STATISTICAL RETHINKING WINTER 2020
HOMEWORK, WEEK 1

What is homework? Your completed answers to the prompts below should contain all the code necessary to repeat your calculations.

When is homework due? Homework is due each TUESDAY before the relevant discussion of the solutions. So for this first homework assignment, it'll be due on December 1st. You are welcome to work in groups. Just please turn in your individual completed answers.

Where is homework due? Upload your homework at this link:

https://share.eva.mpg.de/index.php/s/r5Gcn4ssgNxAPyb

Please name the file with your name and the course week. The preferred file format is PDF or a plain text script file (.Rmd or .R). Please do NOT turn in a Microsoft Word document—Please just convert it to PDF first.

WEEK 1 PROBLEMS.

1. Suppose the globe tossing data (Chapter 2) had turned out to be 4 water in 15 tosses. Construct the posterior distribution, using grid approximation. Use the same flat prior as in the book.

2. Start over in **1**, but now use a prior that is zero below $p = 0.5$ and a constant above $p = 0.5$. This corresponds to prior information that a majority of the Earth's surface is water. What difference does the better prior make?

3. For the posterior distribution from **2**, compute 89% percentile and HPDI intervals. Compare the widths of these intervals. Which is wider? Why? If you had only the information in the interval, what might you misunderstand about the shape of the posterior distribution?