This README explains how to reproduce the results presented in the manuscript **Generating Spatially Realistic Environmental Null Models with the Shift-&-Rotate Approach Helps Evaluate False Positives in Species Distribution Modeling**: How to investigate the results of a species distribution model using null models generated from the Shift & Rotate approach. All analyses are performed in R.

The manuscript involves analyses with simulated occurrence data and real climate data. The climate data are from the WorldClim database (Fick & Hijmans, 2017). Code to download the climate freely available data are available in Script\_1\_Clim1.R.

The analyses of the manuscript can be reproduced by the provided R-scripts:

Shift&Rot.R

Script\_1\_Clim1.R

Script\_2\_simulate\_community\_data0.R

Script\_3\_define\_models0.R

Script\_4\_fit\_and\_evaluate\_models0.R

Script\_5\_show\_results0.R

The scripts should be run consecutively following the instructions in the annotations. Script\_1\_Clim1.R generates one file with 100 shifted and rotated climate datasets as well as the original dataset. Script\_2\_simulate\_community\_data0.R generates the simulated community data named: “datasets.RData”. Script\_3\_define\_models0.R defines and appropriately names the models to be fitted named “unfitted\_models.RData”. Script\_4\_fit\_and\_evaluate\_models0.R fits the models with settings for that alter the computationally intensive analysis. The final results presented in the manuscript are run with thin.list=100, samples.list = 250. (note: this is highly computationally demanding even with less intensive sampling). Finally, Script\_5\_show\_results0.R provides a workflow for generating individual panels of figures 5, 6, S1, and S2.

**Reference**

Fick, S.E. & Hijmans, R.J. (2017). WorldClim 2: new 1km spatial resolution climate surfaces for global land areas. *International Journal of Climatology* 37 (12): 4302-4315. <https://doi.org/10.1002/joc.5086>