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# Minimum oxygen concentrations in the deepwater of enclosed stratified marine basins of arbitrary hypsography as determined by organic loading and vertical mixing and their dependences on atmospheric and marine boundary conditions

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The oxygen conditions in the deepwater of a stratified enclosed basin depends on the rate of oxygen consumption, which is determined by the flux of organic matter into the basin, and the rate of water renewal and the oxygen concentration of new deepwater. They also depend on the hypsography, in particular the mean depth of the basin. The rate of water exchange depends on the rate of energy supply, by tides and winds, to turbulence in the basin and the density variability of potential new deepwater outside the basin. A formula for the minimum oxygen concentration in a deep isolated basin has been derived. It can be used to, for instance, evaluate the sensitivity of a basin to hypoxia and anoxia and how these states depend on factors mentioned above, e.g. flux of organic matter and vertical mixing and their dependences on marine and atmospheric boundary condition. The formula has been tested on several fjord basins and basins in the Baltic Sea with promising results. This work was developed as part of the EU project HYPOX.