

Each question should result in one graph. Graphing here can be done using packages and commands we used in lab – artistic embellishments are optional (but always appreciated). The data set is available from the course web site's schedule for this week:

<http://jenkins.cos.ucf.edu/59-2/classes/pcb-6466-methods-in-experimental-ecology/>

Your answer to each question should include (a) a graph and (b) a sentence or two that clearly answers the question, based on the graph. *Aim for information clarity in your graphs.*

Preface: England is pretty far north, but its weather is buffered by the Gulf Stream. Thus, climate change is uncertain there. The SilwoodWeather data set shows upper and lower temperatures (°C), and rainfall (mm), for each day 1987-2005, at the Imperial College's Silwood campus, west of London.

1. Make boxplots, where you obtain one box & whiskers per month (12 box & whiskers in your graph). Describe the typical annual pattern in rainfall at Silwood.
2. Rainfall is famously variable – a better approach may be to calculate a monthly total rainfall [hint – remember dplyr?], and then try boxplots per month again.
3. Calculate the average upper temperature each month of each year, and then graph those values through the months (i.e., your X-axis is months). Based on your graph, what month(s) get warmest at Silwood?
4. Using the same data as in #3 above (but a different graph): Have the high temperatures increased through time, consistent with global warming projections?
5. Calculate the daily temperature range (i.e., upper – lower), and then the monthly average of those daily ranges; to yield one average for every month of every year. Now graph those monthly average ranges through time. Have temperatures become more variable through time, as also predicted by climate change models?