Project: MiMeMo - Microbes to Megafauna Modelling of Arctic Seas

We will develop two contrasting types of mathematical models of marine food webs to quantify the 'end-to-end' (microbes to megafauna) spatial and seasonal patterns of biomass, production and fishery yields in slope and shelf waters of the Atlantic-Arctic. We will test the models by assessing their ability to explain contemporary patterns, and then use them to predict the impacts of multiple stressors associated with a warming climate, in particular changes in temperature, circulation and mixing, sea-ice cover, and freshwater inputs. Finally, we will use the models to examine trade-off between the realisation of provisioning services (harvesting of fish and invertebrates in order to sustain Arctic communities), and cultural values (reputation, tourism) arising from the abundances of marine megafauna the pristine Arctic environment.

The DKRZ resources are used to simulate the regional, end-to-end ecosystem in the Arctic ocean in high spatial resolution.