telemetry

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Code to recreate analyses in Fisher et al 2020

Define multiple functions used in the code

```
source('functions.r')
source('find functions.r')
```

Stationary locations:

```
df.all <- read.csv('BGE070718.csv', as.is=T)
# raw data from automated receivers, with location information added
```

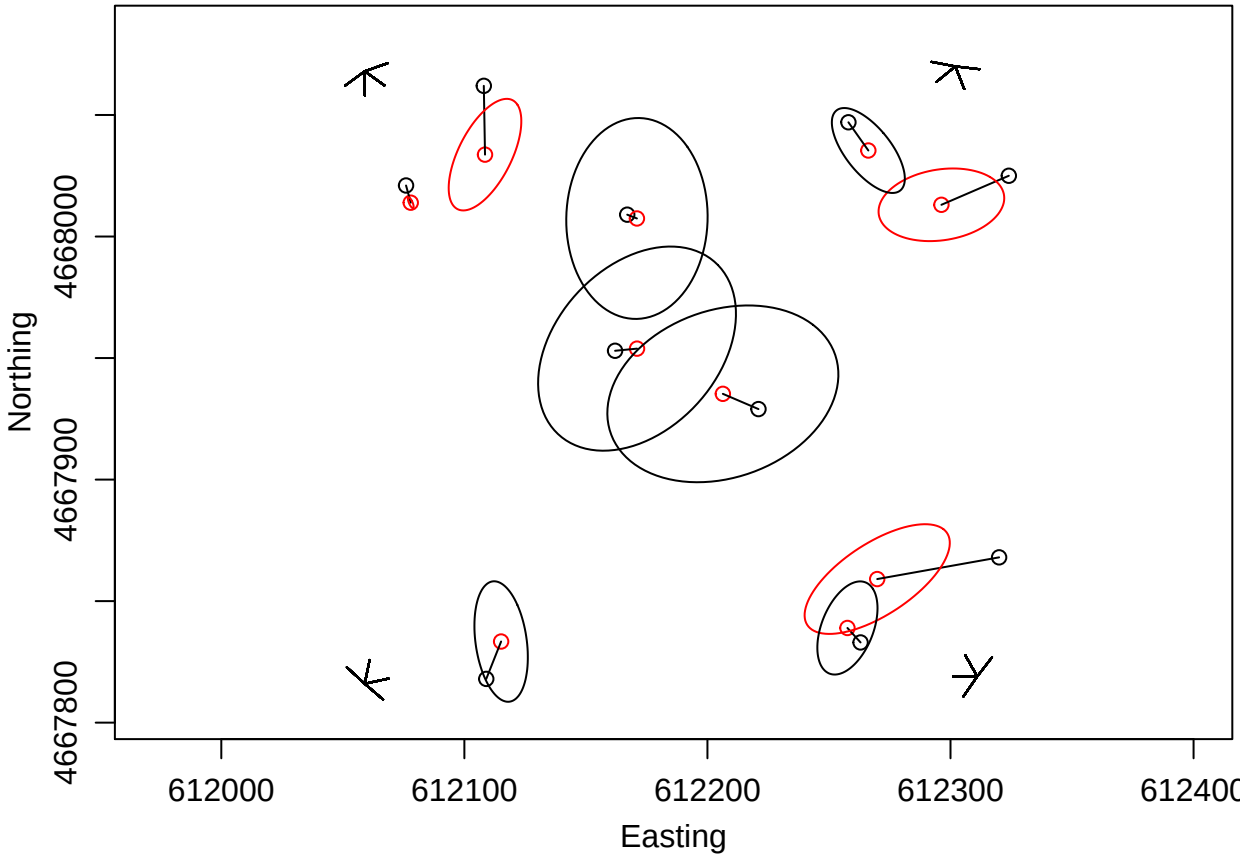
```
source('BGE prediction.r')
```

```
## Warning: Column `Tower` joining character vector and factor, coercing into
## character vector
```

```
## Warning: Column `Antenna` joining character vector and factor, coercing into
## character vector
```

```
## 1  2  3  4  5  6  7  8  9  10
```

```
source('BGE plot.r')
```

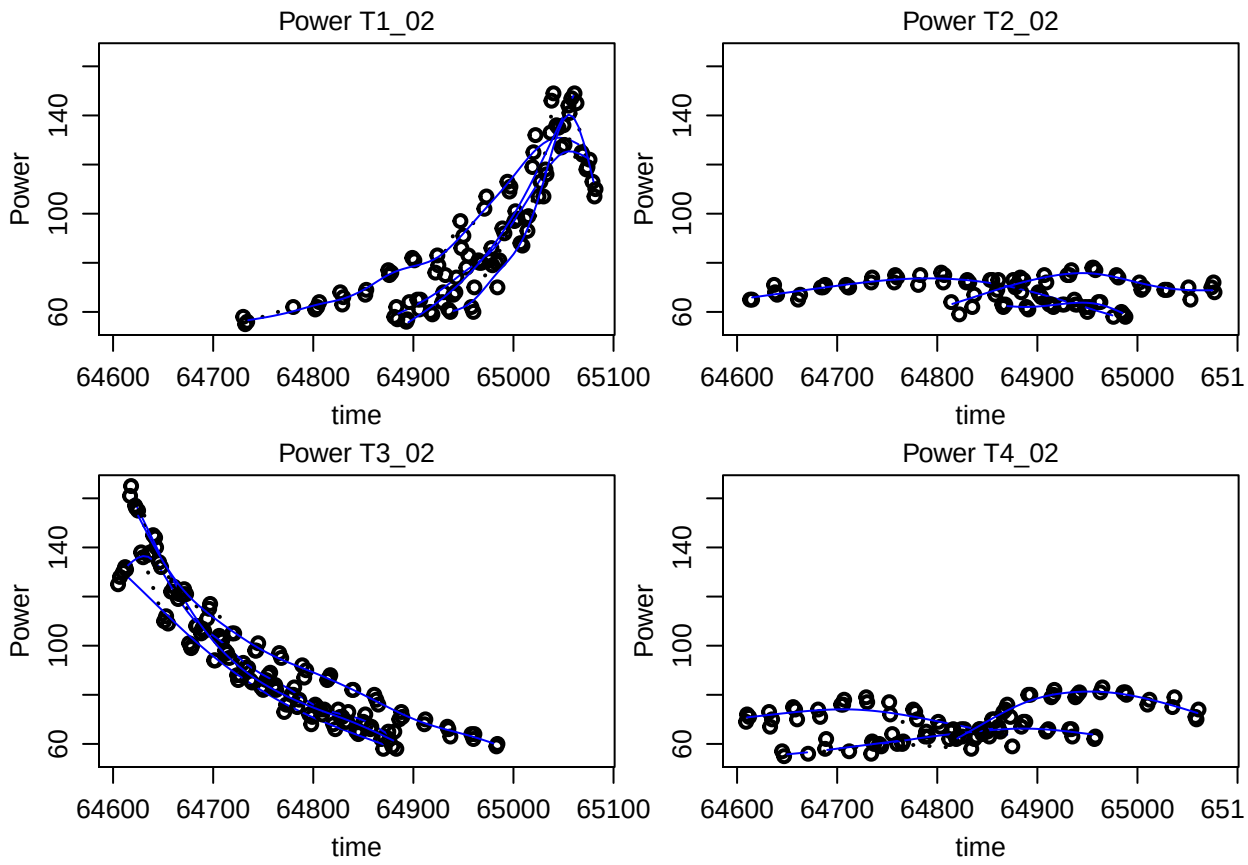


Moving target

```
source('walk calibrate.r')
```

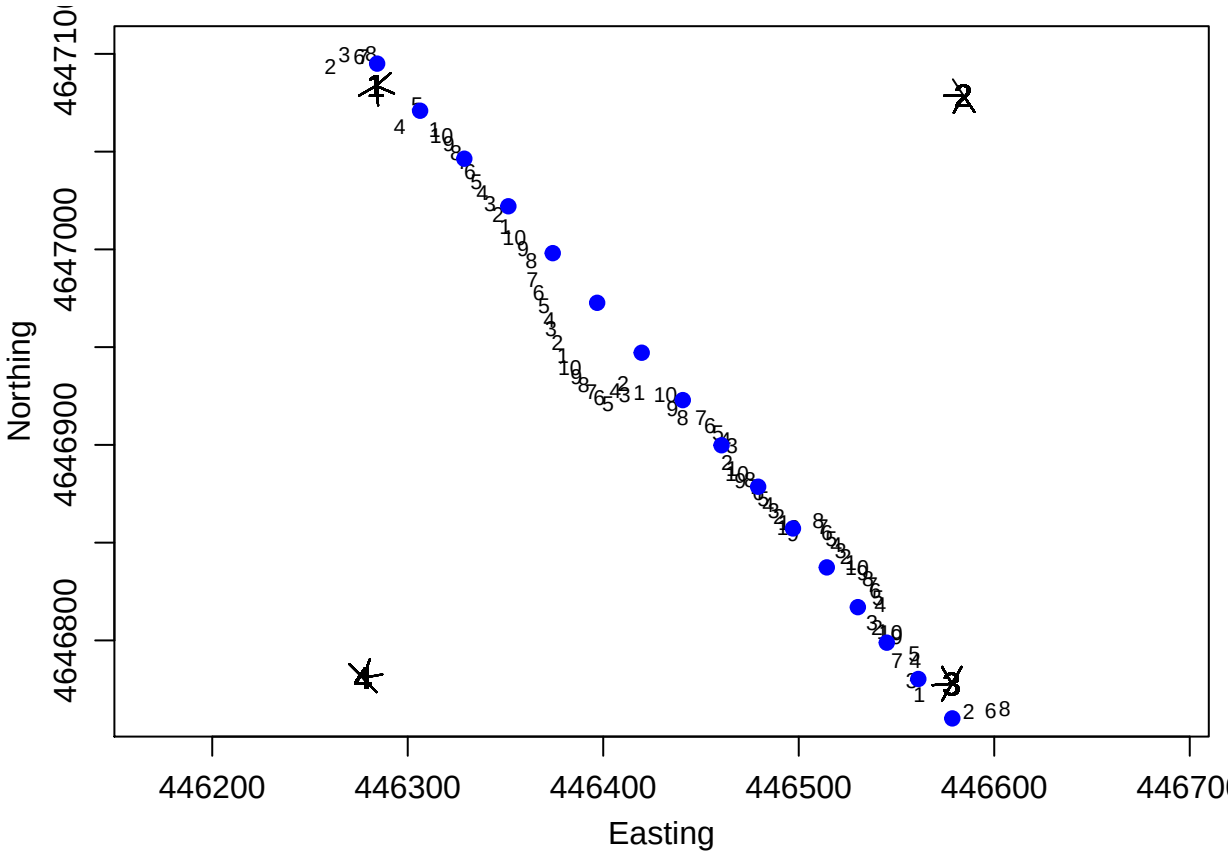
```
## Warning in checkConv(attr(opt, "derivs"), opt$par, ctrl = control$checkConv, :
## Model failed to converge with max|grad| = 0.00752908 (tol = 0.002, component 1)
```

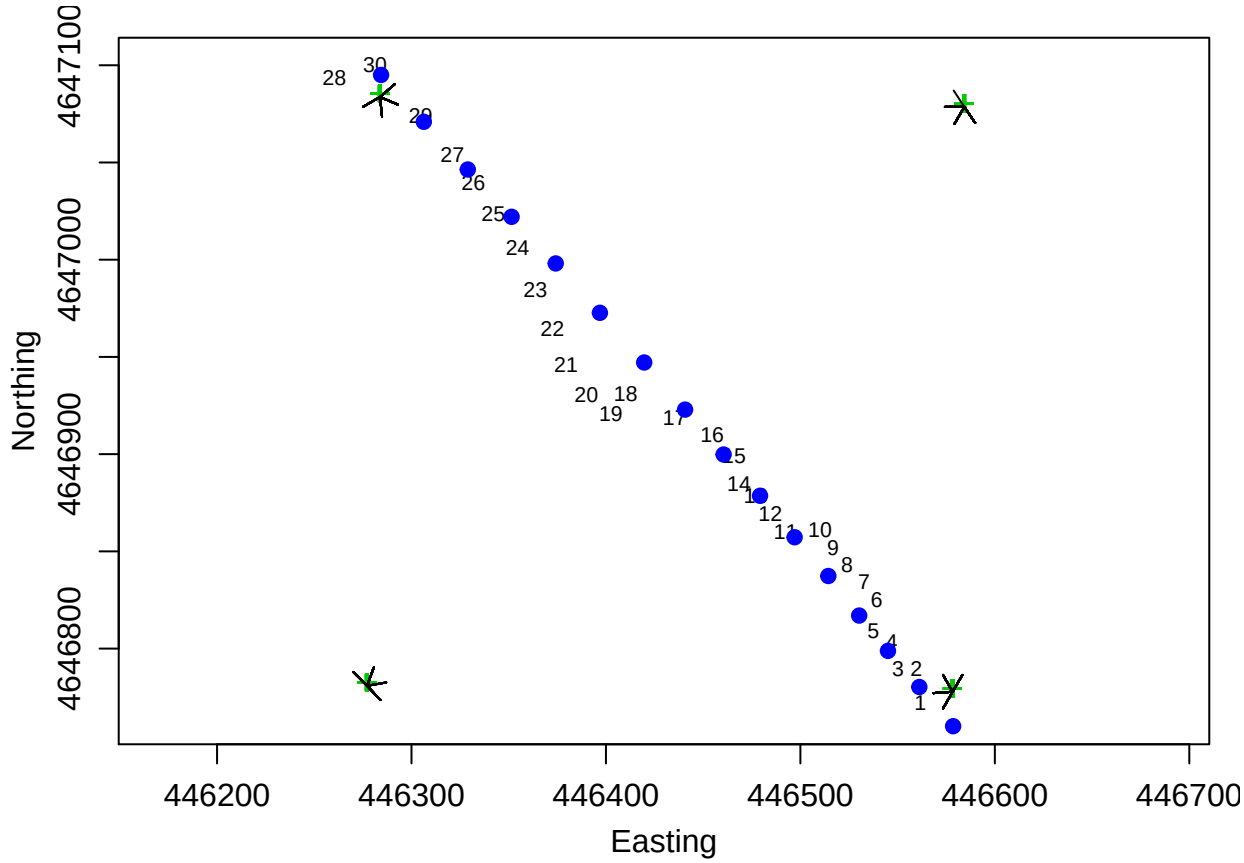
```
source('walk predict.r')
```




```
## 1  2  3  4  5  6  7  8  9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28
```

```
source('walk plot.r')
```


Northing
4647100
4647000
4646900
4646800
446200
446300
446400
446500
446600
Easting

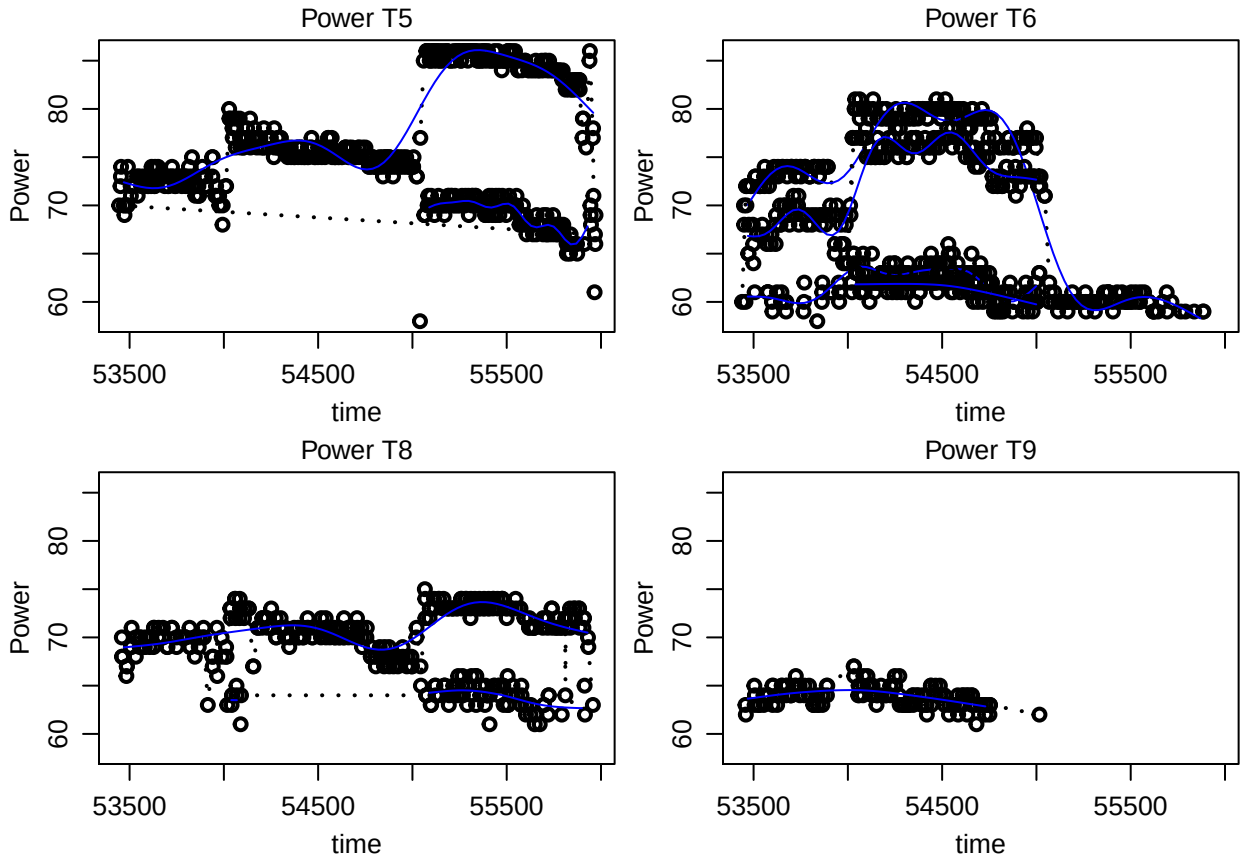



```
## [1] 6.755508
## [1] 4.732389
## [1] 2.179958
## [1] 5.079438
```

Transmitter on a flying butterfly

```
source('M171 calibrate.r')
```

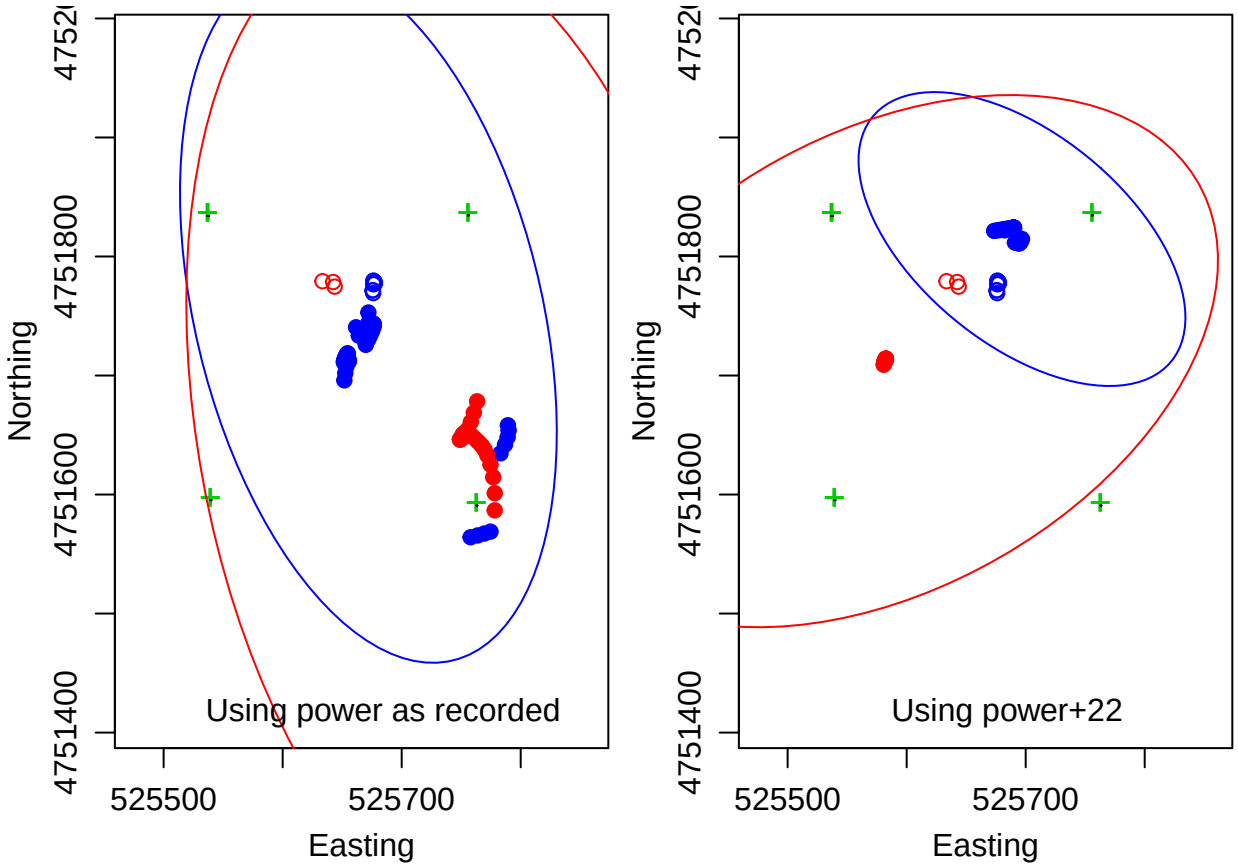
```
source('M171 predict.r')
```




```
## 1  2  3  4  5  6  7  8  9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28
## [1] 119.6967
## [1] 310.4157
## [1] 240.77
```

```
source('M171 plot.r')
```

```
## Summary of distances btwn obs and estimated, obs power
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   27.17   49.56   72.65  115.01  176.05  235.01
## Summary of distances btwn obs and estimated, power+22
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   37.61   42.80   46.35   58.30   84.73   92.96
## Distance btwn obs and estimated: obs power
## [1]  27.16915 176.62166
## Distance btwn obs and estimated: power+22
## [1] 40.55714 84.90813
## CI eff radius for loc 19, obs power
## [1] 209.2282
## CI eff radius for loc 19, power + 22
## [1] 119.6967
## CI eff radius for loc 59, obs power
## [1] 310.4157
## CI eff radius for loc 59, power+22
## [1] 240.77
```


Northing
4752
4751800
4751600
4751400
525500
525700
Easting
Using power as recorded
Northing
4752
4751800
4751600
4751400
525500
525700
Easting
Using power+22