

I. APPENDIX

1. R CODE

```
library(nlstools)
library(nls2)
library(nortest)
library(car)
library(lmtest)
```

➤ *Petterson local formula*

```
#h~1.3 + (1/(a+(b/diameter))^3) tree by tree
start <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/valiP.csv",
sep=";", dec=".")
#start <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/species_24_coor
ds_polar/24_all_out.csv", sep=";", dec=".")
attach(start)
h<- height
d<-diameter
#Peterson lineal
H= 1/(h-1.3)^(1/3)
D<-1/d
Peters<-lm(H~D)
summary(Peters)
anova(Peters)
out<-summary(Peters)
confint(Peters)
plot(Peters)
res<-residuals(Peters)
lillie.test(res) #no normal
durbinWatsonTest(res) #no correlated
AIC(Peters)
```

➤ *Petterson GWR*

```
plots<-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/valiP.csv",
sep=";", dec=".")
library(spgwr)
library(sp)
attach(plots)
map = SpatialPointsDataFrame(data=start, coords= cbind(CX_H30,CY_H30))

#Fixed kernel calculation
#Gauss-cross-validation
bandA<-gwr.sel(H~D, data=map)
gwrA<-gwr(H~D, data=map, bandwidth=bandA,hatmatrix=T, se.fit=T)
gwrA

#Adapted kernel calculation
#Bisquare-AIC
Bisq_AD_AIC<-gwr.sel(H~D, data=map, adapt=T,
gweight=gwr.bisquare,method = "AIC", verbose = TRUE, longlat=NULL,
RMSE=FALSE, tol=.Machine$double.eps^0.25, show.error.messages = FALSE)
```

```
Bisqu_AD_AIC_gwr<-gwr(H~D, data=map, adapt=Bisq_AD_AIC,hatmatrix=T,
se.fit=T, gweight = gwr.bisquare)
Bisqu_AD_AIC_gwr
```

#1 km bandwidth calculation

#Bisquare-AIC

```
gwrB<-gwr(H~D, data=map, bandwidth=1000,hatmatrix=T, se.fit=T)
gwrB
```

#500 m bandwidth calculation

#Bisquare-AIC

```
gwrB<-gwr(H~D, data=map, bandwidth=500,hatmatrix=T, se.fit=T)
gwrB
```

➤ **Curves Plots vs Local Regression (Petterson)**

#Plot n° 1151

```
start3 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/V1151.csv", sep=";", dec=".")
attach(start3)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.41902+1.73792 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.434711+2.701881 /x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.450459+2.56751/x)^3), add=TRUE,col="green") #Fixed
curve(1.3+(1/(0.43273604+2.319682 /x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.4190656+2.31722 /x)^3),add=TRUE,col="blue") #500m
legend(title='Plot 1151',"topleft",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)
```

#Plot n° 1174

```
start4 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1174.csv", sep=";", dec=".")
attach(start4)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.40478+2.4672 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.441815+2.261727 /x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.4504086+2.1794 /x)^3), add=TRUE,col="green") #Fixed
curve(1.3+(1/(0.43139446+2.311824 /x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.46094277+2.31182 /x)^3),add=TRUE,col="blue") #500m
legend(title='Plot 1174',"topleft",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)
```

#Plot n° 1191

```
start7 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1191.csv", sep=";", dec=".")
```

```

attach(start7)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.42307+2.22909 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.432269+2.752624 /x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.458488+2.427429 /x)^3), add=TRUE,col="green") #Fixed
curve(1.3+(1/(0.45880453+2.3411 /x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.43646272+2.5987987 /x)^3),add=TRUE,col="blue") #500m
legend(title='Plot 1191',"topleft",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)

```

#Plot n° 1196

```

start9 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1196.csv", sep=";", dec=".")
attach(start9)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.41489+3.82912 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.435216+2.496689 /x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.448562+2.321209 /x)^3), add=TRUE,col="green") #Fixed
curve(1.3+(1/(0.36822739+4.1315299 /x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.33919546+4.1019285 /x)^3),add=TRUE,col="blue") #500m
legend(title='Plot 1196',"bottomright",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)

```

#Plot n° 1202

```

start10 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1202.csv", sep=";", dec=".")
attach(start10)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.4475+1.1437 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.445705+2.396964 /x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.459891+2.135036 /x)^3), add=TRUE,col="green") #Fixed
curve(1.3+(1/(0.5111695+0.8107863 /x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.64521706+0.94664653 /x)^3),add=TRUE,col="blue") #500m
legend(title='Plot 1202',"topleft",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)

```

#Plot n° 1215

```

start12 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1215.csv", sep=";", dec=".")
attach(start12)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")

```

```

curve(1.3+(1/(0.49675+1.74904 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.446581+2.36908 /x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.4572283+2.184688 /x)^3), add=TRUE,col="green") #Fixed
curve(1.3+(1/(0.45285087+2.643429 /x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.51661324+2.5489603 /x)^3),add=TRUE,col="blue") #500m
legend(title='Plot 1215',"topleft",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)

```

#Plot n° 1455

```

start13 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1455.csv", sep=";", dec=".")
attach(start13)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.3963+2.1981 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.4427+2.43219 /x)^3), add=TRUE,col="orange") #Adaptive
curve(1.3+(1/(0.45494+2.2343299 /x)^3), add=TRUE,col="green") #Fixed
curve(1.3+(1/(0.49723301+1.487969 /x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.53426256+1.5033928 /x)^3),add=TRUE,col="blue") #500m
legend(title='Plot 1455',"topleft",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)

```

#Plot n° 1468

```

start16 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1468.csv", sep=";", dec=".")
attach(start16)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.45172+0.9936 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.454889+2.30014 /x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.461077+2.212158 /x)^3), add=TRUE,col="green") #Fixed
curve(1.3+(1/(0.45023518+2.60985 /x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.4025015+2.4939588 /x)^3),add=TRUE,col="blue") #500m
legend(title='Plot 1468',"topleft",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)

```

#Plot n° 1477

```

start17 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1477.csv", sep=";", dec=".")
attach(start17)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.3631+3.15528 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.44725+2.43812 /x)^3), add=TRUE,col="orange") #Adaptive
curve(1.3+(1/(0.45944+2.24098 /x)^3), add=TRUE,col="green") #Fixed
curve(1.3+(1/(0.48407964+2.08492 /x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.47791439+2.0829614 /x)^3),add=TRUE,col="blue") #500m

```

```
legend(title='Plot 1477',"topleft",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)
```

#Plot 1511

```
start20 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1511.csv", sep=";", dec=".")
attach(start20)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.40292+2.71806 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.439642+2.594797 /x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.45658401+2.35388 /x)^3), add=TRUE,col="green") #Fixed
curve(1.3+(1/(0.49115155+1.593816 /x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.53202745+1.5871263 /x)^3),add=TRUE,col="blue") #500m
legend(title='Plot 1511',"topleft",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)
```

#Plot 1524

```
start22 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1524.csv", sep=";", dec=".")
attach(start22)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.38065+2.46048 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.428184+2.70688 /x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.45019628+2.299784 /x)^3), add=TRUE,col="green") #Fixed
curve(1.3+(1/(0.51110544+0.9706428 /x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.79693978+0.98158809 /x)^3),add=TRUE,col="blue") #500m
#curve(1.3+(1/(0.78620205-1.1405355/x)^3),add=TRUE,col="violet") #388m
legend(title='Plot 1524',"topleft",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)
```

#Plot 1527

```
start23 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1527.csv", sep=";", dec=".")
attach(start23)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.3773+2.2447 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.409362+2.852913 /x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.42682768+2.523297 /x)^3), add=TRUE,col="green") #Fixed
curve(1.3+(1/(0.42588919+2.16222 /x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.43876482+2.1529716 /x)^3),add=TRUE,col="blue") #500m
legend(title='Plot 1527',"bottomright",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)
```

#Plot 1533

```
start24 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1533.csv", sep=";", dec=".")
attach(start24)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.38709+1.5151 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.417151+2.853721 /x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.44041852+2.42105 /x)^3), add=TRUE,col="green") #Fixed
curve(1.3+(1/(0.44441696+1.9060955 /x)^3), add=TRUE,col="red") #1km
curve(1.3+(1/(0.52498635+1.9060955 /x)^3), add=TRUE,col="blue") #500m
legend(title='Plot 1533',"topleft",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)
```

#Plot 1555

```
start25 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1555.csv", sep=";", dec=".")
attach(start25)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.44002+0.93015 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.410985+2.788965 /x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.42839681+2.439593 /x)^3), add=TRUE,col="green") #Fixed
curve(1.3+(1/(0.46104902+2.0101134 /x)^3), add=TRUE,col="red") #1km
curve(1.3+(1/(0.80511484+2.0101134 /x)^3), add=TRUE,col="blue") #500m
legend(title='Plot 1555',"topleft",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)
```

#Plot 1598

```
start27 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1598.csv", sep=";", dec=".")
attach(start27)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.4369+1.51652 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.3917304+3.1196247/x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.41382609+2.658969 /x)^3), add=TRUE,col="green") #Fixed
curve(1.3+(1/(0.27760987+4.8266982 /x)^3), add=TRUE,col="red") #1km
curve(1.3+(1/(0.23557085+4.7515349 /x)^3), add=TRUE,col="blue") #500m
legend(title='Plot 1598',"bottomright",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)
```

#Plot 1648

```
start29 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1648.csv", sep=";", dec=".")
```

```

attach(start29)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.44571+1.62916 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.3868865+3.288398 /x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.40941561+2.8312022 /x)^3), add=TRUE,col="green")
#Fixed
curve(1.3+(1/(0.41570921+2.7156847 /x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.29831487+2.7151616 /x)^3),add=TRUE,col="blue") #500m
legend(title='Plot 1648',"bottomright",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)

```

#Plot 1660

```

start30 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1660.csv", sep=";", dec=".")
attach(start30)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.40342+2.163 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.3996343+3.101009 /x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.41183224+2.8391931 /x)^3), add=TRUE,col="green")
#Fixed
curve(1.3+(1/(0.47383604+1.8238681 /x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.66925232+1.7930344 /x)^3),add=TRUE,col="blue") #500m
legend(title='Plot 1660',"topleft",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)

```

#Plot 1666

```

start31 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1666.csv", sep=";", dec=".")
attach(start31)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.41014+2.60797 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.4041607+3.060545 /x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.45596309+2.05049 /x)^3), add=TRUE,col="green") #Fixed
curve(1.3+(1/(0.69590184-0.88811265 /x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.79270163-0.88811265 /x)^3),add=TRUE,col="blue") #500m
legend(title='Plot 1666',"topleft",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)

```

#Plot 1667

```

start32 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1667.csv", sep=";", dec=".")
attach(start32)
h<-height

```

```

d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.43019+1.50054 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.40560477+3.0434651 /x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.45648572+2.0457464 /x)^3), add=TRUE,col="green")
#Fixed
curve(1.3+(1/(0.67738605-0.41408126 /x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.87263822-0.23019408 /x)^3),add=TRUE,col="blue") #500m
legend(title='Plot 1667',"topleft",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)

```

#Plot 1781

```

start33 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1781.csv", sep=";", dec=".")
attach(start33)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.40038+2.64309 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.4028729+2.996512 /x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.43432961+2.3311978 /x)^3), add=TRUE,col="green")
#Fixed
curve(1.3+(1/(0.38003307+3.3344083 /x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.52364313+3.3344083 /x)^3),add=TRUE,col="blue") #500m
legend(title='Plot 1781',"topleft",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)

```

➤ **Curves Trees vs local Petterson**

#Plot 1151

```

start3 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/V1151.csv", sep=";", dec=".")
attach(start3)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.41902+1.73792 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.42724577+1.8565383 /x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.42302678+1.8852055/x)^3), add=TRUE,col="green") #Fixed
curve(1.3+(1/(0.40100915+2.4699093 /x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.41536399+2.0513537 /x)^3),add=TRUE,col="blue") #500m
legend(title='Plot 1151',"topleft",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)

```

#Plot 1174

```

start4 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1174.csv", sep=";", dec=".")
attach(start4)

```



```

h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.40478+2.4672 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.45380431+1.2310749 /x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.45230982+ 1.3451496/x)^3), add=TRUE,col="green")
#Fixed
curve(1.3+(1/(0.42486352+1.8383351 /x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.45723842+1.4488124/x)^3),add=TRUE,col="blue") #500m
legend(title='Plot 1174',"topleft",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)

#Plot 1187
start5 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1187.csv", sep=";", dec=".")
attach(start5)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/((0.38193+2.68613 /x)^3)), add=TRUE,col="black")
#Petterson
curve(1.3+(1/((0.45376848+1.117626 /x)^3)), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.44075716+1.4338303/x)^3), add=TRUE,col="green") #Fixed
curve(1.3+(1/(0.41316598+2.0220193 /x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.42901412+1.7120061 /x)^3),add=TRUE,col="blue") #500m
legend(title='Plot 1187',"topleft",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)

#Plot 1191
start7 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1191.csv", sep=";", dec=".")
attach(start7)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.42307+2.22909 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.41188752+2.8469041 /x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.43025968+2.1816946/x)^3), add=TRUE,col="green") #Fixed
curve(1.3+(1/(0.41845423+2.3373027 /x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.4240043+2.2525501 /x)^3),add=TRUE,col="blue") #500m
legend(title='Plot 1191',"topleft",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)

#Plot 1196
start9 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1196.csv", sep=";", dec=".")
attach(start9)
h<-height
d<-diameter

```

```

plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.41489+3.82912 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.43900264+1.7721102/x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.43771839+1.7383301/x)^3), add=TRUE,col="green") #Fixed
curve(1.3+(1/(0.41493189+2.1877471 /x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.42799641+1.8728016 /x)^3),add=TRUE,col="blue") #500m
legend(title='Plot 1196',"bottomright",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)

```

#Plot 1202

```

start10 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1202.csv", sep=";", dec=".")
attach(start10)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.4475+1.1437 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.4460641+1.5854774/x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.44569024+1.56827 /x)^3), add=TRUE,col="green") #Fixed
curve(1.3+(1/(0.43550696+1.774532 /x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.43670611+1.8232702 /x)^3),add=TRUE,col="blue") #500m
legend(title='Plot 1202',"bottomright",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)

```

#Plot 1215

```

start12 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1215.csv", sep=";", dec=".")
attach(start12)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.49675+1.74904 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.43941702+1.7548859/x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.43942092+1.7428753 /x)^3), add=TRUE,col="green")
#Fixed
curve(1.3+(1/(0.42907945+1.9394386/x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.43670611+1.8232702 /x)^3),add=TRUE,col="blue") #500m
legend(title='Plot 1215',"bottomright",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)

```

#Plot 1455

```

start13 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1455.csv", sep=";", dec=".")
attach(start13)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.3963+2.1981 /x)^3), add=TRUE,col="black") #Petterson

```

```

curve(1.3+(1/(0.44398075+1.7320823 /x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.44313654+1.6965262 /x)^3), add=TRUE,col="green")
#Fixed
curve(1.3+(1/(0.43876759+1.8602901/x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.44431856+1.6976159 /x)^3),add=TRUE,col="blue") #500m
legend(title='Plot 1455',"bottomright",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)

#Plot 1468
start16 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1468.csv", sep=";", dec=".")
attach(start16)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.45172+0.9936 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.44683822+1.5829411 /x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.44902797+1.6152754 /x)^3), add=TRUE,col="green")
#Fixed
curve(1.3+(1/(0.44748814+1.608336 /x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.44998584+1.5663694/x)^3),add=TRUE,col="blue") #500m
legend(title='Plot 1468',"bottomright",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)

#Plot 1477
start17 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1477.csv", sep=";", dec=".")
attach(start17)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.3631+3.15528 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.47015152+1.578027 /x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.46412782+1.5427659 /x)^3), add=TRUE,col="green")
#Fixed
curve(1.3+(1/(0.43801047+1.7655199/x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.45852328+1.4997644 /x)^3),add=TRUE,col="blue") #500m
legend(title='Plot 1477',"bottomright",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)

#Plot 1511
start20 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1511.csv", sep=";", dec=".")
attach(start20)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.40292+2.71806 /x)^3), add=TRUE,col="black") #Petterson

```

```

curve(1.3+(1/(0.43632981+1.8376018/x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.43694763+1.8501165 /x)^3), add=TRUE,col="green")
#Fixed
curve(1.3+(1/(0.42166756+2.1462104 /x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.43259811+1.889839/x)^3),add=TRUE,col="blue") #500m
legend(title='Plot 1511',"bottomright",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)

#Plot 1524
start22 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1524.csv", sep=";", dec=".")
attach(start22)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.38065+2.46048 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.44527166+1.6397589 /x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.44641821+1.5903641 /x)^3), add=TRUE,col="green")
#Fixed
curve(1.3+(1/(0.43760595+1.8479355/x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.44474732+1.6362684/x)^3),add=TRUE,col="blue") #500m
legend(title='Plot 1524',"topleft",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)

#Plot 1527
start23 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1527.csv", sep=";", dec=".")
attach(start23)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.3773+2.2447 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.43726257+1.451449 /x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.43335128+1.4739929/x)^3), add=TRUE,col="green") #Fixed
curve(1.3+(1/(0.41536579+1.8048409/x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.42881637+1.6184497/x)^3),add=TRUE,col="blue") #500m
legend(title='Plot 1527',"bottomright",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)

#Plot 1533
start24 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1533.csv", sep=";", dec=".")
attach(start24)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.38709+1.5151 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.43690102+1.7596909 /x)^3), add=TRUE,col="orange")
#Adaptive

```

```

curve(1.3+(1/(0.44355362+1.7317658/x)^3), add=TRUE,col="green") #Fixed
curve(1.3+(1/(0.42751475+1.9813983 /x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.43798761+1.7526127/x)^3),add=TRUE,col="blue") #500m
legend(title='Plot 1533',"topleft",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)

```

#Plot 1555

```

start25 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1555.csv", sep=";", dec=".")
attach(start25)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.44002+0.93015 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.4403088+1.6239772 /x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.437975+1.6300924 /x)^3), add=TRUE,col="green") #Fixed
curve(1.3+(1/(0.43120479+1.8006116 /x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.43717904+1.754497/x)^3),add=TRUE,col="blue") #500m
legend(title='Plot 1555',"topleft",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)

```

#Plot 1598

```

start27 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1598.csv", sep=";", dec=".")
attach(start27)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.4369+1.51652 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.41375696+1.7925799/x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.41563524+1.8012457/x)^3), add=TRUE,col="green") #Fixed
curve(1.3+(1/(0.40575553+2.0038413 /x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.41109678+1.8509747/x)^3),add=TRUE,col="blue") #500m
legend(title='Plot 1598',"bottomright",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)

```

#Plot 1660

```

start30 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1660.csv", sep=";", dec=".")
attach(start30)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.40342+2.163 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.4324257+1.9290773 /x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.43988133+1.8039612/x)^3), add=TRUE,col="green") #Fixed
curve(1.3+(1/(0.42037046+2.1298904 /x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.43716172+1.8505755/x)^3),add=TRUE,col="blue") #500m

```

```
legend(title='Plot 1660',"bottomright",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)
```

#Plot 1648

```
start29 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1648.csv", sep=";", dec=".")
attach(start29)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.44571+1.62916 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.43863539+1.984595/x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.45778777+1.6278768/x)^3), add=TRUE,col="green") #Fixed
curve(1.3+(1/(0.44483963+2.0213166/x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.47004587+1.665568/x)^3),add=TRUE,col="blue") #500m
legend(title='Plot 1648',"topleft",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)
```

#Plot 1666

```
start31 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1666.csv", sep=";", dec=".")
attach(start31)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.41014+2.60797 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.42617671+2.1488279/x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.42232201+2.2148975/x)^3), add=TRUE,col="green") #Fixed
curve(1.3+(1/(0.40401351+2.4784541 /x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.41897464+2.2087962/x)^3),add=TRUE,col="blue") #500m
legend(title='Plot 1666',"bottomright",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)
```

#Plot 1667

```
start32 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1667.csv", sep=";", dec=".")
attach(start32)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.43019+1.50054 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.42482001+2.4346516/x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.42175064+2.3092389/x)^3), add=TRUE,col="green") #Fixed
curve(1.3+(1/(0.40942222+2.576566/x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.41922925+2.4149062/x)^3),add=TRUE,col="blue") #500m
legend(title='Plot 1667',"topleft",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)
```

```

#Plot 1781
start33 <-
read.csv("C:/Users/maria/Documents/R/datos/Phalepensis/Inventos/sIERRA
/ValiTrees/1781.csv", sep=";", dec=".")
attach(start33)
h<-height
d<-diameter
plot(h~d, xlab='diameter', ylab="height")
curve(1.3+(1/(0.40038+2.64309 /x)^3), add=TRUE,col="black") #Petterson
curve(1.3+(1/(0.41385572+2.2144794/x)^3), add=TRUE,col="orange")
#Adaptive
curve(1.3+(1/(0.41335765+2.2532911/x)^3), add=TRUE,col="green") #Fixed
curve(1.3+(1/(0.40883907+2.2713785/x)^3),add=TRUE,col="red") #1km
curve(1.3+(1/(0.41246948+2.3442321/x)^3),add=TRUE,col="blue") #500m
legend(title='Plot 1781',"bottomright",
c("Petterson","Adaptive",'Fixed','1km bandwidth','500m bandwidth'),
col = c('black','orange','green','red','blue'),lwd=2, cex = 0.7)

```

2. PARAMETERS TABLE

Table 1 - Parameters table average data plot

Plot	n	DepP	IndepP	R ²	DepAd	IndepAd	DepFix	IndepFix	Dep1km	Indep1km	Dep500m	Indep500m	x	y
1151	17	1.738	0.419	0.770	2.702	0.435	2.568	0.450	2.320	0.433	2.317	0.419	604988	4211030
1174	12	2.467	0.405	0.826	2.262	0.442	2.179	0.450	2.312	0.431	2.312	0.461	611974	4210011
1191	11	2.229	0.423	0.811	2.753	0.432	2.427	0.458	2.341	0.459	2.599	0.436	601953	4207998
1196	17	3.829	0.415	0.675	2.497	0.435	2.321	0.449	4.132	0.368	4.102	0.339	606948	4208000
1202	32	1.144	0.448	0.373	2.397	0.446	2.135	0.460	0.811	0.511	0.947	0.645	615964	4207937
1215	12	1.749	0.497	0.786	2.369	0.447	2.185	0.457	2.643	0.453	2.549	0.517	613981	4206982
1455	15	2.198	0.396	0.769	2.432	0.443	2.234	0.455	1.488	0.497	1.503	0.534	610968	4205960
1468	13	0.994	0.452	0.693	2.300	0.455	2.212	0.461	2.610	0.450	2.494	0.403	616027	4204976
1477	23	3.155	0.363	0.529	2.438	0.447	2.241	0.459	2.085	0.484	2.083	0.478	611943	4203872
1511	10	2.718	0.403	0.779	2.595	0.440	2.354	0.457	1.594	0.491	1.587	0.532	615000	4201000
1524	10	2.460	0.381	0.812	2.707	0.428	2.300	0.450	0.971	0.511	0.982	0.797	620165	4200165
1527	26	2.245	0.377	0.565	2.853	0.409	2.523	0.427	2.162	0.426	2.153	0.439	630190	4200042
1533	15	1.515	0.387	0.607	2.854	0.417	2.421	0.440	1.906	0.444	1.906	0.525	620018	4199003
1555	14	0.930	0.440	0.595	2.789	0.411	2.440	0.428	2.010	0.461	2.010	0.805	625025	4196977
1598	13	1.517	0.437	0.738	3.120	0.392	2.659	0.414	4.827	0.278	4.752	0.236	622058	4193972
1648	16	1.629	0.446	0.558	3.288	0.387	2.831	0.409	2.716	0.416	2.715	0.298	619079	4189940
1660	11	2.163	0.402	0.672	3.101	0.3996	2.839	0.412	1.824	0.474	1.793	0.669	617998	4189940
1666	17	2.608	0.410	0.886	3.061	0.404	2.050	0.456	-0.888	0.696	-0.888	0.793	628994	4189064
1667	30	1.501	0.430	0.687	3.043	0.406	2.046	0.456	-0.414	0.677	-0.230	0.873	630086	4189039
1781	10	2.643	0.400	0.962	2.997	0.403	2.331	0.434	3.334	0.380	3.334	0.524	632000	4191000

Table 2 - Parameters table tree data

Plot	n	DepP	IndepP	R2p	DepAd	IndepAd	DepFix	IndepFix	Dep1km	Indep1km	Dep500m	Indep500m	x	y
1127	13	0.893	0.468	0.563	1.873	0.437	1.832	0.441	2.164	0.418	1.971	0.431	612002	4213978
1151	17	1.738	0.419	0.770	1.857	0.427	1.885	0.423	2.470	0.401	2.051	0.415	604988	4211030
1174	12	2.467	0.405	0.826	1.231	0.454	1.345	0.452	1.838	0.425	1.449	0.457	611974	4210011
1187	11	2.686	0.382	0.678	1.118	0.454	1.434	0.441	2.022	0.413	1.712	0.429	609958	4208987
1191	11	2.229	0.423	0.811	2.847	0.412	2.182	0.430	2.337	0.418	2.253	0.424	601953	4207998
1196	17	3.829	0.415	0.675	1.772	0.439	1.738	0.438	2.188	0.415	1.873	0.428	606948	4208000
1202	32	1.144	0.448	0.373	1.585	0.446	1.568	0.446	1.775	0.436	1.612	0.442	615964	4207937
1215	12	1.749	0.497	0.786	1.755	0.439	1.743	0.439	1.939	0.429	1.823	0.437	613981	4206982
1455	15	2.198	0.396	0.769	1.732	0.444	1.697	0.443	1.860	0.439	1.698	0.444	610968	4205960
1468	13	0.994	0.452	0.693	1.583	0.447	1.615	0.449	1.608	0.447	1.566	0.450	616027	4204976
1477	23	3.155	0.363	0.529	1.578	0.470	1.543	0.464	1.766	0.438	1.500	0.459	611943	4203872
1511	10	2.718	0.403	0.779	1.838	0.436	1.850	0.437	2.146	0.422	1.890	0.433	615000	4201000
1524	10	2.460	0.381	0.812	1.640	0.445	1.590	0.446	1.848	0.438	1.636	0.445	620165	4200165
1527	26	2.245	0.377	0.565	1.451	0.437	1.474	0.433	1.805	0.415	1.618	0.429	630190	4200042
1533	15	1.515	0.387	0.607	1.760	0.437	1.732	0.444	1.981	0.428	1.753	0.438	620018	4199003
1555	14	0.930	0.440	0.595	1.624	0.440	1.630	0.438	1.801	0.431	1.754	0.437	625025	4196977
1598	13	1.517	0.437	0.738	1.793	0.414	1.801	0.416	2.004	0.406	1.851	0.411	622058	4193972
1648	16	1.629	0.446	0.558	1.985	0.439	1.628	0.458	2.021	0.445	1.666	0.470	619079	4189940
1660	11	2.163	0.403	0.673	1.929	0.432	1.804	0.440	2.130	0.420	1.851	0.437	617998	4188940
1666	17	2.608	0.410	0.886	2.149	0.426	2.215	0.422	2.478	0.404	2.209	0.419	628994	4189064
1667	30	1.501	0.430	0.687	2.435	0.425	2.309	0.422	2.577	0.409	2.415	0.419	630086	4189039
1781	10	2.643	0.400	0.962	2.214	0.414	2.253	0.413	2.271	0.409	2.344	0.412	632000	4191000

3. RESUDUALS TABLES

3.1. Petterson Local Regression

Table 3 - Regression residual coefficients

Plot	average_p	rmse_p	std_p	stde_p	aic_p
1151	-0.107	0.960	0.903	0.082	0.887
1174	-0.064	1.013	0.971	0.069	2.195
1191	-0.031	0.511	0.483	0.044	-12.994
1196	-0.041	0.721	0.679	0.068	-4.768
1202	0.009	0.576	0.543	0.054	-9.265
1215	-0.057	0.920	0.871	0.079	-0.033
1455	-0.095	1.066	1.026	0.064	3.923
1468	-0.057	0.921	0.888	0.055	-0.770
1477	-0.085	1.067	1.046	0.034	5.979
1511	-0.022	1.166	1.099	0.110	4.847
1524	-0.058	0.738	0.707	0.050	-6.650
1527	-0.091	1.111	1.085	0.042	7.406
1533	-0.092	1.400	1.345	0.090	11.943
1555	-0.040	0.737	0.702	0.058	-5.504
1598	-0.041	0.680	0.666	0.022	-21.248
1648	-0.162	1.468	1.411	0.083	14.916
1660	-0.081	0.838	0.805	0.050	-3.790
1666	-0.130	1.407	1.319	0.132	8.591
1667	-0.004	1.009	0.966	0.074	2.074
1781	-0.201	1.411	1.361	0.062	17.052

3.2. Plot Curves

Table 4 - Adaptive kernel residual coefficients.

Plot	average_ad	rmse_ad	mean_gwr_pred_ad	std_ad	stde_ad	aic_ad
1174	-1.066	1.635	0.950	1.075	0.098	12.607
1555	-2.449	2.883	2.387	1.101	0.079	31.486
1215	0.337	0.708	0.421	0.571	0.052	-5.807
1191	-1.185	1.506	1.148	0.674	0.067	9.952
1781	-0.646	0.924	0.668	0.543	0.054	0.184
1660	-1.625	2.022	0.086	0.880	0.080	17.278
1151	-2.335	2.723	2.241	1.049	0.066	33.916
1648	-0.637	1.387	0.616	1.167	0.073	12.324
1202	-2.470	2.790	2.364	1.105	0.036	65.543
1524	-2.162	2.660	2.126	1.047	0.105	21.339
1455	-1.524	1.846	1.475	0.802	0.057	19.001
1527	-2.253	2.586	2.173	1.068	0.041	51.315
1533	-4.318	4.846	4.232	1.353	0.090	49.196
1468	-2.731	3.092	2.679	0.747	0.062	28.907
1667	-2.245	2.413	2.210	0.638	0.021	54.773
1666	-0.622	1.542	0.465	1.348	0.079	16.596
1196	1.073	1.432	1.157	0.828	0.052	13.359
1511	-1.129	1.927	0.997	1.372	0.137	14.887
1598	-1.481	2.002	1.472	1.139	0.088	19.876
1477	-1.246	1.975	1.048	1.445	0.066	31.841

Table 5 - 1km bandwidth residual coefficients

Plot	average1k	rmse_1k	mean_gwr_pred_1k	std_1k	stde_1k	aic_1k
117	-0.786	1.379	0.671	1.016	0.092	8.865
155	-2.997	3.393	2.934	0.979	0.070	36.051
121	-0.174	0.607	0.279	0.546	0.050	-9.178
119	-1.563	1.932	1.526	0.776	0.078	14.939
178	-0.441	0.847	0.463	0.650	0.065	-1.547
166	-1.425	1.874	0.559	0.963	0.088	15.611
115	-1.716	2.128	1.622	1.042	0.065	26.032
164	-0.776	1.343	0.707	1.021	0.064	11.312
120	-1.564	1.942	1.459	1.056	0.034	43.075
152	-1.983	2.728	2.114	1.498	0.150	21.840
145	-1.128	1.569	1.079	0.950	0.068	14.449
152	-1.534	1.934	1.454	1.071	0.041	36.230
153	-3.659	4.163	3.573	1.324	0.088	44.643
146	-3.039	3.422	2.987	0.757	0.063	31.339
166	-3.162	3.505	3.128	1.231	0.041	77.182
166	-2.758	4.683	2.769	3.532	0.208	54.363
119	0.805	1.212	0.889	0.825	0.052	8.029
151	-1.192	2.131	1.168	1.567	0.157	16.897
159	-0.663	2.541	2.022	2.333	0.179	26.075
147	-1.569	2.269	1.371	1.525	0.069	37.949

Table 6 - 500 m bandwidth residual coefficients

Plot	average500m	rmse500m	meangwr_pred_500m	std_500m	stde_500m	aic_500m
1174	-1.689	2.242	1.574	1.176	0.107	19.552
1555	-7.506	8.215	7.444	1.275	0.091	60.809
1215	-1.273	1.499	1.236	0.488	0.044	10.694
1191	-1.118	1.448	1.081	0.689	0.069	9.174
1781	-3.354	3.929	3.377	1.103	0.110	29.134
1660	-4.318	4.976	2.607	1.332	0.121	37.095
1151	-1.248	1.702	1.153	1.022	0.064	18.883
1648	6.262	7.197	6.330	2.554	0.160	65.023
1202	-4.315	4.607	4.209	1.129	0.036	96.637
1524	-5.906	6.925	5.870	1.968	0.197	40.472
1455	-1.824	2.248	1.775	1.041	0.074	24.526
1527	-1.870	2.241	1.791	1.087	0.042	43.876
1533	-5.743	6.362	5.657	1.498	0.100	57.362
1468	-1.774	2.200	1.722	0.983	0.082	20.737
1667	-5.231	5.542	5.197	1.158	0.039	104.669
1666	-4.043	5.545	3.886	3.385	0.199	60.112
1196	1.831	2.188	1.915	0.944	0.059	26.914
1511	-2.178	3.027	2.046	1.695	0.169	23.920
1598	1.275	4.089	2.851	3.683	0.283	38.445
1477	-1.440	2.163	1.242	1.512	0.069	35.859

Table 7 - Fixed kernel residual coefficients

Plot	average_fix	rmse_fix	mean_gwr_pred_fix	std_fix	stde_fix	aic_fix
1151	-2.553	2.951	2.459	1.085	0.068	36.496
1174	-1.190	1.769	1.074	1.123	0.102	14.345
1191	-1.638	2.004	1.600	0.767	0.077	15.667
1196	0.894	1.300	0.978	0.851	0.053	10.258
1202	-2.421	2.731	2.315	1.075	0.035	64.229
1215	0.343	0.677	0.400	0.532	0.048	-6.796

1455	-1.460	1.797	1.411	0.827	0.059	18.252
1468	-2.735	3.094	2.683	0.735	0.061	28.920
1477	-1.239	1.989	1.041	1.470	0.067	32.160
1511	-1.281	2.078	1.149	1.420	0.142	16.401
1524	-2.214	2.735	2.177	1.098	0.110	21.893
1527	-2.173	2.515	2.093	1.077	0.041	49.872
1533	-4.355	4.879	4.269	1.336	0.089	49.402
1555	-2.517	2.927	2.455	1.042	0.074	31.913
1598	-1.391	1.859	1.382	1.035	0.080	17.954
1648	-0.707	1.327	0.639	1.053	0.066	10.914
1660	-1.486	1.882	0.225	0.872	0.079	15.706
1666	-0.849	2.112	0.715	1.848	0.109	27.285
1667	-1.934	2.119	1.899	0.682	0.023	46.973
1781	-0.578	0.876	0.615	0.558	0.056	-0.869

Table 8 - Coefficient of Determination

Plot	R_ad	R_fix	R_1km	R_500km
1151	0	0	0	0.269
1174	0.496	0.409	0.641	0.052
1191	0	0	0	0.063
1196	0	0.076	0.196	0
1202	0	0	0	0
1215	0.527	0.568	0.652	0
1455	0	0	0	0
1468	0	0	0	0
1477	0.026	0.012	0	0
1511	0.321	0.209	0.169	0
1524	0	0	0	0
1527	0	0	0	0
1533	0	0	0	0
1555	0	0	0	0
1598	0	0	0	0
1648	0	0	0	0
1660	0	0	0	0
1666	0.781	0.59	0	0
1667	0	0	0	0
1781	0.802	0.822	0.834	0

3.3. Tree Curves

Table 9 - 500m bandwidth residuals

Plot	average500m	rmse500m	meangwr_pred_500m	std_500m	stde_500m	aic_500m
1174	-0.224	1.336	0.592	1.245	0.113	8.166
1555	-1.708	2.122	1.645	1.006	0.072	22.904
1215	1.560	1.840	1.592	0.607	0.055	15.206
1191	-0.121	0.733	0.080	0.679	0.068	-4.445
1781	0.111	0.548	0.146	0.503	0.050	-10.255
1660	-0.544	1.110	0.487	0.885	0.080	4.088
1151	-0.611	1.241	0.516	1.020	0.064	8.778
1648	-1.017	1.411	0.960	0.868	0.054	12.874
1202	-0.980	1.498	0.895	1.085	0.035	26.987
1524	-0.949	1.562	1.045	1.081	0.108	10.690
1455	-0.293	0.881	0.314	0.790	0.056	-1.694
1527	-0.483	1.205	0.471	1.073	0.041	11.617

1533	-3.163	3.660	3.071	1.312	0.087	40.780
1468	-1.357	1.677	1.318	0.739	0.062	14.217
1667	-1.584	1.767	1.544	0.646	0.022	36.076
1666	0.173	1.579	0.371	1.518	0.089	17.396
1196	2.403	2.709	2.484	0.832	0.052	33.753
1511	0.243	1.464	0.405	1.356	0.136	9.389
1598	0.241	1.122	0.337	1.045	0.080	4.823
1477	0.029	1.524	0.657	1.487	0.068	20.455

Table 10 - Adaptive kernel residual coefficients

Plot	average_ad	rmse_ad	mean_gwr_pred_ad	std_ad	stde_ad	aic_ad
1174	0.343	1.398	0.564	1.276	0.116	9.159
1555	-1.595	2.011	1.532	0.995	0.071	21.397
1215	1.600	1.875	1.631	0.589	0.054	15.616
1191	-0.564	0.935	0.523	0.651	0.065	0.432
1781	0.299	0.624	0.290	0.497	0.050	-7.656
1660	-0.548	1.104	0.491	0.876	0.080	3.977
1151	-0.686	1.299	0.591	1.036	0.065	10.232
1648	-0.410	1.050	0.353	0.922	0.058	3.417
1202	-1.057	1.546	0.972	1.076	0.035	28.959
1524	-0.976	1.584	1.063	1.083	0.108	10.965
1455	-0.355	0.906	0.340	0.789	0.056	-0.907
1527	-0.388	1.184	0.468	1.090	0.042	10.684
1533	-3.136	3.633	3.044	1.311	0.087	40.554
1468	-1.295	1.621	1.255	0.748	0.062	13.408
1667	-1.768	1.944	1.727	0.646	0.022	41.823
1666	0.004	1.636	0.382	1.584	0.093	18.606
1196	2.148	2.459	2.229	0.852	0.053	30.661
1511	0.198	1.467	0.397	1.368	0.137	9.439
1598	0.270	1.114	0.328	1.029	0.079	4.629
1477	-0.464	1.622	0.610	1.510	0.069	23.196

Table 11 - Fixed kernel residual coefficients

Plot	average_fix	rmse_fix	mean_gwr_pred_fix	std_fix	stde_fix	aic_fix
1174	0.169	1.320	0.485	1.239	0.113	7.897
1555	-1.507	1.932	1.443	1.000	0.071	20.280
1215	1.624	1.899	1.655	0.588	0.053	15.900
1191	-0.271	0.799	0.231	0.697	0.070	-2.713
1781	0.245	0.596	0.236	0.499	0.050	-8.589
1660	-0.539	1.112	0.482	0.891	0.081	4.133
1151	-0.578	1.230	0.483	1.028	0.064	8.501
1648	-0.524	1.064	0.467	0.874	0.055	3.855
1202	-1.008	1.511	0.923	1.076	0.035	27.520
1524	-0.923	1.550	1.044	1.091	0.109	10.539
1455	-0.260	0.866	0.299	0.787	0.056	-2.192
1527	-0.299	1.148	0.411	1.083	0.042	9.099
1533	-3.328	3.828	3.236	1.320	0.088	42.128
1468	-1.428	1.748	1.389	0.744	0.062	15.221
1667	-1.468	1.656	1.428	0.647	0.022	32.212
1666	0.035	1.594	0.334	1.543	0.091	17.717
1196	2.264	2.575	2.345	0.851	0.053	32.135
1511	0.151	1.462	0.373	1.369	0.137	9.364
1598	0.175	1.083	0.270	1.021	0.079	3.902
1477	-0.226	1.553	0.617	1.498	0.068	21.283

Table 12 - 1 km bandwidht residual coefficients

Plot	averagE1k	rmse1k	mean_gwr_pred_1k	std_1k	stde_1k	aic_1k
117	0.297	1.115	0.406	1.011	0.092	4.193
155	-1.542	1.977	1.478	1.023	0.073	20.920
121	1.599	1.899	1.630	0.659	0.060	15.903
119	-0.021	0.708	0.046	0.667	0.067	-5.139
178	0.379	0.683	0.370	0.505	0.051	-5.859
166	-0.557	1.100	0.500	0.864	0.079	3.884
115	-0.873	1.417	0.778	1.030	0.064	13.018
164	-0.700	1.203	0.643	0.910	0.057	7.776
120	-1.096	1.599	1.012	1.109	0.036	31.039
152	-1.086	1.645	1.115	1.046	0.105	11.720
145	-0.480	0.959	0.422	0.775	0.055	0.666
152	-0.441	1.173	0.387	1.058	0.041	10.224
153	-3.212	3.709	3.120	1.312	0.087	41.174
146	-1.368	1.691	1.328	0.748	0.062	14.420
166	-1.595	1.777	1.554	0.646	0.022	36.435
166	0.286	1.468	0.448	1.391	0.082	14.931
119	2.329	2.629	2.411	0.814	0.051	32.793
151	0.185	1.425	0.320	1.330	0.133	8.857
159	0.106	1.135	0.390	1.081	0.083	5.131
147	0.147	1.472	0.582	1.428	0.065	18.906

Table 13 - Coefficient of Detemination

Plot	R_ad	R_fix	R_1km	R_500km
1151	0.574	0.618	0.493	0.611
1174	0.631	0.671	0.765	0.663
1191	0.405	0.49	0.639	0.555
1196	0	0	0	0
1202	0	0	0	0
1215	0	0	0	0
1455	0.642	0.673	0.599	0.661
1468	0	0	0	0
1477	0.342	0.397	0.459	0.419
1511	0.606	0.609	0.628	0.608
1524	0.492	0.513	0.452	0.506
1527	0.454	0.486	0.463	0.434
1533	0	0	0	0
1555	0	0	0	0
1598	0.618	0.639	0.603	0.612
1648	0.213	0.191	0	0
1660	0.536	0.529	0.539	0.531
1666	0.754	0.766	0.802	0.771
1667	0	0	0	0
1781	0.91	0.918	0.892	0.93