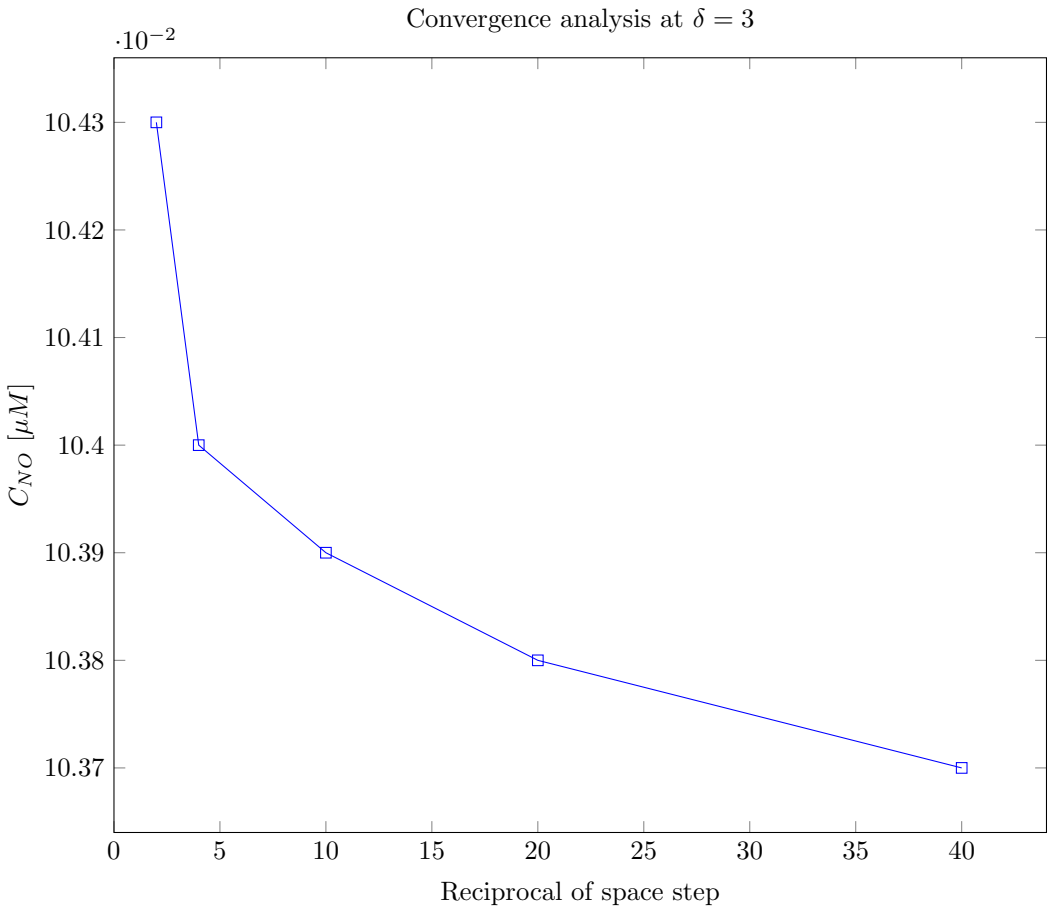
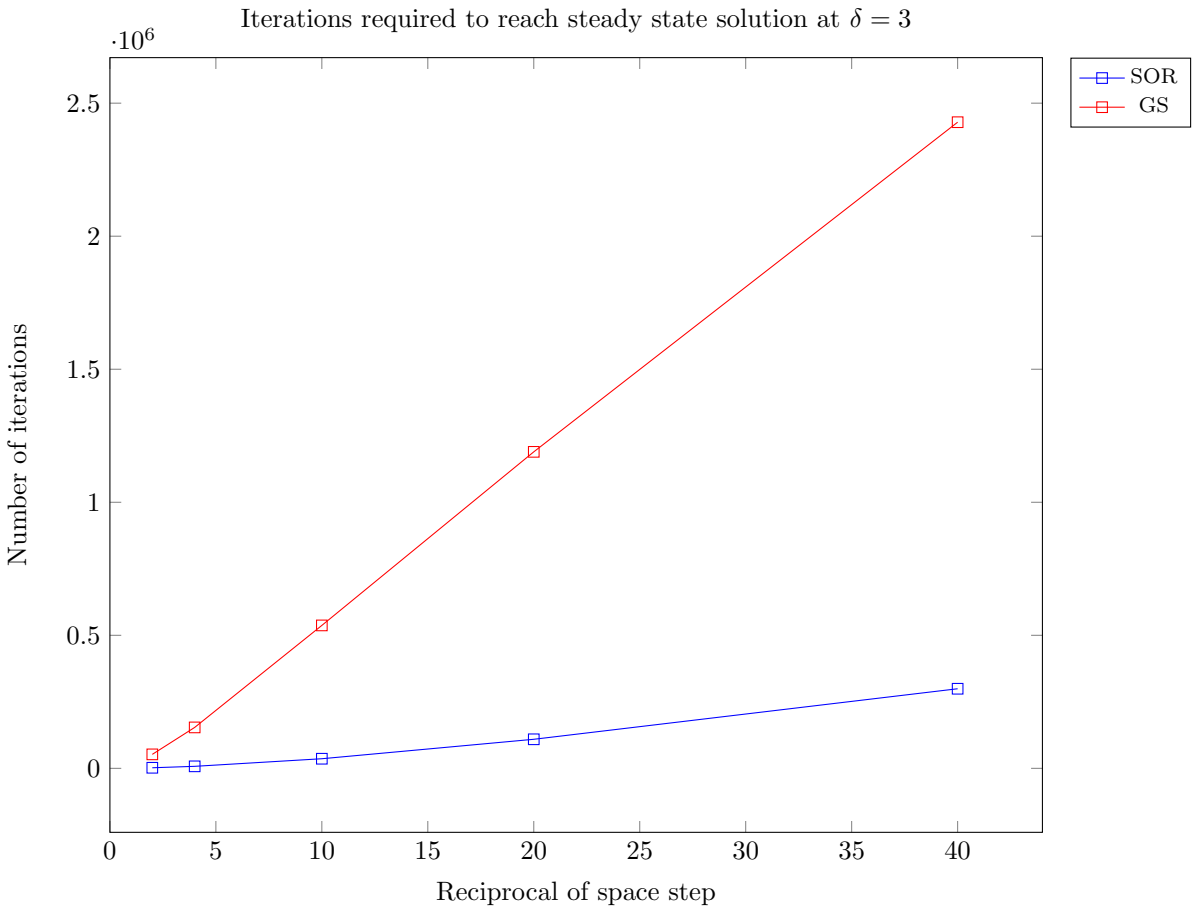
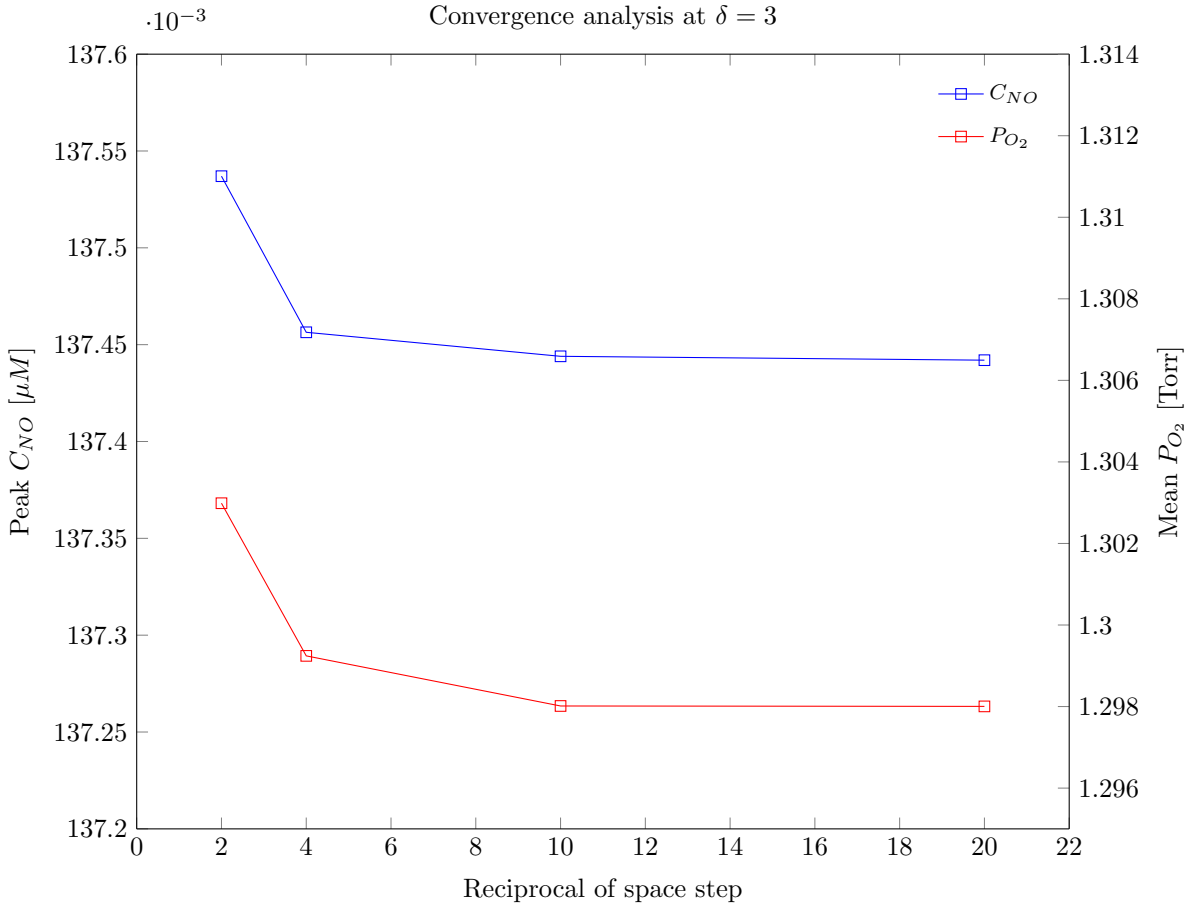
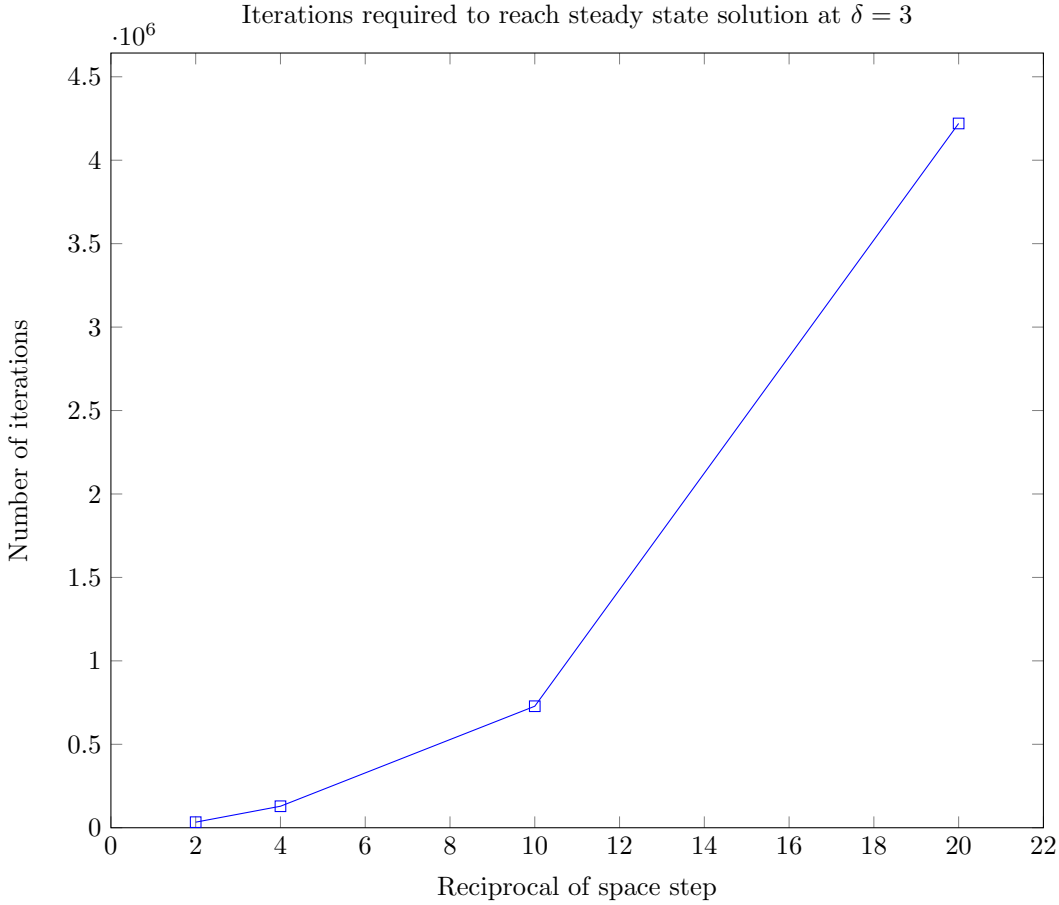

Convergence analysis at $\delta = 3$
$\cdot 10^{-2}$
10.43
10.42
10.41
10.4
10.39
10.38
10.37
C_{NO} $[\mu M]$
0
5
10
15
20
25
30
35
40
Reciprocal of space step

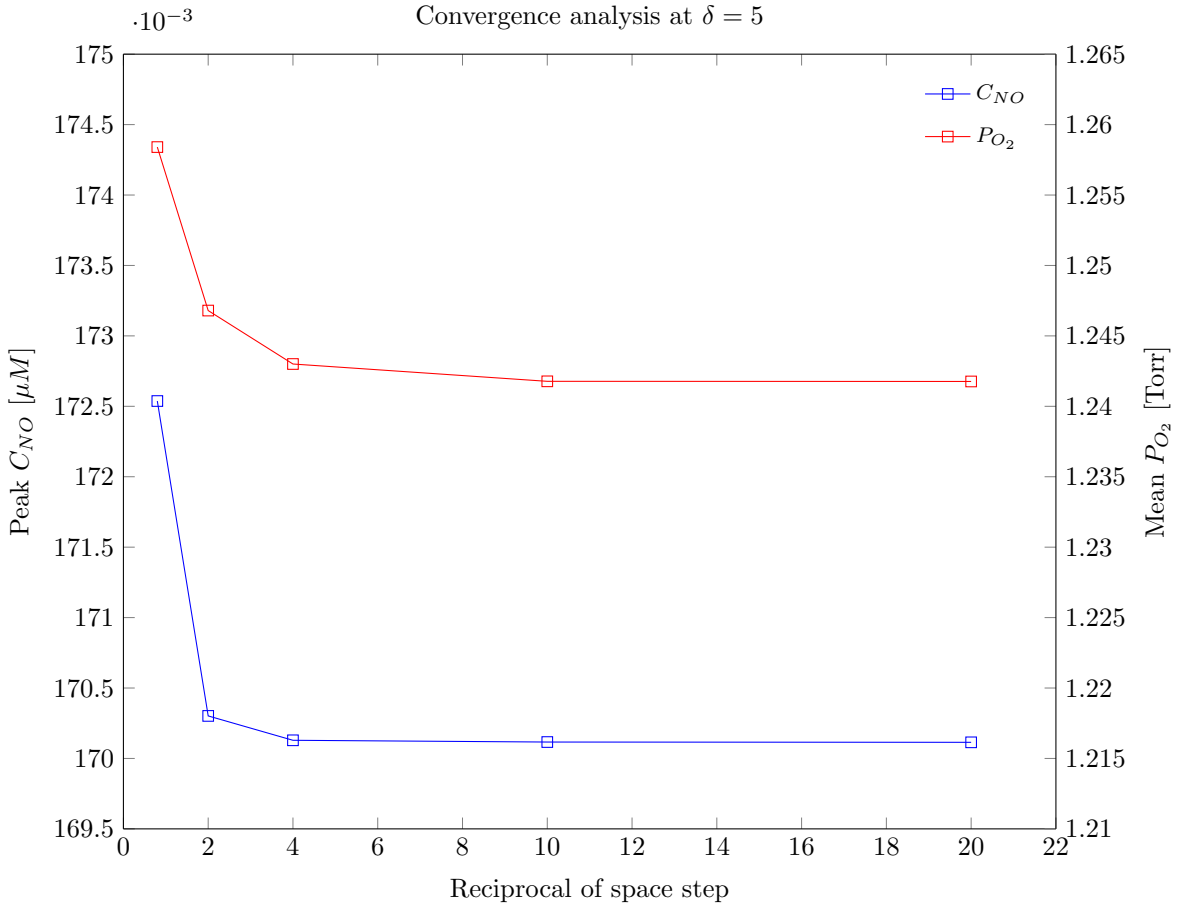

Iterations required to reach steady state solution at $\delta = 3$
$\cdot 10^{6}$
2.5
2
1.5
1
0.5
0
Number of iterations
SOR
GS
0
5
10
15
20
25
30
35
40
Reciprocal of space step

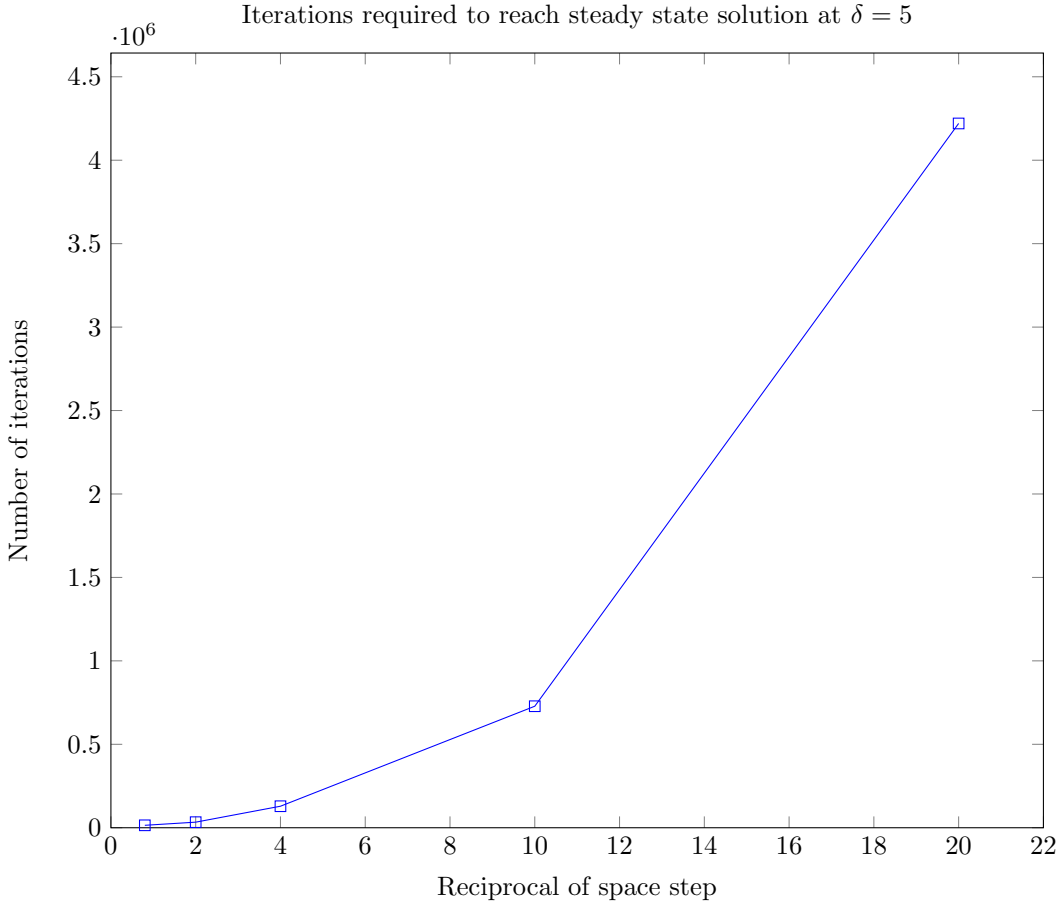
Convergence for large data



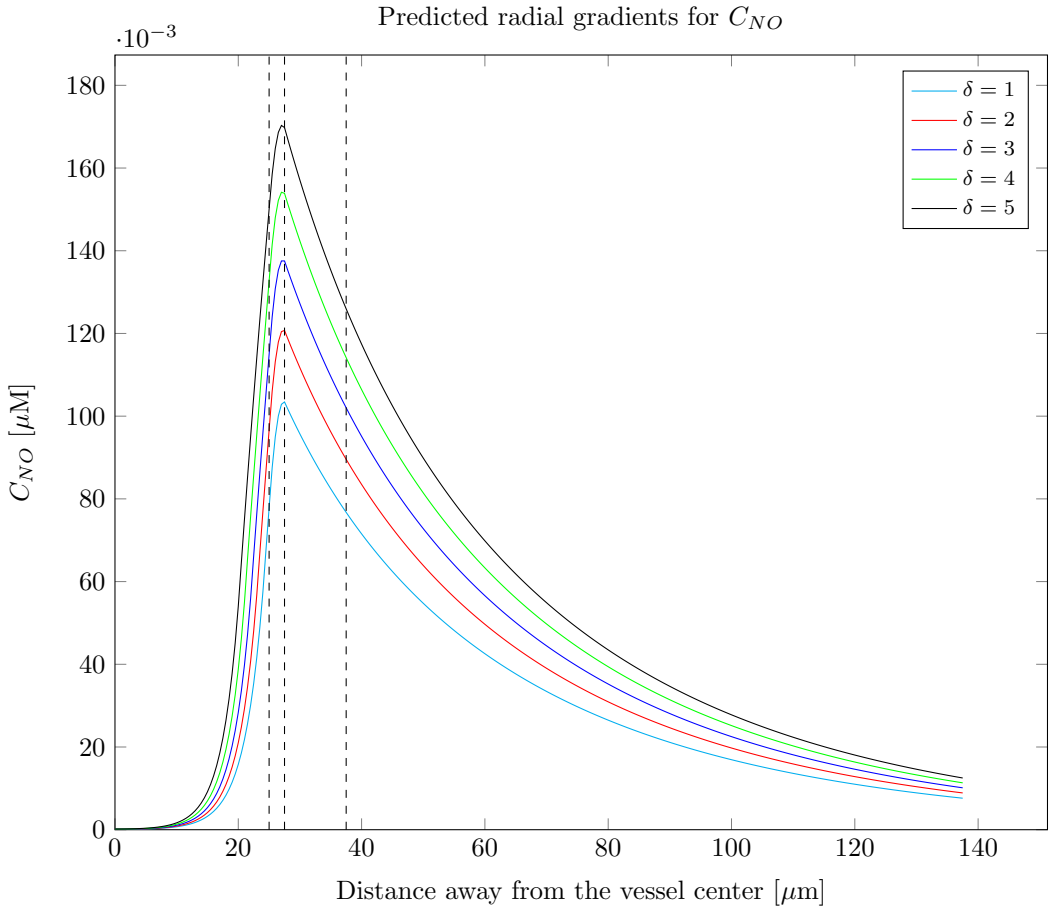


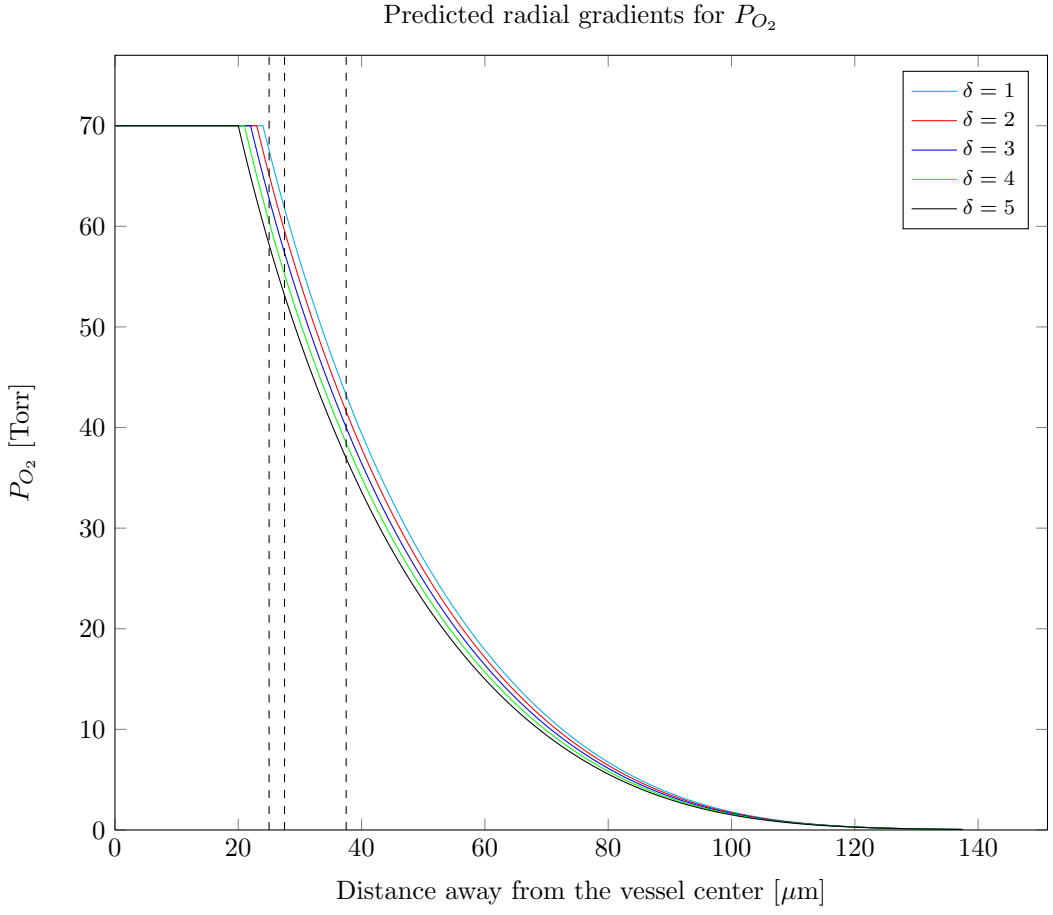
Convergence for large data with very large space step



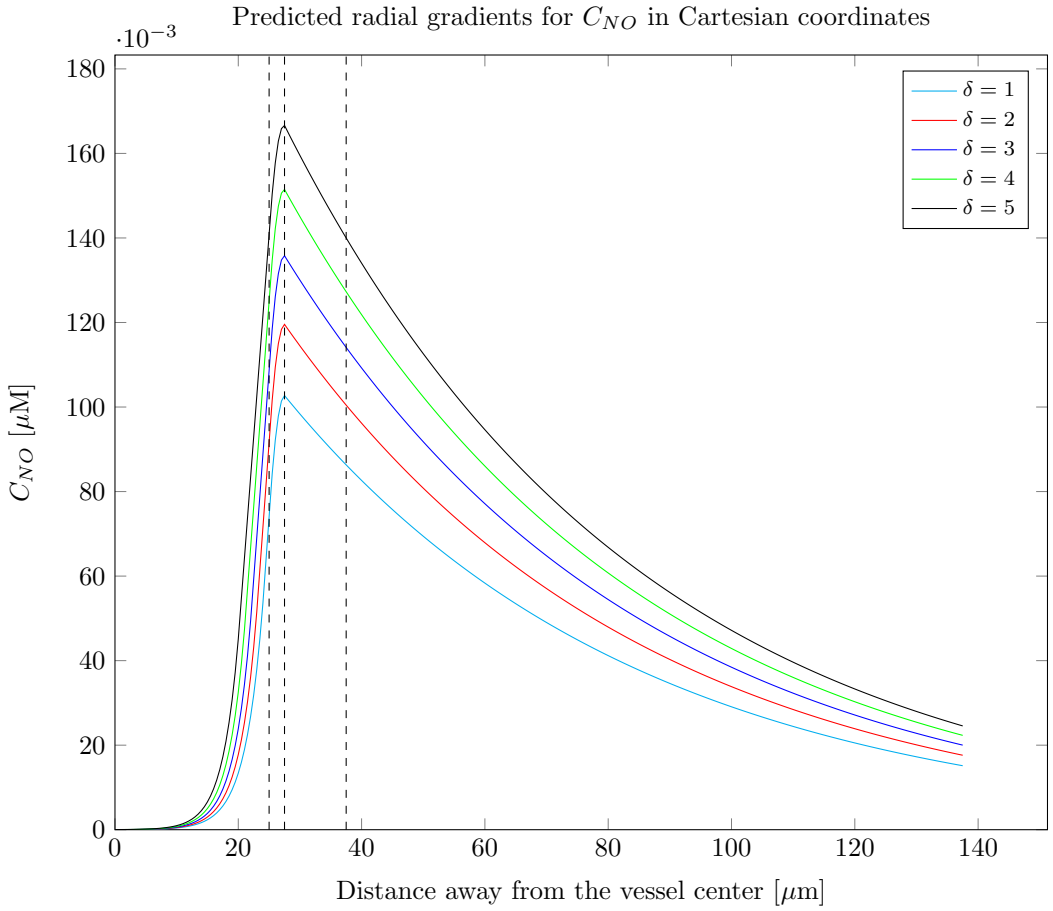


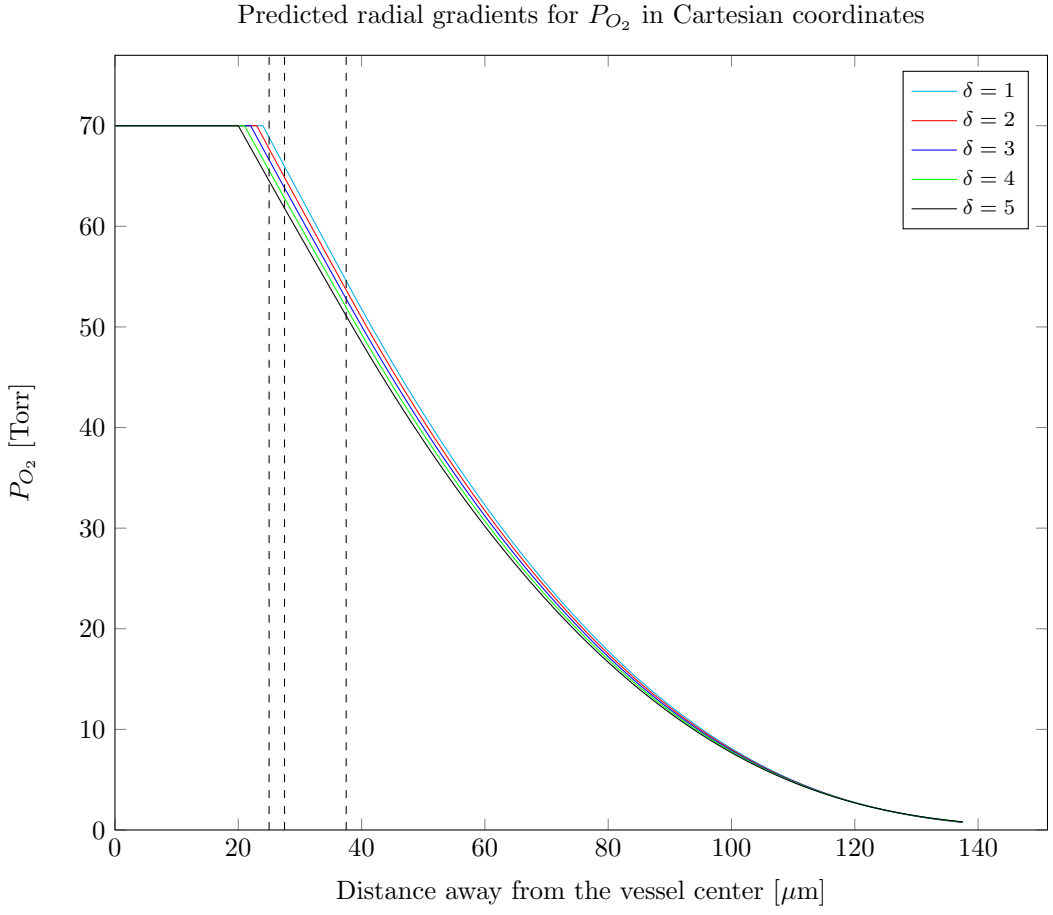
Polar $h = 0.5$


Predicted radial gradients for C_{NO}
$\cdot 10^{-3}$
C_{NO} [μM]
Distance away from the vessel center [μm]
$\delta = 1$
$\delta = 2$
$\delta = 3$
$\delta = 4$
$\delta = 5$


Predicted radial gradients for P_{O_2}
P_{O_2} [Torr]
Distance away from the vessel center [μm]
$\delta = 1$
$\delta = 2$
$\delta = 3$
$\delta = 4$
$\delta = 5$

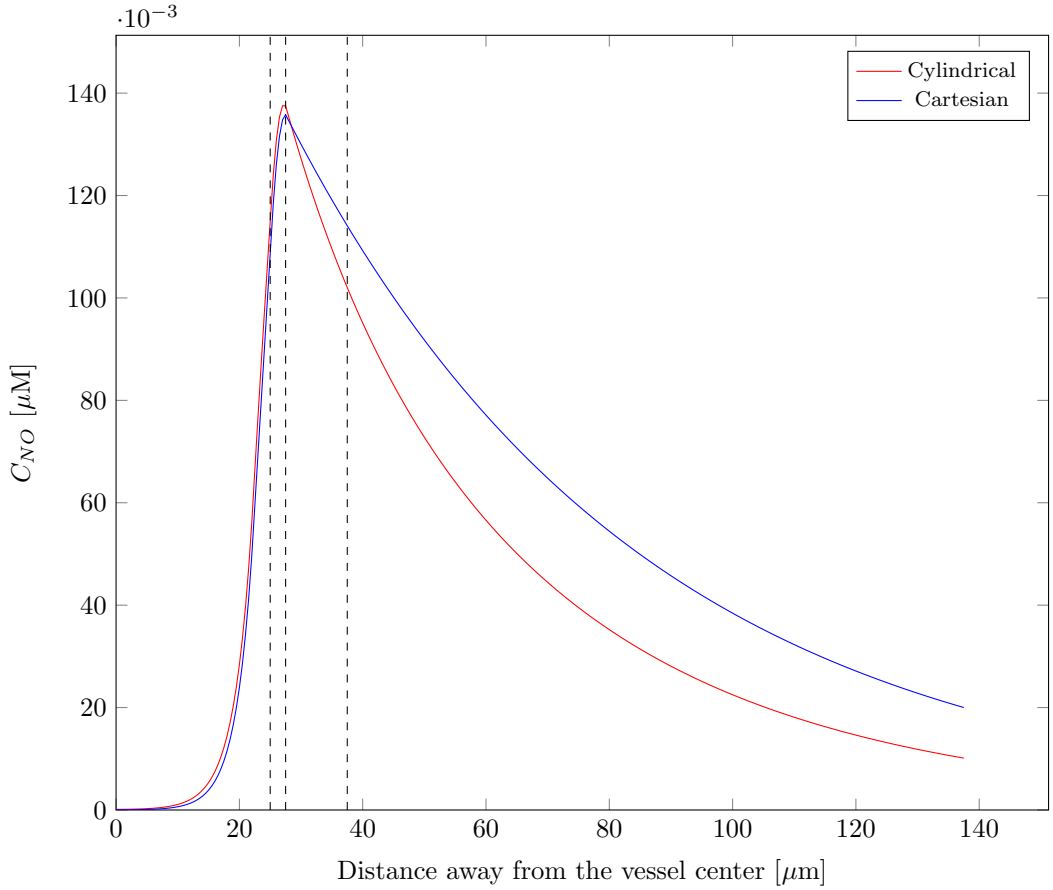
Cartesian $h = 0.5$



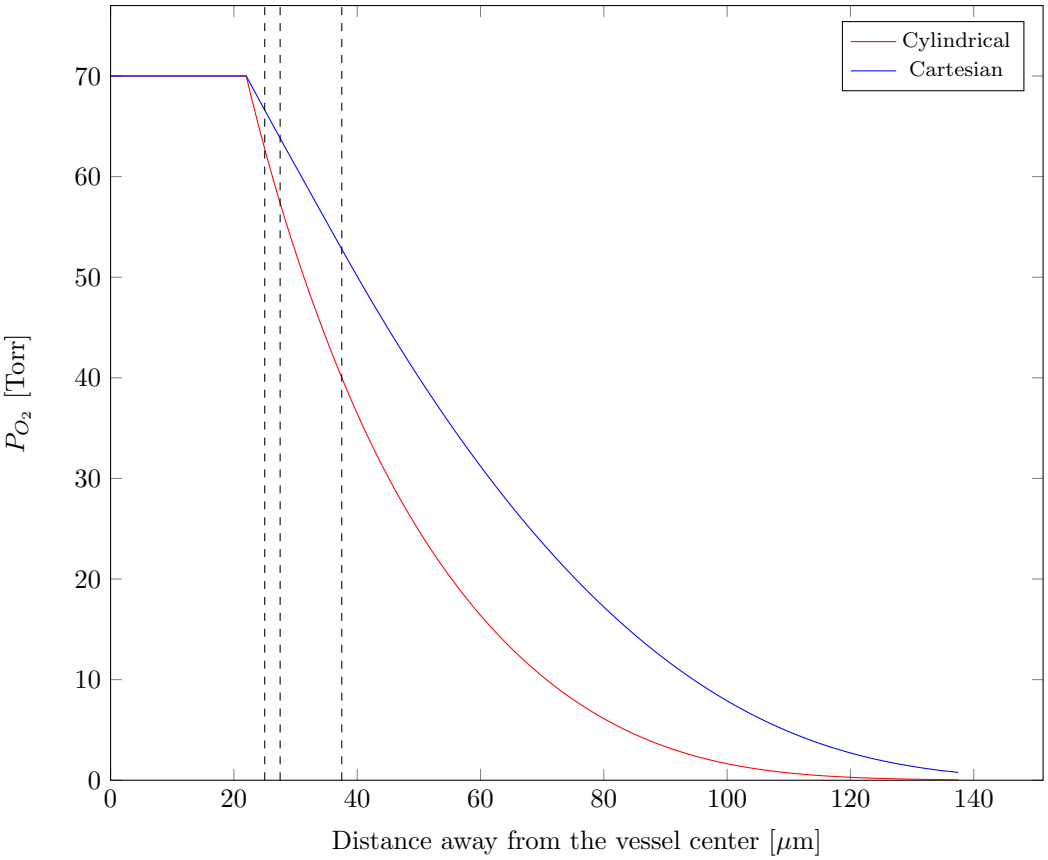


Cartesian vs Polar

Predicted radial gradients for C_{NO} using Cartesian coordinates and Cylindrical coordinates at $\delta = 3$

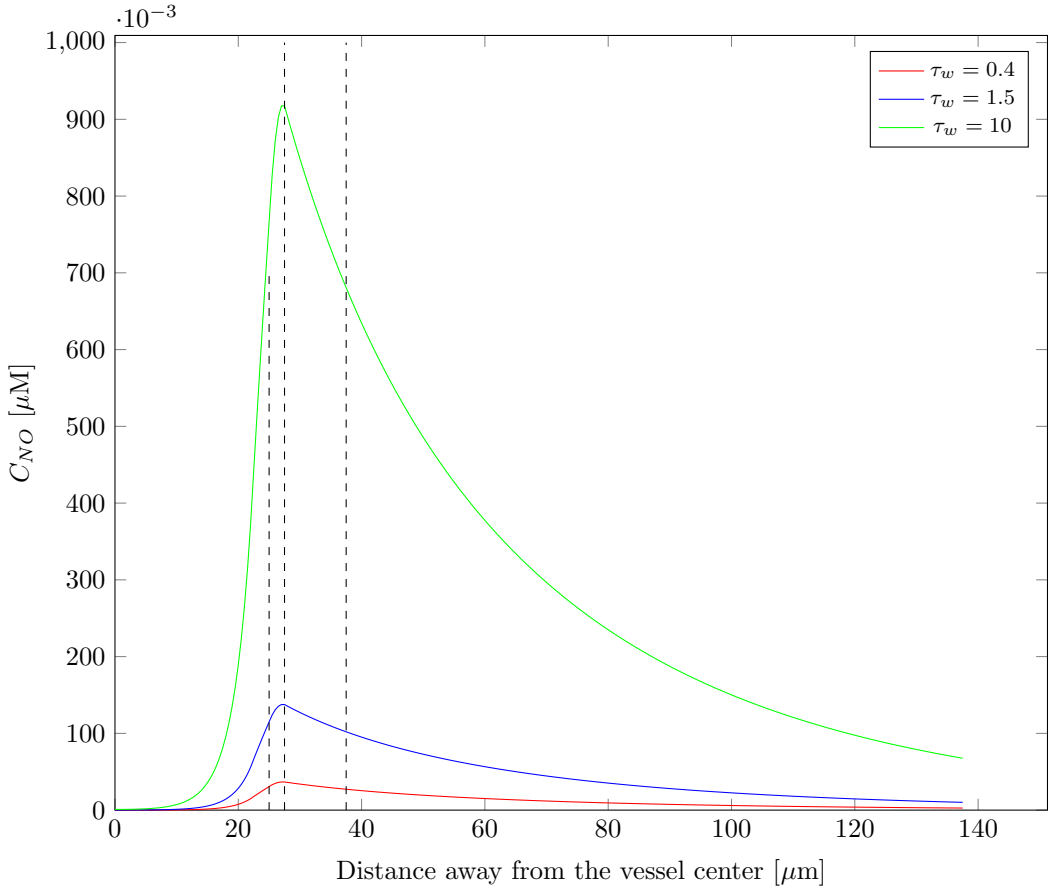


Predicted radial gradients for P_{O_2} using Cartesian coordinates and Cylindrical coordinates at $\delta = 3$

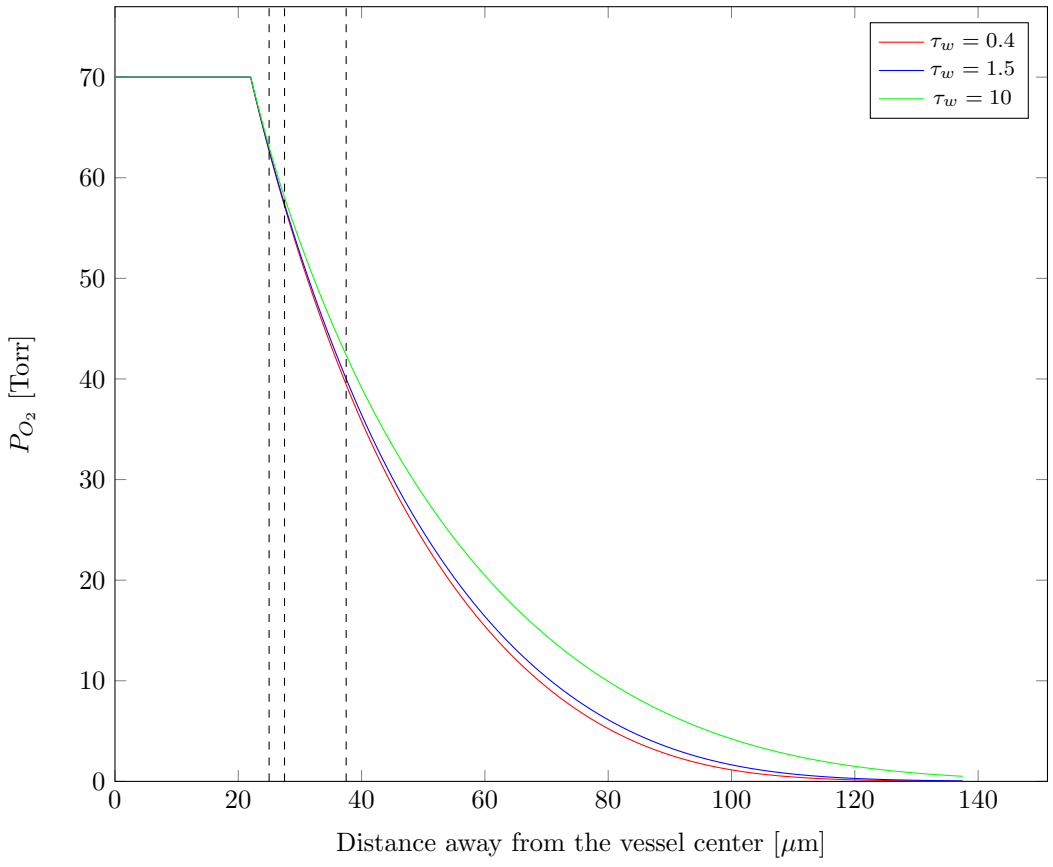


Varying τ_w

Predicted radial gradients for C_{NO} at $\delta = 3$ and various τ_w

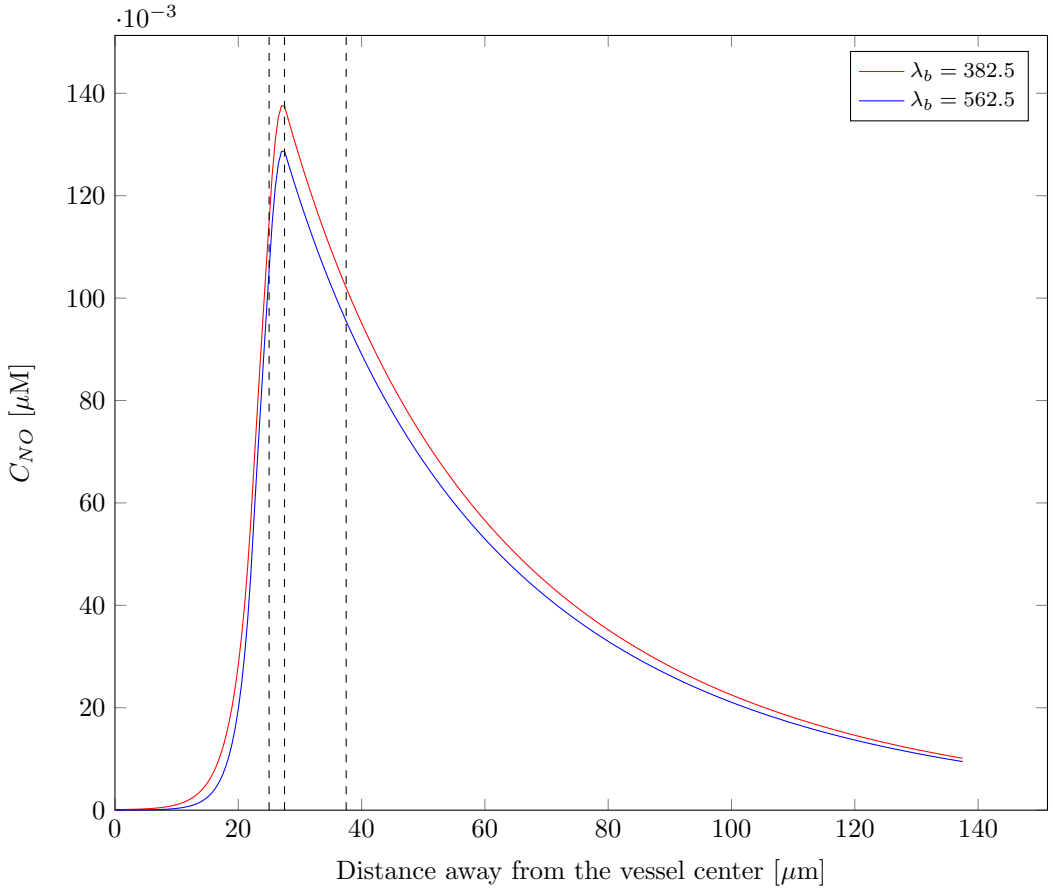


Predicted radial gradients for P_{O_2} at $\delta = 3$ and various τ_w

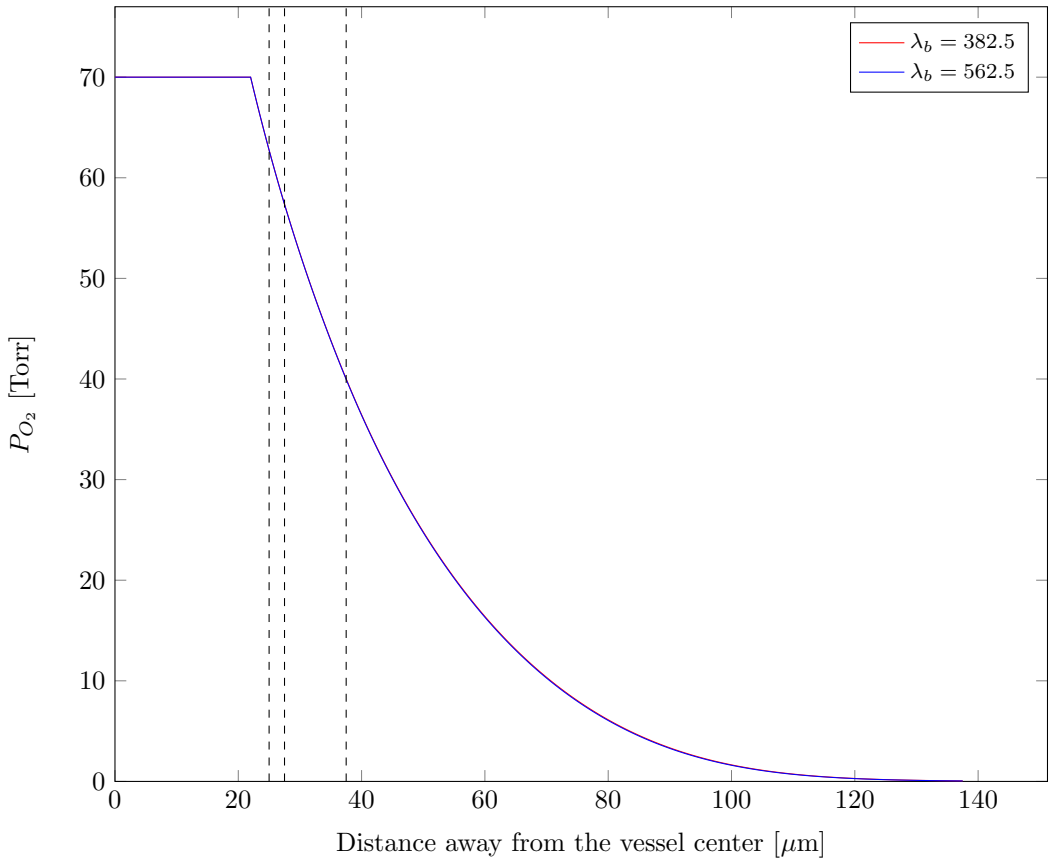


Varying λ_b

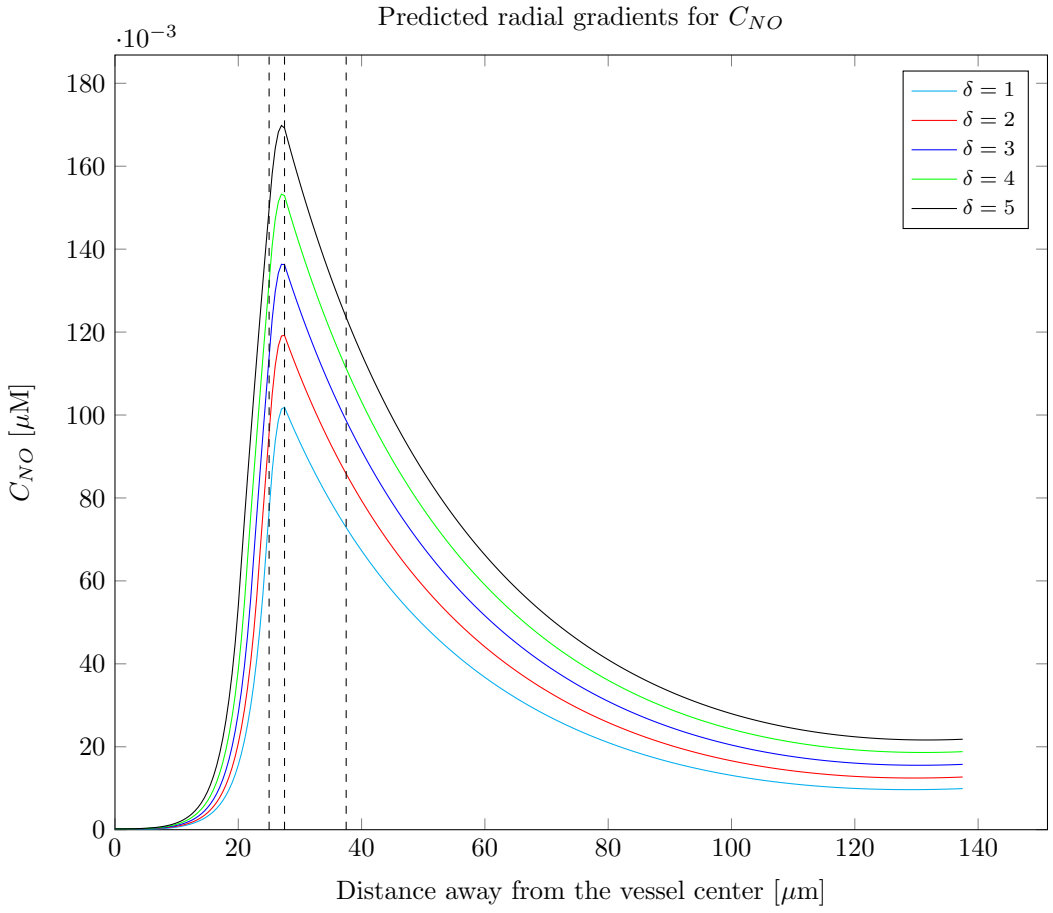
Predicted radial gradients for C_{NO} at $\delta = 3$ and various λ_b

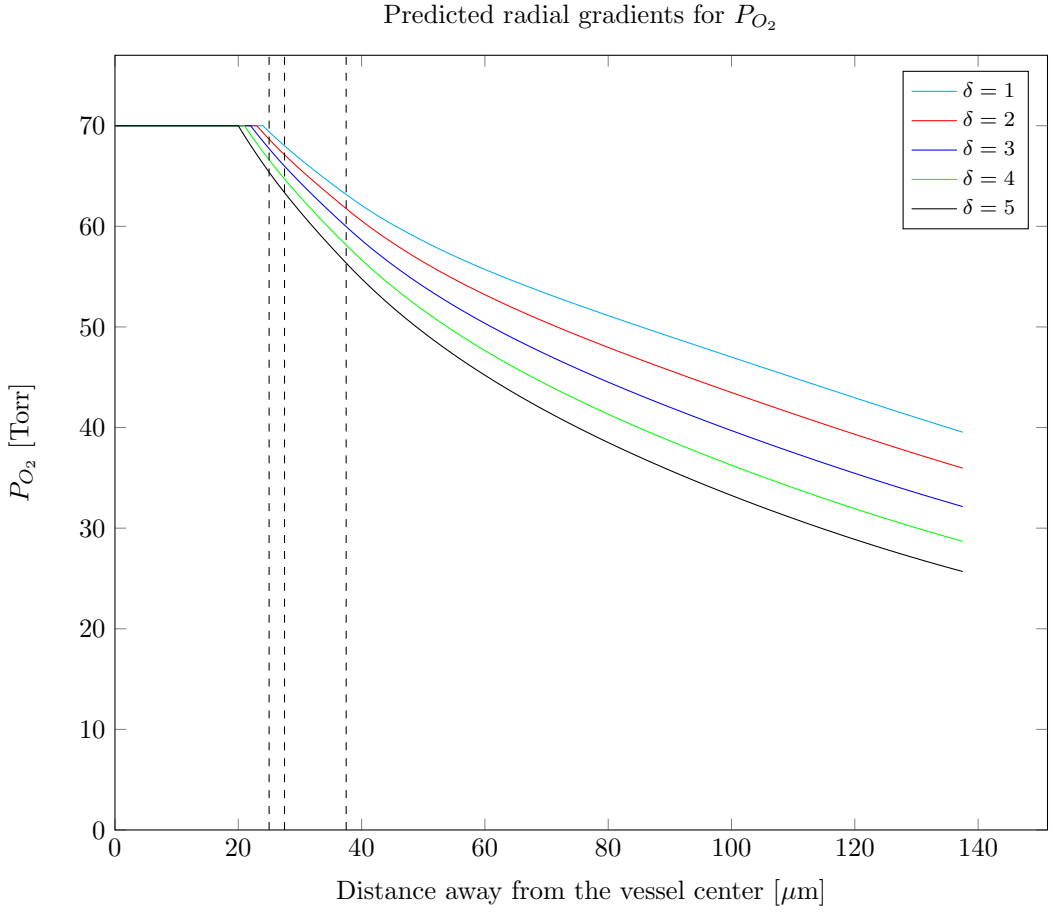


Predicted radial gradients for P_{O_2} at $\delta = 3$ and various λ_b



Polar $h = 0.5$


Predicted radial gradients for C_{NO}
$\cdot 10^{-3}$
180
160
140
120
100
80
60
40
20
0
C_{NO} [μM]
0
20
40
60
80
100
120
140
Distance away from the vessel center [μm]
$\delta = 1$
$\delta = 2$
$\delta = 3$
$\delta = 4$
$\delta = 5$


Predicted radial gradients for P_{O_2}
70
60
50
40
30
20
10
0
P_{O_2} [Torr]
0
20
40
60
80
100
120
140
Distance away from the vessel center [μm]
$\delta = 1$
$\delta = 2$
$\delta = 3$
$\delta = 4$
$\delta = 5$