Supplementary material to "Remineralization rate of terrestrial DOC as inferred from CO_2 supersaturated coastal waters"

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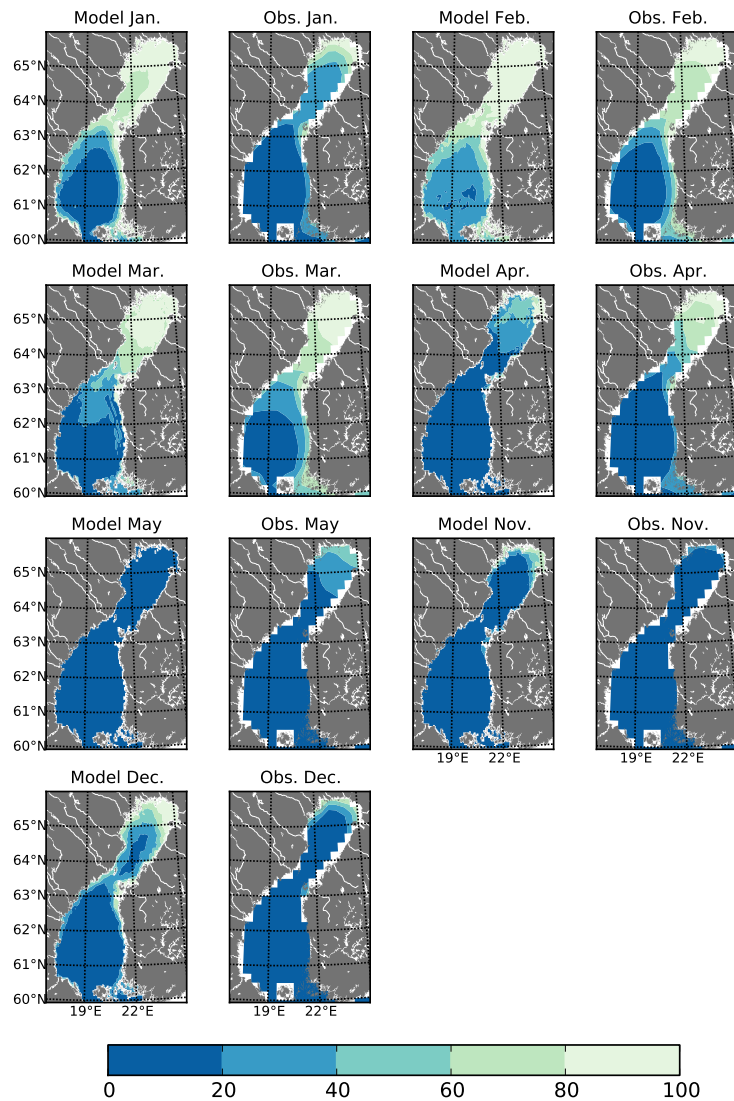
Figure S1. Modelled and observed sea ice concentration (%), climatological monthly mean for 1990-2010. Months with zero ice cover (June-October) are not shown. The observations in May are biased towards periods with sea-ice (periods without sea-ice are sometimes not reported), which to a large extent can describe the mismatch between modelled and observed sea ice during this month.
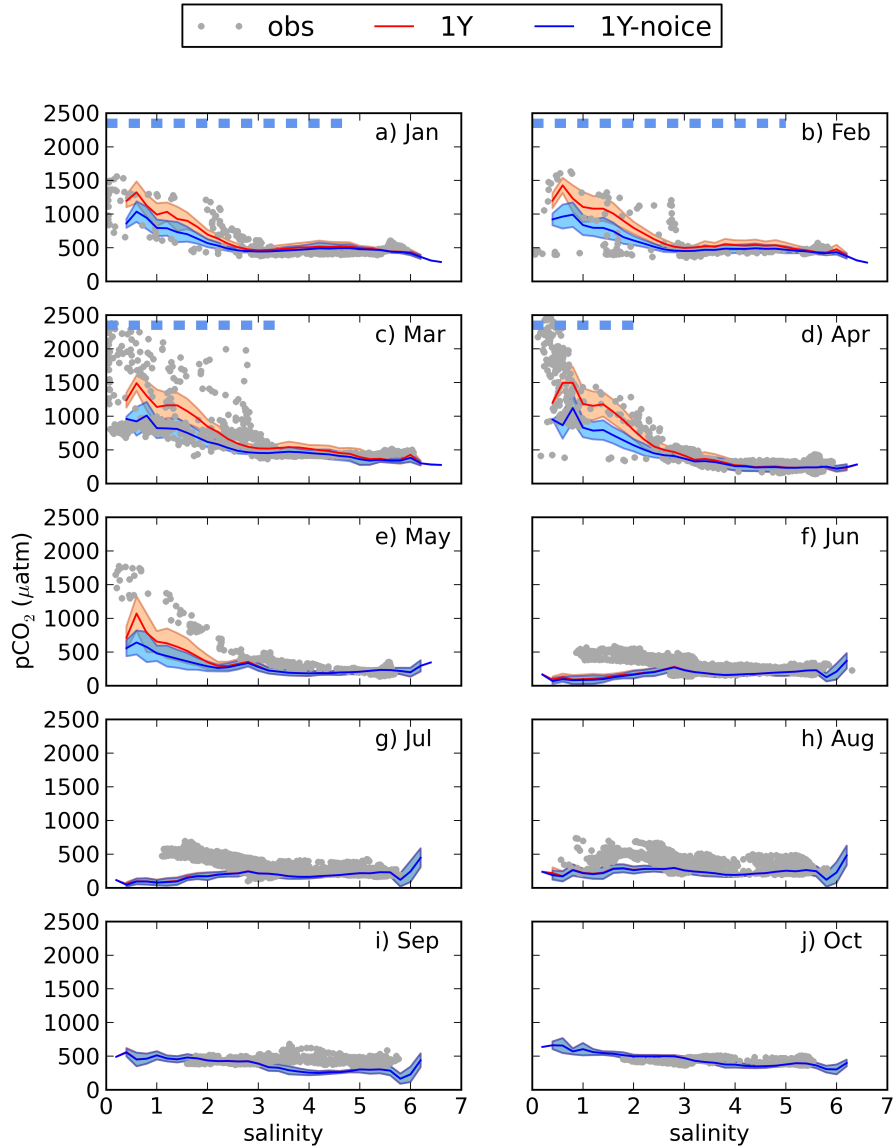
Figure S2. pCO$_2$-salinity relationships for January-October (a-j). Grey dots show observed values. The red and blue lines show modelled climatological monthly means for the 1Y experiments, and for the 1Y-noice experiment, with the shaded area displaying the standard deviation. The 1Y-noice experiment is identical to the 1Y experiment, except for that the sea ice has no influence on the air-sea gas (carbon dioxide, CO$_2$, and oxygen, O$_2$) exchange. The dashed blue line shows the ice extent (salinities where the ice concentration is larger than 60%).
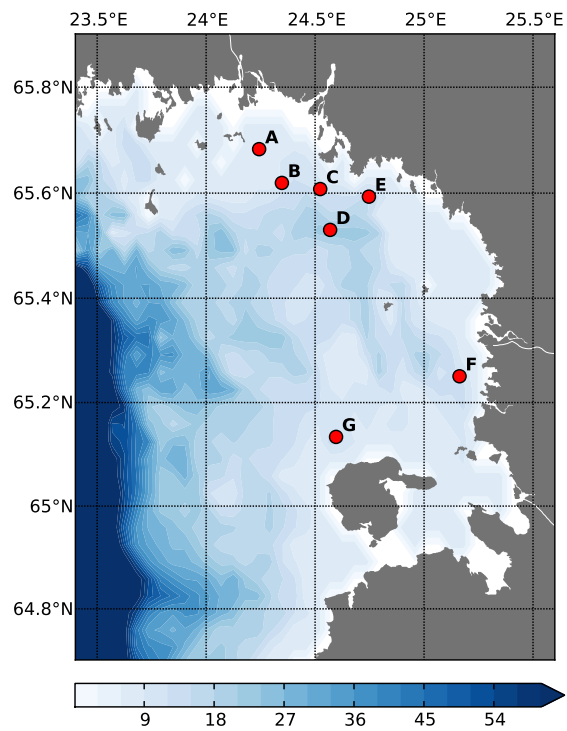
Figure S3. Map with HELCOM monitoring stations from which data have been collected (from the ICES data portal, http://ocean.ices.dk/Helcom/Helcom.aspx?Mode=1) to validate model performance in the low salinity region of the Gulf of Bothnia (Figure S4).
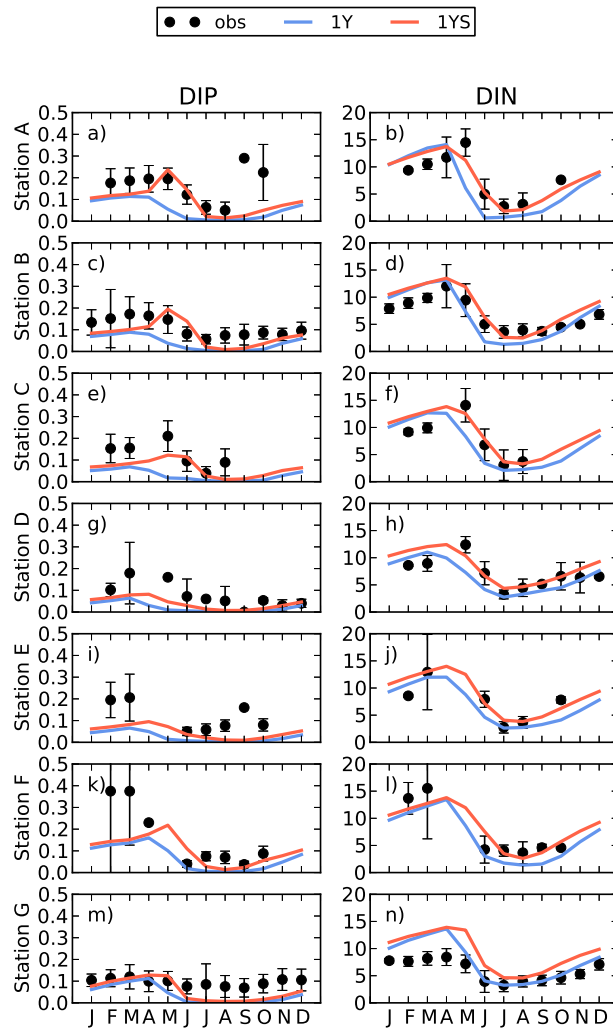
Figure S4. Observed (black dots) and modelled (blue and red lines) seasonal dynamics of DIP (dissolved inorganic phosphorus) and DIN (dissolved inorganic nitrogen) at stations A to G (Figure S3) in mmol m^{-3}. The blue lines show the results from the 1Y experiment, and the red line from the 1YS. The root mean square error (rmse) for the 1Y experiment is 0.086 and 2.3 for DIP and DIN, respectively. For the 1YS experiment the rmse equals 0.071 and 2.0 fro DIP and DIN, respectively.
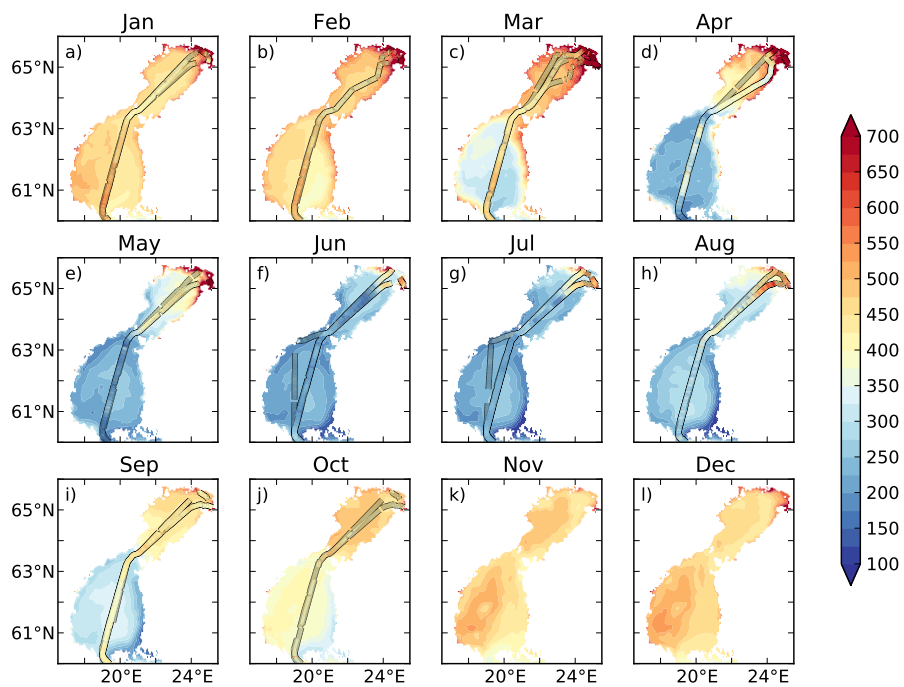
Figure S5. Observed (filled lines) and modelled (filled contours) pCO$_2$ (μatm) from the 1YS experiment.