

Supporting information (SI) for:

Enabling comprehensive assessment of marine eutrophication impacts and their evaluation against regional safe operating space

Eldbjørg Blikra Vea¹, Mark Jwaideh², Katherine Richardson³, Morten Ryberg⁴, Anders Bjørn¹, Michael Hauschild¹

¹ Section for Quantitative Sustainability Assessment, Department Environmental and Resource Engineering, Technical University of Denmark, Denmark

² Institute for Sustainable Resources, University College London, London, UK

³ Center for Macroecology, Evolution and Climate, Globe Institute, University of Copenhagen, Denmark

⁴ Sweco Danmark A/S, Denmark

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SI - 1- Supplementary Figures

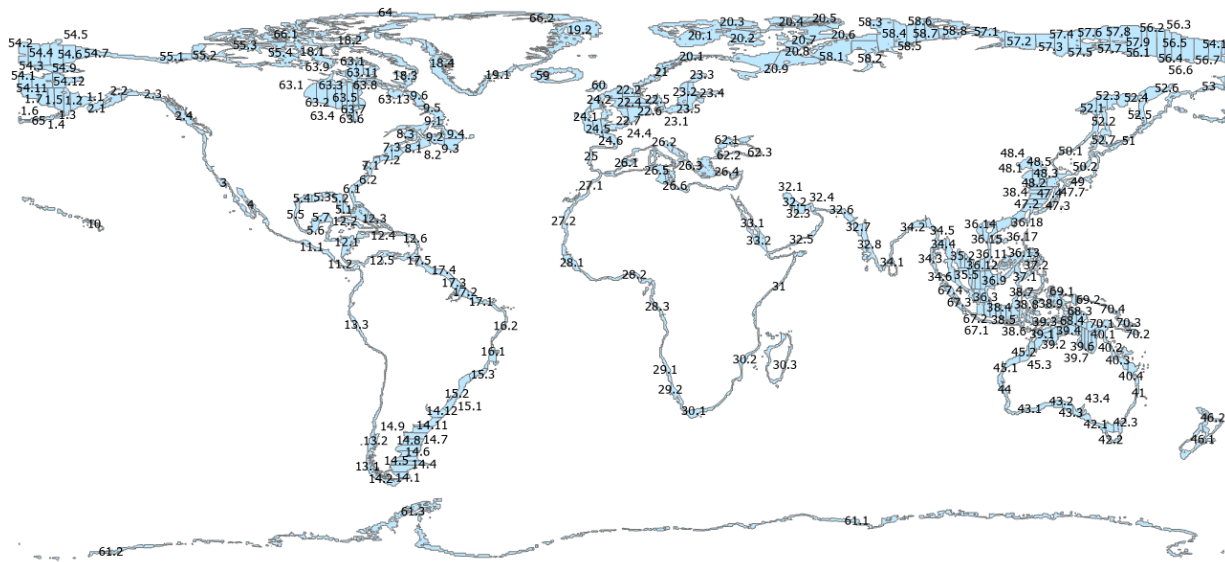


Figure S1: Overview of the 305 cLME subsegments covering the entire global coast. The underlying data for this figure can be found in the Supporting Information 3 (SI-3 – Supplementary Data)

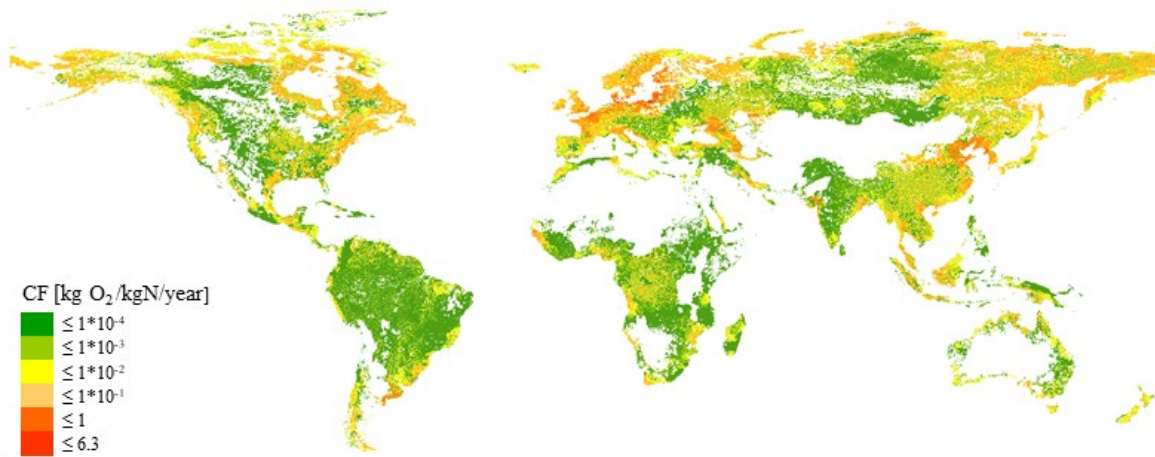


Figure S2: CFs [kg O₂/kgN/year] for emissions to all soils. The underlying data for this figure can be found in the Supporting Information 3 (SI-3 – Supplementary Data).

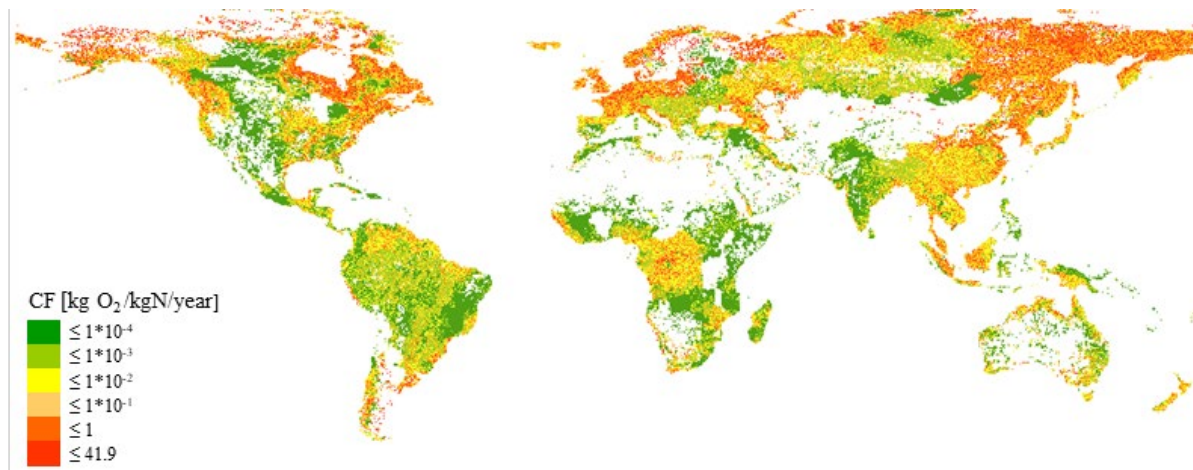


Figure S3: CFs [kg O₂/kgN/year] for emissions to freshwater. The underlying data for this figure can be found in the Supporting Information 3 (SI-3 – Supplementary Data).

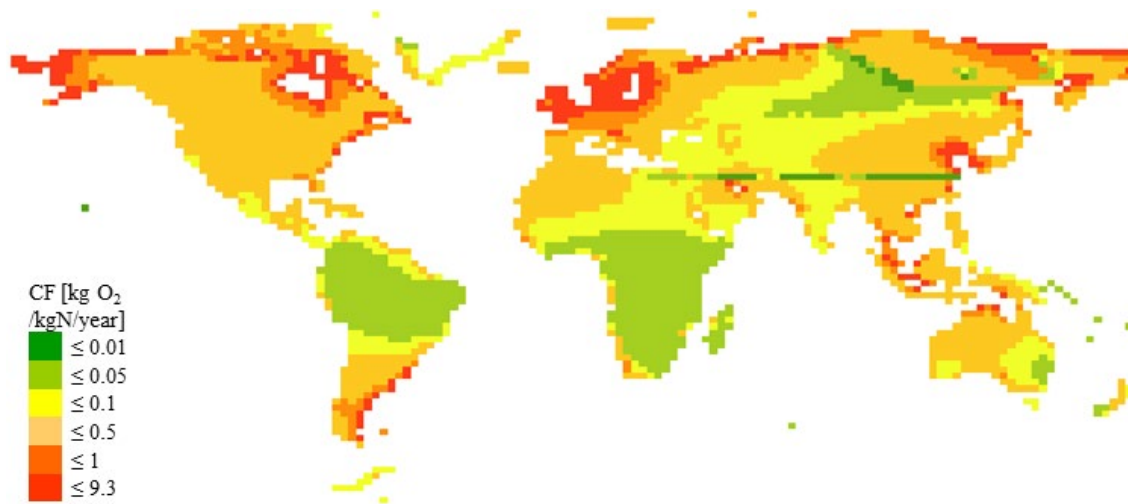


Figure S4: CFs [kg O₂/kg N/year] for NH_x emissions to air. The underlying data for this figure can be found in the Supporting Information 3 (SI-3 – Supplementary Data).

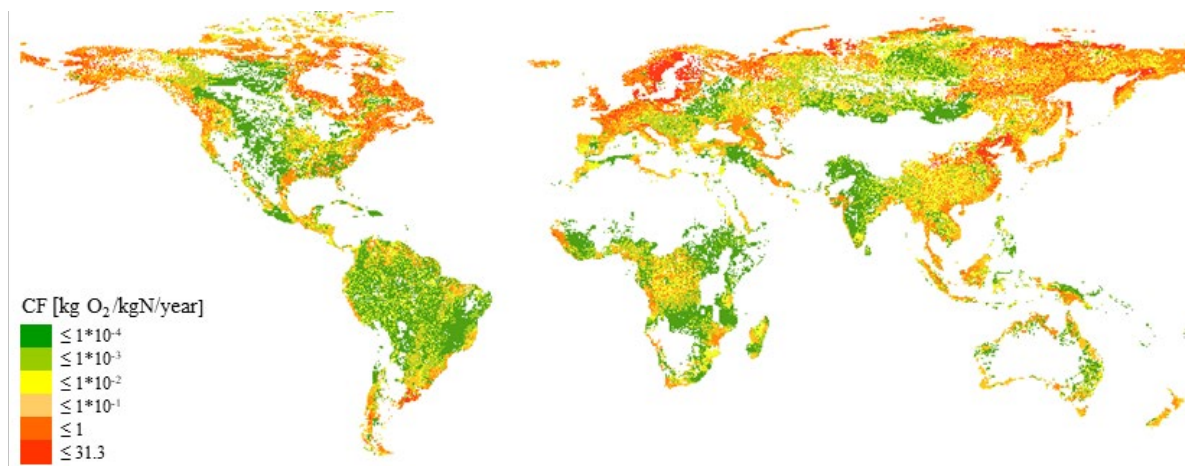


Figure S5: CFs [kg O₂/kg N/year] for emissions to soil excluding leaching fraction (i.e. leaching is considered as a part of the technosphere and not as a part of the CF). The underlying data for this figure can be found in the Supporting Information 3 (SI-3 – Supplementary Data).

SI - 2 - Supplementary Tables

Refer to Excel file “SI_2_Supplementary Tables” for Table S1: Overview of cLME subsegments, SOS and XFs

SI - 3 - Supplementary Data

Refer to zip-file “SI_3_Supplementary_Data” for data underlying the following Figures in the MS and SI:

- Figure S1: Shapefiles including cLMess numbering, XF and SOS data
- Figure 3a: .TIF file with data on CFs [kg O₂/kgN/year] for emissions to arable soils
- Figure S2: .TIF file with data on CFs [kg O₂/kgN/year] for emissions to all soils
- Figure S3: .TIF file with data on CFs [kg O₂/kgN/year] for emissions to freshwater
- Figure 4a: .TIF file with data on CFs [kg O₂/kg N/year] for NO_x emissions to air
- Figure S4: .TIF file with data on CFs [kg O₂/kg N/year] for NH_x emissions to air
- Figure S5: .TIF file with data on CFs [kg O₂/kgN/year] for emissions to soil excluding leaching fraction (i.e. leaching is considered as a part of the technosphere and not as a part of the CF)

SI - 3- References in Supplementary Information

Cosme, N., Mayorga, E. and Hauschild, M. Z. (2018) 'Spatially explicit fate factors of waterborne nitrogen emissions at the global scale', *International Journal of Life Cycle Assessment*. Springer Verlag, 23(6), pp. 1286–1296. doi: 10.1007/s11367-017-1349-0.

Liu, X., Dunne, J. P., Stock, C. A., Harrison, M. J., Adcroft, A. and Resplandy, L. (2019) 'Simulating Water Residence Time in the Coastal Ocean: A Global Perspective', *Geophysical Research Letters*. Blackwell Publishing Ltd, 46(23), pp. 13910–13919. doi: 10.1029/2019GL085097.

Murray, J. W. (2004) 'A . Mass Balance - Simple Box Models', *Rivers*, pp. 1–27.