Plot positions only

Plots the GPS positions as eastings and northings on a map.

```
rm(list=ls())
setwd("~/WORKSHOP/GPS/")
library(dplyr)
```

```
##
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':
##
##     filter, lag

## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```
library(lubridate)
```

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

## The following objects are masked from 'package:base':
##
##     date, intersect, setdiff, union
```

```
library(MASS)
```

```
##
## Attaching package: 'MASS'

## The following object is masked from 'package:dplyr':
##
##     select
```

```
library(dsm)
```

```
## Loading required package: mgcv

## Loading required package: nlme
```

```
##
## Attaching package: 'nlme'

## The following object is masked from 'package:dplyr':
##
##     collapse

## This is mgcv 1.8-39. For overview type 'help("mgcv-package")'.

## Loading required package: mrds

## This is mrds 2.2.6
## Built: R 4.1.3; ; 2022-05-31 15:38:04 UTC; unix

## Loading required package: numDeriv

## This is dsm 2.3.2
## Built: R 4.1.3; ; 2022-05-31 15:38:15 UTC; unix
```

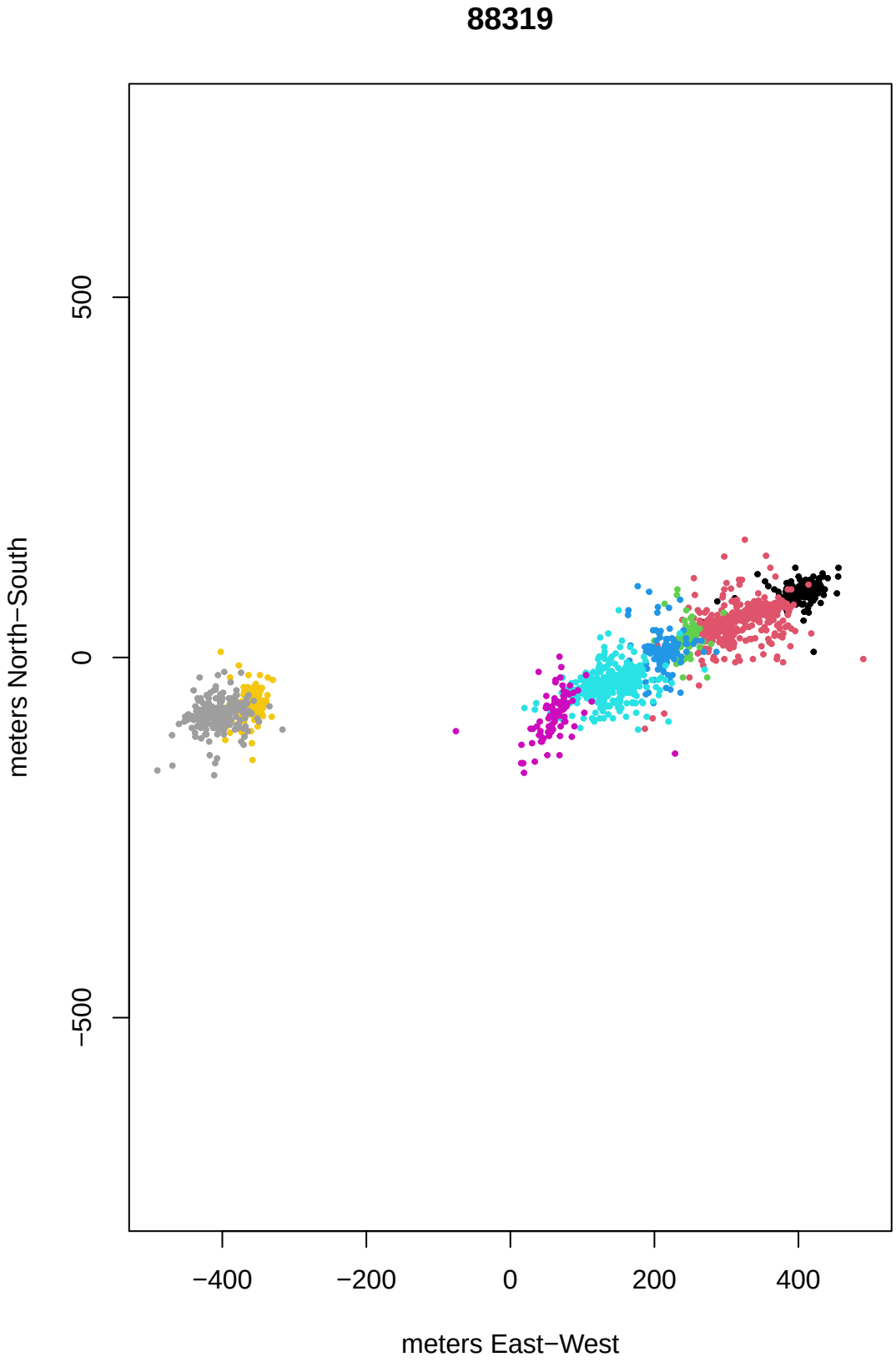
```
library(anytime)

Rearth <- 6371*1e3 # meters

data <- readRDS("OUTPUT/combined_GPS_data.rds")
IDs <- sort(unique(data$UnitID))
```

read and plot each file

```
# list the important times - start, jumps, ending:
important_times <- c(as.POSIXct("2022-03-31 00:00:00",tz="UTC"),as.POSIXct("2022-04-07 00:00:00",tz="UTC
                     as.POSIXct("2022-04-07 00:00:00",tz="UTC"),as.POSIXct("2022-04-24 12:00:00",tz="UTC
                     as.POSIXct("2022-04-24 12:00:00",tz="UTC"),as.POSIXct("2022-04-27 12:00:01",tz="UTC
                     as.POSIXct("2022-04-27 12:00:01",tz="UTC"),as.POSIXct("2022-05-03 03:00:00",tz="UTC
                     as.POSIXct("2022-05-03 03:00:00",tz="UTC"),as.POSIXct("2022-05-19 22:00:00",tz="UTC
                     as.POSIXct("2022-05-19 22:00:00",tz="UTC"),as.POSIXct("2022-06-09 02:00:00",tz="UTC
                     as.POSIXct("2022-06-09 02:00:00",tz="UTC"),as.POSIXct("2022-06-15 02:00:00",tz="UTC
                     as.POSIXct("2022-06-15 02:00:00",tz="UTC"),as.POSIXct("2022-06-25 00:00:00",tz="UTC
                     as.POSIXct("2022-06-25 00:00:00",tz="UTC"),as.POSIXct("2023-06-20 02:00:00",tz="UTC
limitdates <- NULL
for (it in seq(from=1,to=length(important_times),by=2))
{  limitdates <- rbind(limitdates,c(anytime(important_times[it],asUTC=T),anytime(important_times[it+1],a


for (ifil in IDs)
{
  name <- ifil
  print("-----------------------------------------")
  print(paste(" Processing file ",name))
```

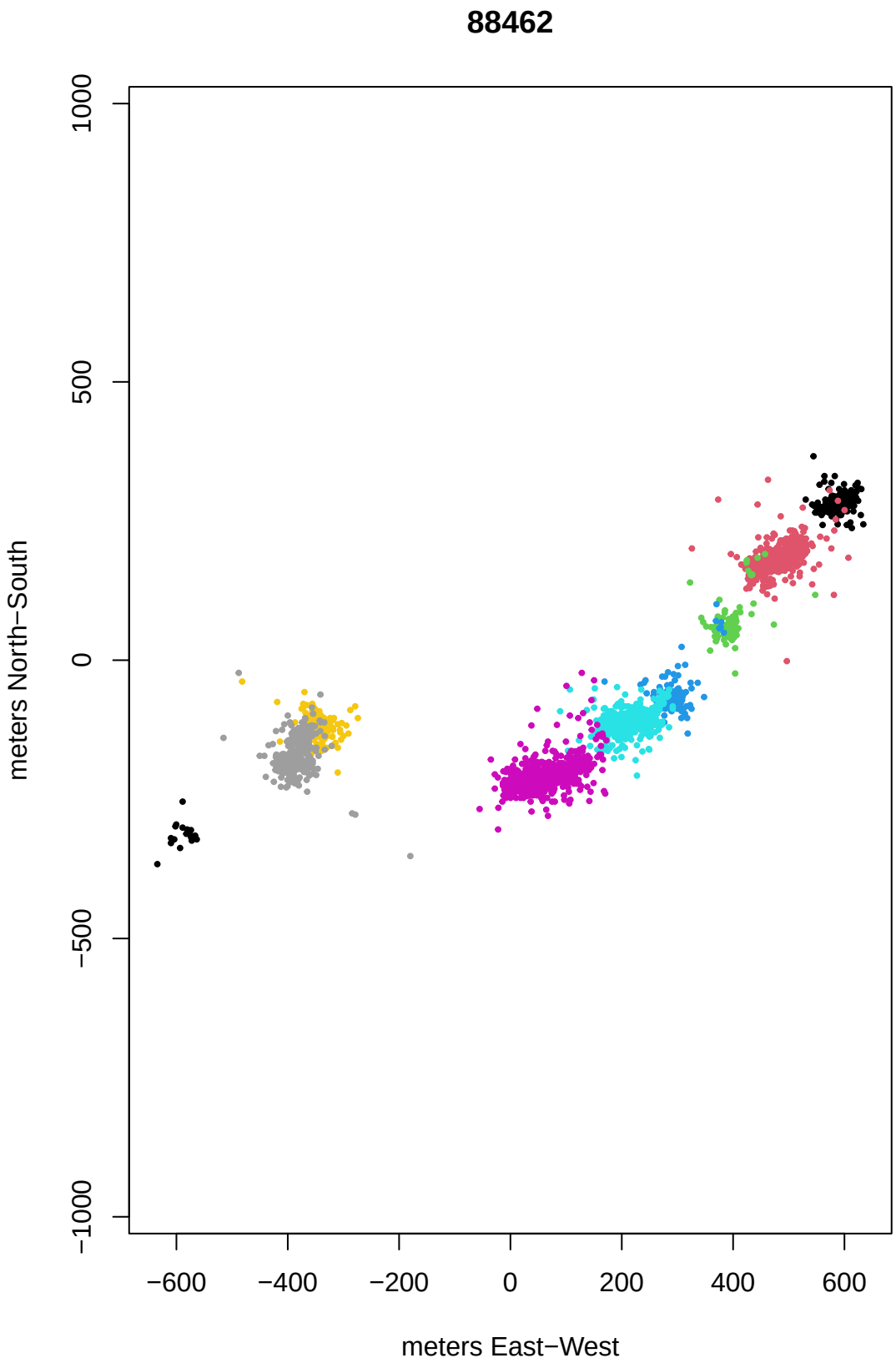
```
  sdx <- which(data$UnitID == ifil)
  df <- data[sdx,]
  df <- na.omit(df)
  xy <- latlong2km(df$lon, df$lat)
  #delta_t <- unname((max(df$UTC)-min(df$UTC))/nrow(df))[[1]] # days
  plot(xy$km.e*1000,xy$km.n*1000,asp=1,main=name,type="p",pch=19,cex=0.3,xlab="meters East-West",ylab="m
  #legend("topleft",legend=paste("Step length : ",round(delta_t*24,2)," hours"))
  #png(paste0("FIGURES/map_",name,'.png'))
  #plot(xy$km.e*1000,xy$km.n*1000,asp=1,main=name,type="p",pch=19,cex=0.3,xlab="meters East-West",ylab=
  #dev.off()

  # overplot colours for each segment
  for (iseg in 1:nrow(limitdates))
  {
    idx <- which(df$POSIX >= limitdates[iseg,1] & df$POSIX < limitdates[iseg,2])
    points(xy$km.e[idx]*1000,xy$km.n[idx]*1000,col=iseg,pch=19,cex=0.4)


  } # end iseg loop
  print("----------------------------------------")
} # end ifil loop
```

```
## [1] "----------------------------------------"
## [1] " Processing file  88319"
```

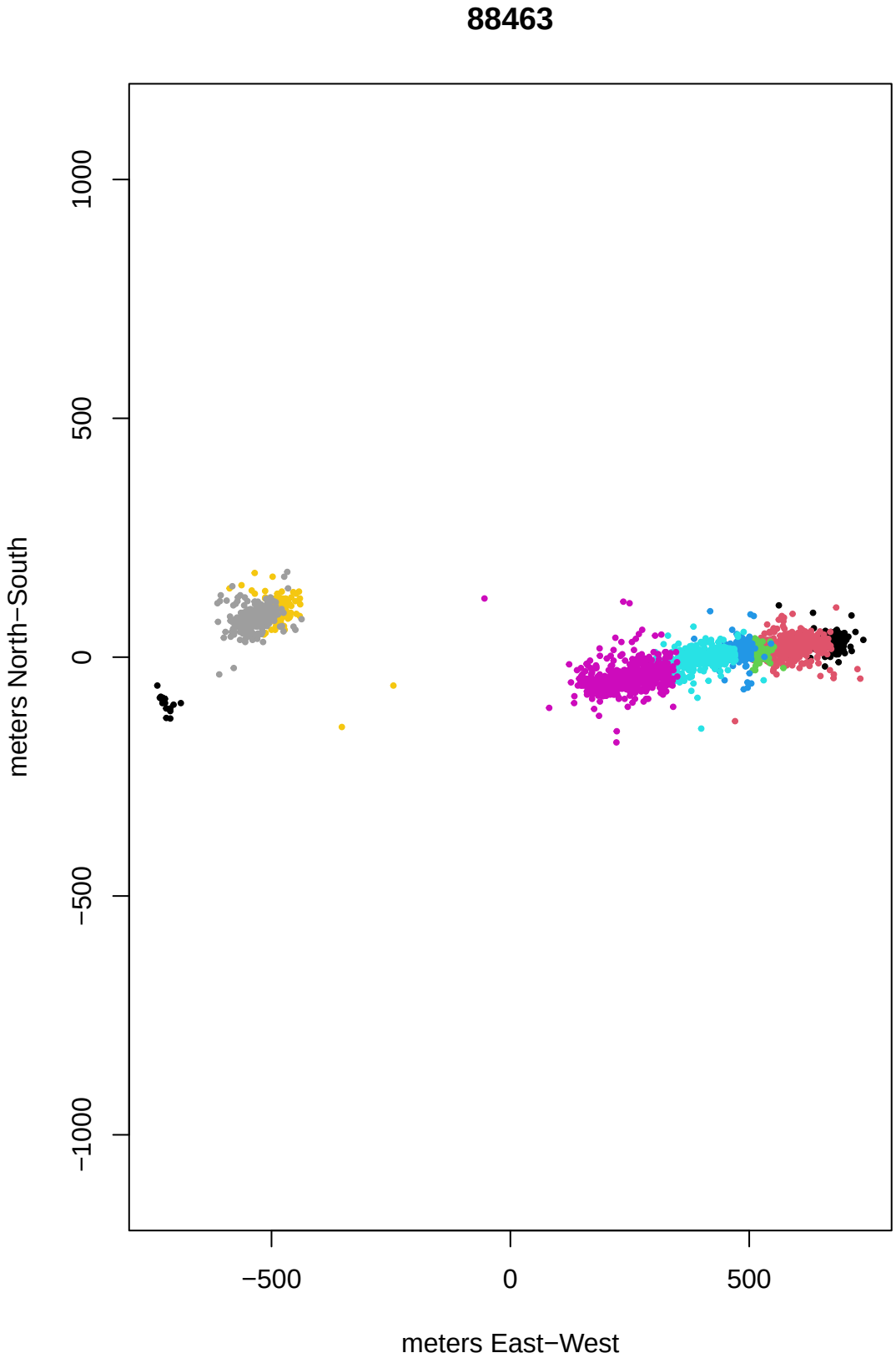

88319
meters North−South
500
0
−500
−400
−200
0
200
400
meters East−West

```
## [1] "----------------------------------------"
## [1] "----------------------------------------"
```

```
## [1] " Processing file  88462"
```

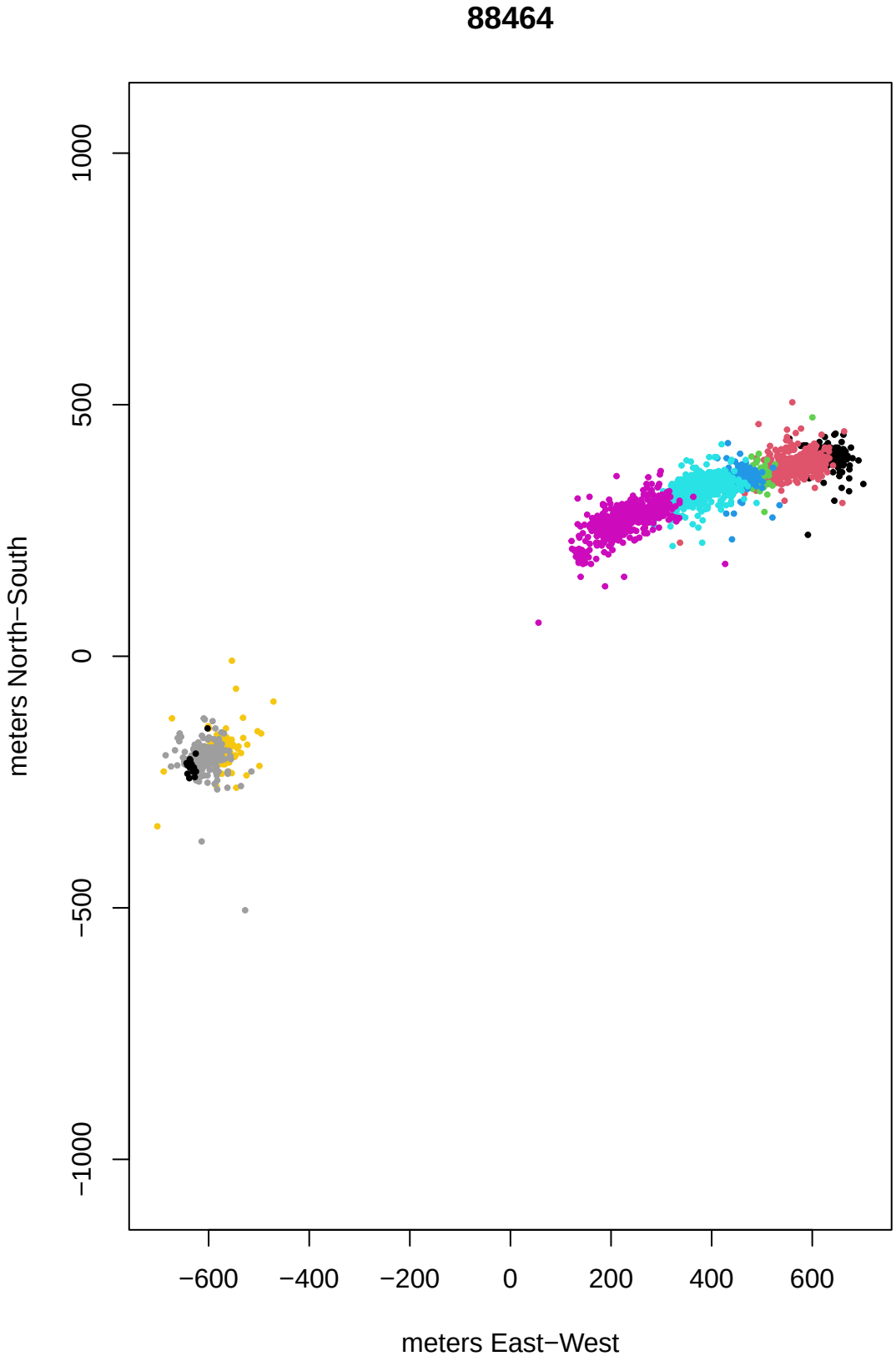


```
## [1] "----------------------------------------"
## [1] "----------------------------------------"
## [1] " Processing file  88463"
```

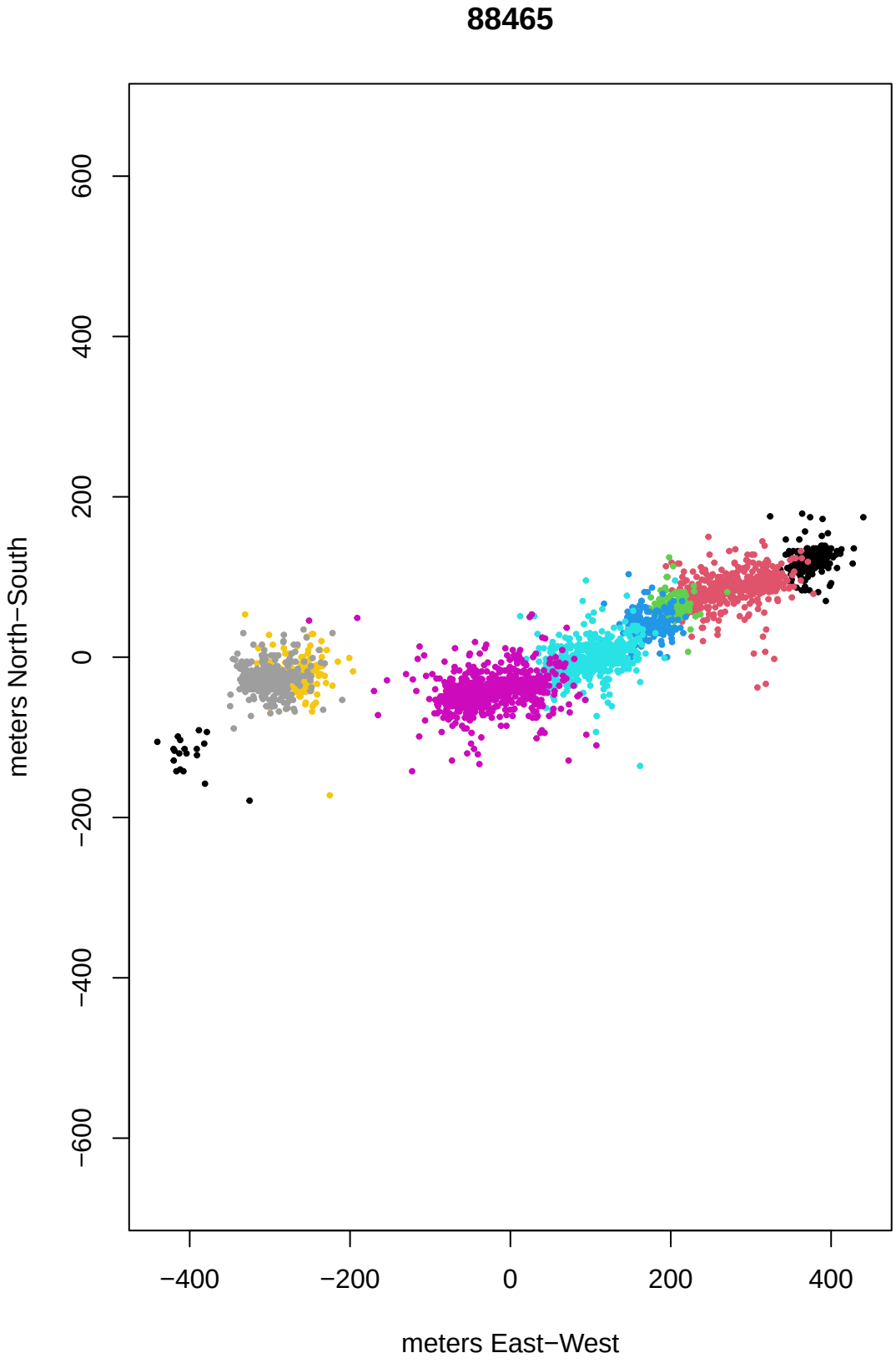

88463
meters North−South
1000
500
0
−500
−1000
−500
0
500
meters East−West

```
## [1] "----------------------------------------"
## [1] "----------------------------------------"
```

```
## [1] " Processing file  88464"
```

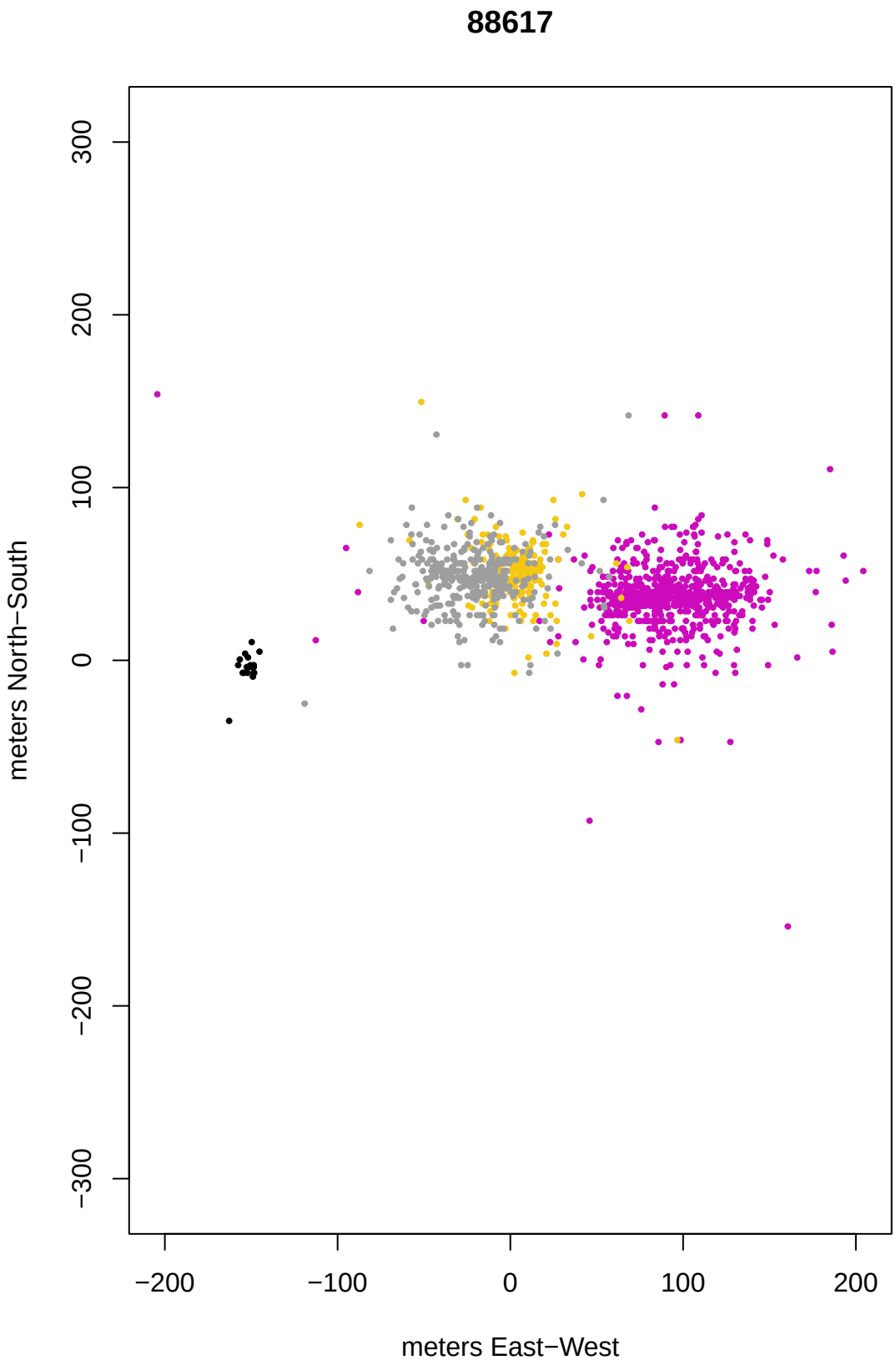


```
## [1] "----------------------------------------"
## [1] "----------------------------------------"
## [1] " Processing file  88465"
```


88465
meters North−South
600
400
200
0
−200
−400
−600
−400
−200
0
200
400
meters East−West

```
## [1] "----------------------------------------"
## [1] "----------------------------------------"
```

```
## [1] " Processing file  88617"
```



```
## [1] "----------------------------------------"
```