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Agenda Item	5 – Developing new core eutrophication indicators
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Background

One task of the HELCOM EUTRO OPER project is to develop new core eutrophication indicators. EUTRO OPER 1-2014 decided that an oxygen consumption indicator will be further developed under the project during 2015, in the lead of Sweden. The document provides information on the indicator.

Action required

The Meeting is invited to take note of the information and discuss next steps.

We are currently discussing two alternatives for the oxygen indicator that we will test. The idea in both alternatives is to base the oxygen indicator on oxygen consumption. Hopefully this allows us to connect the oxygen indicator to the eutrophication signal. One goal is to be able to show time series of oxygen consumption.

Alternative a)

Alternative a) is based on Kari Eilola's work on the oxygen budget in the Baltic Sea, literature previously circulated in the Eutro-Oper group. The oxygen consumption for the summer season will be calculated below the productive layer but above the halocline to avoid interference of anoxic water masses, figure 1. If a stabile layer can be identified during the productive season, the advective term can be neglected. The diffusion term can be calculated using seasonal averages of oxygen and density. It might also be possible to use estimated values for advection and diffusion from models but this has not been investigated yet.
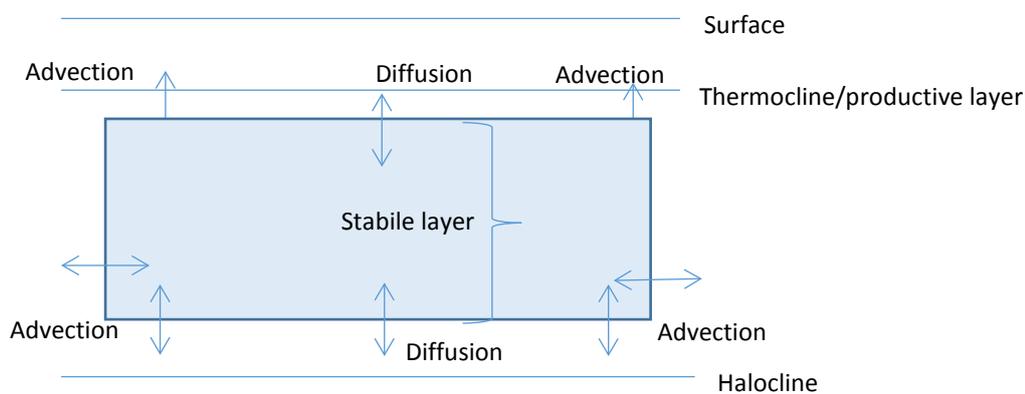

Figure 1. Conceptual sketch of alternative a.

Alternative b)

The second alternative is based on Stigebrandt and Kalén (2013). Here the idea is to use the whole profile below the sill depth to calculate the oxygen consumption. In this alternative we can neglect advection and diffusion at the lower boundary. This method is only applicable in basins with sills.
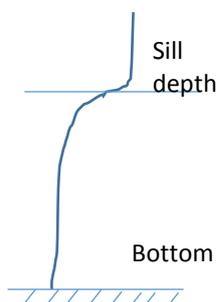

Figure 2. Conceptual sketch of alternative b.