

a)

$$y = \beta_0 + \mathbf{X}\boldsymbol{\beta} + \epsilon$$

$$\mathbf{X} \sim MVN(\mu_x, \Sigma_x)$$

$$\epsilon \sim N(0, \sigma_\epsilon^2)$$

```
squid_data <- simulate_population(
  parameters=list(
    observation=list(
      names=c("temperature","rainfall", "wind"),
      mean = c(10,1,20),
      vcov =c(1,0.1,2),
      beta =c(0.5,-3,0.4)
    ),
    residual=list(
      mean=10,
      vcov=0.8
    )
  ),
  N=2000
)
```

b)

$$y = \beta_0 + \mathbf{X}\boldsymbol{\beta} + \epsilon$$

$$\mathbf{X} \sim MVN(\mu_x, \Sigma_x)$$

$$\epsilon \sim N(0, \sigma_\epsilon^2)$$

```
squid_data <- simulate_population(
  parameters=list(
    observation=list(
      names=c("temperature","rainfall", "wind"),
      mean = c(10,1,20),
      vcov =c(1,0.1,2),
      beta =c(0.5,-3,0.4)
    ),
    residual=list(
      mean=10,
      vcov=0.8
    )
  ),
  N=2000
)
```