Wensum

> summary(my.seg3)

 \*\*\*Regression Model with Segmented Relationship(s)\*\*\*

Call:

segmented.lm(obj = my.lm3, seg.Z = ~dyas\_dried, psi = list(dyas\_dried = c(10)))

Estimated Break-Point(s):

 Est. St.Err

 7.067 2.274

Meaningful coefficients of the linear terms:

 Estimate Std. Error t value Pr(>|t|)

(Intercept) 219.265 29.263 7.493 1.92e-08 \*\*\*

dyas\_dried 16.591 8.277 2.005 0.0538 .

U1.dyas\_dried -22.433 8.481 -2.645 NA

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 65.43 on 31 degrees of freedom

Multiple R-Squared: 0.3108, Adjusted R-squared: 0.2441

Convergence attained in 2 iterations with relative change 2.19314e-16

> my.seg3$psi

 Initial Est. St.Err

psi1.dyas\_dried 10 7.067465 2.2736

> my.fitted3 <- fitted(my.seg3)

> my.model3 <- data.frame(daysdried = df8A$dyas\_dried, SRP = my.fitted)

Error in data.frame(daysdried = df8A$dyas\_dried, SRP = my.fitted) :

 object 'my.fitted' not found

> my.model3 <- data.frame(daysdried = df8A$dyas\_dried, SRP = my.fitted3)

> my.lm.fit3 <- my.lm3$fitted

> my.seg.fit3 <- my.fitted3

> days3 <- df8A[,1]

> srp3 <- df8A[,2]

> df9 <- data.frame(days3,srp3,my.lm.fit3,my.seg.fit3)

> library(reshape2)

> df11 <- melt(df9,id=c("days","srp"))

Error: id variables not found in data: days, srp

>

> par(mfrow= c(1,2))

> plot(my.seg3,ylim=range(df8A$SRP), xlab= "Days Dried (25ºC)", ylab= "SRP(µgP L-1)", lty=2) #segmented fit

> points(df8A$dyas,df8A$SRP\_ugPL,col="black", pch= 16) #observations

> lines(df8A$dyas\_dried,my.lm3$fitted,col="black", lty=1) #lm fit

> legend(20,430,c("segmented", "linear"), lty=c(2,1), cex= 0.75)

> mtext("a", line= 1, side=3)

>

> plot(wensum\_repeats\_ug$dyas\_dried, wensum\_repeats\_ug$SRP\_ugPL,xlab= "Days Dried (25ºC)", ylab= "SRP(µgP L-1)",pch=16)

> mtext("b", side=3, line=1)

> points(wensum\_repeats\_ug$dyas\_dried,wensum\_repeats\_ug$Mpa, col= "black", pch= 8)

> #abline(v=5.3, col= "black", lty=1)

> mtext("-MPa",side=4,line=3)

> axis(4, ylim=c(0,170), las=1)

> legend(80,25, c("SRP", "MPa"), pch=c(16,8))

> df11 <- melt(df9,id=c("days3","srp3"))

>

> par(mfrow= c(1,2))

> plot(my.seg3,ylim=range(df8A$SRP), xlab= "Days Dried (25ºC)", ylab= "SRP(µgP L-1)", lty=2) #segmented fit

> points(df8A$dyas,df8A$SRP\_ugPL,col="black", pch= 16) #observations

> lines(df8A$dyas\_dried,my.lm3$fitted,col="black", lty=1) #lm fit

> legend(20,430,c("segmented", "linear"), lty=c(2,1), cex= 0.75)

> mtext("a", line= 1, side=3)

>

> plot(wensum\_repeats\_ug$dyas\_dried, wensum\_repeats\_ug$SRP\_ugPL,xlab= "Days Dried (25ºC)", ylab= "SRP(µgP L-1)",pch=16)

> mtext("b", side=3, line=1)

> points(wensum\_repeats\_ug$dyas\_dried,wensum\_repeats\_ug$Mpa, col= "black", pch= 8)

> #abline(v=5.3, col= "black", lty=1)

> mtext("-MPa",side=4,line=3)

> axis(4, ylim=c(0,170), las=1)

> legend(80,25, c("SRP", "MPa"), pch=c(16,8))

> summary(my.seg.fit3)

 Min. 1st Qu. Median Mean 3rd Qu. Max.

 202.6 219.3 261.0 260.9 302.2 319.4

> summary(my.fitted3)

 Min. 1st Qu. Median Mean 3rd Qu. Max.

 202.6 219.3 261.0 260.9 302.2 319.4

Pow

pow\_repeats\_ug <- read.csv("F:/R\_Soils\_Paper/pow\_repeats\_ug.csv")

> df4<- pow\_repeats\_ug

> ##create a linear model

> my.lm1 <- lm(SRP\_ugPL ~ dyas\_dried, data = df4)

> summary(my.lm)

Error in summary(my.lm) : object 'my.lm' not found

> # a linear model with data for the part after 20 days

> my.lm3 <- lm(SRP\_ugPL ~ dyas\_dried, data = df4[df4$dyas\_dried > 20, ])

> summary(my.lm3)

Call:

lm(formula = SRP\_ugPL ~ dyas\_dried, data = df4[df4$dyas\_dried >

 20, ])

Residuals:

 Min 1Q Median 3Q Max

-29.965 -9.607 -3.154 9.546 31.022

Coefficients:

 Estimate Std. Error t value Pr(>|t|)

(Intercept) 51.8384 8.7883 5.899 1.39e-05 \*\*\*

dyas\_dried -0.1004 0.1528 -0.657 0.519

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 17.82 on 18 degrees of freedom

Multiple R-squared: 0.02343, Adjusted R-squared: -0.03083

F-statistic: 0.4318 on 1 and 18 DF, p-value: 0.5194

> # Extract the coefficients from the overall model

> my.coef1 <- coef(my.lm1)

> library(segmented)

>

> # have to provide estimates for breakpoints.

> # after looking a the data,

> my.seg1 <- segmented(my.lm1, seg.Z = ~ dyas\_dried, psi = list(dyas\_dried = c(5)))

> # display the summary

> summary(my.seg1)

 \*\*\*Regression Model with Segmented Relationship(s)\*\*\*

Call:

segmented.lm(obj = my.lm1, seg.Z = ~dyas\_dried, psi = list(dyas\_dried = c(5)))

Estimated Break-Point(s):

 Est. St.Err

 9.959 1.416

Meaningful coefficients of the linear terms:

 Estimate Std. Error t value Pr(>|t|)

(Intercept) -5.829 5.950 -0.980 0.331

dyas\_dried 5.983 1.210 4.943 6.33e-06 \*\*\*

U1.dyas\_dried -6.137 1.215 -5.050 NA

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 17.29 on 61 degrees of freedom

Multiple R-Squared: 0.5588, Adjusted R-squared: 0.5371

Convergence attained in 4 iterations with relative change -5.984819e-16

Newby

newby\_repeats\_ug <- read.csv("F:/R\_Soils\_Paper/newby\_repeats\_ug.csv")

> df1<- newby\_repeats\_ug

> df1<-df1[-c(25,53,65),]

>

> ##create a linear model

> my.lm <- lm(SRP\_ugPL ~ dyas\_dried, data = df1)

> summary(my.lm)

Call:

lm(formula = SRP\_ugPL ~ dyas\_dried, data = df1)

Residuals:

 Min 1Q Median 3Q Max

-48.47 -41.70 -7.99 31.14 95.59

Coefficients:

 Estimate Std. Error t value Pr(>|t|)

(Intercept) 45.7057 7.1369 6.404 2.57e-08 \*\*\*

dyas\_dried 0.6916 0.2267 3.050 0.0034 \*\*

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Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 43.18 on 60 degrees of freedom

Multiple R-squared: 0.1343, Adjusted R-squared: 0.1198

F-statistic: 9.305 on 1 and 60 DF, p-value: 0.003399

> # a linear model with data for the part after 20 days

> my.lm2 <- lm(SRP\_ugPL ~ dyas\_dried, data = df1[df1$dyas\_dried > 20, ])

> summary(my.lm2)

Call:

lm(formula = SRP\_ugPL ~ dyas\_dried, data = df1[df1$dyas\_dried >

 20, ])

Residuals:

 Min 1Q Median 3Q Max

-32.12 -15.73 -1.47 10.68 51.58

Coefficients:

 Estimate Std. Error t value Pr(>|t|)

(Intercept) 72.48124 13.22334 5.481 5.03e-05 \*\*\*

dyas\_dried 0.05969 0.23473 0.254 0.803

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 25.31 on 16 degrees of freedom

Multiple R-squared: 0.004026, Adjusted R-squared: -0.05822

F-statistic: 0.06467 on 1 and 16 DF, p-value: 0.8025

> # Extract the coefficients from the overall model

> my.coef <- coef(my.lm)

>

> ##now to analyse breakpoints

> library(segmented)

>

> # have to provide estimates for breakpoints.

> # after looking a the data,

> my.seg <- segmented(my.lm, seg.Z = ~ dyas\_dried, psi = list(dyas\_dried = c(10)))

> summary(my.seg)

 \*\*\*Regression Model with Segmented Relationship(s)\*\*\*

Call:

segmented.lm(obj = my.lm, seg.Z = ~dyas\_dried, psi = list(dyas\_dried = c(10)))

Estimated Break-Point(s):

 Est. St.Err

14.497 1.763

Meaningful coefficients of the linear terms:

 Estimate Std. Error t value Pr(>|t|)

(Intercept) -9.419 8.116 -1.161 0.251

dyas\_dried 8.113 1.372 5.912 1.9e-07 \*\*\*

U1.dyas\_dried -8.681 1.385 -6.267 NA

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 25.64 on 58 degrees of freedom

Multiple R-Squared: 0.705, Adjusted R-squared: 0.6898

Convergence attained in 2 iterations with relative change 5.725908e-16

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