Precipitation manipulation experiments – diagnostics and illustrations

May 3, 2013

The program which produces the precipitation schedule produces a number of diagnostic plots as well. This document shows some of these. It demonstrates how our rainfall schedule reflects natural rainfall, and how our manipulations alter it.
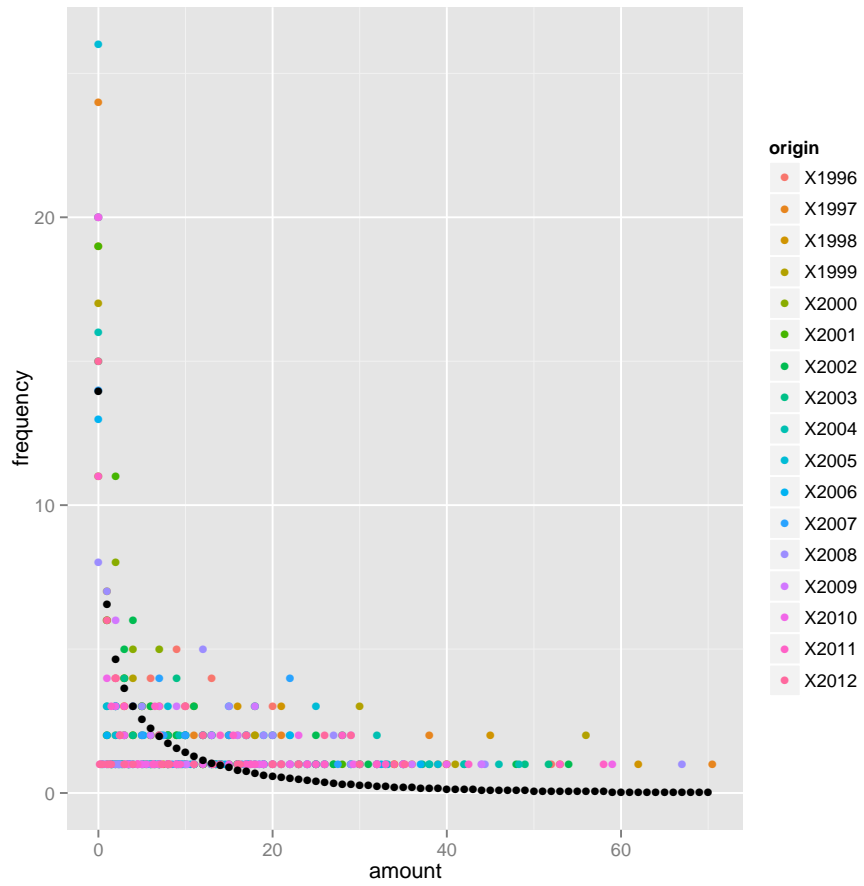
Figure 1: This figure shows a frequency distribution of rainfall in every year. The black dots represent an idealized (average) negative binomial distribution of rainfall amounts.
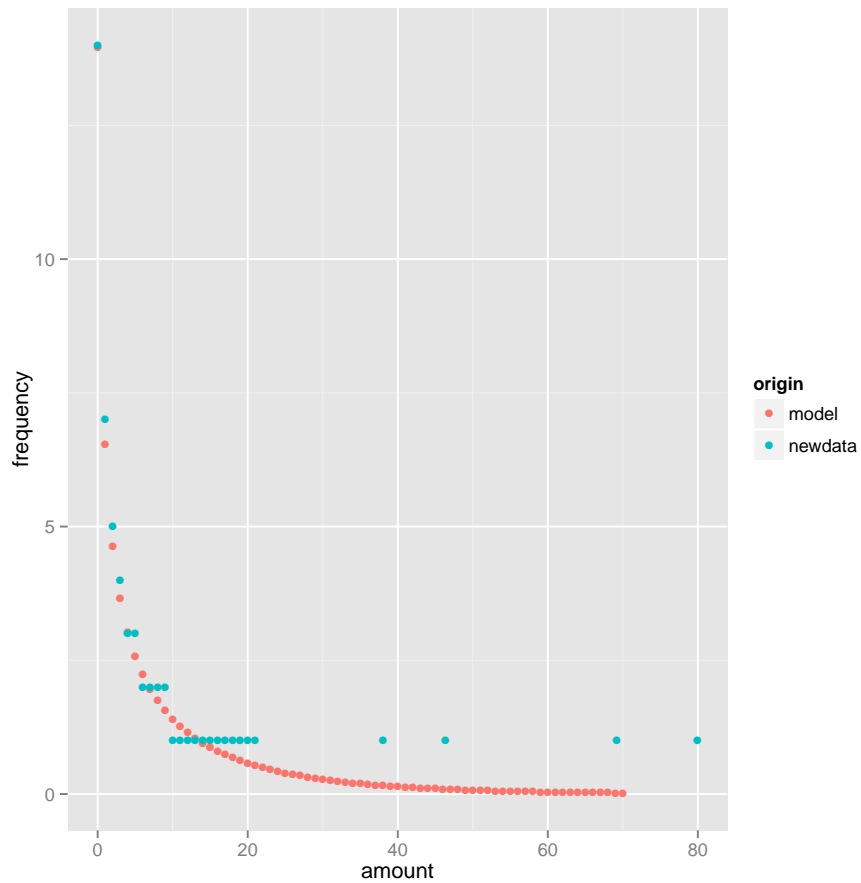
Figure 2: This figure shows the negative binomial prediction (as above). However, it cannot be used directly because it predicts non-integer frequencies for each rainfall amount (and of course we cannot water for a non-integer number of days!). We came up with an 'integerization' algorithim which approximates this smooth line with the points shown here.
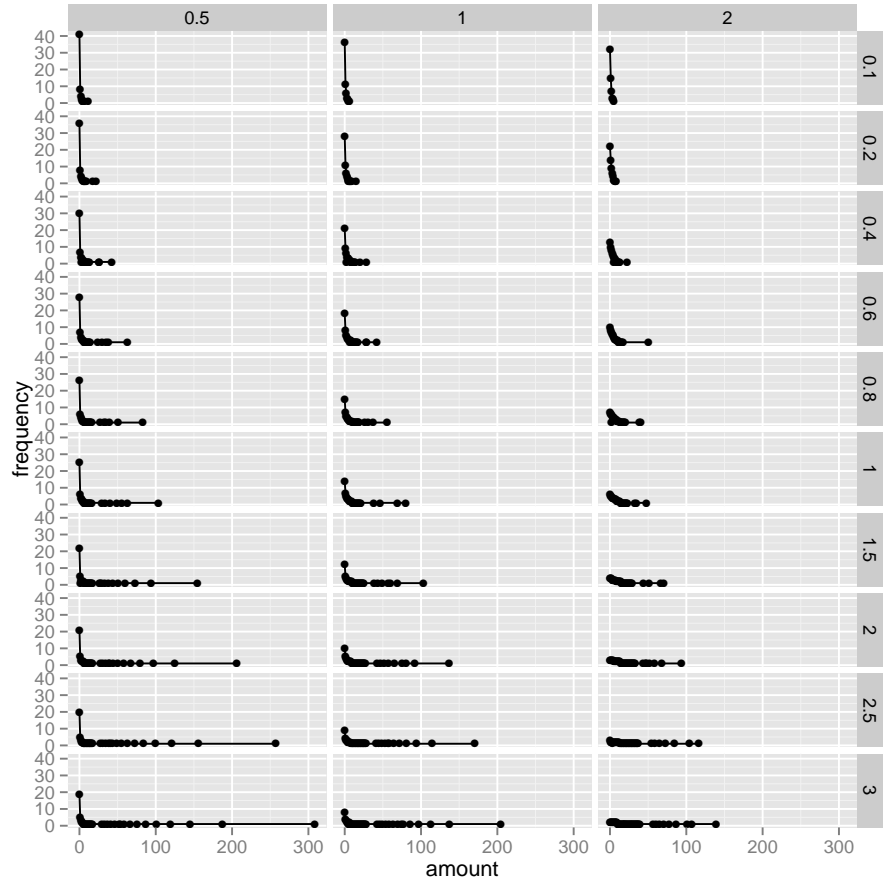
Figure 3: Each panel represents the distribution of days within one treatment (bromeliad). Rows are variation in the *mu* parameter, while columns are *k*.
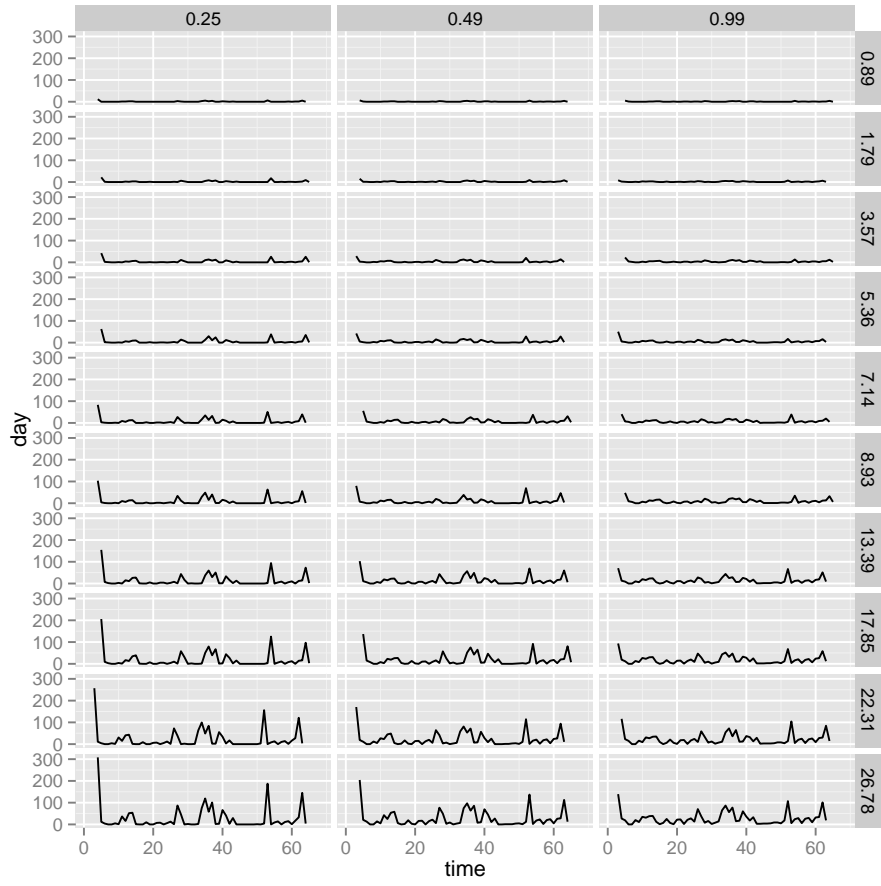
Figure 4: The temporal pattern of rain in each bromeliad – equal to the previous figure but with the addition of a sequence of rainfall that approximates the variation natural to the site.
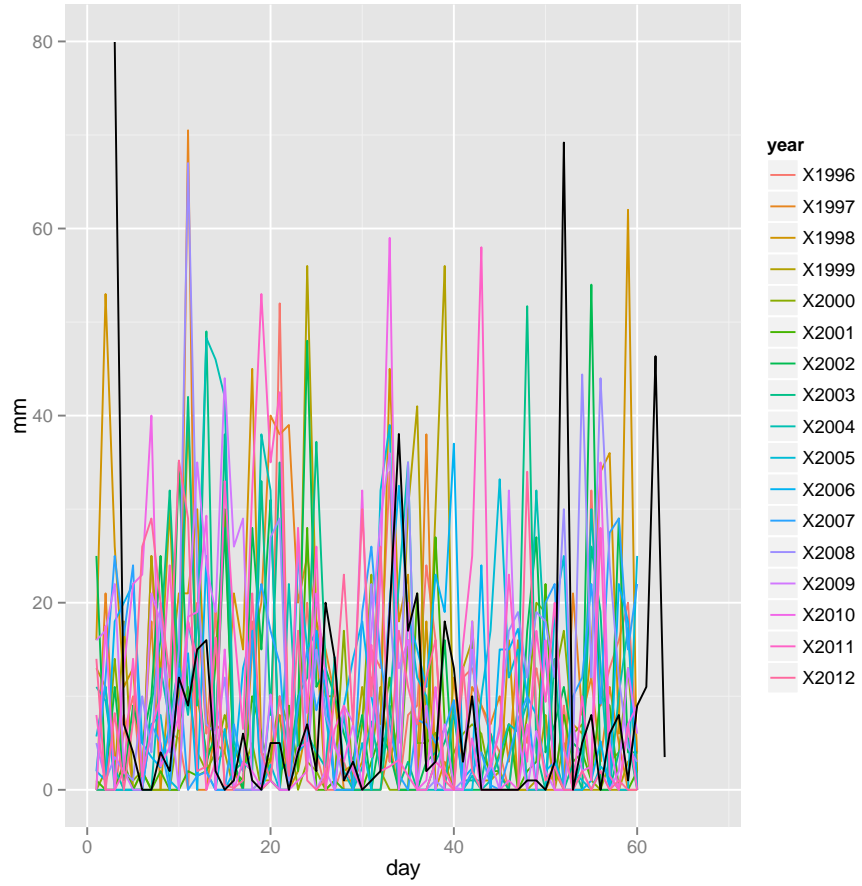
Figure 5: The control treatment bromeliad (i.e. *mu1k1*, black line) compared with the rainfall data, to demonstrate that they are very similar in temporal pattern
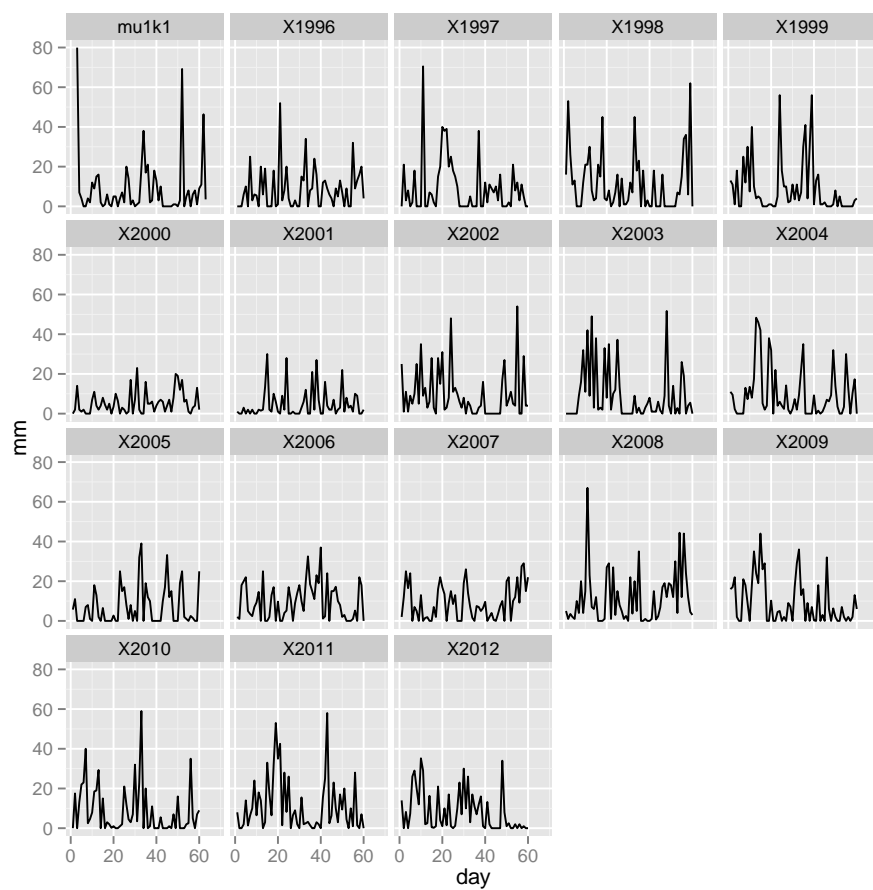
Figure 6: As the above, but each year (and the control plant) is in a separate panel.