



Projected future climate change and Baltic Sea ecosystem management

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Climate change is likely to have large effects on the Baltic Sea ecosystem. Simulations indicate 2-4°C warming and 50-80% decreasing ice cover by 2100. Precipitation may increase ~30% in the north, causing increased land runoff of allochthonous organic matter (AOM) and organic pollutants. Salinity will decrease by about 2 units. Coupled physical-biogeochemical models indicate that in the south, bottom-water anoxia may spread, reducing cod recruitment and increasing sediment phosphorus release, promoting cyanobacterial blooms. In the north, heterotrophic bacteria will be favoured by AOM while phytoplankton may become hampered. More trophic levels in the food web will increase energy losses and consequently reduce fish production. Future management of the Baltic Sea must consider effects of climate change on the ecosystem dynamics and functions, as well as effects of anthropogenic nutrient and pollutant load. Monitoring should have a holistic approach and encompass both autotrophic (phytoplankton) and heterotrophic (e.g. bacterial) processes.