Plot-based aboveground biomass estimates - TropiSAR sites

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05 February 2018

NB. All aboveground biomass (AGB) estimates are in Mg ha-1. Calibration points with Area_code names including ‘h’, ‘q’ and ‘c’ represent 1ha, 0.25ha and 0.16ha, respectively.

Loading packages and datasets

```
# PARACOU: 15 plots 6.25ha (PAR01-15) + 1 plot 25ha (PAR16); ARB = PAR17 (6.25ha) NB. all plot
s surveyed in 2009 except PAR16 surveyed in 2010
## NB. "Each 9 ha plot contains a buffer zone 25 m wide. Trees are monitored inside the core z
one, i.e. in an area of 6.25 ha, while silvicultural treatments were applied to the whole plot
."
# NOURAGUES: NOU01 (Balenfois 2ha; 100x200m), NOU02 (Grand Plateau 10ha; 100x1000m), NOU03 (Pa
rare 6ha; 200x300m), NOU04 (Petit Plateau 12ha; 300x400m), NOU05 (Bas_Fond_1; 50x50m), NOU06 (
Bas_Fond_2; 50x50m), NOU07 (Lek; 50x50m), NOU08 (Lhor; 100x100m), NOU09 (Parare_Ridge; 100x100
m), NOU10 (Ringler; 100x100m), NOU11 (Wemomax; 50x50m)

# Packages
library(BIOMASS)
library(oce) # to compute Earth magnetic declination
```

```
## Loading required package: gsw
```

```
library(lubridate) # convert ymd dates to decimal year
```

```
##
## Attaching package: 'lubridate'
```

```
## The following object is masked from 'package:base':
##
##     date
```

```
library(sp)

# Tree-level and botanical datasets
load("TropiSARstem.rdata")
load("TropiSARbota.rdata")
```

Getting wood density (WD) using names

```
TropiSARstem$Genus <- dfbota$genusCorr[match(TropiSARstem$Name, dfbota$ID)]
TropiSARstem$Species <- dfbota$speciesCorr[match(TropiSARstem$Name, dfbota$ID)]
TropiSARstem$FamilyAPG <- dfbota$familyAPG[match(TropiSARstem$Name, dfbota$ID)]
TropiSARstem$NameCorr <- paste(TropiSARstem$Genus, TropiSARstem$Species)

# Some trees (n=48) were identified at family level in the field; we fill the family column
TropiSARstem$FamilyAPG[which(is.na(TropiSARstem$FamilyAPG) & !(is.na(TropiSARstem$Info_fam)))]
 <- TropiSARstem$Info_fam[which(is.na(TropiSARstem$FamilyAPG) & !(is.na(TropiSARstem$Info_fam)
))]

dataWD <- getWoodDensity(genus=TropiSARstem$Genus, species=TropiSARstem$Species, family=TropiS
ARstem$FamilyAPG, stand=TropiSARstem$Plot_code)
```

```
## The reference dataset contains 16467 wood density values
## Your taxonomic table contains 1125 taxa
```

```
TropiSARstem$WD <- dataWD$meanWD
TropiSARstem$sdWD <- dataWD$sdWD
TropiSARstem$levelWD <- dataWD$levelWD
```

Refining permanent plot georeferencing

```
# Preliminary work in order to georeference the data
load("TropiSARplotcoord.rdata")

coordplot.nousp <- read.csv("PlotCoordNouSP.csv", sep=";", stringsAsFactors=T)
nousp.utm <- SpatialPoints(cbind(coordplot.nousp$X_utm,coordplot.nousp$Y_utm), proj4string=CRS
("+proj=utm +zone=22 +north +datum=WGS84 +units=m +no_defs +ellps=WGS84 +towgs84=0,0,0"))
nousp.geo <- spTransform(nousp.utm, CRS("+proj=longlat +datum=WGS84"))

coordplot.nousp$Longitude <- nousp.geo@coords[,1]
coordplot.nousp$Latitude <- nousp.geo@coords[,2]

coordplot.trop$Longitude[which(is.na(coordplot.trop$Longitude))] <- coordplot.nousp$Longitude
coordplot.trop$Latitude[which(is.na(coordplot.trop$Latitude))] <- coordplot.nousp$Latitude

spgeo <- SpatialPoints(cbind(coordplot.trop$Longitude,coordplot.trop$Latitude), proj4string=CR
S("+proj=longlat +datum=WGS84"))
sputm <- spTransform(spgeo, CRS("+proj=utm +zone=22 +north +datum=WGS84 +units=m +no_defs +ell
ps=WGS84 +towgs84=0,0,0"))

coordplot.trop$X_utm <- sputm@coords[,1]
coordplot.trop$Y_utm <- sputm@coords[,2]

# Get "true" bearing
tropiplot <- as.character(unique(coordplot.trop$Plot_code))
coordplot.trop$Loc <- substring(coordplot.trop$Point, 6)
coordplot.trop$True_bearing <- NA

for (i in (1:length(tropiplot))) {
```

```
  swe.trop <- (atan2(coordplot.trop$X_utm[which(coordplot.trop$Plot_code == tropiplot[i] & coo
rdplot.trop$Loc == "b")] - coordplot.trop$X_utm[which(coordplot.trop$Plot_code == tropiplot[i]
 & coordplot.trop$Loc == "a")],
                     coordplot.trop$Y_utm[which(coordplot.trop$Plot_code == tropiplot[i] & coo
rdplot.trop$Loc == "b")] - coordplot.trop$Y_utm[which(coordplot.trop$Plot_code == tropiplot[i]
 & coordplot.trop$Loc == "a")])*180/pi)

  nwe.trop <- (atan2(coordplot.trop$X_utm[which(coordplot.trop$Plot_code == tropiplot[i] & coo
rdplot.trop$Loc == "c")] - coordplot.trop$X_utm[which(coordplot.trop$Plot_code == tropiplot[i]
 & coordplot.trop$Loc == "d")],
                     coordplot.trop$Y_utm[which(coordplot.trop$Plot_code == tropiplot[i] & coo
rdplot.trop$Loc == "c")] - coordplot.trop$Y_utm[which(coordplot.trop$Plot_code == tropiplot[i]
 & coordplot.trop$Loc == "d")])*180/pi)

  coordplot.trop$True_bearing[which(coordplot.trop$Plot_code == tropiplot[i])] <- round(mean(c
(swe.trop, nwe.trop)),1) + 270
}
coordplot.trop$True_bearing <- round((coordplot.trop$True_bearing) %% 360,1) # modulus operato
r %%

# Converting "true"" bearing in (1) radians, and then in (2) plot rotation
coordplot.trop$TB_rad <- (pi/2 - (coordplot.trop$True_bearing*pi/180)) %% pi # TB stands for t
rue bearing
coordplot.trop$RotAng_rad <- (coordplot.trop$TB_rad - pi/2)

TropiSARstem$TreeRad <- sqrt(TropiSARstem$X_rel^2 + TropiSARstem$Y_rel^2)
TropiSARstem$TreeAng_rel <- atan2(TropiSARstem$X_rel, TropiSARstem$Y_rel); range(TropiSARstem$
TreeAng_rel, na.rm=T) # seems OK; max TreeAng is pi/2 ie tree on the Y line
```

```
## [1] 0.000000 1.570796
```

```
# Assigning plot rotation to each stem
TropiSARstem$PlotAng <- coordplot.trop$RotAng_rad[match(TropiSARstem$Plot_code, coordplot.trop
$Plot_code)]

# Computing new stem coordinates after plot rotation
TropiSARstem$Xrot_rel <- TropiSARstem$X_rel * cos(TropiSARstem$PlotAng) - TropiSARstem$Y_rel *
 sin(TropiSARstem$PlotAng) # x' = x * cos(theta) - y * sin(theta)
TropiSARstem$Yrot_rel <- TropiSARstem$X_rel * sin(TropiSARstem$PlotAng) + TropiSARstem$Y_rel *
 cos(TropiSARstem$PlotAng) # y' = x * sin(theta) + y * cos(theta)

## Works because it selects the first value in the data.frame and that value is the one we nee
d (x=0; y=0)
TropiSARstem$X_abs <- coordplot.trop$X_utm[match(TropiSARstem$Plot_code, coordplot.trop$Plot_c
ode)] + TropiSARstem$Xrot_rel
TropiSARstem$Y_abs <- coordplot.trop$Y_utm[match(TropiSARstem$Plot_code, coordplot.trop$Plot_c
ode)] + TropiSARstem$Yrot_rel

# CHANGING COORDINATES AFTER VISUAL INSPECTION OF BIG TREES LOCATION AND LIDAR-DERIVED CHM
df.changcoord <- data.frame(plot = tropiplot,
                            modX = c(-5,-5,3,-2,0,0,0,0,0,0,0,-2,2,-1,-2,0,-3,0,3,-2,-1,3,4,0,
-1,-1,2,0),
                            modY = c(2,-3,3,-6,0,0,0,0,0,0,0,-5,-3,-4,-2,0,-3,-3,-1,-2,1,0,0,0
```

```
,-2,-1,-2,0),
                              stringsAsFactors=F)

TropiSARstem$X_absCORR <- TropiSARstem$X_abs + df.changcoord$modX[match(TropiSARstem$Plot_code
, df.changcoord$plot)]
TropiSARstem$Y_absCORR <- TropiSARstem$Y_abs + df.changcoord$modY[match(TropiSARstem$Plot_code
, df.changcoord$plot)]

coordplot.trop$X_utmCORR <- coordplot.trop$X_utm + df.changcoord$modX[match(coordplot.trop$Plo
t_code, df.changcoord$plot)]
coordplot.trop$Y_utmCORR <- coordplot.trop$Y_utm + df.changcoord$modY[match(coordplot.trop$Plo
t_code, df.changcoord$plot)]
```

Creating georeferenced sets of calibration points (at 1ha and 0.25ha)

```
site = c("NOURAGUES", "PARACOU")
scale = c(100, 50)
suffixe = c("h","q")
partplot = c("PAR01","PAR02","PAR03","PAR04","PAR05","PAR06","PAR07","PAR08","PAR09","PAR10","
PAR11","PAR12","PAR13","PAR14","PAR15","PAR17")

# Creating dataframe to georeference quarter hectare features
coord_orig_q <- coordplot.trop[which(coordplot.trop$X_rel == 0 & coordplot.trop$Y_rel == 0),]
coord_orig_q$full_lengthX <- coordplot.trop$X_rel[which(coordplot.trop$Loc == "b")]
coord_orig_q$full_lengthY <- coordplot.trop$Y_rel[which(coordplot.trop$Loc == "d")]
coord_orig_temp <- coord_orig_q
coord_orig_q <- coord_orig_q[-which(coord_orig_q$Plot_code == "NOU08"),] # Removing NOU08, a 1
00x100m plot without XY (so won't be able to dispatch trees in quarters)

# Creating dataframe to georeference hectare features (n=119)
coord_orig_h <- coord_orig_temp
coord_orig_h$X_rel[which(coord_orig_h$Plot_code %in% partplot)] <- 25
coord_orig_h$Y_rel[which(coord_orig_h$Plot_code %in% partplot)] <- 25
coord_orig_h$full_lengthX[which(coord_orig_h$Plot_code %in% partplot)] <- 200
coord_orig_h$full_lengthY[which(coord_orig_h$Plot_code %in% partplot)] <- 200

coord_orig_h$X_utmCORR[which(coord_orig_h$Plot_code %in% partplot)] <- coord_orig_h$X_utmCORR[
which(coord_orig_h$Plot_code %in% partplot)] + cos(coord_orig_h$RotAng_rad[which(coord_orig_h$
Plot_code %in% partplot)] + pi/4) * sqrt(25^2 + 25^2) # XX <-
coord_orig_h$Y_utmCORR[which(coord_orig_h$Plot_code %in% partplot)] <- coord_orig_h$Y_utmCORR[
which(coord_orig_h$Plot_code %in% partplot)] + sin(coord_orig_h$RotAng_rad[which(coord_orig_h$
Plot_code %in% partplot)] + pi/4) * sqrt(25^2 + 25^2) # YY <-

coord_orig_h <- coord_orig_h[-which(coord_orig_h$full_lengthX < 100),] # Removing 50x50m plots

scale.list <- list() # plot.df <- data.frame(); # Yet, plot.df already defined later in the lo
ops
for (j in (1:length(scale))) {
  if (j == 1) coord_orig = coord_orig_h else coord_orig = coord_orig_q
```

```
  plot.df <- data.frame()
  tempoplot <- as.character(coord_orig$Plot_code)

  for (k in (1:length(tempoplot))) {
    lengthX <- coord_orig$full_lengthX[which(coord_orig$Plot_code == tempoplot[k])]; lengthX
    lengthY <- coord_orig$full_lengthY[which(coord_orig$Plot_code == tempoplot[k])]; lengthY

    incrX_h <- cos(coord_orig$RotAng_rad[which(coord_orig$Plot_code == tempoplot[k])]) * scale
[j] # increment for X coordinates horizontally
    incrY_h <- sin(coord_orig$RotAng_rad[which(coord_orig$Plot_code == tempoplot[k])]) * scale
[j] # increment for Y coordinates horizontally

    incrX_v <- cos(coord_orig$RotAng_rad[which(coord_orig$Plot_code == tempoplot[k])] + pi/2)
* scale[j] # increment for X coordinates vertically; also equals (-incrY_h)
    incrY_v <- sin(coord_orig$RotAng_rad[which(coord_orig$Plot_code == tempoplot[k])] + pi/2)
* scale[j] # increment for Y coordinates vertically; also equals incrX_h

    nbptX <- length(seq(0, lengthX, scale[j]))
    nbptY <- length(seq(0, lengthY, scale[j]))
    incrX.mat <- matrix(rep(0:(nbptX-1),nbptY), nrow=nbptY, ncol=nbptX, byrow = T); incrX.mat
    incrY.mat <- matrix(rep(rev(0:(nbptY-1)),nbptX), nrow=nbptY, ncol=nbptX); incrY.mat

    XX <- coord_orig$X_utmCORR[which(coord_orig$Plot_code == tempoplot[k])] + incrX_h * incrX.
mat + incrX_v * incrY.mat
    YY <- coord_orig$Y_utmCORR[which(coord_orig$Plot_code == tempoplot[k])] + incrY_h * incrX.
mat + incrY_v * incrY.mat
    #plot(as.vector(YY) ~ as.vector(XX))

    XX_SW.mat <- XX[2:nbptY, 1:(nbptX-1)]; YY_SW.mat <- YY[2:nbptY, 1:(nbptX-1)]
    XX_NW.mat <- XX[1:(nbptY-1), 1:(nbptX-1)]; YY_NW.mat <- YY[1:(nbptY-1), 1:(nbptX-1)]
    XX_SE.mat <- XX[2:nbptY, 2:nbptX]; YY_SE.mat <- YY[2:nbptY, 2:nbptX]
    XX_NE.mat <- XX[1:(nbptY-1), 2:nbptX]; YY_NE.mat <- YY[1:(nbptY-1), 2:nbptX]

    XX_SW.vect <- as.vector(XX_SW.mat); YY_SW.vect <- as.vector(YY_SW.mat)
    XX_NW.vect <- as.vector(XX_NW.mat); YY_NW.vect <- as.vector(YY_NW.mat)
    XX_SE.vect <- as.vector(XX_SE.mat); YY_SE.vect <- as.vector(YY_SE.mat)
    XX_NE.vect <- as.vector(XX_NE.mat); YY_NE.vect <- as.vector(YY_NE.mat)

    for (l in (1:(nbptX-1))) {
      XX_SW.vect[((l-1)*(nbptY-1)+1):(l*(nbptY-1))] <- rev(XX_SW.vect[((l-1)*(nbptY-1)+1):(l*(
nbptY-1))])
      XX_NW.vect[((l-1)*(nbptY-1)+1):(l*(nbptY-1))] <- rev(XX_NW.vect[((l-1)*(nbptY-1)+1):(l*(
nbptY-1))])
      XX_SE.vect[((l-1)*(nbptY-1)+1):(l*(nbptY-1))] <- rev(XX_SE.vect[((l-1)*(nbptY-1)+1):(l*(
nbptY-1))])
      XX_NE.vect[((l-1)*(nbptY-1)+1):(l*(nbptY-1))] <- rev(XX_NE.vect[((l-1)*(nbptY-1)+1):(l*(
nbptY-1))])
    }
    for (l in (1:(nbptX-1))) {
      YY_SW.vect[((l-1)*(nbptY-1)+1):(l*(nbptY-1))] <- rev(YY_SW.vect[((l-1)*(nbptY-1)+1):(l*(
nbptY-1))])
      YY_NW.vect[((l-1)*(nbptY-1)+1):(l*(nbptY-1))] <- rev(YY_NW.vect[((l-1)*(nbptY-1)+1):(l*(
nbptY-1))])
      YY_SE.vect[((l-1)*(nbptY-1)+1):(l*(nbptY-1))] <- rev(YY_SE.vect[((l-1)*(nbptY-1)+1):(l*(
```

```
nbptY-1))])
      YY_NE.vect[((l-1)*(nbptY-1)+1):(l*(nbptY-1))] <- rev(YY_NE.vect[((l-1)*(nbptY-1)+1):(l*(
nbptY-1))])
    }

    templot.df <- data.frame(Site = as.character(rep(coord_orig$Site[which(coord_orig$Plot_cod
e == tempoplot[k])], (nbptX-1) * (nbptY-1))),
                             Area_code = paste(tempoplot[k], suffixe[j], c(1:((nbptX-1)*(nbptY
-1))), sep=""),
                             Plot_code = rep(tempoplot[k], (nbptX-1) * (nbptY-1)),
                             Scale = rep(paste(scale[j]^2/10^4,"ha", sep=""), (nbptX-1) * (nbp
tY-1)),
                             sw_x = XX_SW.vect, sw_y = YY_SW.vect,
                             nw_x = XX_NW.vect, nw_y = YY_NW.vect,
                             se_x = XX_SE.vect, se_y = YY_SE.vect,
                             ne_x = XX_NE.vect, ne_y = YY_NE.vect)
    plot.df <- rbind(plot.df, templot.df)
  }
  scale.list[[j]] <- plot.df
}
#scale.list

# Convert list of georef hectares/quarters into a single data.frame
df1ha <- as.data.frame(scale.list[[1]])
df0.25ha <- as.data.frame(scale.list[[2]])

georefeatures.df <- rbind(df1ha, df0.25ha)
```

Assigning trees to hectares (1ha) and quarters (0.25ha) based on Plot_code and relative XY

```
## ATTRIBUTING TREES TO ONE HECTARE AREAS
partplot = c("PAR01","PAR02","PAR03","PAR04","PAR05","PAR06","PAR07","PAR08","PAR09","PAR10","
PAR11","PAR12","PAR13","PAR14","PAR15","PAR17")
TropiSARstem$plotnbH <- NA
TropiSARstem$plotnbH[which(TropiSARstem$Plot_code %in% partplot & TropiSARstem$X_rel >= 25 & T
ropiSARstem$X_rel <= 125 & TropiSARstem$Y_rel >= 25 & TropiSARstem$Y_rel <= 125)] <- 1
TropiSARstem$plotnbH[which(TropiSARstem$Plot_code %in% partplot & TropiSARstem$X_rel >= 25 & T
ropiSARstem$X_rel <= 125 & TropiSARstem$Y_rel > 125 & TropiSARstem$Y_rel <= 225)] <- 2
TropiSARstem$plotnbH[which(TropiSARstem$Plot_code %in% partplot & TropiSARstem$X_rel > 125 & T
ropiSARstem$X_rel <= 225 & TropiSARstem$Y_rel >= 25 & TropiSARstem$Y_rel <= 125)] <- 3
TropiSARstem$plotnbH[which(TropiSARstem$Plot_code %in% partplot & TropiSARstem$X_rel > 125 & T
ropiSARstem$X_rel <= 225 & TropiSARstem$Y_rel > 125 & TropiSARstem$Y_rel <= 225)] <- 4
TropiSARstem$plotnbH[which(TropiSARstem$Plot_code == "NOU08")] <- 1

TropiSARstem$hectX <- ifelse(TropiSARstem$X_rel == 0, 1, ceiling(TropiSARstem$X_rel/100))
TropiSARstem$hectY <- ifelse(TropiSARstem$Y_rel == 0, 1, ceiling(TropiSARstem$Y_rel/100))

TropiSARstem$full_lengthY4h <- coord_orig_h$full_lengthY[match(TropiSARstem$Plot_code, coord_o
rig_h$Plot_code)]
```

```
TropiSARstem$plotnbH <- ifelse(TropiSARstem$Plot_code %in% c(partplot, "NOU08"), TropiSARstem$plotnbH,
                               (TropiSARstem$hectX-1)*(TropiSARstem$full_lengthY4h/100) + TropiSARstem$hectY)

ind4h <- which(is.na(TropiSARstem$plotnbH) & !(TropiSARstem$Plot_code %in% partplot))
TropiSARstem$plotnbH[ind4h[which(TropiSARstem$Plot_code[ind4h] == "NOU02")]] <- 20 - TropiSARstem$Info_loc[ind4h[which(TropiSARstem$Plot_code[ind4h] == "NOU02")]]

A <- as.numeric(substr(TropiSARstem$Info_loc[ind4h[which(TropiSARstem$Plot_code[ind4h] == "NOU04")]],2,3))
B <- as.numeric(substr(TropiSARstem$Info_loc[ind4h[which(TropiSARstem$Plot_code[ind4h] == "NOU04")]],3,3))
TropiSARstem$plotnbH[ind4h[which(TropiSARstem$Plot_code[ind4h] == "NOU04")]] <- floor(A/10)*4 + B

TropiSARstem$Hect_code <- ifelse(is.na(TropiSARstem$plotnbH), NA, paste(TropiSARstem$Plot_code,"h",TropiSARstem$plotnbH,sep=""))

## ATTRIBUTING TREES TO QUARTER HECTARE AREAS
TropiSARstem$quartX <- ifelse(TropiSARstem$X_rel == 0, 1, ceiling(TropiSARstem$X_rel/50))
TropiSARstem$quartY <- ifelse(TropiSARstem$Y_rel == 0, 1, ceiling(TropiSARstem$Y_rel/50))

TropiSARstem$full_lengthY4q <- coord_orig_q$full_lengthY[match(TropiSARstem$Plot_code, coord_orig_q$Plot_code)]

TropiSARstem$plotnbQ <- (TropiSARstem$quartX-1)*(TropiSARstem$full_lengthY4q/50) + TropiSARstem$quartY
TropiSARstem$plotnbQ[which(TropiSARstem$Plot_code == "NOU07")] <- 1

TropiSARstem$Quart_code <- ifelse(is.na(TropiSARstem$plotnbQ), NA, paste(TropiSARstem$Plot_code,"q",TropiSARstem$plotnbQ,sep=""))
```

Estimating H from Feldpausch H:D relationship

```
range(TropiSARstem$Diameter)
```

```
## [1]  10.0 200.5
```

```
dataHfeld <- retrieveH(D=TropiSARstem$Diameter, region ="GuianaShield"); range(dataHfeld) # H ranges from 5.3 - 42.8 m
```

```
## [1]  5.28500 42.76006
```

```
TropiSARstem$Hfeld <- dataHfeld$H
TropiSARstem$HfeldRSE <- dataHfeld$RSE
```

Developing local H:D relationships (3 in total: 1 per site for trees + 1 for palms)

```
# Load H:D dataset
load("TropiSARforHD.rdata")
TropiSARforHD <- TropiSARforHD[-which(TropiSARforHD$Family == "Arecaceae"),]

# Compute site-specific H:D models
HDmodelPerSite <- by(TropiSARforHD, TropiSARforHD$Site,
                     function(x) modelHD(D=x$Diameter,H=x$Height, method="michaelis",useWeight
 =T),
                     simplify=FALSE)
RSEmodels <- sapply(HDmodelPerSite,function(x) x$RSE)
Coeffmodels <- lapply(HDmodelPerSite,function(x) x$coefficients)
ResHD <- data.frame(Site=names(unlist(RSEmodels)),
                    a=round(unlist(sapply(Coeffmodels,"[",1)),3),
                    b=round(unlist(sapply(Coeffmodels,"[",2)),3),
                    RSE=round(unlist(RSEmodels),3))
kable(ResHD, row.names = F)

# Retrieve predicted height values in the database
# NB. HEIGHT VALUES SOMETIMES FROM SURVEYS OTHER THAN THOSE WHEN DBH WAS MEASURED... BUT THIS
HAPPENS FOR RABI AS WELL
TropiSARstem$Hlocal <- TropiSARstem$Height # keeping directly measured trees
TropiSARstem$HlocRSE <- 1 # to be refined?! Assume a 1-m error on directly measured trees
TropiSARstem$levelHloc <- "FIELD"

Site=as.character(ResHD$Site)
for(i in 1:length(ResHD$Site)){
  filt<-TropiSARstem$Site==Site[i] & is.na(TropiSARstem$Hlocal)
  TropiSARstem$Hlocal[filt]<-retrieveH(D=TropiSARstem$Diameter[filt],model=HDmodelPerSite[[Sit
e[i]]])$H
  TropiSARstem$HlocRSE[filt]<-HDmodelPerSite[[Site[i]]]$RSE
  TropiSARstem$levelHloc[filt]<-Site[i]
}
```

Assigning mean plot coordinates to trees to get environmental factor E

```
longitude <- tapply(coordplot.trop$Longitude, coordplot.trop$Plot_code, mean)
latitude <- tapply(coordplot.trop$Latitude, coordplot.trop$Plot_code, mean)
meancoord <- data.frame(Plot_code=names(longitude), long=as.numeric(longitude), lat=as.numeric
(latitude))

TropiSARstem$long <- meancoord[match(TropiSARstem$Plot_code, meancoord$Plot_code),"long"]
TropiSARstem$lat <- meancoord[match(TropiSARstem$Plot_code, meancoord$Plot_code),"lat"]
```

Compute AGB at hectare/quarter/corner level using 3 different models

```
TropiSARstemTREE <- TropiSARstem[-which(TropiSARstem$FamilyAPG == "Arecaceae"),]
TropiSARstemTREE <- TropiSARstemTREE[with(TropiSARstemTREE, order(Site, decreasing = c(F), met
hod = "radix")),]
resolAGB <- c("Hect_code", "Quart_code")
coefmult <- c(1,4)
ordarea <- list(df1ha$Area_code, df0.25ha$Area_code)
```

AGB PALM

```
sort(table(TropiSARstem$Hect_code[which(TropiSARstem$FamilyAPG == "Arecaceae")]))
sort(table(TropiSARstem$Quart_code[which(TropiSARstem$FamilyAPG == "Arecaceae")]))

source("computeAGBpalm.R")
getWoodDensity("Oenocarpus", "bataua")
computeAGB(D=25.0, WD=0.6815, H=27.0)
computeAGBpalm(D=25.0)

TropiSARstemPALM <- TropiSARstem[which(TropiSARstem$FamilyAPG == "Arecaceae"),]

AGBpalmval <- computeAGBpalm(TropiSARstemPALM$Diameter)
tempPALM <- as.data.frame(matrix(rep(AGBpalmval, 1000), length(AGBpalmval), 1000))
Tropiprop_PALM <- cbind(TropiSARstemPALM, tempPALM)
```

AGB FELDPAUSCH (agb_fph)

```
AGB_fph.list <- list()

rm(resultMC_FeldFG); gc()
resultMC_FeldFG <- by(TropiSARstemTREE, TropiSARstemTREE[,"Site"],
                      function(x) AGBmonteCarlo(D=x$Diameter, WD=x$WD, errWD=x$sdWD, H=x$Hfeld
,
                                                errH=x$HfeldRSE, Dpropag="chave2004"), simplif
y=F)

tempNOU <- as.data.frame(resultMC_FeldFG$NOURAGUES$AGB_simu)
tempPAR <- as.data.frame(resultMC_FeldFG$PARACOU$AGB_simu)
tempTROP <- rbind(tempNOU,tempPAR)
Tropiprop_FELD <- cbind(TropiSARstemTREE, tempTROP)
Tropiprop_FELD <- rbind(Tropiprop_FELD, Tropiprop_PALM)

for (i in (1:length(resolAGB))) {
  tempocalc <- by(Tropiprop_FELD, Tropiprop_FELD[,resolAGB[i]],
                  function(x) list(meanAGB = mean(apply(x[,46:1045], 2, sum, na.rm = T)),
                                   #medAGB = median(apply(x[,46:1045], 2, sum, na.rm = T)),
                                   #sdAGB = sd(apply(x[,46:1045], 2, sum, na.rm = T)),
```

```
                                  credibilityAGB = quantile(apply(x[,46:1045], 2, sum, na.rm
= T), probs = c(0.025,0.975))))

  AGB_fph.list[[i]] <- data.frame(Area_code = names(tempocalc),
                                  agb_fph = round(as.numeric(sapply(tempocalc,"[",1))*coefmult
[i],1),
                                  cred_fph_2.5 = round(as.numeric(lapply(sapply(tempocalc,"[",
2), function(x) x[1]))*coefmult[i],1),
                                  cred_fph_97.5 = round(as.numeric(lapply(sapply(tempocalc,"["
,2), function(x) x[2]))*coefmult[i],1), stringsAsFactors = F)

  AGB_fph.list[[i]] <- AGB_fph.list[[i]][match(ordarea[[i]], AGB_fph.list[[i]]$Area_code),]
  rownames(AGB_fph.list[[i]]) <- NULL
}
AGB_fph.list
AGB_fph.df <- Reduce(rbind, AGB_fph.list)
AGB_fph.list
```

```
##     Area_code agb_fph cred_fph_2.5 cred_fph_97.5
## 1     NOU01h1   473.2        428.1         528.0
## 2     NOU01h2   405.7        371.7         447.3
## 3     NOU02h1   297.5        266.1         336.6
## 4     NOU02h2   283.0        260.0         311.4
## 5     NOU02h3   346.0        316.2         380.8
## 6     NOU02h4   279.8        254.0         311.4
## 7     NOU02h5   301.5        270.1         341.6
## 8     NOU02h6   321.3        289.1         358.9
## 9     NOU02h7   395.1        357.8         439.8
## 10    NOU02h8   619.0        558.6         683.0
## 11    NOU02h9   478.1        435.4         524.9
## 12   NOU02h10   452.1        413.6         498.5
## 13    NOU03h1   504.6        454.3         567.1
## 14    NOU03h2   538.7        492.2         589.3
## 15    NOU03h3   458.0        417.0         509.7
## 16    NOU03h4   551.1        496.0         613.2
## 17    NOU03h5   536.9        484.0         592.6
## 18    NOU03h6   562.2        514.3         620.9
## 19    NOU04h1   446.7        410.9         488.4
## 20    NOU04h2   310.4        285.5         340.7
## 21    NOU04h3   423.0        390.0         460.8
## 22    NOU04h4   472.9        431.8         517.7
## 23    NOU04h5   437.0        401.5         477.3
## 24    NOU04h6   397.5        360.3         439.6
## 25    NOU04h7   464.7        428.8         506.1
## 26    NOU04h8   449.3        412.4         492.1
## 27    NOU04h9   546.7        502.4         593.7
## 28   NOU04h10   414.1        379.0         451.8
## 29   NOU04h11   511.1        472.3         557.2
## 30   NOU04h12   489.2        448.8         539.6
## 31    NOU08h1   522.9        479.1         565.5
## 32    NOU09h1   466.4        426.1         515.1
## 33    NOU10h1   401.7        368.5         437.4
## 34    PAR01h1   450.7        419.4         486.1
```

```
## 35    PAR01h2   307.6        287.6         328.2
## 36    PAR01h3   489.5        458.1         524.7
## 37    PAR01h4   364.2        338.4         391.4
## 38    PAR02h1   348.8        325.6         375.5
## 39    PAR02h2   345.0        323.3         369.5
## 40    PAR02h3   407.2        383.9         434.0
## 41    PAR02h4   350.0        329.6         374.2
## 42    PAR03h1   367.4        343.5         395.2
## 43    PAR03h2   343.2        321.9         365.8
## 44    PAR03h3   320.6        302.7         339.6
## 45    PAR03h4   316.8        299.2         334.0
## 46    PAR04h1   317.4        301.8         335.4
## 47    PAR04h2   339.9        319.9         363.1
## 48    PAR04h3   285.2        268.2         303.4
## 49    PAR04h4   308.2        291.8         326.3
## 50    PAR05h1   339.7        320.6         360.9
## 51    PAR05h2   326.6        307.5         346.6
## 52    PAR05h3   305.6        284.9         328.9
## 53    PAR05h4   324.1        304.9         344.6
## 54    PAR06h1   380.1        354.0         408.7
## 55    PAR06h2   508.0        471.9         544.2
## 56    PAR06h3   362.8        337.5         391.1
## 57    PAR06h4   456.8        426.7         492.9
## 58    PAR07h1   445.3        416.0         478.2
## 59    PAR07h2   434.5        405.7         467.6
## 60    PAR07h3   410.3        384.4         436.0
## 61    PAR07h4   463.0        433.8         495.5
## 62    PAR08h1   311.5        293.2         330.8
## 63    PAR08h2   280.6        263.7         299.7
## 64    PAR08h3   297.8        281.3         315.6
## 65    PAR08h4   266.8        250.4         283.7
## 66    PAR09h1   410.8        387.0         436.1
## 67    PAR09h2   371.4        346.4         400.4
## 68    PAR09h3   336.7        315.6         359.7
## 69    PAR09h4   352.9        331.6         375.1
## 70    PAR10h1   381.7        357.1         406.7
## 71    PAR10h2   300.9        282.4         320.7
## 72    PAR10h3   340.6        322.0         360.6
## 73    PAR10h4   314.7        297.8         334.0
## 74    PAR11h1   439.5        412.0         469.7
## 75    PAR11h2   407.1        382.9         432.9
## 76    PAR11h3   449.6        421.7         477.3
## 77    PAR11h4   412.2        388.3         438.5
## 78    PAR12h1   340.4        320.9         361.0
## 79    PAR12h2   321.2        303.3         340.8
## 80    PAR12h3   350.3        329.7         373.2
## 81    PAR12h4   331.5        313.0         352.3
## 82    PAR13h1   412.6        388.2         440.2
## 83    PAR13h2   402.7        378.6         429.2
## 84    PAR13h3   462.9        433.6         492.8
## 85    PAR13h4   417.0        390.6         445.0
## 86    PAR14h1   467.7        438.5         498.2
## 87    PAR14h2   467.9        438.4         499.3
## 88    PAR14h3   389.9        367.3         414.6
```

```
## 89    PAR14h4   405.1        379.7        432.6
## 90    PAR15h1   486.6        456.4        517.6
## 91    PAR15h2   402.5        375.1        432.3
## 92    PAR15h3   447.0        420.0        474.6
## 93    PAR15h4   464.4        435.7        494.3
## 94    PAR16h1   468.7        430.8        513.1
## 95    PAR16h2   460.1        422.9        503.0
## 96    PAR16h3   510.8        471.5        552.5
## 97    PAR16h4   398.3        368.5        426.9
## 98    PAR16h5   385.2        356.0        417.8
## 99    PAR16h6   421.7        388.8        453.5
## 100   PAR16h7   410.2        372.6        446.4
## 101   PAR16h8   388.3        358.9        421.2
## 102   PAR16h9   489.3        453.2        529.6
## 103  PAR16h10   450.1        413.1        491.2
## 104  PAR16h11   415.2        388.5        444.6
## 105  PAR16h12   418.5        382.8        457.5
## 106  PAR16h13   440.0        403.5        479.4
## 107  PAR16h14   408.8        379.4        441.9
## 108  PAR16h15   449.2        412.3        492.2
## 109  PAR16h16   415.3        386.9        446.2
## 110  PAR16h17   405.9        375.4        439.6
## 111  PAR16h18   420.2        385.7        463.4
## 112  PAR16h19   462.2        423.4        503.7
## 113  PAR16h20   425.4        391.1        461.1
## 114  PAR16h21   481.8        443.4        527.7
## 115  PAR16h22   457.2        427.5        490.0
## 116  PAR16h23   401.2        364.1        444.5
## 117  PAR16h24   427.7        394.3        464.1
## 118  PAR16h25   447.7        414.8        484.2
## 119   PAR17h1   136.1        130.3        142.2
## 120   PAR17h2   147.5        140.3        155.6
## 121   PAR17h3   158.4        151.6        165.1
## 122   PAR17h4   125.6        119.7        132.1
## 123   NOU01q1   372.4        320.2        435.9
## 124   NOU01q2   686.3        549.5        889.9
## 125   NOU01q3   231.9        195.2        277.2
## 126   NOU01q4   448.8        367.2        565.1
## 127   NOU01q5   478.4        417.4        556.2
## 128   NOU01q6   355.8        300.1        424.7
## 129   NOU01q7   476.2        400.3        570.0
## 130   NOU01q8   466.0        397.9        545.3
## 131   NOU02q1   365.0        294.6        468.5
## 132   NOU02q2   324.3        270.5        393.1
## 133   NOU02q3   253.9        194.7        347.3
## 134   NOU02q4   244.3        207.2        289.9
## 135   NOU02q5   247.0        214.7        283.5
## 136   NOU02q6   288.2        240.9        348.4
## 137   NOU02q7   211.3        177.2        256.2
## 138   NOU02q8   381.9        323.6        454.5
## 139   NOU02q9   216.3        182.7        260.2
## 140  NOU02q10   257.6        221.0        301.9
## 141  NOU02q11   442.8        368.8        532.9
## 142  NOU02q12   467.3        392.1        559.1
```

```
## 143  NOU02q13   182.2        156.6         214.9
## 144  NOU02q14   191.8        165.7         222.1
## 145  NOU02q15   383.3        307.2         492.3
## 146  NOU02q16   362.0        309.0         429.8
## 147  NOU02q17   342.7        287.2         417.2
## 148  NOU02q18   380.9        299.5         497.3
## 149  NOU02q19   275.1        225.4         340.4
## 150  NOU02q20   207.1        177.7         246.9
## 151  NOU02q21   291.1        252.3         336.0
## 152  NOU02q22   217.1        184.1         264.5
## 153  NOU02q23   408.3        336.3         496.4
## 154  NOU02q24   368.5        289.1         486.1
## 155  NOU02q25   465.2        374.4         579.8
## 156  NOU02q26   305.6        258.2         367.9
## 157  NOU02q27   452.7        371.4         554.7
## 158  NOU02q28   356.0        298.2         422.8
## 159  NOU02q29   802.5        660.0         977.2
## 160  NOU02q30   441.3        361.2         546.2
## 161  NOU02q31   661.8        551.4         803.6
## 162  NOU02q32   570.3        482.6         665.9
## 163  NOU02q33   431.7        363.8         516.1
## 164  NOU02q34   579.9        478.4         704.3
## 165  NOU02q35   433.1        356.8         520.8
## 166  NOU02q36   467.8        400.2         552.2
## 167  NOU02q37   473.7        388.0         590.2
## 168  NOU02q38   325.3        272.5         389.8
## 169  NOU02q39   545.4        472.2         644.8
## 170  NOU02q40   463.3        394.3         556.8
## 171   NOU03q1   338.1        288.5         397.4
## 172   NOU03q2   512.0        426.8         628.2
## 173   NOU03q3   668.9        559.1         804.2
## 174   NOU03q4   386.6        326.0         476.3
## 175   NOU03q5   352.0        309.6         402.1
## 176   NOU03q6   549.8        443.1         681.8
## 177   NOU03q7   414.5        362.3         480.6
## 178   NOU03q8   753.6        603.4         967.7
## 179   NOU03q9   630.3        536.8         748.8
## 180  NOU03q10   469.1        404.8         539.3
## 181  NOU03q11   426.5        361.1         509.1
## 182  NOU03q12   503.8        408.8         618.8
## 183  NOU03q13   475.5        388.0         582.5
## 184  NOU03q14   522.8        436.1         630.3
## 185  NOU03q15   704.7        583.7         860.8
## 186  NOU03q16   526.9        433.4         642.0
## 187  NOU03q17   491.6        426.5         568.4
## 188  NOU03q18   535.1        454.9         626.1
## 189  NOU03q19   788.6        652.0         956.7
## 190  NOU03q20   417.3        329.2         543.1
## 191  NOU03q21   499.6        418.1         607.3
## 192  NOU03q22   416.5        343.4         498.7
## 193  NOU03q23   660.1        534.3         835.8
## 194  NOU03q24   562.2        474.5         671.8
## 195   NOU04q1   474.0        406.2         561.3
## 196   NOU04q2   391.8        333.4         464.6
```

```
## 197   NOU04q3   268.6        227.7         317.4
## 198   NOU04q4   397.5        340.9         469.4
## 199   NOU04q5   468.0        398.8         550.6
## 200   NOU04q6   410.7        351.7         482.3
## 201   NOU04q7   482.0        413.8         560.4
## 202   NOU04q8   450.9        383.2         537.6
## 203   NOU04q9   437.3        377.9         509.9
## 204  NOU04q10   483.8        412.8         577.6
## 205  NOU04q11   248.7        210.6         303.4
## 206  NOU04q12   326.2        268.6         399.6
## 207  NOU04q13   413.4        357.5         477.6
## 208  NOU04q14   399.8        341.0         468.6
## 209  NOU04q15   477.6        409.0         557.4
## 210  NOU04q16   481.0        395.8         592.8
## 211  NOU04q17   623.2        540.2         728.0
## 212  NOU04q18   348.6        299.0         405.7
## 213  NOU04q19   381.9        322.4         452.8
## 214  NOU04q20   361.4        298.1         449.4
## 215  NOU04q21   500.7        431.4         579.0
## 216  NOU04q22   499.8        428.6         585.7
## 217  NOU04q23   402.8        343.3         476.5
## 218  NOU04q24   359.2        297.2         438.6
## 219  NOU04q25   416.3        352.3         497.6
## 220  NOU04q26   359.8        301.7         428.3
## 221  NOU04q27   362.3        311.4         426.1
## 222  NOU04q28   484.1        395.1         594.2
## 223  NOU04q29   439.7        374.1         519.2
## 224  NOU04q30   418.1        359.5         495.0
## 225  NOU04q31   468.9        405.9         536.5
## 226  NOU04q32   565.4        483.9         663.3
## 227  NOU04q33   645.5        553.4         754.7
## 228  NOU04q34   435.6        371.4         507.7
## 229  NOU04q35   361.3        313.3         423.7
## 230  NOU04q36   465.9        392.9         556.4
## 231  NOU04q37   545.7        471.0         636.8
## 232  NOU04q38   528.9        461.4         614.3
## 233  NOU04q39   527.1        463.2         599.0
## 234  NOU04q40   562.6        458.1         719.9
## 235  NOU04q41   518.5        445.9         605.0
## 236  NOU04q42   585.4        490.1         703.4
## 237  NOU04q43   452.9        377.3         537.4
## 238  NOU04q44   375.9        313.5         454.4
## 239  NOU04q45   512.6        433.8         621.1
## 240  NOU04q46   455.9        381.4         548.1
## 241  NOU04q47   390.0        334.9         461.7
## 242  NOU04q48   477.3        409.5         560.5
## 243   NOU05q1   244.5        209.2         291.8
## 244   NOU06q1   297.5        250.7         360.1
## 245   NOU07q1   329.0        301.6         360.2
## 246   NOU09q1   606.3        505.1         735.1
## 247   NOU09q2   339.3        291.1         401.9
## 248   NOU09q3   413.4        353.7         490.4
## 249   NOU09q4   506.6        423.5         613.1
## 250   NOU10q1   374.4        318.2         443.6
```

```
## 251   NOU10q2   415.9        351.7         510.2
## 252   NOU10q3   505.1        436.3         586.7
## 253   NOU10q4   311.3        274.6         353.1
## 254   NOU11q1   217.8        188.7         248.0
## 255   PAR01q1   372.3        322.1         431.6
## 256   PAR01q2   379.8        334.5         430.1
## 257   PAR01q3   271.0        235.0         312.4
## 258   PAR01q4   429.5        383.9         481.8
## 259   PAR01q5   437.4        386.5         495.5
## 260   PAR01q6   512.4        449.9         586.1
## 261   PAR01q7   475.3        415.1         547.8
## 262   PAR01q8   369.1        322.0         427.0
## 263   PAR01q9   267.5        237.4         303.1
## 264  PAR01q10   343.7        301.6         393.8
## 265  PAR01q11   535.4        454.3         628.5
## 266  PAR01q12   574.3        505.1         649.8
## 267  PAR01q13   448.7        393.7         516.0
## 268  PAR01q14   313.7        275.4         364.6
## 269  PAR01q15   353.1        311.2         398.7
## 270  PAR01q16   417.5        369.7         476.2
## 271  PAR01q17   433.3        386.3         489.0
## 272  PAR01q18   394.3        346.5         447.0
## 273  PAR01q19   349.5        302.9         406.5
## 274  PAR01q20   339.2        304.0         377.6
## 275  PAR01q21   424.4        373.8         475.8
## 276  PAR01q22   364.3        319.0         416.2
## 277  PAR01q23   383.8        337.8         432.2
## 278  PAR01q24   393.8        344.8         446.8
## 279  PAR01q25   274.3        240.8         312.5
## 280   PAR02q1   336.6        297.5         381.2
## 281   PAR02q2   246.3        215.4         282.4
## 282   PAR02q3   336.0        294.3         392.6
## 283   PAR02q4   316.0        277.3         363.1
## 284   PAR02q5   336.1        293.4         386.6
## 285   PAR02q6   378.0        328.6         442.1
## 286   PAR02q7   334.5        293.2         386.3
## 287   PAR02q8   359.6        315.6         415.6
## 288   PAR02q9   378.8        333.1         428.7
## 289  PAR02q10   341.0        305.0         382.6
## 290  PAR02q11   394.3        344.6         450.7
## 291  PAR02q12   343.0        300.0         393.0
## 292  PAR02q13   396.7        349.4         452.2
## 293  PAR02q14   390.5        348.0         441.4
## 294  PAR02q15   303.5        267.7         347.7
## 295  PAR02q16   429.8        382.7         483.8
## 296  PAR02q17   479.4        423.9         541.5
## 297  PAR02q18   438.7        389.5         493.6
## 298  PAR02q19   374.1        333.0         420.5
## 299  PAR02q20   283.2        250.7         322.8
## 300  PAR02q21   419.7        364.9         484.9
## 301  PAR02q22   513.0        430.5         627.2
## 302  PAR02q23   335.4        291.6         384.0
## 303  PAR02q24   372.7        326.1         430.2
## 304  PAR02q25   283.0        250.3         325.2
```

```
## 305   PAR03q1   402.9        361.1        445.7
## 306   PAR03q2   366.0        303.7        445.0
## 307   PAR03q3   312.4        273.3        357.2
## 308   PAR03q4   341.1        300.5        388.0
## 309   PAR03q5   233.4        203.2        268.9
## 310   PAR03q6   428.9        378.7        490.9
## 311   PAR03q7   412.0        359.4        469.1
## 312   PAR03q8   351.3        305.9        403.3
## 313   PAR03q9   435.5        383.7        500.2
## 314  PAR03q10   312.4        277.6        354.0
## 315  PAR03q11   343.1        308.9        383.6
## 316  PAR03q12   308.8        274.9        349.2
## 317  PAR03q13   382.3        343.3        430.3
## 318  PAR03q14   321.6        290.0        356.8
## 319  PAR03q15   326.8        290.8        370.7
## 320  PAR03q16   328.0        292.0        366.9
## 321  PAR03q17   294.1        266.5        325.5
## 322  PAR03q18   283.6        255.2        315.5
## 323  PAR03q19   335.3        301.6        370.7
## 324  PAR03q20   265.7        234.8        299.7
## 325  PAR03q21   299.6        269.2        335.6
## 326  PAR03q22   300.9        269.1        339.2
## 327  PAR03q23   251.7        227.6        280.3
## 328  PAR03q24   303.4        275.0        336.3
## 329  PAR03q25   409.0        363.6        457.1
## 330   PAR04q1   299.1        266.6        338.8
## 331   PAR04q2   289.2        257.2        323.4
## 332   PAR04q3   302.6        271.7        340.4
## 333   PAR04q4   412.5        366.2        467.6
## 334   PAR04q5   340.3        305.7        381.9
## 335   PAR04q6   274.0        247.1        308.5
## 336   PAR04q7   279.7        251.4        314.0
## 337   PAR04q8   374.8        339.7        414.3
## 338   PAR04q9   303.8        270.0        344.7
## 339  PAR04q10   273.0        241.3        307.4
## 340  PAR04q11   303.7        276.1        340.0
## 341  PAR04q12   309.4        279.9        343.1
## 342  PAR04q13   386.5        347.5        431.0
## 343  PAR04q14   255.5        228.5        283.4
## 344  PAR04q15   275.3        246.0        310.5
## 345  PAR04q16   277.7        249.8        309.5
## 346  PAR04q17   319.9        284.4        364.6
## 347  PAR04q18   291.8        259.4        326.3
## 348  PAR04q19   314.6        285.0        350.6
## 349  PAR04q20   440.1        391.8        496.4
## 350  PAR04q21   329.9        300.9        361.6
## 351  PAR04q22   239.6        213.8        268.3
## 352  PAR04q23   308.4        278.0        343.7
## 353  PAR04q24   283.2        250.2        319.8
## 354  PAR04q25   337.4        305.7        378.6
## 355   PAR05q1   295.4        265.6        329.2
## 356   PAR05q2   298.5        264.8        338.5
## 357   PAR05q3   354.2        318.7        395.2
## 358   PAR05q4   311.9        277.5        349.1
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## 359   PAR05q5   318.9        284.4        361.7
## 360   PAR05q6   394.8        354.0        439.0
## 361   PAR05q7   304.2        270.2        339.8
## 362   PAR05q8   343.9        305.5        383.2
## 363   PAR05q9   279.6        246.8        315.1
## 364  PAR05q10   343.6        302.6        391.1
## 365  PAR05q11   350.3        313.3        390.5
## 366  PAR05q12   345.1        308.4        385.2
## 367  PAR05q13   471.1        408.2        553.3
## 368  PAR05q14   390.7        349.0        439.5
## 369  PAR05q15   378.9        338.8        427.1
## 370  PAR05q16   240.7        215.9        271.8
## 371  PAR05q17   260.0        231.1        292.9
## 372  PAR05q18   267.8        237.0        302.7
## 373  PAR05q19   297.2        266.9        332.7
## 374  PAR05q20   329.2        292.6        367.7
## 375  PAR05q21   280.6        252.6        310.6
## 376  PAR05q22   314.3        280.6        356.3
## 377  PAR05q23   253.6        227.4        287.6
## 378  PAR05q24   316.6        278.6        364.6
## 379  PAR05q25   365.3        328.9        407.8
## 380   PAR06q1   535.6        477.7        603.5
## 381   PAR06q2   431.5        385.3        486.0
## 382   PAR06q3   436.1        393.1        485.2
## 383   PAR06q4   487.1        430.6        552.3
## 384   PAR06q5   573.0        499.6        654.7
## 385   PAR06q6   335.0        293.7        384.0
## 386   PAR06q7   307.6        273.0        347.0
## 387   PAR06q8   446.7        380.0        523.8
## 388   PAR06q9   519.1        461.3        586.1
## 389  PAR06q10   534.0        469.0        615.9
## 390  PAR06q11   470.7        406.9        535.6
## 391  PAR06q12   414.0        361.6        478.6
## 392  PAR06q13   359.4        308.5        428.6
## 393  PAR06q14   405.9        354.2        467.1
## 394  PAR06q15   420.8        365.4        486.0
## 395  PAR06q16   367.2        317.2        425.5
## 396  PAR06q17   307.1        265.8        356.4
## 397  PAR06q18   435.2        381.6        507.8
## 398  PAR06q19   563.9        483.3        647.7
## 399  PAR06q20   445.5        393.4        503.2
## 400  PAR06q21   410.6        364.6        463.4
## 401  PAR06q22   371.3        319.2        436.7
## 402  PAR06q23   531.8        463.3        620.4
## 403  PAR06q24   515.7        459.1        582.2
## 404  PAR06q25   548.6        480.4        623.8
## 405   PAR07q1   429.1        372.8        502.1
## 406   PAR07q2   399.6        344.6        470.3
## 407   PAR07q3   436.6        379.7        505.0
## 408   PAR07q4   297.0        259.8        344.7
## 409   PAR07q5   356.3        306.3        421.4
## 410   PAR07q6   438.3        392.8        488.0
## 411   PAR07q7   376.2        334.9        419.8
## 412   PAR07q8   490.8        437.4        555.4
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## 413   PAR07q9   455.1        394.3        529.2
## 414  PAR07q10   316.5        277.3        365.8
## 415  PAR07q11   396.7        347.8        452.7
## 416  PAR07q12   421.2        371.4        476.6
## 417  PAR07q13   518.1        451.0        590.7
## 418  PAR07q14   416.2        362.2        485.3
## 419  PAR07q15   384.6        340.4        437.0
## 420  PAR07q16   430.5        376.9        492.5
## 421  PAR07q17   348.4        303.1        401.0
## 422  PAR07q18   423.0        377.9        474.0
## 423  PAR07q19   505.6        444.5        574.0
## 424  PAR07q20   400.9        354.6        455.4
## 425  PAR07q21   463.4        408.9        530.8
## 426  PAR07q22   446.6        389.1        511.0
## 427  PAR07q23   346.1        304.3        395.2
## 428  PAR07q24   463.6        400.0        538.7
## 429  PAR07q25   419.9        373.9        474.2
## 430   PAR08q1   270.2        239.3        304.6
## 431   PAR08q2   192.1        168.7        219.6
## 432   PAR08q3   297.2        260.5        337.4
## 433   PAR08q4   212.1        188.1        240.2
## 434   PAR08q5   308.2        267.2        355.8
## 435   PAR08q6   315.4        278.5        355.9
## 436   PAR08q7   331.9        295.3        371.4
## 437   PAR08q8   282.1        252.3        312.8
## 438   PAR08q9   276.8        246.5        311.9
## 439  PAR08q10   280.2        249.8        312.3
## 440  PAR08q11   247.0        220.5        277.7
## 441  PAR08q12   293.1        261.6        328.9
## 442  PAR08q13   282.5        252.4        318.2
## 443  PAR08q14   303.7        267.6        354.1
## 444  PAR08q15   265.0        235.0        297.5
## 445  PAR08q16   308.3        276.5        346.0
## 446  PAR08q17   351.6        320.2        390.2
## 447  PAR08q18   282.3        257.4        311.9
## 448  PAR08q19   241.0        213.4        273.5
## 449  PAR08q20   297.8        264.6        335.7
## 450  PAR08q21   287.1        260.8        315.3
## 451  PAR08q22   245.8        218.7        275.9
## 452  PAR08q23   263.7        236.5        294.9
## 453  PAR08q24   298.4        266.3        336.5
## 454  PAR08q25   272.7        244.0        306.7
## 455   PAR09q1   384.2        340.4        428.7
## 456   PAR09q2   300.9        266.8        338.6
## 457   PAR09q3   396.5        354.9        448.1
## 458   PAR09q4   336.2        299.3        384.3
## 459   PAR09q5   266.7        236.0        300.5
## 460   PAR09q6   438.7        392.3        494.3
## 461   PAR09q7   450.6        400.4        512.5
## 462   PAR09q8   475.1        428.4        531.3
## 463   PAR09q9   336.1        291.0        389.9
## 464  PAR09q10   387.9        325.9        479.7
## 465  PAR09q11   422.6        370.9        479.5
## 466  PAR09q12   392.5        348.2        443.6
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## 467  PAR09q13   352.8        313.5         398.1
## 468  PAR09q14   289.9        255.4         330.8
## 469  PAR09q15   363.7        325.8         406.1
## 470  PAR09q16   361.9        318.8         417.6
## 471  PAR09q17   368.6        327.2         420.8
## 472  PAR09q18   308.9        268.6         362.2
## 473  PAR09q19   295.9        257.7         338.9
## 474  PAR09q20   428.8        379.9         484.9
## 475  PAR09q21   278.2        248.9         315.8
## 476  PAR09q22   342.4        306.6         383.2
## 477  PAR09q23   344.5        306.2         389.3
## 478  PAR09q24   299.0        262.2         343.3
## 479  PAR09q25   492.2        435.6         557.4
## 480   PAR10q1   310.9        277.0         349.7
## 481   PAR10q2   319.8        281.8         365.5
## 482   PAR10q3   375.9        333.6         428.2
## 483   PAR10q4   274.4        242.9         311.9
## 484   PAR10q5   306.4        275.6         342.5
## 485   PAR10q6   435.5        388.1         483.9
## 486   PAR10q7   297.2        262.8         338.7
## 487   PAR10q8   289.7        252.7         332.9
## 488   PAR10q9   357.9        315.3         411.2
## 489  PAR10q10   227.7        203.1         255.4
## 490  PAR10q11   367.8        329.5         409.2
## 491  PAR10q12   379.7        334.1         429.4
## 492  PAR10q13   413.7        365.6         472.1
## 493  PAR10q14   267.4        237.3         302.0
## 494  PAR10q15   340.4        302.1         384.2
## 495  PAR10q16   388.7        346.8         435.2
## 496  PAR10q17   344.8        312.9         382.4
## 497  PAR10q18   277.9        246.8         315.1
## 498  PAR10q19   348.0        310.0         393.6
## 499  PAR10q20   303.1        273.9         336.7
## 500  PAR10q21   373.2        335.8         415.2
## 501  PAR10q22   261.3        235.3         290.3
## 502  PAR10q23   348.2        310.8         389.6
## 503  PAR10q24   355.6        317.4         396.7
## 504  PAR10q25   326.0        283.5         375.6
## 505   PAR11q1   342.7        302.5         391.8
## 506   PAR11q2   380.0        335.3         430.0
## 507   PAR11q3   428.9        381.3         480.5
## 508   PAR11q4   430.2        384.4         483.6
## 509   PAR11q5   406.3        365.5         453.8
## 510   PAR11q6   507.0        447.9         579.3
## 511   PAR11q7   354.6        310.8         405.5
## 512   PAR11q8   499.6        452.0         554.5
## 513   PAR11q9   319.8        278.6         365.8
## 514  PAR11q10   489.9        435.8         555.3
## 515  PAR11q11   565.9        503.4         637.2
## 516  PAR11q12   431.9        384.0         481.5
## 517  PAR11q13   386.0        339.4         438.4
## 518  PAR11q14   473.9        429.1         524.7
## 519  PAR11q15   473.8        411.9         554.1
## 520  PAR11q16   376.7        335.2         424.3
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## 521  PAR11q17   448.1        403.0         504.1
## 522  PAR11q18   399.6        352.3         454.0
## 523  PAR11q19   449.9        400.7         508.7
## 524  PAR11q20   345.1        301.3         395.8
## 525  PAR11q21   460.7        408.6         521.8
## 526  PAR11q22   414.9        361.8         478.1
## 527  PAR11q23   428.8        378.8         483.9
## 528  PAR11q24   379.4        327.6         437.6
## 529  PAR11q25   458.2        401.1         523.8
## 530   PAR12q1   275.4        244.3         310.7
## 531   PAR12q2   294.4        262.2         331.1
## 532   PAR12q3   405.4        356.7         460.5
## 533   PAR12q4   356.7        318.7         399.2
## 534   PAR12q5   326.5        293.6         366.3
## 535   PAR12q6   378.3        336.4         425.9
## 536   PAR12q7   325.5        293.3         364.5
## 537   PAR12q8   350.3        315.7         388.5
## 538   PAR12q9   324.9        286.7         369.2
## 539  PAR12q10   315.4        281.6         352.7
## 540  PAR12q11   291.0        258.3         329.2
## 541  PAR12q12   251.3        224.1         288.1
## 542  PAR12q13   334.9        302.6         373.4
## 543  PAR12q14   315.3        283.2         355.2
## 544  PAR12q15   385.4        340.7         433.0
## 545  PAR12q16   293.3        262.3         330.6
## 546  PAR12q17   349.5        311.2         393.8
## 547  PAR12q18   394.9        353.1         440.2
## 548  PAR12q19   321.6        291.0         357.3
## 549  PAR12q20   332.1        296.7         375.8
## 550  PAR12q21   299.1        266.3         336.7
## 551  PAR12q22   330.4        293.5         374.8
## 552  PAR12q23   379.5        341.3         426.1
## 553  PAR12q24   342.3        307.9         377.1
## 554  PAR12q25   356.5        319.7         397.3
## 555   PAR13q1   471.9        416.1         533.4
## 556   PAR13q2   499.1        442.5         567.6
## 557   PAR13q3   516.6        460.8         581.9
## 558   PAR13q4   444.4        402.0         495.1
## 559   PAR13q5   470.5        412.8         538.2
## 560   PAR13q6   354.9        303.1         419.6
## 561   PAR13q7   339.7        296.0         392.2
## 562   PAR13q8   377.4        327.7         434.7
## 563   PAR13q9   381.0        336.6         434.5
## 564  PAR13q10   413.3        365.8         468.6
## 565  PAR13q11   423.9        373.7         481.4
## 566  PAR13q12   470.5        421.5         525.8
## 567  PAR13q13   414.3        372.1         462.7
## 568  PAR13q14   409.7        359.2         466.2
## 569  PAR13q15   349.6        307.5         405.0
## 570  PAR13q16   466.0        422.4         516.9
## 571  PAR13q17   417.8        368.1         483.8
## 572  PAR13q18   483.7        433.8         536.1
## 573  PAR13q19   358.6        319.4         402.6
## 574  PAR13q20   467.1        411.0         530.3
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## 575  PAR13q21   506.0        444.2         580.7
## 576  PAR13q22   490.5        428.5         565.2
## 577  PAR13q23   399.0        343.4         468.2
## 578  PAR13q24   239.4        205.5         281.2
## 579  PAR13q25   459.7        402.7         527.8
## 580   PAR14q1   477.1        412.5         546.5
## 581   PAR14q2   517.7        457.6         585.7
## 582   PAR14q3   423.5        375.3         478.9
## 583   PAR14q4   411.0        368.9         459.4
## 584   PAR14q5   488.9        429.2         559.5
## 585   PAR14q6   537.3        474.5         613.4
## 586   PAR14q7   378.7        330.7         434.4
## 587   PAR14q8   468.4        411.6         538.7
## 588   PAR14q9   480.4        426.7         538.7
## 589  PAR14q10   496.3        441.1         560.1
## 590  PAR14q11   428.8        383.9         479.0
## 591  PAR14q12   394.4        350.2         444.5
## 592  PAR14q13   373.3        335.0         417.7
## 593  PAR14q14   391.3        342.1         450.7
## 594  PAR14q15   595.5        531.8         670.0
## 595  PAR14q16   386.9        341.6         439.0
## 596  PAR14q17   332.1        296.3         369.7
## 597  PAR14q18   408.7        365.2         462.3
## 598  PAR14q19   399.3        349.5         463.1
## 599  PAR14q20   412.4        356.2         478.9
## 600  PAR14q21   400.0        354.2         454.6
## 601  PAR14q22   327.0        285.9         372.1
## 602  PAR14q23   446.8        391.4         510.0
## 603  PAR14q24   470.8        417.2         536.5
## 604  PAR14q25   380.5        337.0         430.4
## 605   PAR15q1   496.6        441.3         555.3
## 606   PAR15q2   483.9        428.9         545.4
## 607   PAR15q3   394.8        337.1         473.9
## 608   PAR15q4   462.6        408.0         531.6
## 609   PAR15q5   518.6        461.0         584.9
## 610   PAR15q6   441.5        395.6         493.3
## 611   PAR15q7   524.3        463.3         589.3
## 612   PAR15q8   401.9        345.5         469.1
## 613   PAR15q9   338.4        291.3         394.3
## 614  PAR15q10   324.2        284.3         369.7
## 615  PAR15q11   451.8        401.8         510.2
## 616  PAR15q12   455.5        406.9         510.6
## 617  PAR15q13   485.3        431.6         543.3
## 618  PAR15q14   526.1        458.8         604.2
## 619  PAR15q15   274.0        237.7         315.8
## 620  PAR15q16   394.1        345.4         449.1
## 621  PAR15q17   544.2        477.3         616.2
## 622  PAR15q18   449.3        406.7         498.9
## 623  PAR15q19   364.9        324.0         415.8
## 624  PAR15q20   429.2        386.9         480.8
## 625  PAR15q21   454.9        405.2         512.1
## 626  PAR15q22   456.5        409.4         509.5
## 627  PAR15q23   444.9        396.3         498.3
## 628  PAR15q24   553.5        496.1         618.9
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## 629  PAR15q25   420.1        374.6         472.7
## 630   PAR16q1   423.1        362.0         499.7
## 631   PAR16q2   588.8        506.5         693.0
## 632   PAR16q3   707.8        603.6         835.1
## 633   PAR16q4   408.9        358.9         465.3
## 634   PAR16q5   513.3        443.4         607.4
## 635   PAR16q6   496.4        426.6         572.9
## 636   PAR16q7   477.9        419.4         543.6
## 637   PAR16q8   387.0        333.7         448.9
## 638   PAR16q9   501.4        436.5         573.7
## 639  PAR16q10   312.1        259.6         379.5
## 640  PAR16q11   522.2        441.6         623.2
## 641  PAR16q12   340.8        289.5         405.5
## 642  PAR16q13   370.3        313.3         437.6
## 643  PAR16q14   353.5        311.5         404.5
## 644  PAR16q15   570.8        490.4         669.1
## 645  PAR16q16   462.9        404.7         531.8
## 646  PAR16q17   415.8        361.9         476.1
## 647  PAR16q18   312.4        270.7         361.1
## 648  PAR16q19   282.7        241.1         334.3
## 649  PAR16q20   444.7        389.3         515.5
## 650  PAR16q21   445.6        385.2         513.8
## 651  PAR16q22   364.0        308.6         429.1
## 652  PAR16q23   310.3        260.9         368.9
## 653  PAR16q24   402.5        324.9         495.6
## 654  PAR16q25   320.4        272.1         383.2
## 655  PAR16q26   327.9        287.6         378.3
## 656  PAR16q27   605.3        515.3         718.7
## 657  PAR16q28   477.2        415.2         547.4
## 658  PAR16q29   412.8        355.0         493.3
## 659  PAR16q30   346.4        299.0         406.2
## 660  PAR16q31   376.4        325.8         440.2
## 661  PAR16q32   500.9        430.1         590.5
## 662  PAR16q33   355.7        306.5         416.4
## 663  PAR16q34   572.4        485.1         677.6
## 664  PAR16q35   366.7        314.9         432.8
## 665  PAR16q36   538.1        464.2         619.2
## 666  PAR16q37   407.7        353.2         471.6
## 667  PAR16q38   466.8        410.8         530.9
## 668  PAR16q39   539.8        466.4         627.7
## 669  PAR16q40   501.2        418.7         599.9
## 670  PAR16q41   441.5        386.7         510.4
## 671  PAR16q42   377.7        328.2         437.8
## 672  PAR16q43   341.2        300.5         391.0
## 673  PAR16q44   458.1        390.9         533.6
## 674  PAR16q45   535.4        450.6         636.1
## 675  PAR16q46   415.8        358.3         485.2
## 676  PAR16q47   408.0        354.4         465.9
## 677  PAR16q48   389.2        338.0         450.0
## 678  PAR16q49   502.0        439.5         573.9
## 679  PAR16q50   408.5        345.9         491.0
## 680  PAR16q51   448.0        393.3         508.4
## 681  PAR16q52   393.6        349.1         448.5
## 682  PAR16q53   505.4        426.1         594.7
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## 683  PAR16q54   369.4        303.3         458.3
## 684  PAR16q55   408.8        339.5         491.6
## 685  PAR16q56   400.2        344.9         465.5
## 686  PAR16q57   410.3        359.8         474.1
## 687  PAR16q58   427.8        375.1         492.1
## 688  PAR16q59   521.9        436.7         628.7
## 689  PAR16q60   364.5        307.1         439.5
## 690  PAR16q61   514.8        446.4         596.5
## 691  PAR16q62   268.4        235.9         305.5
## 692  PAR16q63   370.7        314.6         434.2
## 693  PAR16q64   353.2        304.8         408.8
## 694  PAR16q65   386.5        328.0         464.8
## 695  PAR16q66   257.0        224.5         296.9
## 696  PAR16q67   529.7        455.8         623.1
## 697  PAR16q68   410.9        358.2         477.9
## 698  PAR16q69   433.1        372.5         502.9
## 699  PAR16q70   365.2        309.9         437.5
## 700  PAR16q71   474.9        416.4         539.7
## 701  PAR16q72   403.2        352.6         458.4
## 702  PAR16q73   482.6        413.6         563.1
## 703  PAR16q74   417.1        363.2         481.4
## 704  PAR16q75   436.1        367.4         519.4
## 705  PAR16q76   601.4        504.5         723.3
## 706  PAR16q77   428.1        355.2         527.8
## 707  PAR16q78   480.2        407.4         575.0
## 708  PAR16q79   443.8        384.3         513.7
## 709  PAR16q80   459.5        392.0         548.1
## 710  PAR16q81   513.3        453.9         580.8
## 711  PAR16q82   316.4        275.3         367.9
## 712  PAR16q83   473.5        417.2         551.0
## 713  PAR16q84   444.0        388.0         511.3
## 714  PAR16q85   348.7        297.2         418.8
## 715  PAR16q86   350.8        298.0         412.6
## 716  PAR16q87   376.8        325.0         440.2
## 717  PAR16q88   515.5        442.2         606.8
## 718  PAR16q89   485.3        413.9         574.2
## 719  PAR16q90   416.6        355.4         486.9
## 720  PAR16q91   548.2        465.4         656.0
## 721  PAR16q92   549.4        461.5         675.0
## 722  PAR16q93   480.5        425.4         549.1
## 723  PAR16q94   430.9        377.0         499.7
## 724  PAR16q95   492.9        390.8         638.6
## 725  PAR16q96   412.4        348.1         492.6
## 726  PAR16q97   412.7        351.9         486.5
## 727  PAR16q98   406.0        344.9         476.3
## 728  PAR16q99   436.0        374.0         513.6
## 729 PAR16q100   452.9        387.0         528.0
## 730   PAR17q1   129.5        117.9         143.7
## 731   PAR17q2   152.6        133.0         183.4
## 732   PAR17q3   182.5        167.4         197.7
## 733   PAR17q4   172.2        156.3         189.9
## 734   PAR17q5   179.6        165.9         194.3
## 735   PAR17q6   129.1        118.6         140.1
## 736   PAR17q7   127.8        117.4         139.0
```

```
## 737   PAR17q8   145.4        133.4         160.2
## 738   PAR17q9   132.0        119.9         145.4
## 739  PAR17q10   146.7        131.0         165.0
## 740  PAR17q11   142.5        132.0         153.4
## 741  PAR17q12   131.2        120.3         142.9
## 742  PAR17q13   151.0        140.3         163.0
## 743  PAR17q14   145.0        131.0         162.6
## 744  PAR17q15   137.8        124.9         153.1
## 745  PAR17q16   150.0        137.8         162.6
## 746  PAR17q17   180.5        164.0         197.7
## 747  PAR17q18   179.8        167.5         193.7
## 748  PAR17q19    91.4         83.2         100.6
## 749  PAR17q20   138.9        127.3         150.9
## 750  PAR17q21   129.4        118.6         142.1
## 751  PAR17q22   139.4        127.1         151.7
## 752  PAR17q23   129.1        118.6         140.9
## 753  PAR17q24   130.3        118.0         145.1
## 754  PAR17q25   170.6        152.8         191.7
```

AGB USING ENVIRONMENTAL FACTOR E (agb_chv)

```
AGB_chv.list <- list()

rm(resultMC_ChavFG); gc()
resultMC_ChaveFG <- by(TropiSARstemTREE, TropiSARstemTREE[,"Site"],
                       function(x) AGBmonteCarlo(D=x$Diameter, WD=x$WD, errWD=x$sdWD, coord=cb
ind(x$long,x$lat),
                                                 Dpropag="chave2004"), simplify=F)

tempNOU <- as.data.frame(resultMC_ChaveFG$NOURAGUES$AGB_simu)
tempPAR <- as.data.frame(resultMC_ChaveFG$PARACOU$AGB_simu)
tempTROP <- rbind(tempNOU,tempPAR)
Tropiprop_CHAV <- cbind(TropiSARstemTREE, tempTROP)
Tropiprop_CHAV <- rbind(Tropiprop_CHAV, Tropiprop_PALM)

for (i in (1:length(resolAGB))) {
  tempocalc <- by(Tropiprop_CHAV, Tropiprop_CHAV[,resolAGB[i]],
                  function(x) list(meanAGB = mean(apply(x[,46:1045], 2, sum, na.rm = T)),
                                   credibilityAGB = quantile(apply(x[,46:1045], 2, sum, na.rm
= T), probs = c(0.025,0.975))))

  AGB_chv.list[[i]] <- data.frame(Area_code = names(tempocalc),
                                  agb_chv = round(as.numeric(sapply(tempocalc,"[",1))*coefmult
[i],1),
                                  cred_chv_2.5 = round(as.numeric(lapply(sapply(tempocalc,"[",
2), function(x) x[1]))*coefmult[i],1),
                                  cred_chv_97.5 = round(as.numeric(lapply(sapply(tempocalc,"["
,2), function(x) x[2]))*coefmult[i],1), stringsAsFactors = F)

  AGB_chv.list[[i]] <- AGB_chv.list[[i]][match(ordarea[[i]], AGB_chv.list[[i]]$Area_code),]
```

```
  rownames(AGB_chv.list[[i]]) <- NULL
}
AGB_chv.list
AGB_chv.df <- Reduce(rbind, AGB_chv.list)
AGB_chv.df
```

```
##     Area_code agb_chv cred_chv_2.5 cred_chv_97.5
## 1     NOU01h1   468.2        410.1         547.5
## 2     NOU01h2   395.6        352.9         448.2
## 3     NOU02h1   287.9        250.3         334.4
## 4     NOU02h2   269.6        241.6         302.1
## 5     NOU02h3   332.1        296.6         376.7
## 6     NOU02h4   269.3        237.5         310.1
## 7     NOU02h5   293.8        257.6         338.1
## 8     NOU02h6   313.5        275.5         360.0
## 9     NOU02h7   385.7        343.6         437.4
## 10    NOU02h8   628.6        558.4         718.4
## 11    NOU02h9   465.6        418.5         519.6
## 12   NOU02h10   439.4        391.7         491.6
## 13    NOU03h1   509.9        445.4         597.5
## 14    NOU03h2   528.0        472.2         596.4
## 15    NOU03h3   457.0        400.6         525.1
## 16    NOU03h4   558.9        488.2         638.0
## 17    NOU03h5   540.9        476.7         616.9
## 18    NOU03h6   559.3        494.5         641.3
## 19    NOU04h1   427.1        386.2         476.5
## 20    NOU04h2   295.1        264.6         331.3
## 21    NOU04h3   400.8        365.2         444.9
## 22    NOU04h4   464.9        413.0         523.4
## 23    NOU04h5   418.4        377.0         466.2
## 24    NOU04h6   386.5        342.6         437.9
## 25    NOU04h7   445.3        401.8         491.7
## 26    NOU04h8   432.6        387.9         483.3
## 27    NOU04h9   528.0        476.5         585.9
## 28   NOU04h10   397.6        353.5         445.6
## 29   NOU04h11   490.3        444.3         547.4
## 30   NOU04h12   472.9        424.3         535.4
## 31    NOU08h1   510.2        458.7         567.8
## 32    NOU09h1   462.1        409.9         523.1
## 33    NOU10h1   379.4        343.5         423.3
## 34    PAR01h1   414.8        382.4         457.0
## 35    PAR01h2   278.9        257.3         302.0
## 36    PAR01h3   448.7        413.0         486.6
## 37    PAR01h4   332.2        305.6         363.9
## 38    PAR02h1   319.6        295.1         348.8
## 39    PAR02h2   312.1        289.6         338.1
## 40    PAR02h3   369.6        340.2         401.7
## 41    PAR02h4   317.5        292.9         343.5
## 42    PAR03h1   336.4        309.5         367.2
## 43    PAR03h2   312.2        289.9         337.5
## 44    PAR03h3   288.4        269.6         308.9
## 45    PAR03h4   285.2        266.7         307.1
## 46    PAR04h1   284.5        266.0         305.0
```

```
## 47    PAR04h2   306.5        283.9        332.4
## 48    PAR04h3   257.4        240.6        277.7
## 49    PAR04h4   276.6        258.0        296.0
## 50    PAR05h1   305.0        285.2        326.7
## 51    PAR05h2   293.6        272.3        315.9
## 52    PAR05h3   278.7        256.1        308.7
## 53    PAR05h4   291.1        271.4        312.8
## 54    PAR06h1   345.6        317.8        374.8
## 55    PAR06h2   467.1        428.0        512.3
## 56    PAR06h3   334.8        305.1        366.6
## 57    PAR06h4   419.9        382.0        457.8
## 58    PAR07h1   409.3        376.4        445.9
## 59    PAR07h2   397.2        363.9        437.3
## 60    PAR07h3   374.7        344.3        409.6
## 61    PAR07h4   421.7        389.2        455.5
## 62    PAR08h1   280.6        260.5        302.2
## 63    PAR08h2   252.3        234.1        271.6
## 64    PAR08h3   267.8        250.4        285.7
## 65    PAR08h4   242.6        225.0        261.7
## 66    PAR09h1   371.2        343.5        401.2
## 67    PAR09h2   341.8        313.4        379.8
## 68    PAR09h3   304.1        281.1        330.7
## 69    PAR09h4   318.4        295.0        346.5
## 70    PAR10h1   347.3        322.3        378.2
## 71    PAR10h2   273.1        252.6        295.3
## 72    PAR10h3   305.8        285.3        329.2
## 73    PAR10h4   282.9        264.6        303.0
## 74    PAR11h1   400.3        369.3        436.8
## 75    PAR11h2   367.9        339.6        396.8
## 76    PAR11h3   409.2        378.2        443.2
## 77    PAR11h4   371.8        343.4        400.7
## 78    PAR12h1   306.3        283.8        328.8
## 79    PAR12h2   289.1        269.5        310.5
## 80    PAR12h3   315.4        292.1        340.9
## 81    PAR12h4   296.0        277.4        317.5
## 82    PAR13h1   377.0        346.1        411.0
## 83    PAR13h2   367.6        338.9        397.2
## 84    PAR13h3   422.7        385.6        460.4
## 85    PAR13h4   378.9        350.3        411.8
## 86    PAR14h1   427.9        396.2        465.0
## 87    PAR14h2   425.6        392.7        460.7
## 88    PAR14h3   351.3        324.5        382.4
## 89    PAR14h4   369.1        339.2        401.6
## 90    PAR15h1   442.8        409.8        479.0
## 91    PAR15h2   368.7        338.0        404.2
## 92    PAR15h3   404.0        376.3        435.9
## 93    PAR15h4   422.3        389.0        456.5
## 94    PAR16h1   444.2        399.3        495.4
## 95    PAR16h2   432.5        393.3        476.9
## 96    PAR16h3   480.9        437.1        528.8
## 97    PAR16h4   368.2        336.1        405.6
## 98    PAR16h5   362.7        329.1        401.8
## 99    PAR16h6   393.1        354.9        433.4
## 100   PAR16h7   390.1        348.1        437.3
```

```
## 101   PAR16h8   360.7        328.5         397.1
## 102   PAR16h9   458.7        418.0         507.9
## 103  PAR16h10   424.6        380.7         466.7
## 104  PAR16h11   378.6        347.8         412.5
## 105  PAR16h12   394.5        354.9         440.6
## 106  PAR16h13   418.4        373.0         470.6
## 107  PAR16h14   378.6        346.7         411.2
## 108  PAR16h15   426.9        383.7         475.7
## 109  PAR16h16   380.4        349.0         415.5
## 110  PAR16h17   375.5        340.8         414.2
## 111  PAR16h18   401.0        360.1         453.0
## 112  PAR16h19   437.2        394.3         483.9
## 113  PAR16h20   399.1        362.2         441.9
## 114  PAR16h21   458.5        410.7         516.9
## 115  PAR16h22   419.4        384.6         456.1
## 116  PAR16h23   384.7        339.0         446.1
## 117  PAR16h24   402.4        360.3         446.0
## 118  PAR16h25   423.3        381.2         471.0
## 119   PAR17h1   123.1        116.4         130.3
## 120   PAR17h2   133.7        124.7         143.6
## 121   PAR17h3   143.2        135.6         151.7
## 122   PAR17h4   113.8        107.3         121.2
## 123   NOU01q1   352.8        295.4         420.6
## 124   NOU01q2   725.9        545.6        1020.5
## 125   NOU01q3   217.1        177.2         267.3
## 126   NOU01q4   441.6        349.2         585.1
## 127   NOU01q5   453.6        381.2         538.9
## 128   NOU01q6   340.6        279.0         422.0
## 129   NOU01q7   472.9        383.8         574.0
## 130   NOU01q8   450.7        376.2         549.9
## 131   NOU02q1   355.4        279.2         475.0
## 132   NOU02q2   306.7        252.5         380.5
## 133   NOU02q3   256.2        186.2         394.0
## 134   NOU02q4   230.8        193.5         282.8
## 135   NOU02q5   228.0        196.8         265.5
## 136   NOU02q6   279.2        223.6         357.9
## 137   NOU02q7   201.3        163.2         257.4
## 138   NOU02q8   366.5        304.1         449.9
## 139   NOU02q9   205.5        168.8         259.4
## 140  NOU02q10   235.5        201.6         278.9
## 141  NOU02q11   430.2        353.1         530.3
## 142  NOU02q12   457.1        371.7         575.6
## 143  NOU02q13   167.5        142.5         198.8
## 144  NOU02q14   178.9        153.5         211.0
## 145  NOU02q15   386.2        294.0         520.2
## 146  NOU02q16   344.5        283.4         418.5
## 147  NOU02q17   330.5        273.8         410.4
## 148  NOU02q18   387.1        295.7         546.2
## 149  NOU02q19   264.9        211.6         338.2
## 150  NOU02q20   192.8        160.6         232.4
## 151  NOU02q21   273.1        234.9         325.3
## 152  NOU02q22   205.4        169.8         256.6
## 153  NOU02q23   398.5        324.6         497.3
## 154  NOU02q24   377.1        282.8         514.4
```

```
## 155  NOU02q25   462.3        365.0         592.0
## 156  NOU02q26   291.4        236.6         358.1
## 157  NOU02q27   448.2        357.2         564.9
## 158  NOU02q28   340.0        278.7         414.2
## 159  NOU02q29   847.6        673.0        1090.6
## 160  NOU02q30   437.5        342.7         561.5
## 161  NOU02q31   671.4        528.8         843.7
## 162  NOU02q32   558.0        458.0         695.6
## 163  NOU02q33   416.2        343.6         510.9
## 164  NOU02q34   576.5        470.8         715.2
## 165  NOU02q35   420.8        347.4         537.5
## 166  NOU02q36   449.0        369.8         542.9
## 167  NOU02q37   474.7        374.1         608.8
## 168  NOU02q38   307.1        254.5         370.8
## 169  NOU02q39   523.8        438.8         632.5
## 170  NOU02q40   451.4        369.6         548.1
## 171   NOU03q1   324.8        267.3         389.4
## 172   NOU03q2   505.8        407.5         645.4
## 173   NOU03q3   676.9        552.7         852.0
## 174   NOU03q4   369.8        303.7         460.1
## 175   NOU03q5   327.3        284.0         379.7
## 176   NOU03q6   574.6        441.9         766.2
## 177   NOU03q7   390.2        331.3         460.5
## 178   NOU03q8   818.8        612.5        1126.0
## 179   NOU03q9   620.6        508.0         766.8
## 180  NOU03q10   444.6        376.2         533.4
## 181  NOU03q11   411.2        344.0         497.1
## 182  NOU03q12   514.8        400.0         669.9
## 183  NOU03q13   466.0        372.4         587.3
## 184  NOU03q14   513.6        414.0         628.5
## 185  NOU03q15   719.6        577.1         918.5
## 186  NOU03q16   532.7        430.4         670.7
## 187  NOU03q17   471.5        397.0         562.1
## 188  NOU03q18   517.3        425.4         622.5
## 189  NOU03q19   831.4        653.1        1072.3
## 190  NOU03q20   424.5        324.2         573.8
## 191  NOU03q21   497.4        405.5         613.4
## 192  NOU03q22   413.8        329.3         527.5
## 193  NOU03q23   695.4        529.1         993.0
## 194  NOU03q24   553.0        450.5         680.3
## 195   NOU04q1   453.6        375.1         547.8
## 196   NOU04q2   369.7        306.5         455.0
## 197   NOU04q3   253.2        213.8         303.3
## 198   NOU04q4   377.8        312.9         474.2
## 199   NOU04q5   446.6        376.5         548.7
## 200   NOU04q6   387.3        329.0         465.5
## 201   NOU04q7   466.9        389.6         558.8
## 202   NOU04q8   436.1        362.3         543.8
## 203   NOU04q9   411.0        349.0         495.2
## 204  NOU04q10   474.1        392.3         596.9
## 205  NOU04q11   234.5        195.6         291.0
## 206  NOU04q12   314.1        252.3         395.1
## 207  NOU04q13   385.3        328.9         453.8
## 208  NOU04q14   383.9        322.5         469.7
```

```
## 209  NOU04q15   464.6        390.3         562.3
## 210  NOU04q16   491.7        385.0         649.6
## 211  NOU04q17   597.2        503.7         721.0
## 212  NOU04q18   331.7        278.3         404.9
## 213  NOU04q19   366.1        302.1         454.4
## 214  NOU04q20   355.1        278.3         467.7
## 215  NOU04q21   475.8        396.6         576.6
## 216  NOU04q22   485.7        408.0         593.5
## 217  NOU04q23   385.2        319.9         461.3
## 218  NOU04q24   352.4        283.9         455.1
## 219  NOU04q25   402.3        328.6         492.4
## 220  NOU04q26   342.4        282.6         417.5
## 221  NOU04q27   344.1        288.3         411.1
## 222  NOU04q28   480.5        381.9         608.3
## 223  NOU04q29   423.8        347.8         511.0
## 224  NOU04q30   395.7        335.1         478.3
## 225  NOU04q31   437.0        372.5         513.1
## 226  NOU04q32   555.0        457.5         678.7
## 227  NOU04q33   619.0        522.9         746.4
## 228  NOU04q34   417.8        348.5         503.4
## 229  NOU04q35   339.7        290.0         400.8
## 230  NOU04q36   454.9        370.9         562.0
## 231  NOU04q37   529.0        446.5         633.2
## 232  NOU04q38   500.9        429.5         584.3
## 233  NOU04q39   494.3        422.8         572.0
## 234  NOU04q40   564.6        439.9         765.0
## 235  NOU04q41   491.8        411.5         591.4
## 236  NOU04q42   581.7        470.9         734.7
## 237  NOU04q43   441.1        360.9         543.3
## 238  NOU04q44   354.7        293.5         444.9
## 239  NOU04q45   487.6        402.1         605.3
## 240  NOU04q46   442.6        360.7         549.5
## 241  NOU04q47   374.7        310.6         458.2
## 242  NOU04q48   457.9        384.5         549.7
## 243   NOU05q1   234.6        196.2         286.4
## 244   NOU06q1   288.1        238.4         357.4
## 245   NOU07q1   302.6        274.6         335.7
## 246   NOU09q1   616.9        485.7         797.5
## 247   NOU09q2   326.1        267.5         403.7
## 248   NOU09q3   400.0        329.5         483.8
## 249   NOU09q4   505.3        413.6         631.1
## 250   NOU10q1   356.2        297.6         444.5
## 251   NOU10q2   402.0        330.1         515.0
## 252   NOU10q3   474.0        400.2         561.9
## 253   NOU10q4   285.3        246.1         331.8
## 254   NOU11q1   199.8        173.3         230.8
## 255   PAR01q1   343.0        290.1         403.6
## 256   PAR01q2   344.4        299.0         397.2
## 257   PAR01q3   247.7        211.7         287.8
## 258   PAR01q4   387.4        342.4         437.8
## 259   PAR01q5   396.2        346.9         455.0
## 260   PAR01q6   473.0        409.5         550.6
## 261   PAR01q7   436.6        377.3         507.1
## 262   PAR01q8   339.6        289.4         401.4
```

```
## 263   PAR01q9   242.4        210.9        276.8
## 264  PAR01q10   312.9        268.8        363.4
## 265  PAR01q11   508.5        423.8        619.6
## 266  PAR01q12   533.3        458.3        619.5
## 267  PAR01q13   412.2        351.6        495.8
## 268  PAR01q14   288.7        245.2        340.5
## 269  PAR01q15   317.3        278.2        362.9
## 270  PAR01q16   377.4        329.6        433.7
## 271  PAR01q17   391.5        338.4        448.9
## 272  PAR01q18   357.9        309.9        414.8
## 273  PAR01q19   321.0        272.4        379.5
## 274  PAR01q20   304.4        269.1        345.1
## 275  PAR01q21   385.7        337.2        439.7
## 276  PAR01q22   329.3        283.6        382.6
## 277  PAR01q23   343.9        301.0        398.3
## 278  PAR01q24   355.8        306.2        414.4
## 279  PAR01q25   246.3        214.7        285.5
## 280   PAR02q1   306.4        266.9        351.9
## 281   PAR02q2   221.7        190.1        262.2
## 282   PAR02q3   304.0        262.5        354.8
## 283   PAR02q4   286.2        248.0        334.3
## 284   PAR02q5   308.4        268.9        360.7
## 285   PAR02q6   350.0        297.7        415.9
## 286   PAR02q7   304.6        262.8        353.9
## 287   PAR02q8   327.7        284.4        385.4
## 288   PAR02q9   340.5        295.9        391.2
## 289  PAR02q10   309.1        272.7        355.1
## 290  PAR02q11   363.5        309.7        430.2
## 291  PAR02q12   314.0        268.8        362.2
## 292  PAR02q13   359.1        308.7        416.6
## 293  PAR02q14   351.9        308.5        398.9
## 294  PAR02q15   275.3        239.7        320.4
## 295  PAR02q16   389.3        341.5        448.3
## 296  PAR02q17   438.8        380.2        506.3
## 297  PAR02q18   397.3        348.4        454.5
## 298  PAR02q19   343.0        298.5        393.5
## 299  PAR02q20   253.8        221.8        292.4
## 300  PAR02q21   387.3        329.1        457.6
## 301  PAR02q22   494.5        400.6        626.5
## 302  PAR02q23   306.6        264.3        358.2
## 303  PAR02q24   343.4        293.3        399.9
## 304  PAR02q25   253.4        218.9        293.4
## 305   PAR03q1   369.0        327.2        418.7
## 306   PAR03q2   347.0        281.3        446.8
## 307   PAR03q3   285.0        244.1        330.7
## 308   PAR03q4   310.6        269.3        361.9
## 309   PAR03q5   212.5        181.1        248.1
## 310   PAR03q6   393.7        336.3        458.6
## 311   PAR03q7   378.6        328.3        437.4
## 312   PAR03q8   319.7        271.9        378.7
## 313   PAR03q9   402.7        349.3        466.8
## 314  PAR03q10   283.3        248.7        325.4
## 315  PAR03q11   307.1        273.3        343.3
## 316  PAR03q12   277.1        245.0        317.2
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## 317  PAR03q13   343.7        303.2        386.5
## 318  PAR03q14   288.2        252.9        324.6
## 319  PAR03q15   296.4        259.0        342.6
## 320  PAR03q16   294.0        259.0        332.7
## 321  PAR03q17   264.8        237.3        294.6
## 322  PAR03q18   255.5        226.7        287.6
## 323  PAR03q19   300.9        269.0        342.1
## 324  PAR03q20   240.6        211.2        274.0
## 325  PAR03q21   269.7        240.0        303.2
## 326  PAR03q22   272.8        240.7        314.7
## 327  PAR03q23   225.2        199.4        254.1
## 328  PAR03q24   271.1        240.6        305.5
## 329  PAR03q25   369.5        324.8        417.0
## 330   PAR04q1   269.3        237.6        306.4
## 331   PAR04q2   260.5        229.7        297.6
## 332   PAR04q3   271.7        241.1        305.8
## 333   PAR04q4   377.2        326.3        447.9
## 334   PAR04q5   307.7        274.2        348.3
## 335   PAR04q6   245.2        218.3        280.2
## 336   PAR04q7   253.9        224.6        289.9
## 337   PAR04q8   336.1        301.9        376.9
## 338   PAR04q9   272.6        240.1        312.5
## 339  PAR04q10   247.7        215.9        287.1
## 340  PAR04q11   272.0        243.4        306.3
## 341  PAR04q12   275.5        247.4        304.8
## 342  PAR04q13   348.1        309.3        391.7
## 343  PAR04q14   227.3        202.0        253.9
## 344  PAR04q15   247.0        217.7        279.7
## 345  PAR04q16   249.2        222.0        281.2
## 346  PAR04q17   289.2        251.3        331.3
## 347  PAR04q18   263.9        232.1        302.7
## 348  PAR04q19   283.5        254.0        317.4
## 349  PAR04q20   400.8        352.8        455.6
## 350  PAR04q21   293.9        266.0        326.3
## 351  PAR04q22   215.6        191.0        242.3
## 352  PAR04q23   276.7        245.8        310.0
## 353  PAR04q24   252.4        218.7        289.3
## 354  PAR04q25   303.0        269.7        342.0
## 355   PAR05q1   264.2        235.0        299.4
## 356   PAR05q2   268.1        236.2        308.2
## 357   PAR05q3   318.8        279.9        360.5
## 358   PAR05q4   280.6        248.2        316.6
## 359   PAR05q5   286.5        253.6        325.6
## 360   PAR05q6   352.1        313.4        397.2
## 361   PAR05q7   271.7        240.1        307.2
## 362   PAR05q8   309.4        273.3        352.3
## 363   PAR05q9   253.3        222.1        287.9
## 364  PAR05q10   309.1        270.1        355.8
## 365  PAR05q11   314.2        278.3        355.5
## 366  PAR05q12   309.8        274.1        354.5
## 367  PAR05q13   439.2        373.0        540.0
## 368  PAR05q14   351.7        313.0        398.1
## 369  PAR05q15   339.3        294.3        389.0
## 370  PAR05q16   216.1        190.6        244.4
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## 371  PAR05q17   235.1        204.8         271.8
## 372  PAR05q18   241.9        210.4         276.6
## 373  PAR05q19   266.5        236.1         303.1
## 374  PAR05q20   293.5        259.1         334.3
## 375  PAR05q21   251.5        224.9         279.6
## 376  PAR05q22   283.5        247.1         322.8
## 377  PAR05q23   228.6        201.3         263.5
## 378  PAR05q24   290.4        252.4         345.0
## 379  PAR05q25   326.7        291.0         369.5
## 380   PAR06q1   488.1        427.9         558.0
## 381   PAR06q2   389.3        338.4         443.7
## 382   PAR06q3   391.4        346.2         442.7
## 383   PAR06q4   447.6        386.5         527.2
## 384   PAR06q5   529.6        452.0         622.8
## 385   PAR06q6   301.5        261.6         353.7
## 386   PAR06q7   275.8        242.2         316.7
## 387   PAR06q8   415.5        350.0         498.4
## 388   PAR06q9   469.8        411.9         534.2
## 389  PAR06q10   492.8        422.6         575.5
## 390  PAR06q11   438.8        372.1         520.7
## 391  PAR06q12   377.4        323.9         442.8
## 392  PAR06q13   335.9        277.2         410.6
## 393  PAR06q14   374.3        319.0         444.7
## 394  PAR06q15   384.2        331.9         448.8
## 395  PAR06q16   335.7        287.1         393.3
## 396  PAR06q17   278.5        237.4         326.8
## 397  PAR06q18   399.2        341.9         471.8
## 398  PAR06q19   526.5        443.4         623.0
## 399  PAR06q20   403.5        350.1         466.8
## 400  PAR06q21   372.7        328.4         427.0
## 401  PAR06q22   345.8        285.2         416.5
## 402  PAR06q23   493.8        415.2         583.0
## 403  PAR06q24   471.1        409.3         541.3
## 404  PAR06q25   504.4        436.7         585.4
## 405   PAR07q1   397.2        335.9         489.5
## 406   PAR07q2   372.7        315.6         439.3
## 407   PAR07q3   401.3        342.5         464.7
## 408   PAR07q4   268.0        231.2         311.4
## 409   PAR07q5   328.3        274.7         396.4
## 410   PAR07q6   396.0        346.0         447.7
## 411   PAR07q7   339.7        297.9         384.9
## 412   PAR07q8   448.1        390.6         515.3
## 413   PAR07q9   423.6        355.3         500.1
## 414  PAR07q10   288.5        248.2         337.5
## 415  PAR07q11   360.3        311.0         420.9
## 416  PAR07q12   383.1        331.8         441.1
## 417  PAR07q13   472.0        407.8         550.4
## 418  PAR07q14   380.9        324.0         449.4
## 419  PAR07q15   347.8        301.3         401.6
## 420  PAR07q16   394.1        339.5         461.9
## 421  PAR07q17   321.5        274.6         382.4
## 422  PAR07q18   381.1        336.8         434.3
## 423  PAR07q19   463.7        402.3         544.7
## 424  PAR07q20   363.3        316.3         417.3
```

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## 425  PAR07q21   422.8        368.1        489.4
## 426  PAR07q22   412.8        353.9        480.4
## 427  PAR07q23   314.8        275.0        365.6
## 428  PAR07q24   430.4        367.9        510.8
## 429  PAR07q25   379.8        332.5        437.3
## 430   PAR08q1   243.8        215.6        279.9
## 431   PAR08q2   173.4        152.4        195.7
## 432   PAR08q3   268.6        234.8        309.6
## 433   PAR08q4   190.7        167.0        218.9
## 434   PAR08q5   280.4        241.8        326.1
## 435   PAR08q6   285.7        251.8        324.6
## 436   PAR08q7   298.1        263.4        339.3
## 437   PAR08q8   251.7        224.7        282.8
## 438   PAR08q9   250.1        221.1        286.8
## 439  PAR08q10   250.8        219.8        284.7
## 440  PAR08q11   223.2        197.1        255.2
## 441  PAR08q12   264.0        233.0        298.6
## 442  PAR08q13   254.5        224.2        291.2
## 443  PAR08q14   279.1        241.0        327.5
## 444  PAR08q15   239.1        212.8        271.7
## 445  PAR08q16   278.8        248.7        315.0
## 446  PAR08q17   314.1        280.0        350.1
## 447  PAR08q18   253.3        229.5        281.4
## 448  PAR08q19   219.7        189.0        255.1
## 449  PAR08q20   271.0        235.7        309.9
## 450  PAR08q21   259.5        231.3        287.8
## 451  PAR08q22   222.7        196.8        251.3
## 452  PAR08q23   237.2        209.9        268.9
## 453  PAR08q24   269.8        241.4        306.2
## 454  PAR08q25   246.0        215.8        278.3
## 455   PAR09q1   347.8        305.2        395.0
## 456   PAR09q2   270.2        238.9        308.9
## 457   PAR09q3   359.5        317.8        411.6
## 458   PAR09q4   305.5        266.1        350.8
## 459   PAR09q5   238.6        208.7        275.1
## 460   PAR09q6   394.7        351.3        446.6
## 461   PAR09q7   411.1        358.3        480.3
## 462   PAR09q8   425.2        375.6        477.9
## 463   PAR09q9   311.0        266.4        371.9
## 464  PAR09q10   366.6        300.1        475.7
## 465  PAR09q11   386.1        333.5        445.0
## 466  PAR09q12   353.3        310.1        404.0
## 467  PAR09q13   318.0        278.2        361.6
## 468  PAR09q14   264.7        228.2        307.0
## 469  PAR09q15   329.7        291.0        376.0
## 470  PAR09q16   329.0        284.0        381.6
## 471  PAR09q17   332.9        289.3        389.7
## 472  PAR09q18   285.0        240.8        336.9
## 473  PAR09q19   269.0        232.0        313.8
## 474  PAR09q20   385.1        334.8        445.7
## 475  PAR09q21   250.2        218.6        286.4
## 476  PAR09q22   307.1        268.8        348.9
## 477  PAR09q23   308.0        270.1        350.2
## 478  PAR09q24   270.4        230.7        315.5
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## 479  PAR09q25   446.0        389.7         514.3
## 480   PAR10q1   280.2        248.7         319.4
## 481   PAR10q2   289.7        252.2         334.2
## 482   PAR10q3   339.8        301.1         385.4
## 483   PAR10q4   245.4        217.0         276.8
## 484   PAR10q5   274.9        243.3         310.5
## 485   PAR10q6   391.1        345.0         440.8
## 486   PAR10q7   267.3        232.6         308.8
## 487   PAR10q8   266.6        227.7         314.9
## 488   PAR10q9   328.3        284.0         384.9
## 489  PAR10q10   205.2        182.5         232.9
## 490  PAR10q11   329.7        290.2         375.7
## 491  PAR10q12   345.5        301.4         393.2
## 492  PAR10q13   377.9        327.9         441.6
## 493  PAR10q14   241.3        212.9         275.8
## 494  PAR10q15   306.3        269.3         351.5
## 495  PAR10q16   351.7        311.2         404.6
## 496  PAR10q17   310.3        279.0         347.5
## 497  PAR10q18   248.3        219.5         283.2
## 498  PAR10q19   312.1        272.8         356.0
## 499  PAR10q20   272.6        244.0         305.4
## 500  PAR10q21   335.9        297.2         382.1
## 501  PAR10q22   234.8        207.3         265.5
## 502  PAR10q23   314.4        278.8         356.0
## 503  PAR10q24   319.7        284.8         362.1
## 504  PAR10q25   299.2        256.3         356.3
## 505   PAR11q1   312.2        268.6         360.9
## 506   PAR11q2   342.3        297.1         399.0
## 507   PAR11q3   386.0        338.9         442.4
## 508   PAR11q4   389.5        342.6         447.2
## 509   PAR11q5   366.0        321.0         416.5
## 510   PAR11q6   467.9        399.5         546.3
## 511   PAR11q7   320.4        276.2         373.7
## 512   PAR11q8   447.1        398.9         500.9
## 513   PAR11q9   291.7        250.0         338.1
## 514  PAR11q10   446.7        395.3         512.1
## 515  PAR11q11   517.8        453.2         596.8
## 516  PAR11q12   390.6        346.1         444.5
## 517  PAR11q13   349.6        301.7         402.9
## 518  PAR11q14   425.9        374.7         479.9
## 519  PAR11q15   435.9        367.7         532.7
## 520  PAR11q16   341.4        299.2         396.8
## 521  PAR11q17   406.4        355.9         466.0
## 522  PAR11q18   361.9        317.3         413.0
## 523  PAR11q19   403.8        352.4         465.5
## 524  PAR11q20   314.7        268.6         367.3
## 525  PAR11q21   421.3        367.9         483.9
## 526  PAR11q22   381.2        328.5         444.8
## 527  PAR11q23   391.4        345.3         451.0
## 528  PAR11q24   350.8        298.3         411.7
## 529  PAR11q25   418.9        362.7         484.9
## 530   PAR12q1   250.4        218.9         290.1
## 531   PAR12q2   265.9        233.8         302.6
## 532   PAR12q3   371.2        321.4         428.3
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## 533   PAR12q4   320.4        283.5        361.9
## 534   PAR12q5   293.6        261.6        338.9
## 535   PAR12q6   340.9        298.3        390.5
## 536   PAR12q7   292.5        260.1        329.4
## 537   PAR12q8   315.6        280.5        354.3
## 538   PAR12q9   293.6        255.9        337.1
## 539  PAR12q10   283.8        252.0        322.0
## 540  PAR12q11   260.6        231.5        296.3
## 541  PAR12q12   227.1        198.2        261.7
## 542  PAR12q13   299.4        267.7        334.8
## 543  PAR12q14   282.8        251.5        322.1
## 544  PAR12q15   347.6        302.7        399.2
## 545  PAR12q16   263.2        232.4        299.1
## 546  PAR12q17   314.3        275.5        361.5
## 547  PAR12q18   353.2        312.9        398.4
## 548  PAR12q19   285.3        255.2        317.6
## 549  PAR12q20   298.7        261.4        342.1
## 550  PAR12q21   269.0        235.2        306.8
## 551  PAR12q22   298.3        261.5        340.5
## 552  PAR12q23   340.8        300.9        387.3
## 553  PAR12q24   304.4        272.2        341.2
## 554  PAR12q25   319.1        281.6        357.8
## 555   PAR13q1   432.0        378.5        500.0
## 556   PAR13q2   453.9        399.0        519.0
## 557   PAR13q3   470.5        407.9        542.9
## 558   PAR13q4   399.8        354.5        451.9
## 559   PAR13q5   431.0        374.4        500.6
## 560   PAR13q6   331.3        277.8        400.9
## 561   PAR13q7   312.7        267.0        365.9
## 562   PAR13q8   351.6        298.3        418.7
## 563   PAR13q9   348.2        303.6        405.9
## 564  PAR13q10   372.9        321.5        431.9
## 565  PAR13q11   386.0        334.6        450.2
## 566  PAR13q12   422.7        369.0        480.0
## 567  PAR13q13   371.4        329.5        419.4
## 568  PAR13q14   370.6        321.7        427.3
## 569  PAR13q15   320.9        277.4        374.7
## 570  PAR13q16   418.4        375.2        476.0
## 571  PAR13q17   384.6        329.3        459.1
## 572  PAR13q18   433.1        381.2        491.5
## 573  PAR13q19   321.1        282.3        363.6
## 574  PAR13q20   425.6        372.0        493.5
## 575  PAR13q21   464.6        398.7        545.7
## 576  PAR13q22   454.4        390.3        531.6
## 577  PAR13q23   371.5        310.3        439.3
## 578  PAR13q24   216.9        183.4        255.2
## 579  PAR13q25   426.3        365.8        499.9
## 580   PAR14q1   441.4        378.2        521.3
## 581   PAR14q2   468.8        412.3        537.6
## 582   PAR14q3   385.5        332.1        450.1
## 583   PAR14q4   371.4        327.7        421.6
## 584   PAR14q5   446.2        386.4        519.6
## 585   PAR14q6   494.3        423.6        575.3
## 586   PAR14q7   343.0        296.6        402.9
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## 587   PAR14q8   434.4        368.1         508.6
## 588   PAR14q9   433.8        376.4         497.6
## 589  PAR14q10   453.2        395.2         518.3
## 590  PAR14q11   389.4        342.8         448.7
## 591  PAR14q12   357.7        314.4         406.9
## 592  PAR14q13   338.0        298.6         379.9
## 593  PAR14q14   354.8        305.8         415.9
## 594  PAR14q15   541.1        472.5         622.4
## 595  PAR14q16   350.8        306.7         402.9
## 596  PAR14q17   295.7        263.4         338.3
## 597  PAR14q18   365.0        315.1         419.6
## 598  PAR14q19   363.2        308.8         422.6
## 599  PAR14q20   383.6        326.8         454.4
## 600  PAR14q21   362.1        312.1         418.5
## 601  PAR14q22   293.8        253.0         338.0
## 602  PAR14q23   407.7        350.1         473.9
## 603  PAR14q24   430.6        370.5         500.6
## 604  PAR14q25   341.3        299.8         393.9
## 605   PAR15q1   449.7        394.4         511.1
## 606   PAR15q2   437.9        381.2         502.3
## 607   PAR15q3   370.6        308.0         452.7
## 608   PAR15q4   426.0        364.2         502.9
## 609   PAR15q5   473.4        415.4         540.9
## 610   PAR15q6   399.0        351.2         452.9
## 611   PAR15q7   479.5        417.2         555.0
## 612   PAR15q8   373.5        313.2         441.1
## 613   PAR15q9   305.3        263.2         359.3
## 614  PAR15q10   293.6        252.2         340.6
## 615  PAR15q11   409.6        356.1         470.0
## 616  PAR15q12   409.8        363.3         462.6
## 617  PAR15q13   439.8        384.7         506.9
## 618  PAR15q14   482.8        412.6         569.7
## 619  PAR15q15   246.7        214.0         287.1
## 620  PAR15q16   360.2        309.8         419.1
## 621  PAR15q17   493.4        430.7         567.7
## 622  PAR15q18   404.1        359.3         453.1
## 623  PAR15q19   329.5        286.1         382.0
## 624  PAR15q20   386.4        340.1         442.1
## 625  PAR15q21   408.6        357.5         462.6
## 626  PAR15q22   412.9        359.8         472.6
## 627  PAR15q23   401.4        349.1         460.9
## 628  PAR15q24   505.5        439.7         570.7
## 629  PAR15q25   378.0        330.4         429.2
## 630   PAR16q1   395.9        329.2         483.0
## 631   PAR16q2   562.0        464.5         688.6
## 632   PAR16q3   683.8        572.5         826.1
## 633   PAR16q4   374.3        322.4         431.5
## 634   PAR16q5   486.6        405.4         581.9
## 635   PAR16q6   459.6        392.6         539.0
## 636   PAR16q7   441.6        377.3         516.1
## 637   PAR16q8   359.9        308.0         428.1
## 638   PAR16q9   469.2        402.2         552.5
## 639  PAR16q10   299.8        237.3         385.3
## 640  PAR16q11   496.1        404.2         604.0
```

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## 641  PAR16q12   322.8        266.4         400.1
## 642  PAR16q13   345.4        279.9         421.1
## 643  PAR16q14   326.3        279.9         381.3
## 644  PAR16q15   546.0        454.4         657.5
## 645  PAR16q16   431.3        367.6         511.1
## 646  PAR16q17   384.9        328.0         455.7
## 647  PAR16q18   286.4        242.7         343.2
## 648  PAR16q19   263.3        220.1         323.0
## 649  PAR16q20   418.4        353.8         494.4
## 650  PAR16q21   413.9        348.0         485.7
## 651  PAR16q22   339.8        280.6         402.1
## 652  PAR16q23   290.3        239.3         358.2
## 653  PAR16q24   398.7        312.9         514.4
## 654  PAR16q25   299.6        247.9         363.0
## 655  PAR16q26   296.7        256.8         346.1
## 656  PAR16q27   591.8        489.7         737.5
## 657  PAR16q28   439.5        374.7         517.7
## 658  PAR16q29   387.0        321.0         468.5
## 659  PAR16q30   319.4        269.4         389.7
## 660  PAR16q31   350.7        295.0         417.4
## 661  PAR16q32   467.9        389.5         567.3
## 662  PAR16q33   328.3        275.9         395.6
## 663  PAR16q34   543.2        450.1         660.0
## 664  PAR16q35   344.1        287.3         424.5
## 665  PAR16q36   502.2        428.7         593.8
## 666  PAR16q37   375.8        319.5         441.0
## 667  PAR16q38   427.6        364.0         502.8
## 668  PAR16q39   502.6        435.2         590.6
## 669  PAR16q40   489.5        393.3         614.7
## 670  PAR16q41   402.8        344.8         471.3
## 671  PAR16q42   344.3        289.4         405.7
## 672  PAR16q43   309.8        269.1         362.9
## 673  PAR16q44   425.7        358.4         511.9
## 674  PAR16q45   522.0        421.7         645.9
## 675  PAR16q46   393.5        332.3         470.4
## 676  PAR16q47   377.4        319.5         442.1
## 677  PAR16q48   360.0        305.4         425.5
## 678  PAR16q49   464.7        395.5         553.5
## 679  PAR16q50   394.0        321.9         491.3
## 680  PAR16q51   410.4        352.4         480.9
## 681  PAR16q52   357.0        309.7         412.3
## 682  PAR16q53   484.6        397.7         586.8
## 683  PAR16q54   357.9        282.7         466.1
## 684  PAR16q55   388.3        313.2         490.7
## 685  PAR16q56   369.6        312.0         445.0
## 686  PAR16q57   380.4        325.1         444.7
## 687  PAR16q58   396.7        339.5         464.5
## 688  PAR16q59   506.0        408.7         633.2
## 689  PAR16q60   342.7        282.6         426.2
## 690  PAR16q61   478.3        404.3         555.1
## 691  PAR16q62   242.7        211.4         284.9
## 692  PAR16q63   344.5        283.6         422.8
## 693  PAR16q64   324.6        272.8         388.3
## 694  PAR16q65   370.4        301.5         471.9
```

```
## 695  PAR16q66   232.9        200.3         272.1
## 696  PAR16q67   501.3        421.9         594.1
## 697  PAR16q68   379.9        316.0         444.9
## 698  PAR16q69   401.1        337.5         482.5
## 699  PAR16q70   347.6        288.9         429.9
## 700  PAR16q71   433.4        373.3         504.0
## 701  PAR16q72   367.2        315.9         429.2
## 702  PAR16q73   450.0        379.8         550.2
## 703  PAR16q74   382.7        329.0         451.0
## 704  PAR16q75   412.5        341.2         502.0
## 705  PAR16q76   588.2        480.5         730.1
## 706  PAR16q77   413.2        325.3         528.7
## 707  PAR16q78   454.6        373.6         566.7
## 708  PAR16q79   411.1        348.5         480.2
## 709  PAR16q80   436.4        363.9         531.4
## 710  PAR16q81   468.8        407.4         542.5
## 711  PAR16q82   287.1        247.8         336.8
## 712  PAR16q83   433.8        374.0         514.6
## 713  PAR16q84   404.9        350.5         473.6
## 714  PAR16q85   324.9        268.5         403.5
## 715  PAR16q86   332.0        276.1         401.8
## 716  PAR16q87   346.2        294.2         413.6
## 717  PAR16q88   493.8        410.4         601.5
## 718  PAR16q89   466.5        387.1         563.8
## 719  PAR16q90   393.3        330.3         480.6
## 720  PAR16q91   537.3        435.6         686.3
## 721  PAR16q92   540.7        436.7         702.5
## 722  PAR16q93   437.0        378.9         501.6
## 723  PAR16q94   401.8        340.9         478.8
## 724  PAR16q95   495.5        375.2         706.9
## 725  PAR16q96   386.3        316.8         475.7
## 726  PAR16q97   385.9        320.5         464.0
## 727  PAR16q98   383.6        314.1         467.4
## 728  PAR16q99   411.1        343.3         496.6
## 729 PAR16q100   422.4        352.1         512.8
## 730   PAR17q1   117.4        105.8         131.8
## 731   PAR17q2   140.5        119.6         171.3
## 732   PAR17q3   165.2        151.1         181.4
## 733   PAR17q4   154.9        139.5         173.0
## 734   PAR17q5   162.0        147.8         176.9
## 735   PAR17q6   116.2        106.2         128.5
## 736   PAR17q7   115.5        104.7         125.8
## 737   PAR17q8   130.9        117.1         145.6
## 738   PAR17q9   119.3        107.6         133.7
## 739  PAR17q10   133.8        118.5         155.1
## 740  PAR17q11   129.5        119.5         140.8
## 741  PAR17q12   118.6        107.9         130.0
## 742  PAR17q13   136.7        124.9         149.0
## 743  PAR17q14   130.7        116.2         147.2
## 744  PAR17q15   124.6        112.7         137.6
## 745  PAR17q16   135.7        123.6         148.4
## 746  PAR17q17   162.9        146.9         182.4
## 747  PAR17q18   163.1        151.1         175.6
## 748  PAR17q19    82.9         75.1          91.8
```

```
## 749  PAR17q20   125.9        114.9         137.6
## 750  PAR17q21   116.8        106.2         128.0
## 751  PAR17q22   125.7        114.4         138.2
## 752  PAR17q23   116.6        106.9         128.0
## 753  PAR17q24   117.3        106.0         129.9
## 754  PAR17q25   153.7        136.6         174.0
```

AGB USING LOCAL H:D RELATIONSHIP (agb_loc)

```
AGB_loc.list <- list()

rm(resultMC_LocalFG); gc()
resultMC_LocalFG <- by(TropiSARstemTREE, TropiSARstemTREE[,"Site"],
                       function(x) AGBmonteCarlo(D=x$Diameter, WD=x$WD, H=x$Hlocal, errWD=x$sd
WD,
                                                 errH=x$HlocRSE, Dpropag ="chave2004"), simpli
fy=F)

tempNOU <- as.data.frame(resultMC_LocalFG$NOURAGUES$AGB_simu)
tempPAR <- as.data.frame(resultMC_LocalFG$PARACOU$AGB_simu)
tempTROP <- rbind(tempNOU,tempPAR)
Tropiprop_LOCAL <- cbind(TropiSARstemTREE, tempTROP)
Tropiprop_LOCAL <- rbind(Tropiprop_LOCAL, Tropiprop_PALM)

for (i in (1:length(resolAGB))) {
  tempocalc <- by(Tropiprop_LOCAL, Tropiprop_LOCAL[,resolAGB[i]],
                  function(x) list(meanAGB = mean(apply(x[,46:1045], 2, sum, na.rm = T)),
                                   credibilityAGB = quantile(apply(x[,46:1045], 2, sum, na.rm
= T), probs = c(0.025,0.975))))

  AGB_loc.list[[i]] <- data.frame(Area_code = names(tempocalc),
                                  agb_loc = round(as.numeric(sapply(tempocalc,"[",1))*coefmult
[i],1),
                                  cred_loc_2.5 = round(as.numeric(lapply(sapply(tempocalc,"[",
2), function(x) x[1]))*coefmult[i],1),
                                  cred_loc_97.5 = round(as.numeric(lapply(sapply(tempocalc,"["
,2), function(x) x[2]))*coefmult[i],1), stringsAsFactors = F)

  AGB_loc.list[[i]] <- AGB_loc.list[[i]][match(ordarea[[i]], AGB_loc.list[[i]]$Area_code),]
  rownames(AGB_loc.list[[i]]) <- NULL
}
AGB_loc.list
AGB_loc.df <- Reduce(rbind, AGB_loc.list)
AGB_loc.df
```

```
##     Area_code agb_loc cred_loc_2.5 cred_loc_97.5
## 1     NOU01h1   464.8        420.0         523.6
## 2     NOU01h2   388.2        354.8         428.6
## 3     NOU02h1   284.6        255.0         323.0
```

```
## 4     NOU02h2   268.2        244.8        294.6
## 5     NOU02h3   328.9        301.2        359.7
## 6     NOU02h4   266.5        240.9        295.4
## 7     NOU02h5   288.5        258.2        326.0
## 8     NOU02h6   308.5        277.5        346.9
## 9     NOU02h7   378.6        341.5        419.7
## 10    NOU02h8   605.1        548.5        671.3
## 11    NOU02h9   461.3        423.7        504.8
## 12   NOU02h10   434.2        397.5        477.1
## 13    NOU03h1   489.8        438.4        553.9
## 14    NOU03h2   518.4        475.2        568.4
## 15    NOU03h3   444.3        398.9        496.0
## 16    NOU03h4   537.5        482.7        598.3
## 17    NOU03h5   521.0        472.7        577.4
## 18    NOU03h6   545.4        495.6        610.0
## 19    NOU04h1   425.6        393.6        463.9
## 20    NOU04h2   294.6        270.0        321.0
## 21    NOU04h3   400.9        372.3        434.8
## 22    NOU04h4   454.6        415.9        500.9
## 23    NOU04h5   417.2        383.7        454.7
## 24    NOU04h6   381.4        344.4        422.0
## 25    NOU04h7   442.3        408.8        481.0
## 26    NOU04h8   430.2        395.2        468.3
## 27    NOU04h9   508.2        465.6        554.2
## 28   NOU04h10   394.4        361.0        432.8
## 29   NOU04h11   485.0        449.1        525.2
## 30   NOU04h12   467.3        428.0        511.3
## 31    NOU08h1   495.3        454.5        540.3
## 32    NOU09h1   443.1        406.2        488.2
## 33    NOU10h1   343.3        317.9        371.7
## 34    PAR01h1   393.2        365.0        423.4
## 35    PAR01h2   269.1        252.1        287.2
## 36    PAR01h3   426.6        399.8        455.3
## 37    PAR01h4   317.7        294.9        341.7
## 38    PAR02h1   303.6        282.4        326.1
## 39    PAR02h2   301.2        283.6        320.9
## 40    PAR02h3   355.6        334.5        377.6
## 41    PAR02h4   305.8        287.9        326.8
## 42    PAR03h1   320.4        298.1        343.8
## 43    PAR03h2   300.5        282.0        321.2
## 44    PAR03h3   281.9        267.9        297.4
## 45    PAR03h4   278.3        263.1        293.9
## 46    PAR04h1   278.5        263.7        293.5
## 47    PAR04h2   297.7        281.1        315.6
## 48    PAR04h3   251.0        237.7        264.7
## 49    PAR04h4   269.9        255.7        286.3
## 50    PAR05h1   297.3        280.8        313.8
## 51    PAR05h2   286.4        270.0        302.9
## 52    PAR05h3   268.3        251.2        290.3
## 53    PAR05h4   284.7        269.7        302.3
## 54    PAR06h1   330.8        309.0        355.3
## 55    PAR06h2   419.2        393.7        446.5
## 56    PAR06h3   316.5        293.4        342.0
## 57    PAR06h4   397.0        369.2        427.1
```

```
## 58    PAR07h1   387.3        364.0        412.8
## 59    PAR07h2   377.9        353.8        404.3
## 60    PAR07h3   357.4        334.8        382.2
## 61    PAR07h4   403.1        378.6        429.8
## 62    PAR08h1   272.4        257.8        288.5
## 63    PAR08h2   245.4        231.1        261.2
## 64    PAR08h3   262.1        249.3        275.2
## 65    PAR08h4   234.7        220.0        249.2
## 66    PAR09h1   358.1        338.7        381.3
## 67    PAR09h2   324.9        301.5        350.9
## 68    PAR09h3   294.3        276.6        315.1
## 69    PAR09h4   307.6        290.0        326.4
## 70    PAR10h1   333.0        313.2        355.0
## 71    PAR10h2   263.9        248.9        282.6
## 72    PAR10h3   298.2        283.2        314.3
## 73    PAR10h4   275.5        260.4        291.6
## 74    PAR11h1   382.4        359.1        407.2
## 75    PAR11h2   356.6        335.9        377.6
## 76    PAR11h3   392.7        370.0        415.5
## 77    PAR11h4   359.5        338.7        383.1
## 78    PAR12h1   298.5        282.4        315.9
## 79    PAR12h2   281.1        265.8        297.5
## 80    PAR12h3   306.2        288.4        323.6
## 81    PAR12h4   290.8        275.5        305.7
## 82    PAR13h1   360.5        338.9        384.6
## 83    PAR13h2   352.2        330.2        377.6
## 84    PAR13h3   404.3        378.7        431.8
## 85    PAR13h4   363.4        342.7        386.0
## 86    PAR14h1   406.8        382.3        433.4
## 87    PAR14h2   406.6        382.4        431.3
## 88    PAR14h3   340.6        319.1        363.5
## 89    PAR14h4   352.9        329.9        378.1
## 90    PAR15h1   424.3        400.6        450.6
## 91    PAR15h2   350.9        328.1        376.9
## 92    PAR15h3   389.9        367.3        413.7
## 93    PAR15h4   405.1        381.2        430.5
## 94    PAR16h1   409.5        375.7        448.7
## 95    PAR16h2   401.9        371.7        435.3
## 96    PAR16h3   444.3        410.2        477.0
## 97    PAR16h4   348.5        324.7        373.8
## 98    PAR16h5   336.8        311.6        364.0
## 99    PAR16h6   368.3        341.1        400.6
## 100   PAR16h7   359.1        329.7        392.8
## 101   PAR16h8   337.4        313.9        366.6
## 102   PAR16h9   427.4        394.9        463.3
## 103  PAR16h10   392.3        361.7        430.5
## 104  PAR16h11   361.9        338.0        388.2
## 105  PAR16h12   365.1        334.7        397.6
## 106  PAR16h13   384.4        353.0        422.7
## 107  PAR16h14   356.6        331.0        384.5
## 108  PAR16h15   392.9        359.6        428.0
## 109  PAR16h16   361.7        339.2        387.3
## 110  PAR16h17   354.2        329.4        385.1
## 111  PAR16h18   368.9        338.6        404.8
```

```
## 112  PAR16h19   402.5        369.3        438.9
## 113  PAR16h20   370.9        344.1        401.5
## 114  PAR16h21   421.6        386.7        463.6
## 115  PAR16h22   399.1        372.2        429.5
## 116  PAR16h23   352.1        317.6        392.7
## 117  PAR16h24   373.1        344.8        402.8
## 118  PAR16h25   390.3        359.3        424.7
## 119   PAR17h1   122.0        117.0        127.5
## 120   PAR17h2   131.7        125.5        138.6
## 121   PAR17h3   141.8        135.4        147.7
## 122   PAR17h4   112.8        107.4        118.6
## 123   NOU01q1   348.1        302.6        406.3
## 124   NOU01q2   691.8        565.9        884.3
## 125   NOU01q3   218.3        185.5        257.2
## 126   NOU01q4   434.2        355.7        542.4
## 127   NOU01q5   442.9        385.4        512.8
## 128   NOU01q6   376.5        318.2        452.2
## 129   NOU01q7   457.4        387.5        538.0
## 130   NOU01q8   443.0        375.3        522.5
## 131   NOU02q1   350.5        279.6        460.0
## 132   NOU02q2   307.8        256.9        374.5
## 133   NOU02q3   246.7        186.4        337.5
## 134   NOU02q4   231.1        195.4        274.6
## 135   NOU02q5   231.6        202.1        267.4
## 136   NOU02q6   275.7        228.6        334.1
## 137   NOU02q7   199.6        167.0        245.6
## 138   NOU02q8   362.7        311.3        438.5
## 139   NOU02q9   205.3        173.5        245.3
## 140  NOU02q10   240.8        210.3        280.2
## 141  NOU02q11   422.2        352.9        499.2
## 142  NOU02q12   447.5        377.5        538.3
## 143  NOU02q13   169.9        146.1        197.0
## 144  NOU02q14   179.7        156.0        206.9
## 145  NOU02q15   373.7        294.5        480.2
## 146  NOU02q16   342.9        295.0        405.5
## 147  NOU02q17   324.5        274.9        393.5
## 148  NOU02q18   372.3        288.6        499.0
## 149  NOU02q19   262.1        214.0        329.3
## 150  NOU02q20   195.2        166.7        233.2
## 151  NOU02q21   274.3        242.6        314.7
## 152  NOU02q22   204.8        174.4        245.9
## 153  NOU02q23   392.2        329.4        472.2
## 154  NOU02q24   362.9        281.6        476.0
## 155  NOU02q25   450.6        367.6        557.4
## 156  NOU02q26   289.1        244.1        345.6
## 157  NOU02q27   435.2        358.9        538.8
## 158  NOU02q28   338.5        290.4        400.4
## 159  NOU02q29   802.1        653.9        982.8
## 160  NOU02q30   425.1        347.1        523.3
## 161  NOU02q31   643.9        527.8        787.1
## 162  NOU02q32   549.1        467.3        655.7
## 163  NOU02q33   434.2        370.0        505.5
## 164  NOU02q34   568.2        470.9        679.4
## 165  NOU02q35   402.0        334.1        500.6
```

```
## 166  NOU02q36   440.6        375.3         516.3
## 167  NOU02q37   462.8        380.8         582.6
## 168  NOU02q38   307.9        261.8         366.5
## 169  NOU02q39   520.2        451.3         603.5
## 170  NOU02q40   445.5        381.0         529.8
## 171   NOU03q1   321.5        270.7         378.7
## 172   NOU03q2   490.2        405.2         596.6
## 173   NOU03q3   652.7        551.8         799.9
## 174   NOU03q4   370.6        313.1         455.3
## 175   NOU03q5   330.3        291.2         376.8
## 176   NOU03q6   545.9        435.7         690.5
## 177   NOU03q7   392.8        339.6         453.5
## 178   NOU03q8   754.7        605.5         976.0
## 179   NOU03q9   604.8        515.8         707.8
## 180  NOU03q10   445.4        392.4         514.3
## 181  NOU03q11   406.7        346.2         483.5
## 182  NOU03q12   494.3        406.6         617.1
## 183  NOU03q13   458.5        375.1         558.1
## 184  NOU03q14   501.6        421.0         595.8
## 185  NOU03q15   685.5        565.3         845.1
## 186  NOU03q16   515.1        427.3         627.7
## 187  NOU03q17   470.3        402.8         546.0
## 188  NOU03q18   514.9        439.2         603.9
## 189  NOU03q19   782.6        638.6         960.6
## 190  NOU03q20   407.2        324.0         523.3
## 191  NOU03q21   481.3        397.8         586.0
## 192  NOU03q22   402.1        333.6         486.9
## 193  NOU03q23   653.9        528.0         836.9
## 194  NOU03q24   542.7        449.6         647.4
## 195   NOU04q1   454.6        388.7         540.2
## 196   NOU04q2   371.8        316.7         437.4
## 197   NOU04q3   253.3        214.7         298.0
## 198   NOU04q4   380.7        325.5         454.5
## 199   NOU04q5   444.7        376.7         524.5
## 200   NOU04q6   388.4        331.8         455.2
## 201   NOU04q7   461.7        401.5         538.3
## 202   NOU04q8   427.6        358.3         516.6
## 203   NOU04q9   411.0        358.0         474.8
## 204  NOU04q10   465.1        394.5         553.9
## 205  NOU04q11   235.2        199.2         281.8
## 206  NOU04q12   308.6        256.5         371.9
## 207  NOU04q13   390.2        338.4         446.8
## 208  NOU04q14   380.2        325.6         442.5
## 209  NOU04q15   460.0        389.0         545.2
## 210  NOU04q16   468.8        380.7         595.5
## 211  NOU04q17   597.0        518.9         687.6
## 212  NOU04q18   329.1        283.3         389.3
## 213  NOU04q19   366.1        307.2         445.0
## 214  NOU04q20   347.3        284.8         431.0
## 215  NOU04q21   476.0        412.3         554.9
## 216  NOU04q22   477.7        410.1         562.8
## 217  NOU04q23   384.9        327.5         452.2
## 218  NOU04q24   345.2        286.5         421.0
## 219  NOU04q25   400.5        337.2         476.1
```

```
## 220  NOU04q26   342.4        290.9         407.3
## 221  NOU04q27   344.3        295.4         409.7
## 222  NOU04q28   467.5        378.3         575.0
## 223  NOU04q29   418.9        357.0         502.7
## 224  NOU04q30   396.3        340.4         463.0
## 225  NOU04q31   443.3        389.1         514.2
## 226  NOU04q32   546.8        458.7         650.2
## 227  NOU04q33   600.4        518.6         693.5
## 228  NOU04q34   404.6        347.8         477.9
## 229  NOU04q35   341.5        295.5         394.7
## 230  NOU04q36   444.3        374.5         526.1
## 231  NOU04q37   520.1        451.1         608.0
## 232  NOU04q38   498.2        438.3         571.1
## 233  NOU04q39   499.4        437.3         565.7
## 234  NOU04q40   542.6        443.0         687.6
## 235  NOU04q41   469.1        404.2         542.3
## 236  NOU04q42   557.0        464.0         667.0
## 237  NOU04q43   433.6        365.2         515.2
## 238  NOU04q44   358.0        303.4         435.3
## 239  NOU04q45   486.3        419.1         578.8
## 240  NOU04q46   434.0        367.8         516.6
## 241  NOU04q47   372.3        313.4         441.2
## 242  NOU04q48   455.0        386.3         537.9
## 243   NOU05q1   186.7        164.7         213.0
## 244   NOU06q1   258.2        222.6         306.2
## 245   NOU07q1   242.9        224.4         263.2
## 246   NOU09q1   523.3        443.0         624.4
## 247   NOU09q2   347.6        293.0         418.8
## 248   NOU09q3   390.0        330.3         464.8
## 249   NOU09q4   511.7        428.7         625.6
## 250   NOU10q1   342.5        293.8         405.7
## 251   NOU10q2   363.1        306.0         442.9
## 252   NOU10q3   398.2        349.7         458.9
## 253   NOU10q4   269.3        239.9         307.8
## 254   NOU11q1   178.6        157.0         201.9
## 255   PAR01q1   324.6        279.4         373.0
## 256   PAR01q2   331.7        296.0         374.1
## 257   PAR01q3   236.1        204.2         271.7
## 258   PAR01q4   374.5        331.3         420.8
## 259   PAR01q5   379.9        335.0         432.6
## 260   PAR01q6   444.7        391.9         498.8
## 261   PAR01q7   416.6        368.8         473.7
## 262   PAR01q8   322.2        280.8         371.2
## 263   PAR01q9   234.5        210.1         266.4
## 264  PAR01q10   300.9        261.9         346.1
## 265  PAR01q11   468.2        398.0         553.6
## 266  PAR01q12   498.8        440.7         567.4
## 267  PAR01q13   392.8        342.4         457.3
## 268  PAR01q14   275.4        238.4         319.5
## 269  PAR01q15   307.1        275.9         342.9
## 270  PAR01q16   365.3        324.7         408.2
## 271  PAR01q17   377.3        335.0         424.4
## 272  PAR01q18   343.3        303.3         392.4
## 273  PAR01q19   304.4        263.7         352.8
```

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## 274  PAR01q20   295.3        265.4         330.6
## 275  PAR01q21   370.3        332.5         419.6
## 276  PAR01q22   318.2        282.3         362.6
## 277  PAR01q23   335.3        299.8         375.6
## 278  PAR01q24   342.6        302.1         392.1
## 279  PAR01q25   240.0        211.0         274.6
## 280   PAR02q1   292.4        259.0         331.7
## 281   PAR02q2   214.9        187.1         246.8
## 282   PAR02q3   292.2        256.8         337.2
## 283   PAR02q4   276.5        243.9         316.5
## 284   PAR02q5   293.1        259.2         336.5
## 285   PAR02q6   329.4        286.4         384.2
## 286   PAR02q7   290.3        251.8         329.7
## 287   PAR02q8   310.7        271.6         355.1
## 288   PAR02q9   330.2        294.6         370.7
## 289  PAR02q10   298.9        263.1         335.7
## 290  PAR02q11   343.3        300.6         393.6
## 291  PAR02q12   300.6        264.6         339.8
## 292  PAR02q13   345.8        304.7         391.7
## 293  PAR02q14   340.7        305.2         381.9
## 294  PAR02q15   266.4        235.0         304.5
## 295  PAR02q16   373.9        332.2         422.3
## 296  PAR02q17   418.1        370.5         472.6
## 297  PAR02q18   381.7        338.9         427.7
## 298  PAR02q19   327.3        289.5         371.3
## 299  PAR02q20   246.7        218.3         278.3
## 300  PAR02q21   366.1        318.2         420.4
## 301  PAR02q22   452.6        379.7         545.8
## 302  PAR02q23   293.0        257.8         336.1
## 303  PAR02q24   326.2        284.8         374.7
## 304  PAR02q25   247.9        219.3         280.0
## 305   PAR03q1   352.4        315.8         395.0
## 306   PAR03q2   320.4        268.5         393.0
## 307   PAR03q3   271.7        241.2         307.9
## 308   PAR03q4   297.4        265.6         334.3
## 309   PAR03q5   204.2        177.1         234.4
## 310   PAR03q6   374.6        332.7         425.9
## 311   PAR03q7   357.3        316.3         402.7
## 312   PAR03q8   307.5        270.0         356.4
## 313   PAR03q9   381.0        336.7         435.7
## 314  PAR03q10   272.9        243.3         306.2
## 315  PAR03q11   301.1        275.3         331.3
## 316  PAR03q12   270.1        242.1         305.8
## 317  PAR03q13   335.2        301.8         373.8
## 318  PAR03q14   281.7        254.2         312.4
## 319  PAR03q15   286.5        253.9         323.7
## 320  PAR03q16   288.2        257.7         321.9
## 321  PAR03q17   260.0        235.3         284.3
## 322  PAR03q18   249.4        225.4         275.4
## 323  PAR03q19   294.7        266.8         327.5
## 324  PAR03q20   234.3        209.8         265.8
## 325  PAR03q21   262.5        236.3         291.7
## 326  PAR03q22   265.8        237.0         296.4
## 327  PAR03q23   221.7        200.6         246.0
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## 328  PAR03q24   266.3        240.5        294.0
## 329  PAR03q25   356.9        318.4        397.1
## 330   PAR04q1   262.5        235.4        295.9
## 331   PAR04q2   255.0        228.8        285.6
## 332   PAR04q3   265.6        240.8        296.2
## 333   PAR04q4   361.0        321.3        414.3
## 334   PAR04q5   298.3        268.4        329.9
## 335   PAR04q6   240.6        217.5        265.4
## 336   PAR04q7   247.0        221.6        276.5
## 337   PAR04q8   328.2        296.5        364.7
## 338   PAR04q9   266.6        238.3        299.1
## 339  PAR04q10   238.3        209.3        269.3
## 340  PAR04q11   266.4        241.6        295.5
## 341  PAR04q12   270.5        244.3        300.7
## 342  PAR04q13   337.9        302.6        377.0
## 343  PAR04q14   223.9        201.1        247.9
## 344  PAR04q15   242.0        218.1        270.3
## 345  PAR04q16   243.6        218.6        271.5
## 346  PAR04q17   280.4        249.8        314.4
## 347  PAR04q18   257.2        230.4        289.0
## 348  PAR04q19   276.5        250.1        306.6
## 349  PAR04q20   384.6        342.5        433.0
## 350  PAR04q21   289.7        264.5        319.1
## 351  PAR04q22   211.2        188.7        238.0
## 352  PAR04q23   270.9        246.2        298.7
## 353  PAR04q24   247.2        218.0        280.3
## 354  PAR04q25   295.3        266.2        326.2
## 355   PAR05q1   259.5        235.3        288.4
## 356   PAR05q2   260.7        229.6        294.9
## 357   PAR05q3   309.4        277.6        350.8
## 358   PAR05q4   272.4        245.4        303.6
## 359   PAR05q5   278.8        249.8        313.8
## 360   PAR05q6   344.6        309.8        384.6
## 361   PAR05q7   266.6        239.2        299.4
## 362   PAR05q8   301.2        271.2        335.7
## 363   PAR05q9   247.0        220.4        280.9
## 364  PAR05q10   301.3        266.2        340.3
## 365  PAR05q11   304.2        272.4        340.4
## 366  PAR05q12   302.5        270.4        337.6
## 367  PAR05q13   415.5        364.2        480.7
## 368  PAR05q14   340.9        307.6        379.4
## 369  PAR05q15   330.6        295.0        371.6
## 370  PAR05q16   211.6        189.6        237.1
## 371  PAR05q17   228.2        202.7        257.9
## 372  PAR05q18   236.4        210.8        269.4
## 373  PAR05q19   261.3        235.5        293.2
## 374  PAR05q20   289.1        258.5        321.2
## 375  PAR05q21   247.7        223.9        272.8
## 376  PAR05q22   275.9        246.1        310.5
## 377  PAR05q23   222.8        200.2        247.9
## 378  PAR05q24   277.1        243.5        318.0
## 379  PAR05q25   319.3        290.1        352.7
## 380   PAR06q1   464.3        412.8        516.9
## 381   PAR06q2   374.0        333.9        418.2
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## 382   PAR06q3   365.2        329.0        405.3
## 383   PAR06q4   427.0        378.7        484.3
## 384   PAR06q5   491.8        432.5        561.8
## 385   PAR06q6   291.3        257.1        331.3
## 386   PAR06q7   268.4        237.6        301.5
## 387   PAR06q8   350.4        307.5        402.6
## 388   PAR06q9   425.0        380.7        472.4
## 389  PAR06q10   453.5        396.9        519.8
## 390  PAR06q11   410.4        355.9        471.4
## 391  PAR06q12   360.7        315.5        413.7
## 392  PAR06q13   314.5        266.6        371.1
## 393  PAR06q14   354.1        307.4        409.4
## 394  PAR06q15   366.9        320.7        424.7
## 395  PAR06q16   320.1        279.9        363.3
## 396  PAR06q17   267.5        235.5        305.4
## 397  PAR06q18   379.4        331.7        432.3
## 398  PAR06q19   490.9        424.6        566.1
## 399  PAR06q20   387.0        342.4        440.9
## 400  PAR06q21   358.9        321.5        402.6
## 401  PAR06q22   323.4        278.5        379.0
## 402  PAR06q23   463.3        403.3        537.2
## 403  PAR06q24   447.5        393.1        501.7
## 404  PAR06q25   476.9        420.1        542.3
## 405   PAR07q1   372.2        319.9        433.8
## 406   PAR07q2   349.4        301.6        403.5
## 407   PAR07q3   382.1        334.5        439.4
## 408   PAR07q4   258.9        228.1        294.4
## 409   PAR07q5   312.8        267.4        370.7
## 410   PAR07q6   380.8        339.6        423.4
## 411   PAR07q7   327.9        294.4        365.5
## 412   PAR07q8   425.6        379.4        478.1
## 413   PAR07q9   397.2        343.6        459.9
## 414  PAR07q10   277.1        243.9        319.4
## 415  PAR07q11   345.8        304.2        393.7
## 416  PAR07q12   366.1        321.0        418.8
## 417  PAR07q13   448.5        396.5        508.0
## 418  PAR07q14   362.3        316.0        425.1
## 419  PAR07q15   334.7        294.7        379.9
## 420  PAR07q16   375.4        330.4        428.1
## 421  PAR07q17   305.0        267.5        350.2
## 422  PAR07q18   369.0        331.7        412.3
## 423  PAR07q19   441.2        386.9        501.1
## 424  PAR07q20   348.4        308.1        392.3
## 425  PAR07q21   405.7        358.3        463.5
## 426  PAR07q22   389.9        345.1        443.0
## 427  PAR07q23   301.3        264.5        343.1
## 428  PAR07q24   403.2        351.1        462.8
## 429  PAR07q25   364.5        323.1        413.6
## 430   PAR08q1   237.1        210.4        267.1
## 431   PAR08q2   169.0        149.8        191.7
## 432   PAR08q3   259.1        228.2        295.2
## 433   PAR08q4   186.5        165.8        213.0
## 434   PAR08q5   269.9        238.9        305.6
## 435   PAR08q6   276.2        246.0        311.1
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## 436   PAR08q7   289.9        259.6        323.0
## 437   PAR08q8   247.7        222.8        275.5
## 438   PAR08q9   243.0        217.2        271.8
## 439  PAR08q10   244.9        217.5        276.1
## 440  PAR08q11   217.6        194.1        242.5
## 441  PAR08q12   257.6        231.0        290.3
## 442  PAR08q13   248.0        222.3        278.2
## 443  PAR08q14   266.7        232.8        307.4
## 444  PAR08q15   233.0        208.9        261.5
## 445  PAR08q16   270.9        243.1        301.3
## 446  PAR08q17   308.4        282.1        336.5
## 447  PAR08q18   249.3        225.9        274.9
## 448  PAR08q19   211.7        185.5        241.3
## 449  PAR08q20   260.5        230.9        293.8
## 450  PAR08q21   252.6        229.8        279.8
## 451  PAR08q22   216.8        195.0        241.3
## 452  PAR08q23   231.5        209.3        257.8
## 453  PAR08q24   261.9        235.8        291.6
## 454  PAR08q25   239.4        215.3        267.3
## 455   PAR09q1   334.3        300.7        372.5
## 456   PAR09q2   264.6        237.2        295.6
## 457   PAR09q3   346.4        310.8        386.9
## 458   PAR09q4   292.9        259.2        330.1
## 459   PAR09q5   234.3        208.6        265.8
## 460   PAR09q6   382.8        343.6        428.8
## 461   PAR09q7   392.6        347.3        444.4
## 462   PAR09q8   413.0        374.9        455.6
## 463   PAR09q9   295.7        256.2        343.2
## 464  PAR09q10   339.8        285.9        416.0
## 465  PAR09q11   367.7        323.4        420.7
## 466  PAR09q12   342.8        305.7        389.1
## 467  PAR09q13   309.2        274.0        351.8
## 468  PAR09q14   253.5        221.4        289.0
## 469  PAR09q15   317.9        283.3        357.0
## 470  PAR09q16   315.6        277.8        356.7
## 471  PAR09q17   322.0        284.9        364.6
## 472  PAR09q18   269.7        235.0        312.5
## 473  PAR09q19   257.7        226.7        295.3
## 474  PAR09q20   374.5        335.0        421.7
## 475  PAR09q21   244.2        219.3        274.9
## 476  PAR09q22   299.5        268.6        339.2
## 477  PAR09q23   299.0        265.8        335.6
## 478  PAR09q24   260.8        229.5        299.6
## 479  PAR09q25   429.4        385.3        486.9
## 480   PAR10q1   272.6        245.0        305.3
## 481   PAR10q2   279.2        246.0        317.0
## 482   PAR10q3   329.2        294.7        370.1
## 483   PAR10q4   240.4        214.3        270.1
## 484   PAR10q5   267.5        241.1        298.2
## 485   PAR10q6   378.7        341.3        420.8
## 486   PAR10q7   259.9        230.3        296.3
## 487   PAR10q8   254.1        222.0        290.2
## 488   PAR10q9   314.4        279.6        358.1
## 489  PAR10q10   200.1        177.3        224.8
```

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## 490  PAR10q11   321.0        288.7         357.3
## 491  PAR10q12   330.7        292.9         376.4
## 492  PAR10q13   361.1        319.5         412.1
## 493  PAR10q14   234.3        208.3         263.8
## 494  PAR10q15   297.9        264.3         336.3
## 495  PAR10q16   339.0        304.6         377.2
## 496  PAR10q17   302.5        276.1         333.8
## 497  PAR10q18   243.3        218.1         272.2
## 498  PAR10q19   304.1        271.2         342.4
## 499  PAR10q20   267.4        243.0         295.8
## 500  PAR10q21   323.8        291.2         362.3
## 501  PAR10q22   229.8        205.4         255.0
## 502  PAR10q23   303.4        272.7         338.5
## 503  PAR10q24   310.0        277.2         344.3
## 504  PAR10q25   284.9        249.1         327.1
## 505   PAR11q1   300.3        265.6         344.6
## 506   PAR11q2   331.1        296.4         372.0
## 507   PAR11q3   374.0        331.5         422.2
## 508   PAR11q4   375.2        334.7         421.3
## 509   PAR11q5   354.3        319.1         397.2
## 510   PAR11q6   442.7        392.3         505.4
## 511   PAR11q7   307.9        273.4         346.6
## 512   PAR11q8   436.5        393.4         482.6
## 513   PAR11q9   280.8        243.2         325.3
## 514  PAR11q10   429.9        384.9         485.8
## 515  PAR11q11   491.6        442.2         552.7
## 516  PAR11q12   377.7        336.0         421.2
## 517  PAR11q13   335.6        295.2         381.0
## 518  PAR11q14   414.1        374.9         457.7
## 519  PAR11q15   413.3        358.7         485.0
## 520  PAR11q16   329.1        294.0         367.9
## 521  PAR11q17   390.3        346.5         436.9
## 522  PAR11q18   348.7        309.6         396.4
## 523  PAR11q19   391.8        348.8         440.3
## 524  PAR11q20   301.8        265.4         342.6
## 525  PAR11q21   401.2        355.0         452.7
## 526  PAR11q22   360.9        315.7         411.0
## 527  PAR11q23   375.1        333.2         423.3
## 528  PAR11q24   330.8        290.0         378.7
## 529  PAR11q25   400.6        351.7         457.5
## 530   PAR12q1   241.3        212.9         275.9
## 531   PAR12q2   259.1        231.7         289.1
## 532   PAR12q3   351.8        308.6         403.0
## 533   PAR12q4   310.2        279.7         346.4
## 534   PAR12q5   286.4        257.3         320.2
## 535   PAR12q6   329.4        295.0         370.3
## 536   PAR12q7   285.8        256.2         321.5
## 537   PAR12q8   307.8        279.3         341.3
## 538   PAR12q9   283.2        252.8         323.3
## 539  PAR12q10   277.2        249.9         310.8
## 540  PAR12q11   254.2        227.6         284.5
## 541  PAR12q12   222.2        196.5         250.7
## 542  PAR12q13   295.2        269.4         323.2
## 543  PAR12q14   275.8        248.1         306.0
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## 544  PAR12q15   336.2        300.1        382.2
## 545  PAR12q16   256.5        229.3        286.8
## 546  PAR12q17   305.7        274.4        341.1
## 547  PAR12q18   345.1        310.7        384.2
## 548  PAR12q19   282.6        254.3        312.2
## 549  PAR12q20   291.8        261.5        325.1
## 550  PAR12q21   261.2        231.1        293.0
## 551  PAR12q22   288.3        256.0        324.3
## 552  PAR12q23   330.4        297.4        371.2
## 553  PAR12q24   300.6        271.3        331.7
## 554  PAR12q25   312.6        282.7        346.6
## 555   PAR13q1   413.4        366.9        467.7
## 556   PAR13q2   434.5        386.1        492.6
## 557   PAR13q3   450.7        398.3        506.2
## 558   PAR13q4   388.9        349.9        429.5
## 559   PAR13q5   412.8        367.7        466.0
## 560   PAR13q6   311.2        267.2        366.9
## 561   PAR13q7   297.5        260.8        340.4
## 562   PAR13q8   331.1        286.5        378.5
## 563   PAR13q9   333.9        296.9        380.1
## 564  PAR13q10   359.8        318.6        411.2
## 565  PAR13q11   369.7        326.6        422.7
## 566  PAR13q12   409.0        367.1        451.9
## 567  PAR13q13   361.4        325.7        400.6
## 568  PAR13q14   356.9        314.3        405.4
## 569  PAR13q15   304.1        266.6        354.2
## 570  PAR13q16   408.5        367.5        451.9
## 571  PAR13q17   366.4        320.4        423.7
## 572  PAR13q18   419.9        377.9        462.1
## 573  PAR13q19   313.1        279.9        348.3
## 574  PAR13q20   407.0        360.6        461.0
## 575  PAR13q21   440.1        387.7        501.0
## 576  PAR13q22   427.0        374.3        491.3
## 577  PAR13q23   347.7        299.4        405.6
## 578  PAR13q24   209.2        179.3        240.5
## 579  PAR13q25   401.0        354.6        463.1
## 580   PAR14q1   415.9        364.3        479.7
## 581   PAR14q2   448.2        398.0        503.9
## 582   PAR14q3   367.9        326.5        416.4
## 583   PAR14q4   359.3        320.9        400.6
## 584   PAR14q5   424.2        375.1        481.4
## 585   PAR14q6   468.9        416.1        528.9
## 586   PAR14q7   330.1        286.6        378.5
## 587   PAR14q8   407.6        355.1        466.6
## 588   PAR14q9   417.5        374.4        466.7
## 589  PAR14q10   431.7        386.2        485.0
## 590  PAR14q11   372.4        333.4        416.2
## 591  PAR14q12   344.1        303.3        387.3
## 592  PAR14q13   326.1        291.2        364.0
## 593  PAR14q14   340.5        297.9        390.0
## 594  PAR14q15   519.5        465.7        587.9
## 595  PAR14q16   338.8        302.4        379.4
## 596  PAR14q17   290.9        259.4        326.0
## 597  PAR14q18   356.8        319.5        401.2
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## 598  PAR14q19   346.9        303.7         400.1
## 599  PAR14q20   360.0        309.9         418.4
## 600  PAR14q21   348.9        304.8         396.0
## 601  PAR14q22   285.4        253.1         326.2
## 602  PAR14q23   390.4        345.5         443.7
## 603  PAR14q24   411.2        362.8         464.6
## 604  PAR14q25   330.8        295.2         369.2
## 605   PAR15q1   434.9        388.0         491.3
## 606   PAR15q2   419.8        373.1         471.0
## 607   PAR15q3   345.0        295.7         404.8
## 608   PAR15q4   403.9        355.1         463.0
## 609   PAR15q5   452.5        401.1         505.6
## 610   PAR15q6   385.5        345.6         428.4
## 611   PAR15q7   457.5        409.9         518.2
## 612   PAR15q8   352.4        304.4         413.6
## 613   PAR15q9   293.4        256.7         336.8
## 614  PAR15q10   282.6        249.9         320.8
## 615  PAR15q11   394.1        352.6         445.0
## 616  PAR15q12   395.6        353.7         441.6
## 617  PAR15q13   423.8        378.7         474.3
## 618  PAR15q14   456.4        403.1         516.9
## 619  PAR15q15   240.3        211.3         271.8
## 620  PAR15q16   343.2        301.1         390.9
## 621  PAR15q17   473.5        421.7         534.7
## 622  PAR15q18   393.0        354.2         435.8
## 623  PAR15q19   318.4        283.7         359.8
## 624  PAR15q20   374.8        336.2         416.7
## 625  PAR15q21   394.3        351.6         443.0
## 626  PAR15q22   398.4        356.8         446.1
## 627  PAR15q23   388.2        345.2         441.9
## 628  PAR15q24   483.5        434.2         544.6
## 629  PAR15q25   367.9        329.9         411.6
## 630   PAR16q1   372.1        318.6         440.5
## 631   PAR16q2   512.0        435.8         609.5
## 632   PAR16q3   618.0        529.3         732.2
## 633   PAR16q4   356.6        312.9         406.8
## 634   PAR16q5   448.7        386.7         520.5
## 635   PAR16q6   432.4        378.5         492.6
## 636   PAR16q7   417.5        366.7         475.7
## 637   PAR16q8   339.0        293.1         389.7
## 638   PAR16q9   437.6        380.8         503.8
## 639  PAR16q10   275.1        226.2         332.5
## 640  PAR16q11   454.1        390.5         534.1
## 641  PAR16q12   299.7        256.0         358.9
## 642  PAR16q13   323.2        274.4         379.5
## 643  PAR16q14   309.7        272.5         354.4
## 644  PAR16q15   496.2        422.2         576.9
## 645  PAR16q16   399.8        348.8         455.7
## 646  PAR16q17   363.1        314.8         417.7
## 647  PAR16q18   274.4        238.0         322.1
## 648  PAR16q19   247.1        214.0         291.1
## 649  PAR16q20   387.4        334.0         446.7
## 650  PAR16q21   388.2        337.3         450.5
## 651  PAR16q22   318.1        268.9         380.4
```

```
## 652  PAR16q23   272.9        229.5         327.4
## 653  PAR16q24   356.2        290.3         443.1
## 654  PAR16q25   280.5        239.5         332.1
## 655  PAR16q26   285.4        253.2         325.3
## 656  PAR16q27   533.1        454.8         630.5
## 657  PAR16q28   414.8        356.7         477.3
## 658  PAR16q29   360.4        307.4         423.9
## 659  PAR16q30   300.9        258.6         351.3
## 660  PAR16q31   331.0        290.1         380.1
## 661  PAR16q32   435.9        376.7         512.4
## 662  PAR16q33   310.2        266.8         358.6
## 663  PAR16q34   497.1        426.1         588.7
## 664  PAR16q35   317.7        271.7         374.7
## 665  PAR16q36   465.9        406.2         542.9
## 666  PAR16q37   354.2        306.4         408.4
## 667  PAR16q38   407.6        356.9         463.7
## 668  PAR16q39   467.5        408.9         528.3
## 669  PAR16q40   440.3        371.1         539.0
## 670  PAR16q41   384.5        332.2         443.0
## 671  PAR16q42   328.1        283.6         378.5
## 672  PAR16q43   297.5        261.0         339.0
## 673  PAR16q44   397.2        342.4         468.8
## 674  PAR16q45   469.2        394.4         565.7
## 675  PAR16q46   363.9        311.2         421.7
## 676  PAR16q47   354.6        308.4         408.2
## 677  PAR16q48   338.8        293.3         390.3
## 678  PAR16q49   437.3        386.2         506.1
## 679  PAR16q50   357.8        299.9         425.8
## 680  PAR16q51   391.2        344.5         448.7
## 681  PAR16q52   343.7        304.8         388.9
## 682  PAR16q53   442.1        376.2         529.1
## 683  PAR16q54   323.6        262.9         398.2
## 684  PAR16q55   356.5        300.1         430.0
## 685  PAR16q56   348.0        298.7         408.3
## 686  PAR16q57   358.4        314.2         413.1
## 687  PAR16q58   374.9        328.1         429.7
## 688  PAR16q59   457.2        377.4         549.2
## 689  PAR16q60   319.3        273.1         378.3
## 690  PAR16q61   445.4        387.5         513.9
## 691  PAR16q62   234.3        206.4         266.2
## 692  PAR16q63   323.7        276.5         380.2
## 693  PAR16q64   308.0        267.2         357.5
## 694  PAR16q65   341.4        285.9         413.2
## 695  PAR16q66   225.3        197.6         257.1
## 696  PAR16q67   461.1        395.0         535.6
## 697  PAR16q68   358.4        312.4         409.8
## 698  PAR16q69   377.0        327.0         436.1
## 699  PAR16q70   318.7        270.3         383.8
## 700  PAR16q71   415.1        370.3         468.4
## 701  PAR16q72   351.8        308.0         404.8
## 702  PAR16q73   421.7        366.0         501.8
## 703  PAR16q74   363.5        315.4         419.9
## 704  PAR16q75   379.7        321.2         453.6
## 705  PAR16q76   529.0        447.2         636.3
```

```
## 706  PAR16q77   373.4        307.3        454.2
## 707  PAR16q78   417.4        352.1        496.4
## 708  PAR16q79   383.5        331.1        441.7
## 709  PAR16q80   404.3        346.6        475.7
## 710  PAR16q81   444.8        390.8        503.8
## 711  PAR16q82   275.4        240.4        316.4
## 712  PAR16q83   413.3        362.8        470.1
## 713  PAR16q84   386.4        339.8        442.2
## 714  PAR16q85   304.5        258.3        362.6
## 715  PAR16q86   308.0        257.8        368.1
## 716  PAR16q87   327.6        282.9        381.1
## 717  PAR16q88   451.7        384.5        532.9
## 718  PAR16q89   425.3        366.0        499.4
## 719  PAR16q90   363.7        306.4        436.8
## 720  PAR16q91   481.3        405.7        582.7
## 721  PAR16q92   484.8        401.2        599.4
## 722  PAR16q93   418.6        374.8        474.0
## 723  PAR16q94   377.9        328.8        436.3
## 724  PAR16q95   433.7        343.5        557.2
## 725  PAR16q96   362.1        307.4        428.3
## 726  PAR16q97   359.1        308.0        419.8
## 727  PAR16q98   354.0        301.1        413.4
## 728  PAR16q99   377.9        320.8        444.9
## 729 PAR16q100   394.2        334.3        460.6
## 730   PAR17q1   116.0        105.5        128.4
## 731   PAR17q2   136.9        119.6        160.9
## 732   PAR17q3   163.4        150.1        177.4
## 733   PAR17q4   152.7        138.5        168.6
## 734   PAR17q5   160.8        149.8        172.9
## 735   PAR17q6   115.6        106.0        125.5
## 736   PAR17q7   114.8        105.5        124.3
## 737   PAR17q8   129.3        118.0        142.0
## 738   PAR17q9   117.6        107.3        128.7
## 739  PAR17q10   131.5        118.3        148.2
## 740  PAR17q11   128.6        119.8        137.4
## 741  PAR17q12   117.3        108.5        126.5
## 742  PAR17q13   135.7        125.0        147.1
## 743  PAR17q14   129.4        117.0        145.1
## 744  PAR17q15   123.2        112.1        135.9
## 745  PAR17q16   135.1        124.7        146.7
## 746  PAR17q17   160.3        146.4        176.0
## 747  PAR17q18   161.6        151.2        172.6
## 748  PAR17q19    82.2         75.6         90.0
## 749  PAR17q20   124.7        115.2        135.3
## 750  PAR17q21   116.5        107.0        127.0
## 751  PAR17q22   125.2        115.9        134.9
## 752  PAR17q23   115.8        106.4        125.9
## 753  PAR17q24   116.2        105.5        128.2
## 754  PAR17q25   151.5        136.3        168.5
```

Reshaping the different information (estimates,

coordinates) in a single object

```
# Merge dataframes
AGB_FIN1 <- merge(georefeatures.df, AGB_fph.df, by="Area_code", sort = F, all=T)
AGB_FIN2 <- merge(AGB_FIN1, AGB_chv.df, by="Area_code", sort = F, all=T)
AGB_TropiSAR <- merge(AGB_FIN2, AGB_loc.df, by="Area_code", sort = F, all=T)
AGB_TropiSAR[,c(14:15,17:18,20:21)] <- round(AGB_TropiSAR[,c(14:15,17:18,20:21)],1)

# Reorder columns
AGB_TropiSAR <- AGB_TropiSAR[c("Site","Area_code","Plot_code","Scale","sw_x","sw_y","nw_x","nw
_y","se_x","se_y","ne_x","ne_y","agb_fph","cred_fph_2.5","cred_fph_97.5","agb_chv","cred_chv_2
.5","cred_chv_97.5","agb_loc","cred_loc_2.5","cred_loc_97.5")]

#AGB_TropiSAR
```