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*Supplement of*

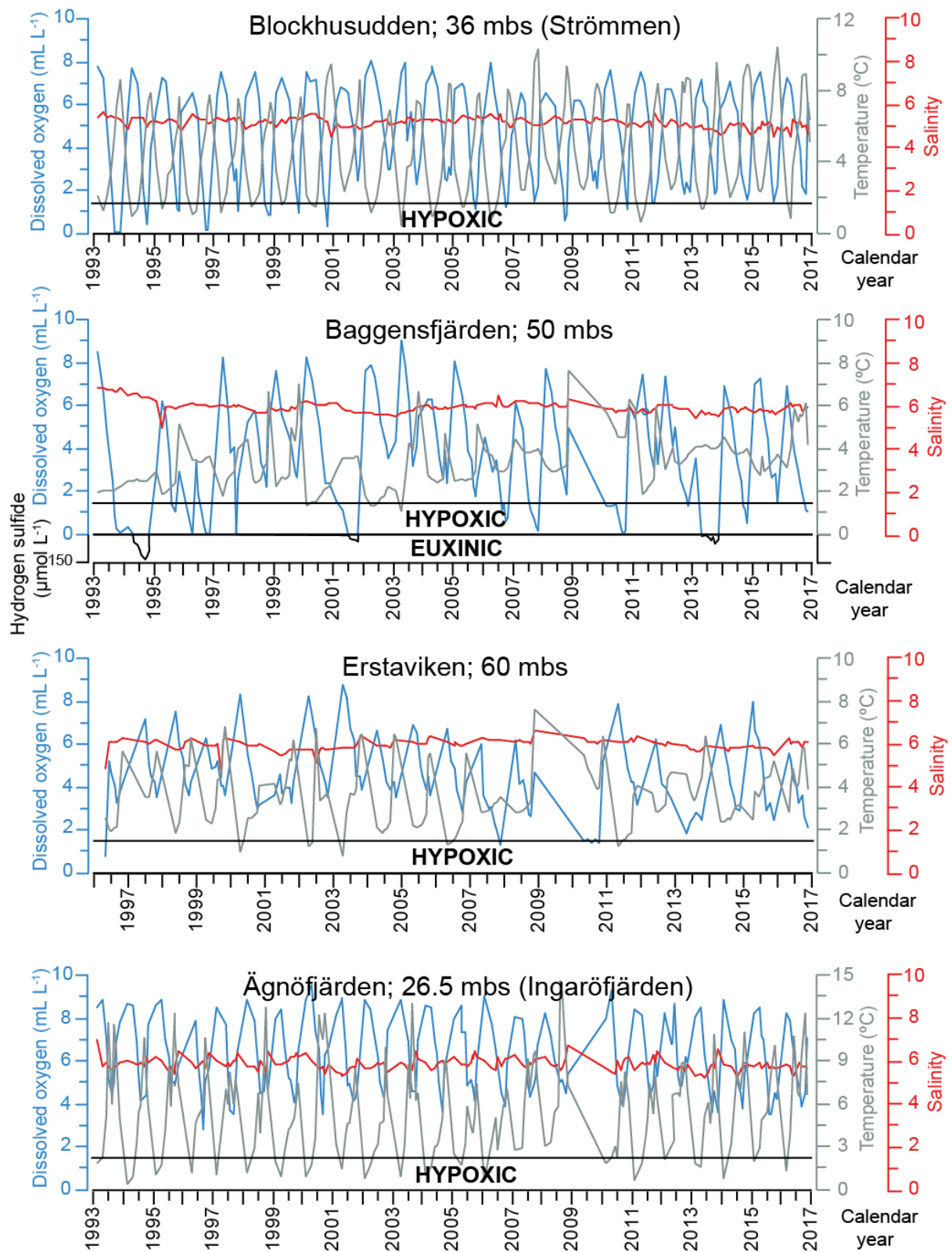
## **Removal of phosphorus and nitrogen in sediments of the eutrophic Stockholm archipelago, Baltic Sea**

**Niels A. G. M. van Helmond et al.**

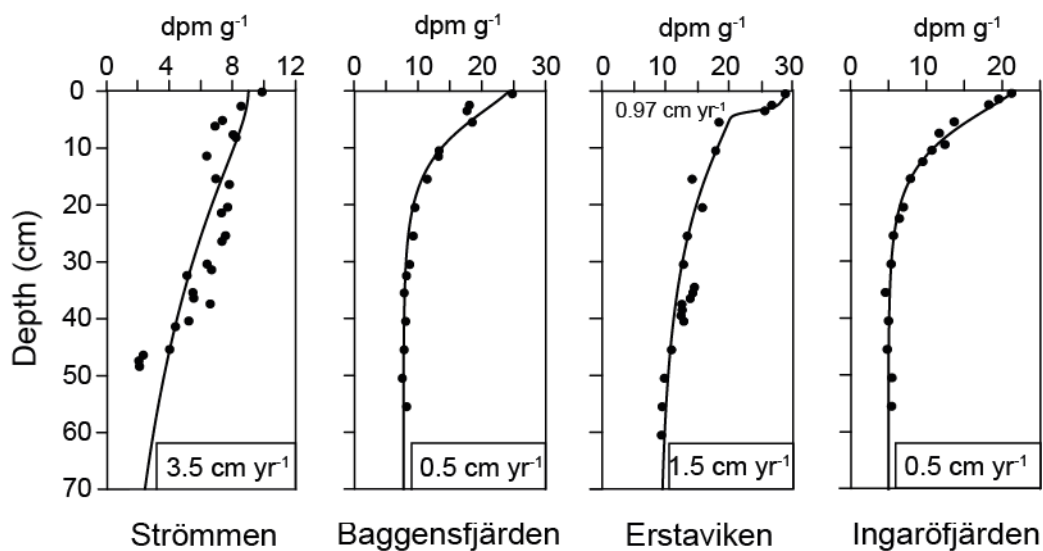
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Supplementary material to van Helmond et al.

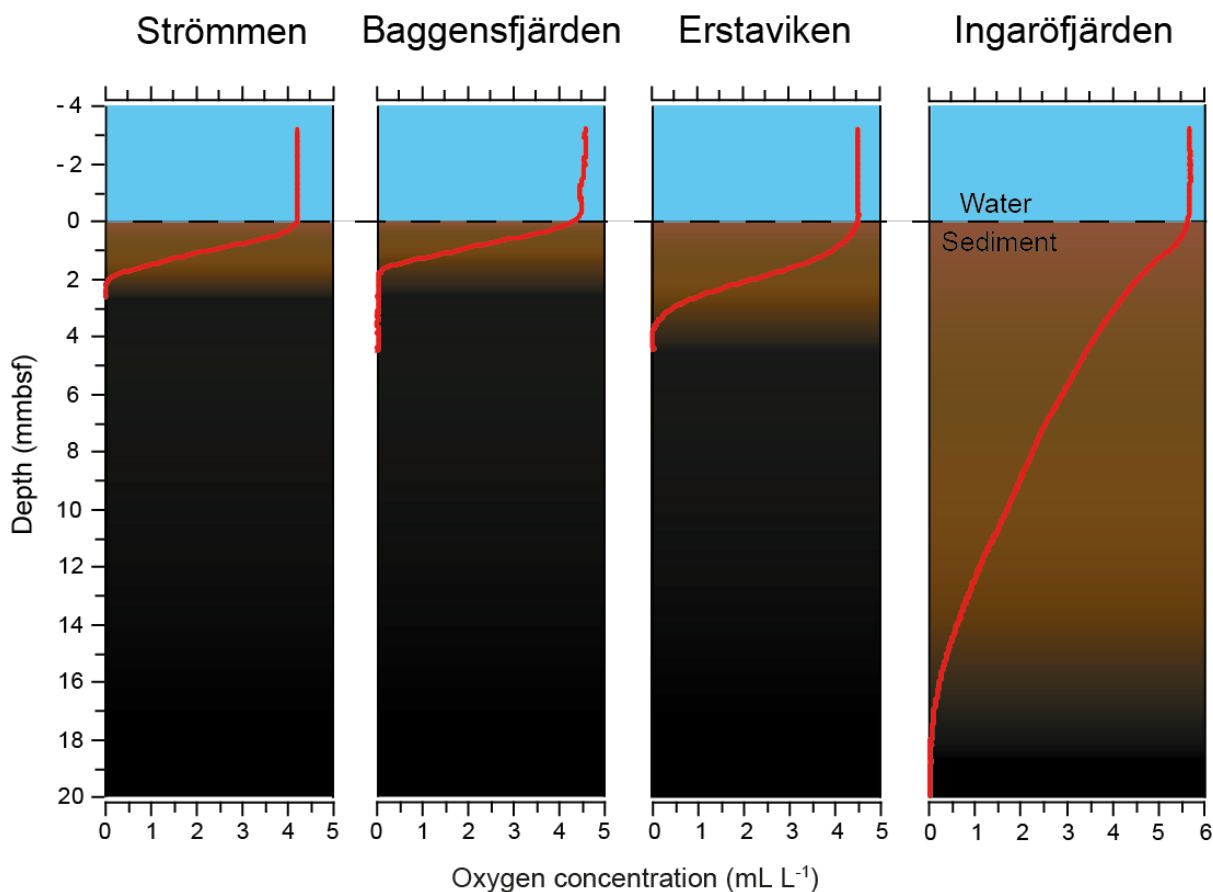


Supplementary Figure 1. Bottom water dissolved oxygen (and in the case of Baggensfjärden sulfide) concentrations, temperature and salinity for the nearest water quality monitoring stations (SMHI, 2019; Fig. 1).

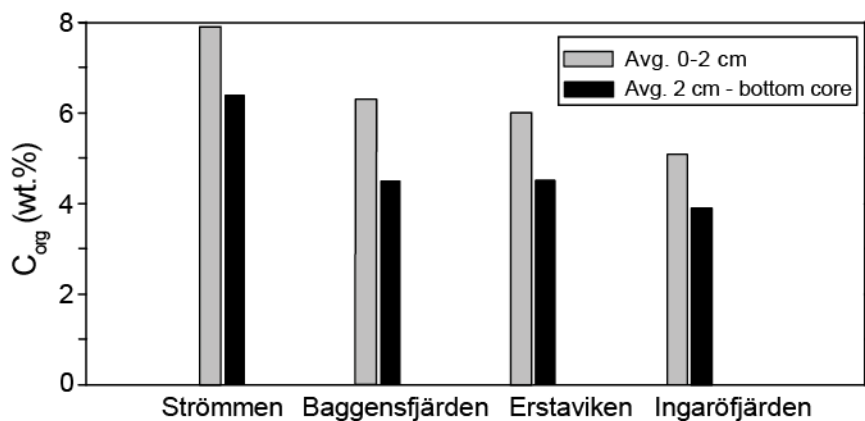


**Supplementary Figure 2.** Solid phase depth profiles of  $^{210}\text{Pb}$  model fits (black lines) for the study sites in the Stockholm Archipelago: Strömmen, Baggensfjärden, Erstaviken and Ingaröfjärden. Sediment accumulation rates per site are indicated in the figure. Note that the sediment accumulation rate at Erstaviken was lower in recent years.

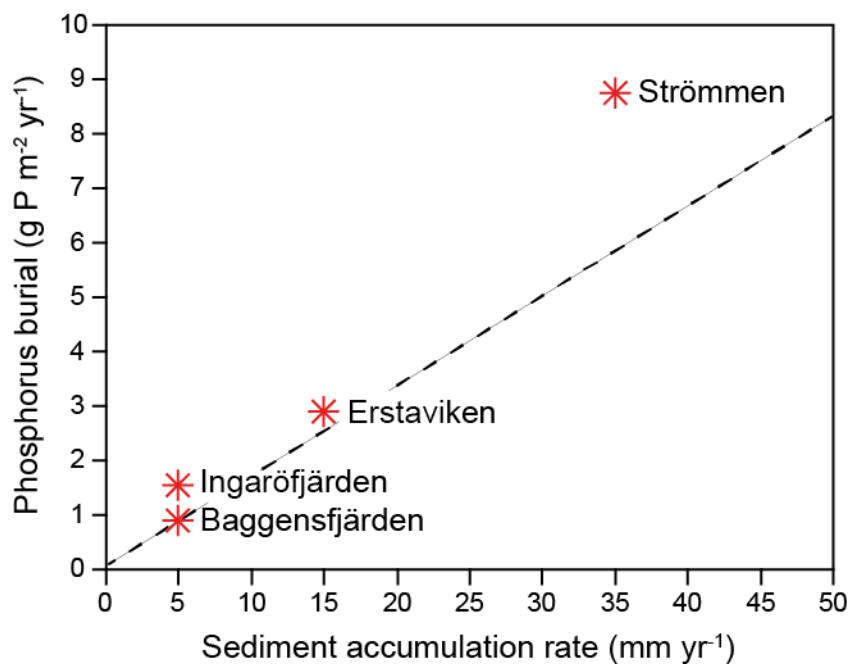
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**Supplementary Figure 3.** High resolution  $\text{O}_2$  profiles.



15 **Supplementary Figure 4.** Bar diagram of the sedimentary organic carbon content for the study sites in the Stockholm Archipelago: Strömmen, Baggensfjärden, Erstaviken and Ingaröfjärden.



20 **Supplementary Figure 5.** Phosphorus burial (calculated as described by Lenstra et al., 2018) versus sediment accumulation rate for the study sites in the Stockholm Archipelago. The dotted line indicates the relationship between the sediment accumulation rate and phosphorus burial derived from eleven study sites in different coastal ecosystems across the Baltic Sea (Asmala et al., 2017).

## References

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- 30 Lenstra, W. K., Egger, M., van Helmond, N. A. G. M., Kritzberg, E., Conley, D. J., and Slomp, C. P.: Large variations in iron input to an oligotrophic Baltic Sea estuary: impact on sedimentary phosphorus burial, *Biogeosciences*, 15, 6979-6996, <https://doi.org/10.5194/bg-15-6979-2018>, 2018.
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