

### 3 **A Supplementary Figures**

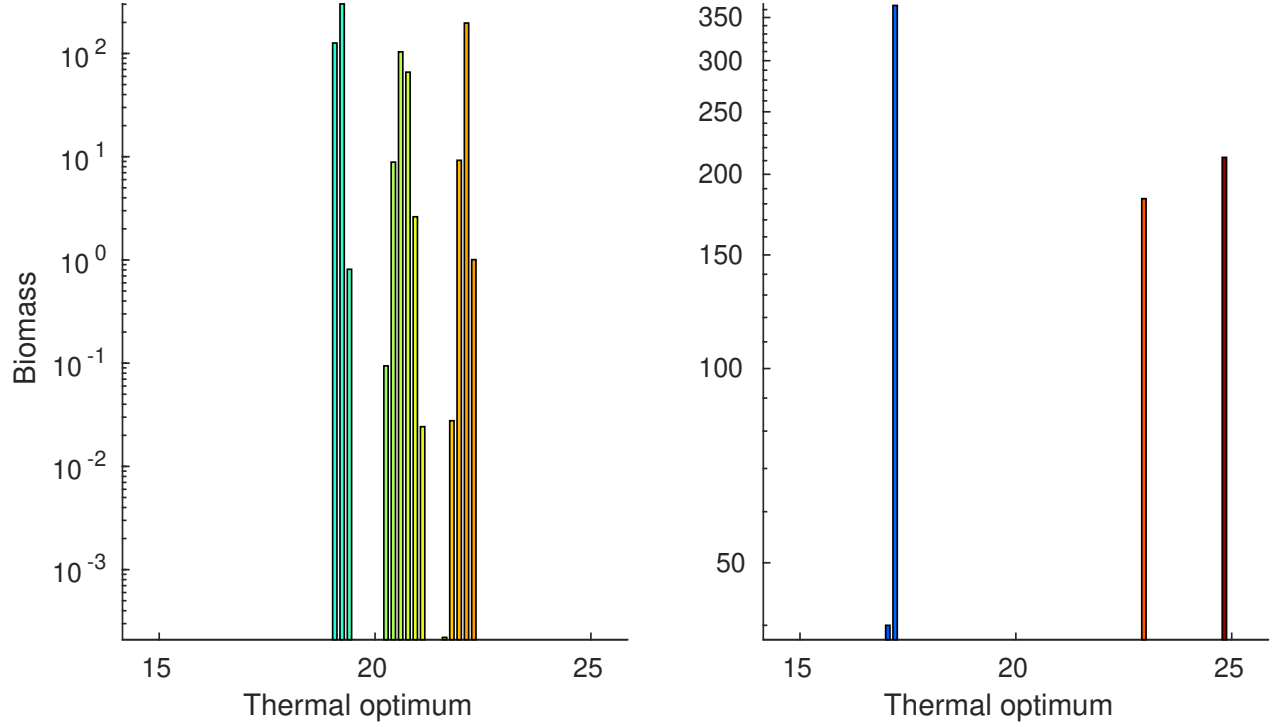


Figure A.1: Temporal mean of biomass as a function of the thermal optimum defining each species. The temporal means are computed over the last 200 years of a simulation spanning 5000 years. We considered both a random (left) or a seasonal noise (right). The coexistence mechanism implemented is the storage effect, and the intra and interspecific competition coefficients are equal. This simulation is the one described in Fig. 1 in main text. 99 other simulations have been performed to produce the main text results in Figs. 2-4.

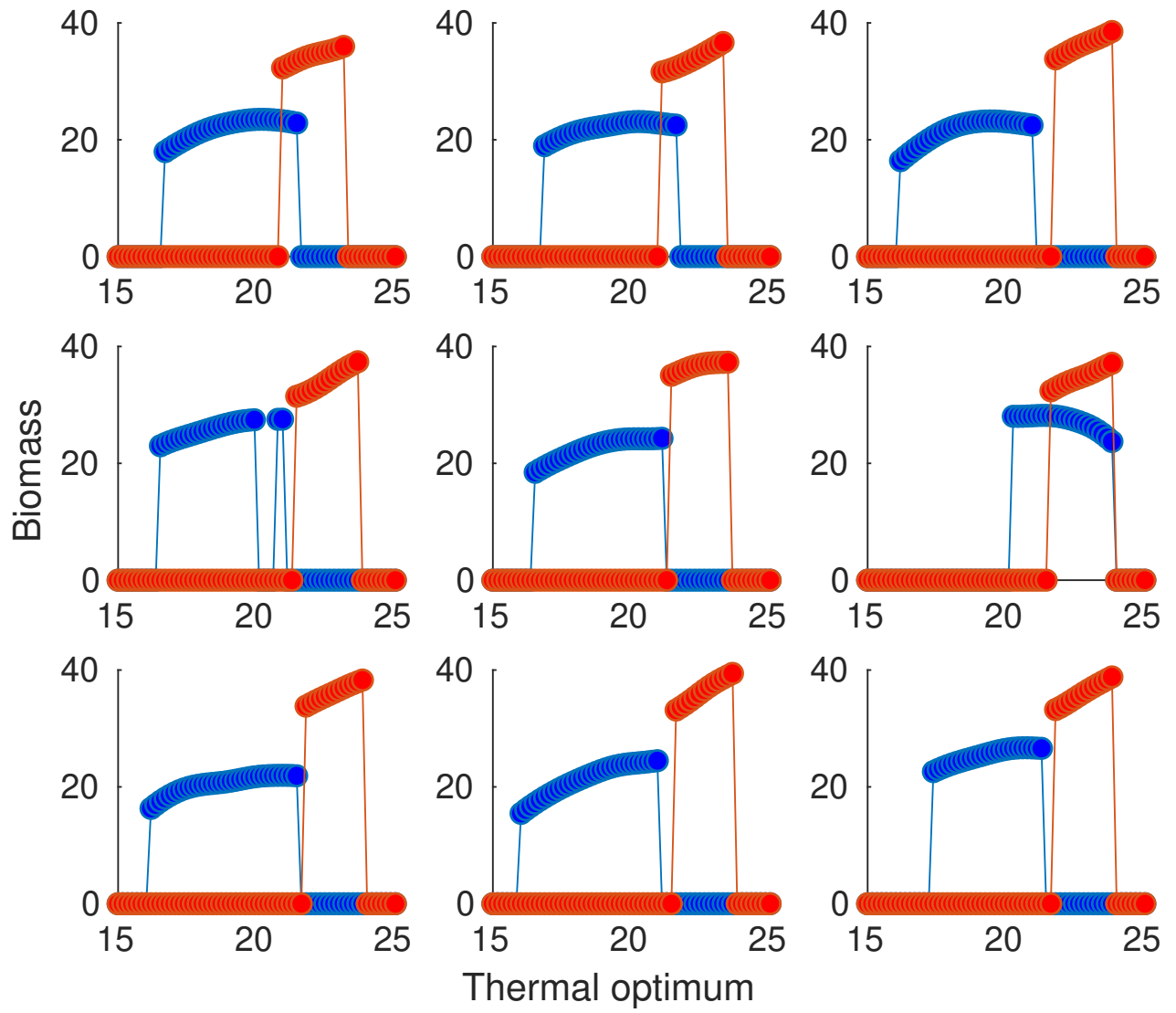


Figure A.2: Temporal mean biomass distribution, computed over the last 200 years, for 9 representative simulations, as a function of the thermal optimum of the species. These simulations are done without storage effect but with strong self-regulation. Temperature is either a seasonal signal (red) or a random noise (blue). The distribution induced by a random noise overlaps the one obtained with a seasonal noise in only 2 simulations out of 100, hence the two signals lead in general to very different biomass distributions on the trait axis.