Use the GLM, Luke.

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1. Introduction

Not mentioned in Newman (2013).

Sparsely in OECD Guideline.

Canada: 'The concept is quite advanced and as yet is not widely used in environmental toxicology.'

Wang/Riffel vergleichen NP aber kein Wort über GLM.

Brock et al. empfiehlt das sampling zui verbessern um die MDD zu verkleinern, keine erwähnung von GLMs (damit erhöhen die auch die power, wie man sieht und sind kostenlos)

1.1. Normal Model

$$log(Ay_i + 1) \sim N(\mu_i, \sigma^2)$$

$$var(log(Ay_i + 1)) = \sigma^2$$

$$log(Ay_i + 1) = \alpha + \beta x_i$$

OR

$$y_i^T = log(Ay_i + 1)$$

$$y_i^T \sim N(\mu_i, \sigma^2)$$

$$var(y_i^T) = \sigma^2$$

$$y_i^T = \alpha + \beta x_i$$

1.2. Generalized Linear Model

$$y_i \sim NB(\mu_i, \theta)$$

$$var(y_i) = \mu_i + \mu_i^2/\theta$$

$$log(\mu_i) = \eta_i$$

$$\eta_i = \alpha + \beta x_i$$

2. Methods

2.1. Simulation scenarious

Derzeit, muT = 1/2 muC. Deshalb nimmt die power ab mit kleiner muC (die differnz wird kleiner). Wie kann man das umgehen/besser machen?

Andere Daten/Szenarios? Siehe Wang. Für beta-GLM braucht man gamlss oder ?betareg? (mal vergleichen). Gamma (densities) kann glm().

2.2. Simulations based on real data

3. Results

3.1. Simulation scenarious

-¿ bei kleinerm muc lm besser weil annahmen nicht passen (checken)?

3.2. Simulations based on real data

4. Discussion

Decide between NB and P? - Mean-Var-Plot!

5. Conclusion

A. Tipps (Or move up to introduction?) Check distribution

B. TODO

Read about nparcomp.

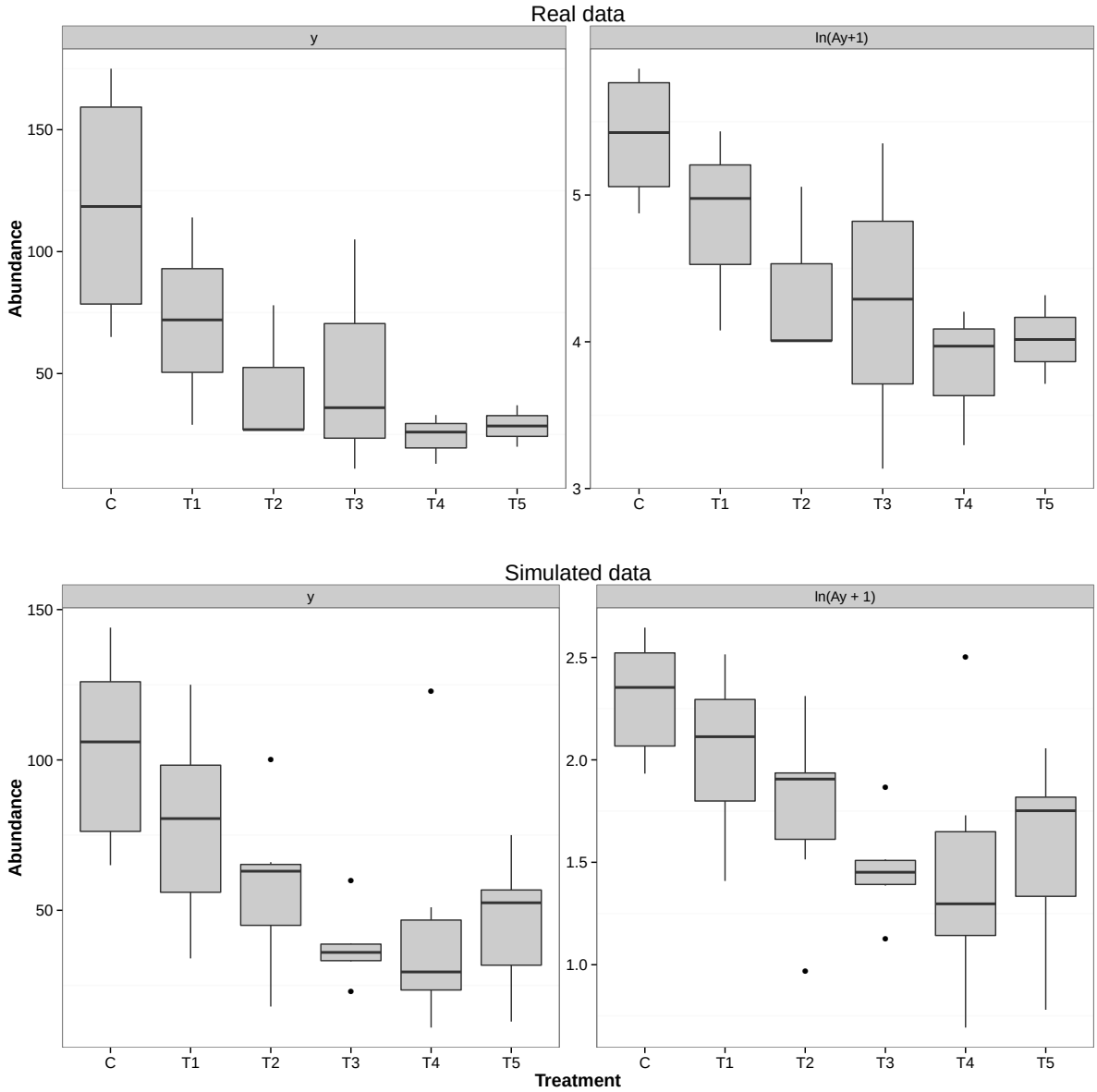

Figure 1: Real data from Brock et al... (top) and one realisation of simulated data (below, N = 6, μ_c = 100). Left panel show raw counts, right panel $log(A \cdot x + 1)$ transformed counts.

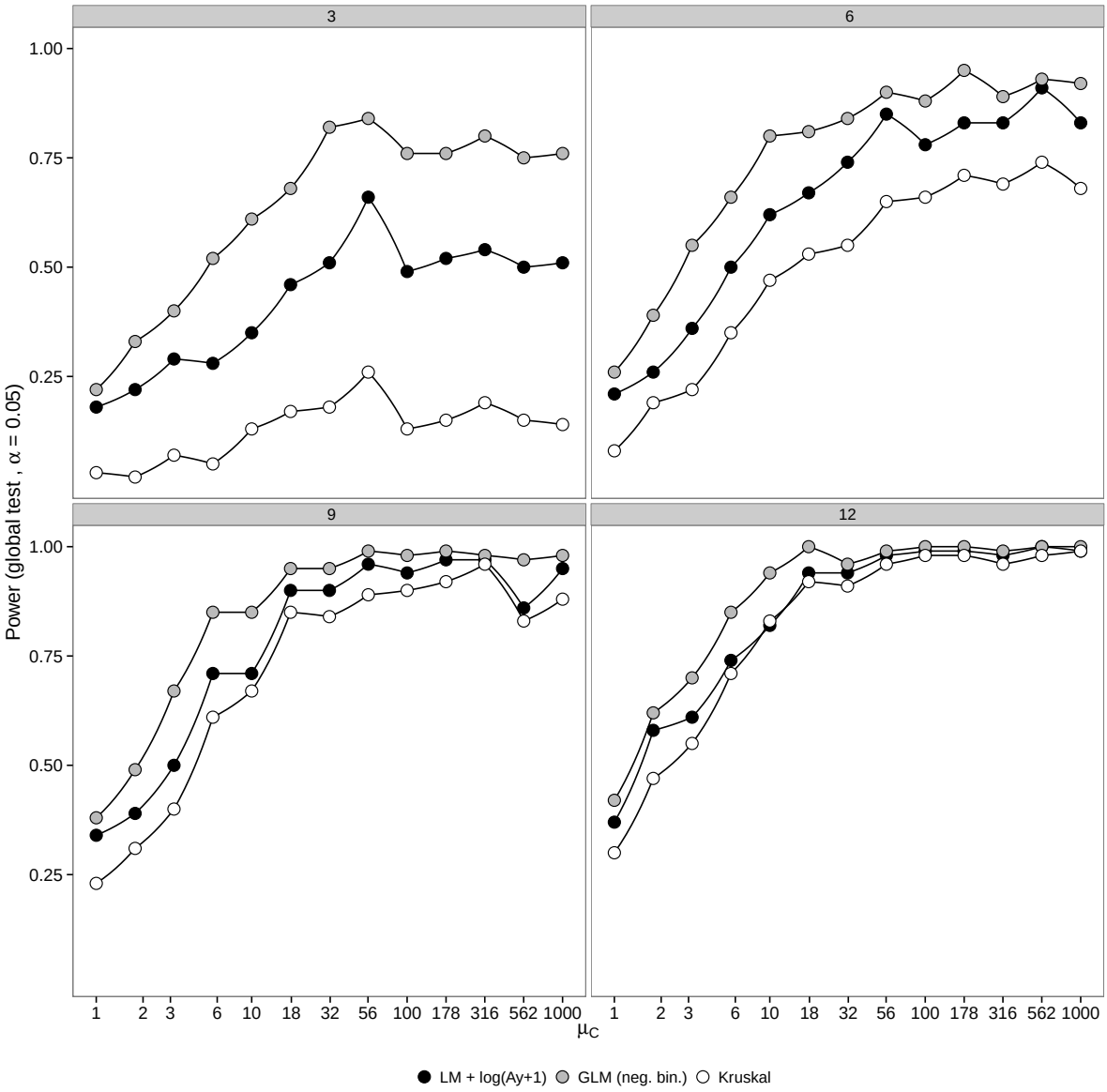

Figure 2: Power.

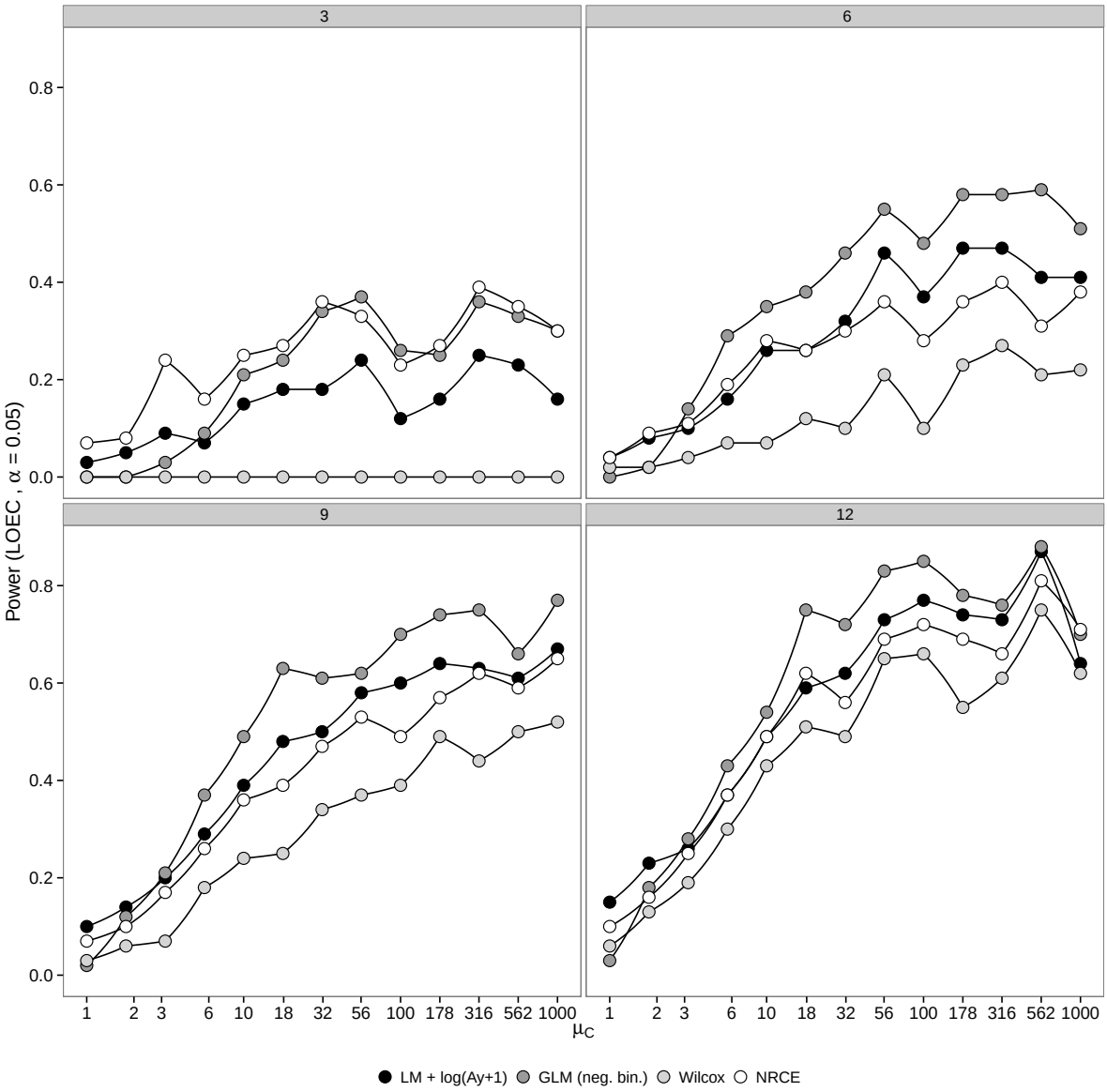

Figure 3: Power to detect LOEC.