

## Supplementary Text S5 Model calibration function

### Calibration function for the VGT model

$$\begin{aligned} \min LS(\alpha, \beta) &= a \cdot [(M_{0,obs} - M_{0,sim})/M_{0,sim}]^2 + \beta \cdot [(M_{1,obs} - M_{1,sim})/M_{1,sim}]^2 \\ &\begin{cases} \alpha = K_\alpha \cdot \alpha_{ref} \\ \beta = K_\beta \cdot \beta_{ref} \end{cases} \end{aligned} \quad (1)$$

### Calibration function for the HGT model

$$\begin{aligned} \min LS(\mu, d) &= a \cdot [A_{0,obs}(6) - A_{0,sim}(6)]^2 + \beta \cdot [A_{1,obs}(6) - A_{1,sim}(6)]^2 \\ &\begin{cases} \mu = K_\mu \cdot \mu_{ref} \\ d = K_d \cdot d_{ref} \end{cases} \end{aligned} \quad (2)$$