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A new marine ecosystem model for Baltic Sea

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A new marine ecosystem model designed for the Baltic Sea. The ecosystem model consists of 11 main compartments, zooplankton, small phytoplankton, diatoms, cyanobacteria , two detrital classes, and the nutrients nitrate, ammonium, phosphate and silicate. The small phytoplankton size class is meant to represent nano- and pico-sized phytoplankton, and may be Fe-, N-, P-, and light-limited. The larger phytoplankton class is explicitly modeled as diatoms and may be limited by the above factors as well as Si. Growth rates of the cyanobacteria may be limited by Fe, P, and light. Many of the biotic and detrital compartments contain multiple elemental pools as we track carbon, nitrogen, phosphorus, iron, silicon, and calcium carbonate through the ecosystem. The marine ecosystem model is coupled to the three-dimensional, time-dependent hydrodynamical model, POPCICE for the Baltic Sea.The model output is compared with field data from different locations of the southern Baltic Sea. This work was carried out in support of grant (No NN305 111636 - the Polish state Committee of Scientific Research)..The partial support for this study was also provided by the project Satellite Monitoring of the Baltic Sea Environment – SatBaltyk founded by European Union through European Regional Development Fund contract no. POIG 01.01.02-22-011/09