

# Supplement: Importance of high resolution nitrogen deposition data for biogeochemical modeling in the western Baltic Sea and the contribution of the shipping sector

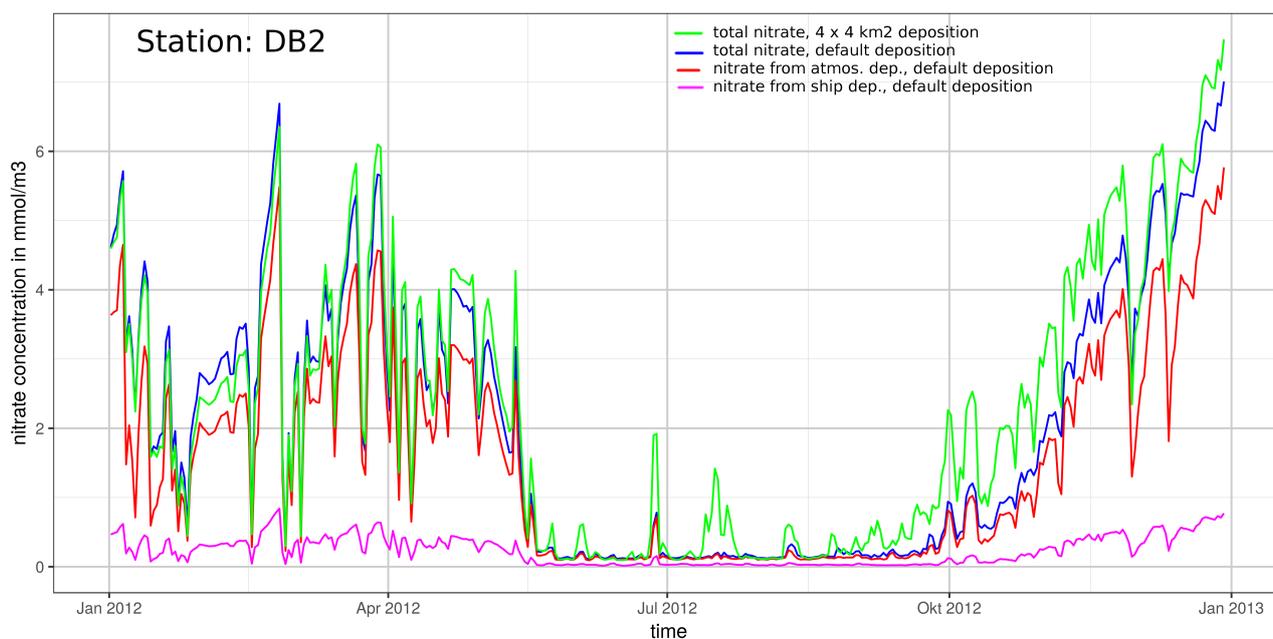
Neumann Daniel<sup>1</sup>, Friedland René<sup>1</sup>, Karl Matthias<sup>2</sup>, Radtke Hagen<sup>1</sup>, Matthias Volker<sup>2</sup>, and Neumann Thomas<sup>1</sup>

<sup>1</sup>Leibniz-Institute for Baltic Sea Research Warnemünde, Seestr. 15, 18119 Rostock, Germany

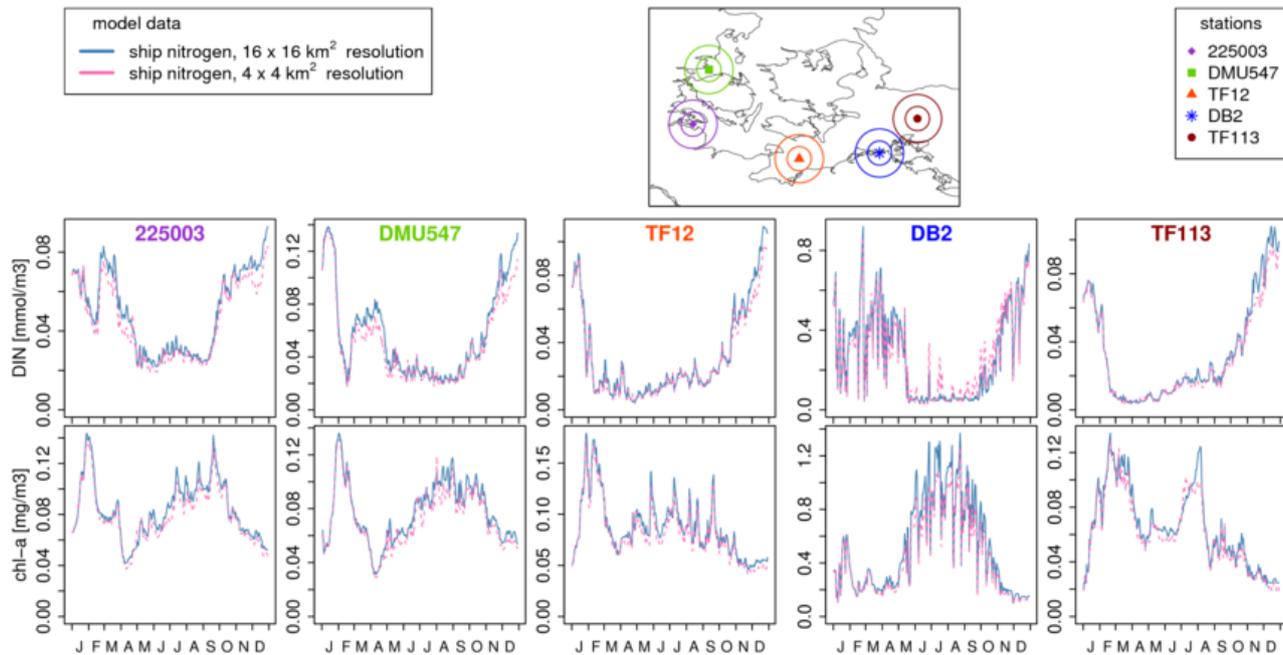
<sup>2</sup>Institute of Coastal Research, Helmholtz-Zentrum Geesthacht, Max-Planck-Str. 1, 21502 Geesthacht, Germany

**Correspondence:** Daniel Neumann (daniel.neumann@io-warnemuende.de)

Figure S.1 shows the contribution of atmospheric (shipping + everything else) and shipping-related nitrogen deposition to the nitrate ( $\text{NO}_3^-$ ) concentrations at the station DB2. These results are based on the cmaq16 case. Additionally, the total nitrate concentrations of the cmaq16 and cmaq04 case are plotted. One clearly sees that nitrogen from atmospheric deposition (red) dominates the nitrate concentrations (total is plotted in blue).



**Figure S.1.** Nitrate ( $\text{NO}_3^-$ ) concentrations at the station DB2 (station in the Grabow). Total (blue), total atmospheric (red), and atmospheric shipping-related (magenta) nitrate in the cmaq16 case (“default”) and total nitrate in the cmaq04 case (green) are plotted.



**Figure S.2.** Similar to Fig. 6 but showing only the shipping contribution at the five considered stations.

Figure S.2 shows the contribution of the shipping sector to DIN and Chl-a concentrations at the stations that were considered in the manuscript. This Figure is similarly structured to Fig. 6 in the manuscript.