0.0948 -0.0057 0.2783  0.53    0.608   0.8273  -0.18   -0.1623 -0.0139 -0.2424 -0.1386 -0.1576 0.0848  0.42
0.5559  0.9344  -0.257  -0.1291 -0.1332 -0.2097 0.0964  -0.1115 -0.0108 -0.01   0.3029  0.3551  -0.2856 -
0.2214 -0.1836 -0.2263 -0.2469 -0.2985 -0.1408 0.00    0.1089  0.3665  -0.2593 -0.2099 -0.1234 -0.2035 -
0.1423 -0.2413 -0.1238 -0.17   0.002   0.1976  -0.2352 -0.1747 -0.1518 -0.2393 -0.1192 0.0416  -0.2288 -0.18
-0.0391 0.1809  -0.2592 -0.191  -0.1935 -0.2456 -0.1726 -0.1374 -0.1644 -0.23   -0.1416 0.0255  -0.2478 -
0.2147 -0.176  -0.1817 -0.1517 -0.2312 -0.1786 -0.16   -0.0992 -0.1039]
```

M7

```
APAmeasured = [ -0.0882 -0.0937 -0.0939 0.0402  0.317   1.9169  5.8372  5.29    7.1868  8.5562  -0.1463 -
0.063  0.004   0.0167  0.1988  0.7622  2.683   4.06    7.5057  7.2478  -0.1491 -0.1649 -0.0181 -0.0516
0.0629  0.278   0.9876  3.03    6.2855  5.8329  -0.149  -0.0684 -0.0789 -0.1096 -0.0317 0.0223  0.7253  2.13
4.6749  5.2057  -0.1636 -0.1945 -0.1785 -0.0597 -0.1871 0.1051  0.4612  1.34    2.8818  4.2414  -0.1207 -
0.1384 0.0295  -0.0726 -0.1535 -0.0202 0.0451  0.57    1.9933  3.715   -0.1698 -0.1268 0.04    -0.1304 -
0.1271 -0.0432 -0.0131 0.45    1.1891  3.2066  -0.153  -0.0793 -0.1021 -0.1451 -0.1237 -0.129  -0.0614 0.32
0.7333  1.9778  -0.18   -0.1013 -0.0828 -0.024  -0.0706 -0.0292 -0.0383 0.12    0.3081  1.4664  -0.142  -
0.1198 -0.0825 -0.1703 -0.166  0.0892  0.0379  0.00    0.2282  0.8663]
```

Fjord

```
APAmeasured = [-0.3284  -0.1428 -0.1863 -0.286  -0.1898 0.2955 2.5378 6.6943 10.5346 13.7314 -0.1965 -0.2844
-0.2682 -0.2084 -0.1855 -0.1032 1.0731 3.3459 7.3318 10.0224 -0.3 -0.3149 -0.2397 -0.1577 -0.1901 -0.0012
0.2686 1.5207 2.8637 5.7859 -0.2759 -0.3283 -0.1817 -0.2519 -0.2432 -0.2379 -0.0501 0.439 1.894 5.7157 -
0.3154 -0.1594 -0.2141 -0.2472 -0.2171 -0.1053 -0.1934 -0.0438 0.8791 3.1222 -0.169 -0.2083 -0.2228 -0.2581
-0.2218 -0.2226 -0.2099 -0.0517 0.0149 0.5632 -0.2828    -0.2457 -0.1946 -0.2719 -0.2732 -0.1269 -0.2381 -
0.0891 -0.0572 0.0658 -0.3154  -0.146  -0.1767 -0.2424 -0.1329 -0.2408 -0.2046 -0.249  -0.1008 -0.0308 -
0.1932 -0.2316 -0.1736 -0.2578 -0.2424 -0.2306 -0.1439 -0.1621 -0.2484 -0.2036 -0.1715 -0.1778 -0.2092 -
0.2128 -0.0978 -0.2312 -0.2056 -0.255  -0.0516 -0.1359]
```