

Modelling secondary production in the Norwegian Sea with a fully coupled model system

Solfrid Sætre Hjøllo, Geir Huse, Morten D. Skogen

The copepod *Calanus finmarchicus* is the dominant species of the mesozooplankton in the Norwegian Sea, and constitutes an important link between the phytoplankton to the higher trophic levels in the Norwegian Sea food chain. An individual-based model (IBM) for *C. finmarchicus*, based on super individuals and evolving traits for behaviour, stages etc., is coupled two ways to a physical–biological model system. One year of modelled *C. finmarchicus* spatial distribution, production, and biomass values are compared with point-wise and integrated observations, and found to represent these satisfactory. Sensitivity tests of model setup (i.e. number of super individuals, initial values of traits for behaviour and food preferences) show that the modelling system is robust and provides a valuable tool for studies of ecosystem responses to causative forces such as fish predation or climate change. From a longer simulation, interannual variability and regional differences in biomass and production are studied.

Keywords: *Calanus finmarchicus*, IBM model, Norwegian Sea.

Contact author: Morten D. Skogen, Institute of Marine Research, Pb.1870 Nordnes, N 5817 Bergen, Norway [e-mail: morten@imr.no].