**Animal movement analysis in space and time, Torres et al.**

Appendix S3: R code and example dataset for running Residence in Space and Time (RST) method

**File list**

GHAL\_23059.csv GPS track of a grey-headed albatross (example movement dataset used in paper).

RST\_documentation Documentation and description of R functions used in RST analysis method.

RST\_functions\_all R source code for all functions used in RST analysis method.

RST\_general\_tracks R code for the user to manipulate to input dataset, set parameters and run RST analysis.

RST\_dynamic\_tracks R code for the user to manipulate to input dataset, set parameters and run RST analysis using the dynamic scaling methods to choose radius scale.

RST\_residenceRadii.so C code to implement R functions for RST analysis (for mac computers)

RST\_residenceRadii.dll C code to implement R functions for RST analysis (for PC computers)

**Description**

In this supplement we provide code to conduct the Residence in Space and Time (RST) analysis method of animal movement data, and the example grey-headed albatross (GHAL) GPS track used in this paper (Bird 23059; GHAL\_23059.csv). All analysis is completed in R (R Development Core Team 2013) and implemented in C. The following packages are utilized: ggplot2 (Wickham 2009), mapdata (Brownrigg 2015), and mapproj (McIlroy 2015).

Column definitions of GHAL\_23059.csv

1. SortID: a unique identifier for each row of data
2. band: a unique identifier for each tracked animal (in this example there is only one albatross tracked, but the user may analyze a data file with tracks from multiple indiviudals).
3. Datetime\_GMT: The date and time stamp of each location point. This may be in multiple formats, with subsequent format definition with strptime in the R code (RST\_general\_tracks.R)
4. lat: Latitude of each location (in decimal degrees)
5. lon: Longitude of each location (in decimal degrees)

To implement the RST code the user must:

* Have the packages ggplot2 and mapproj installed in R.
* Use the “RST\_general\_tracks.R” script to apply user defined radius (*R*) values or “RST\_dynamic\_tracks.R” to allow *R* to be selected for each track based on the radius where <5% of points are transit (residual = 0).

**Literature cited**:

Brownrigg, R. 2015. mapdata: Extra map databases. GPL-2.

McIlroy, D. 2015. mapproj: Map projectuins. Lucent Public License.

R Development Core Team. 2013. R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria.

Wickham, H. 2009. ggplot2: elegant graphics for data analysis. Springer Science & Business Media.