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Control mechanisms on the ctenophore (Mnemiopsis Leidyi) population dynamics: a modelling study

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A comprehensive understanding of the mechanisms that control the ctenophore Mnemiopsis leidyi blooms in the Black Sea is studied with a zero-dimensional population based model. The stage resolving model considers detailed weight and population growth dynamics under four stages of model-ctenophore. The model is able to represent consistent development patterns, while reflecting the physiological complexity of a population of Mnemiopsis leidyi. Model is used to analyse the influence of temperature and food variability on Mnemiopsis leidyi reproduction and outburst. Model results demonstrated how food sources regulated the growth rates under changing temperatures. Model results suggest that different nutritonal requirement of each stage can be critical for population growth.