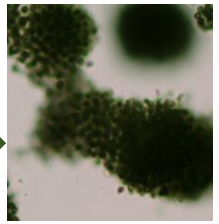
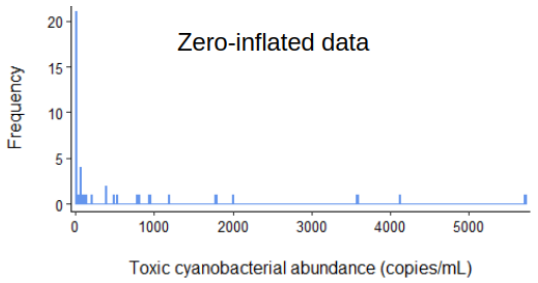
Microcystis



DNA

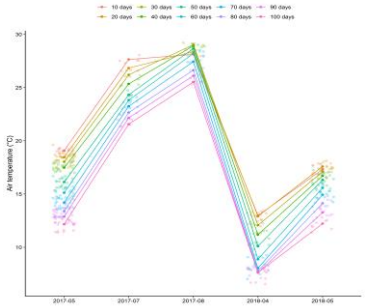
Real-time PCR

mcyB* gene: toxic *Microcystis
PC gene: total *Microcystis*



Trophic State Index (TSI)
(chlorophyll-a)

Meteorological Data
(air temperature, rainfall)



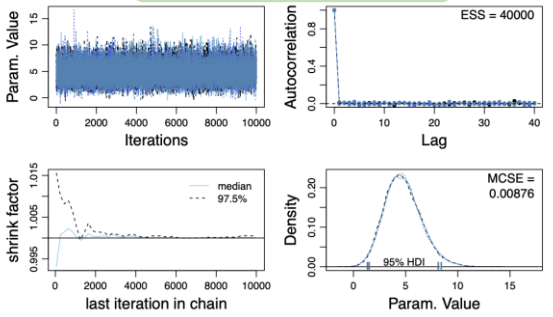
$$P(y|\theta,\lambda) = \begin{cases} 1-\theta & if\ y = 0 \\ \theta \dfrac{Poisson(y|\lambda)}{1-PoissonCDF(0|\lambda)} & if\ y > 0 \end{cases}$$

Bayesian Hurdle Poisson Model

$$logit(\theta) = \alpha_0 + \alpha_1\, temperature + \alpha_2\, rainfall + \alpha_3\, TSI$$

$$log(\lambda) = \beta_0 + \beta_1\, temperature + \beta_2\, rainfall + \beta_3\, TSI$$

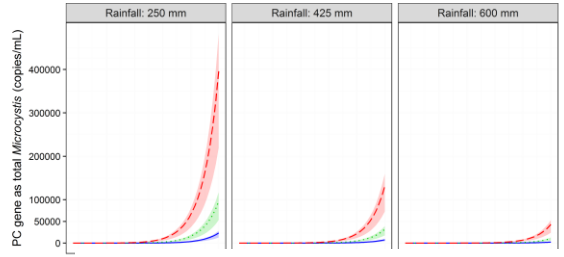
MCMC simulation



Prediction

A

Total *Microcystis abundance*



Toxic *Microcystis abundance*

B