**Figure 20.** Annual and seasonal mean sea surface temperature (SST) biases (°C) during 1969-1998 in RCO-SCOBI simulations driven by regionalized GCM results. From left to right results for winter (December through February), spring (March through May), summer (June through August), autumn (September through November) and the annual mean are shown. From top to bottom the results of the following scenario simulations and analysis results are shown: RCAO-HadCM3-A1B-REF, RCAO-ECHAM5-A1B-3-REF, RCAO-ECHAM5-A1B-1-REF, RCAO-ECHAM5-A2-1-REF, ensemble mean, and range.











































































Figure 20. Continued.











































































Figure 21. As Fig. 20 but for sea surface salinity (SSS) biases (in g  $\rm kg^{-1}).$ 









































04 0





















0.0















































Figure 23. As Fig. 20 but for sea surface height (SSH) biases (cm).

































































0.0 0.2 0

Figure 24. As Fig. 20 but for bottom oxygen concentration biases (ml  $l^{-1}$ ).

































































Figure 25. As Fig. 20 but for phosphate concentration biases (mmolP  $m^{-3}$ ).







-4.0 - 3.2 - 2.4 - 1.6 - 0.8 0.0 0.8 1.6 2.4 3.2



-4.0 - 3.2 - 2.4 - 1.6 - 0.8 0.0 0.8 1.6 2.4 3.2 4.



4.0-3.2-2.4-1.6-0.8 0.0 0.8 1.6 2.4 3.2 4.0



-4.0-3.2-2.4-1.6-0.8 0.0 0.8 1.6 2.4 3.2 4.0





-4.0 - 3.2 - 2.4 - 1.6 - 0.8 0.0 0.8 1.6 2.4 3.2 4.0





12 16 20 24



-4.0-3.2-2.4-1.6-0.8 0.0 0.8 1.6 2.4 3.2



.0 - 3.2 - 2.4 - 1.6 - 0.8 0.0 0.8 1.6 2.4 3.2



-4.0-3.2-2.4-1.6-0.8 0.0 0.8 1.6 2.4 3.2





4.0 - 3.2 - 2.4 - 1.6 - 0.8 0.0 0.8 1.6 2.4 3.2 4.0



-40-32-24-16-08 00 08 16 24 32







1-3.2-2.4-1.6-0.8 0.0 0.8 1.6 2.4 3.2 4



-4.0 - 3.2 - 2.4 - 1.6 - 0.8 0.0 0.8 1.6 2.4 3.2







-4.0 - 3.2 - 2.4 - 1.6 - 0.8 0.0 0.8 1.6 2.4 3.2







0-3.2-2.4-1.6-0.8 0.0 0.8 1.6 2.4 3.2 4.







































































0.1 0.1

Figure 27. As Fig. 20 but for diatom concentration biases (mgChl  $m^{-3}$ ).









-0.5 -0.4 -0.3 -0.2 -0.1 0.0 0.1 0.2 0.3 0.4



-0.5 -0.4 -0.3 -0.2 -0.1 0.0 0.1 0.2 0.3 0.4 0.5



05-04-03-02-01 00 01 02 03 04 05



-05-04-03-02-01 00 01 02 03 04 05







12 16 20 24 28



20 24 28 0.1 0.0 0.1 0.2 0.3 0.4 0.5 -C



16 20 24 28





-0.5-0.4-0.3-0.2-0.1 0.0 0.1 0.2 0.3 0.4





0.5 -0.4 -0.3 -0.2 -0.1 0.0 0.1 0.2 0.3 0.4 0.5





5-0.4-0.3-0.2-0.1 0.0 0.1 0.2 0.3 0.4



-0.4 -0.3 -0.2 -0.1 0.0 0.1 0.2 0.3 0.4



-0.5-0.4-0.3-0.2-0.1 0.0 0.1 0.2 0.3 0.4







Ç CAR

0.5-0.4-0.3-0.2-0.1 0.0 0.1 0.2 0.3 0.4 0.



-0.5-0.4-0.3-0.2-0.1 0.0 0.1 0.2 0.3 0.4 (



5-0.4-0.3-0.2-0.1 0.0 0.1 0.2 0.3 0.4 0.





Figure 28. As Fig. 20 but for concentration biases of flagellates and others (mgChl  $m^{-3}$ ).



































































0.1 0.1

Figure 29. As Fig. 20 but for cyanobacteria concentration biases (mgChl  $m^{-3}$ ).



































































































































Figure 32. Volume averaged temperature (in  $^{\circ}C$ ) and salinity (in g kg<sup>-1</sup>) for 1961-2099 (upper panels). Further, volume integrated dissolved inorganic nitrogen (DIN, in kton, first column) and dissolved inorganic phosphorus (DIP, in kton, second column) in the water column, and benthic nitrogen (in kton, third column) and benthic phosphorus (in kton, fourth column) in the sediments are shown. The second to fifth rows show the results of the four nutrient load scenarios REF, BSAP, CLEG and BAU (see Section 2.4). The various curves show the scenario simulation results driven by HadCM3-A1B (black line), ECHAM5-A1B-3 (red line), ECHAM5-A1B-1 (green line) and ECHAM5-A2 (blue line).



Figure 33. As Figure 32 but for the N:P ratio in the Baltic proper (first row), hypoxic area (in  $10^3 \text{ km}^2$ ) (second row) and cod reproductive volume (in  $10^3 \text{ km}^3$ ) (third row). The first to fourth columns contain results from the nutrient load scenarios REF, BSAP, CLEG and BAU, respectively.