Enlist 2020

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1 Filter Deposition

1.1 Parameters

1.1.1 Southwest

```
## Model fitted: Log-logistic (ED50 as parameter) with lower limit at 0 (3 parms)
##
## Parameter estimates:
##
##                 Estimate Std. Error t-value p-value
## b:(Intercept)    8.78651    3.67777  2.3891 0.09682 .
## d:(Intercept) 1201.32111  703.66859  1.7072 0.18632
## e:(Intercept)    0.89917    0.25491  3.5274 0.03871 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error:
##
##  3.329187 (3 degrees of freedom)
```

1.1.2 Northcentral

```
## Model fitted: Log-logistic (ED50 as parameter) with lower limit at 0 (3 parms)
##
## Parameter estimates:
##
##                 Estimate Std. Error t-value p-value
## b:(Intercept) 4.8309e-03 1.6776e+00  0.0029  0.9979
## d:(Intercept) 6.7663e-02 1.5002e+00  0.0451  0.9669
## e:(Intercept) 5.7490e-01 5.3036e+03  0.0001  0.9999
##
## Residual standard error:
##
##  0.08216097 (3 degrees of freedom)
## Warning in sqrt(diag(varMat)): NaNs produced
```

Southcentral and Southwest failed to converge.

1.2 Distance for 50% and 99% reduction

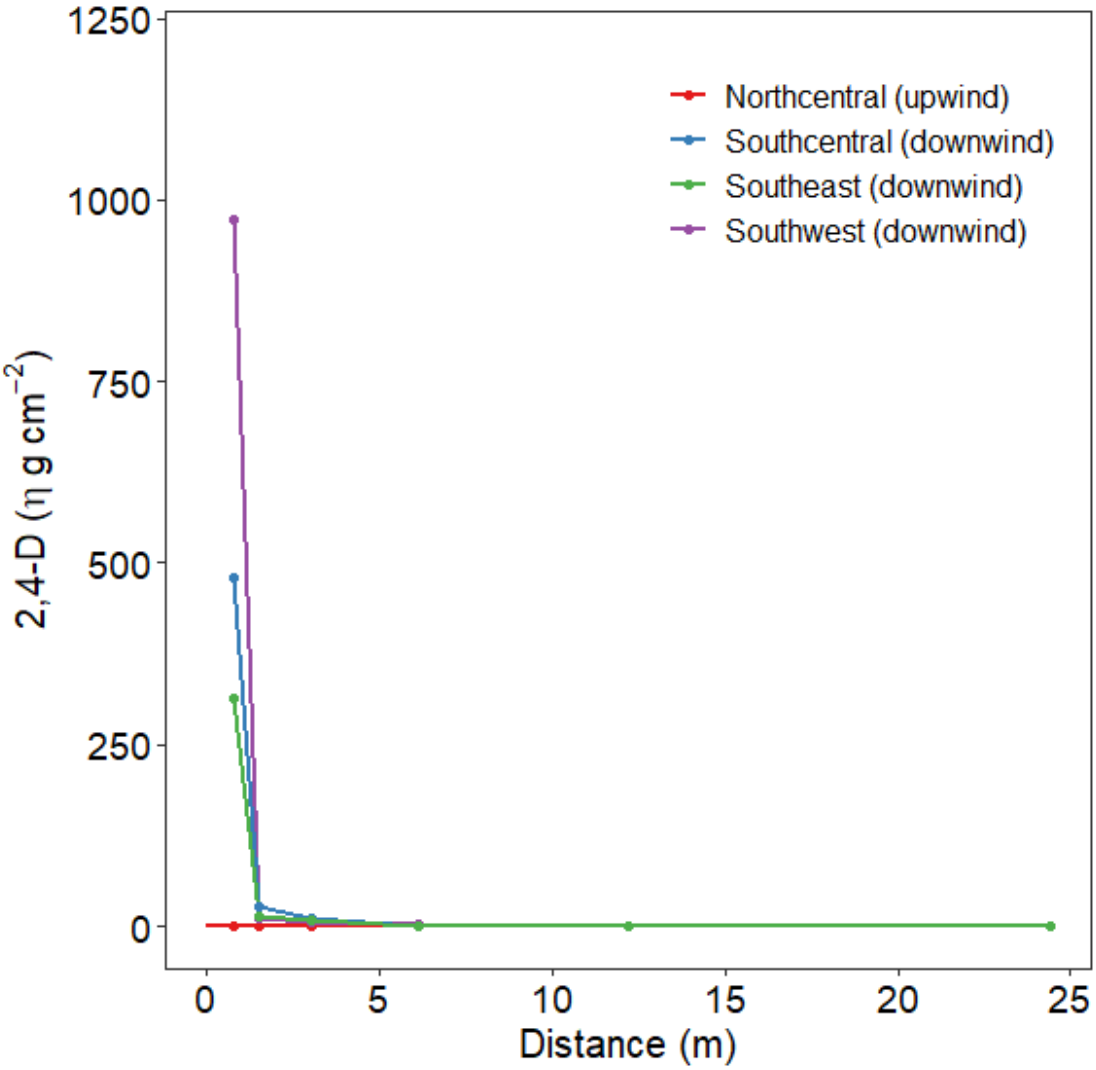
1.2.1 Southwest

```
##
## Estimated effective doses
##
##        Estimate Std. Error
## e:1:50  0.89917    0.25491
## e:1:99  1.51694    0.11182
```

1.2.2 Northcentral

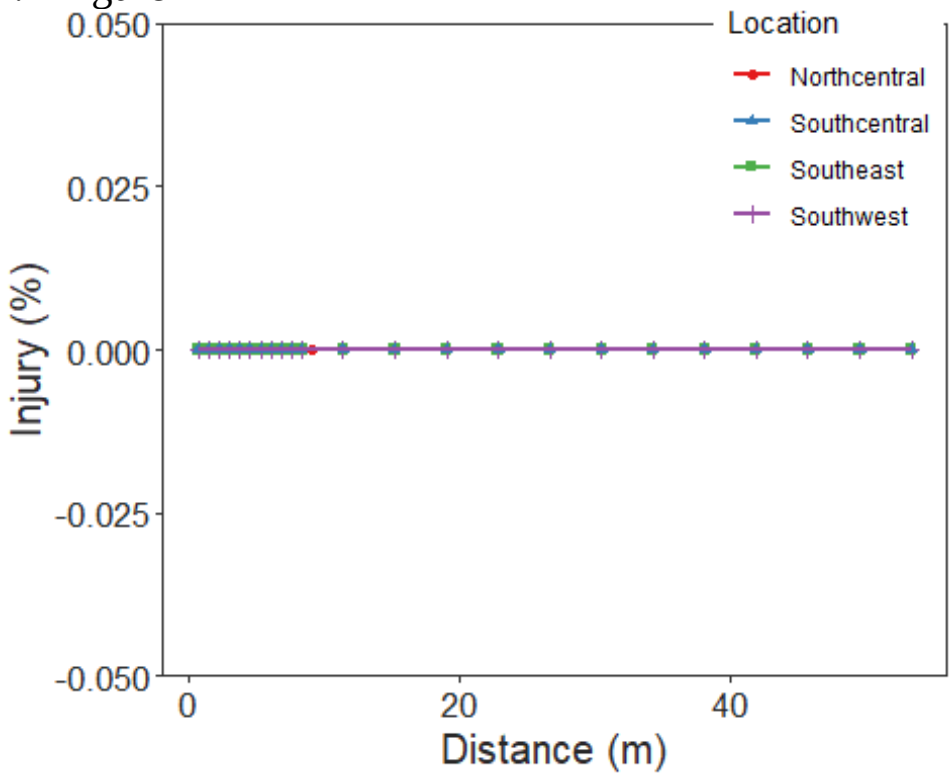
```
##
## Estimated effective doses
##
##         Estimate Std. Error
## e:1:50    0.5749  5303.5612
## e:1:99       Inf         NA
```

1.3 Figure


1250
1000
750
500
250
0
2,4-D (η g cm^{-2})
0
5
10
15
20
25
Distance (m)
Northcentral (upwind)
Southcentral (downwind)
Southeast (downwind)
Southwest (downwind)

2 Injury

2.1 Figure



Nonlinear and linear models failed to converge. Essentially no injury was detected, so it may be appropriate to just report that.

3 Air sampler

3.1 ANOVA

```
model=lm(PUF_ngm3~Direction, data=data_PUF)
summary(model)
##
## Call:
## lm(formula = PUF_ngm3 ~ Direction, data = data_PUF)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.59667 -0.18167 -0.06267  0.14300  0.65933
##
## Coefficients:
##                   Estimate Std. Error t value Pr(>|t|)
## (Intercept)         1.3397     0.2538   5.278 0.001869 **
## DirectionIn-swath   2.6710     0.3589   7.441 0.000303 ***
## DirectionUpwind    -0.9447     0.3589  -2.632 0.038968 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.4396 on 6 degrees of freedom
## Multiple R-squared:  0.9479, Adjusted R-squared:  0.9305
## F-statistic: 54.59 on 2 and 6 DF,  p-value: 0.0001414
anova(model)
```

```
## Analysis of Variance Table
##
## Response: PUF_ngm3
##           Df  Sum Sq Mean Sq F value    Pr(>F)
## Direction  2 21.0997 10.5498  54.587 0.0001414 ***
## Residuals  6  1.1596  0.1933
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
lsm <- emmeans(model, ~ Direction, adjust="none", contr="pairwise", type="response")
lsm
## $emmeans
##  Direction emmean    SE df lower.CL upper.CL
##  Downwind   1.340 0.254  6    0.719     1.96
##  In-swath   4.011 0.254  6    3.390     4.63
##  Upwind     0.395 0.254  6   -0.226     1.02
##
## Confidence level used: 0.95
##
## $contrasts
##  contrast            estimate    SE df t.ratio p.value
##  Downwind - In-swath   -2.671 0.359  6 -7.441  0.0003
##  Downwind - Upwind      0.945 0.359  6  2.632  0.0390
##  In-swath - Upwind      3.616 0.359  6 10.073  0.0001
cld <- CLD(lsm, adjust="none", reversed=TRUE, Letters= letters, type="response")
cld
##  Direction emmean    SE df lower.CL upper.CL .group
##  In-swath   4.011 0.254  6    3.390     4.63  a
##  Downwind   1.340 0.254  6    0.719     1.96   b
##  Upwind     0.395 0.254  6   -0.226     1.02    c
##
## Confidence level used: 0.95
## significance level used: alpha = 0.05
```

3.2 Wind rose