



SEA THE VALUE

MARINE BIODIVERSITY BENEFITS
FOR A SUSTAINABLE SOCIETY



UNIVERSITY OF
PORTSMOUTH

Water Quality update

NEG meeting 1st Nov 2023

Gordon Watson, Joanne Preston, Andrew van der Schatte Olivier

www.seathevalue.org



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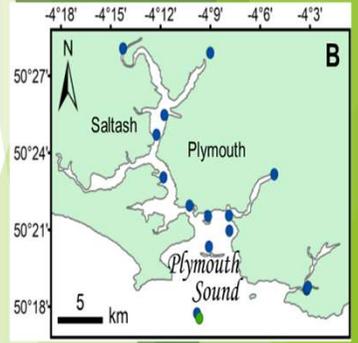
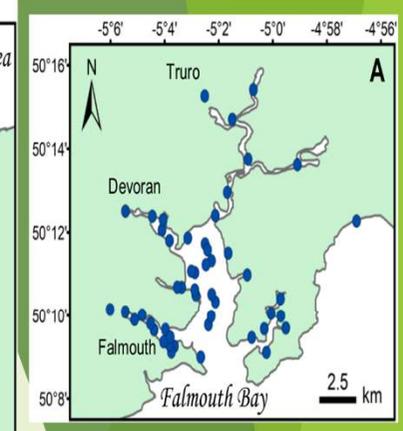
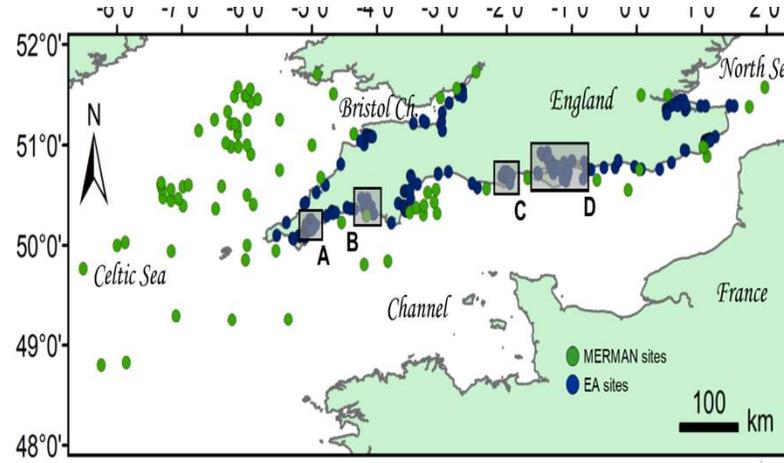


Natural
Environment
Research Council

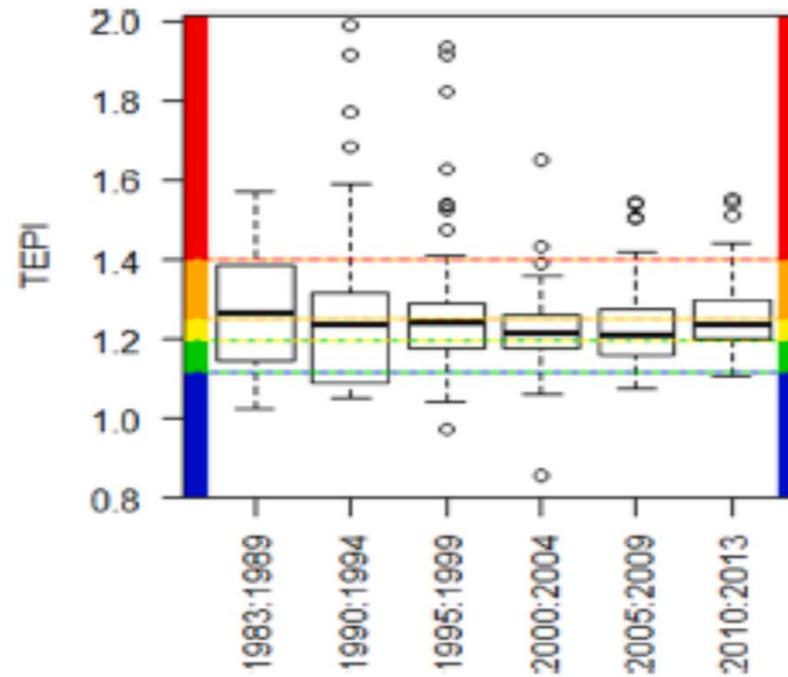
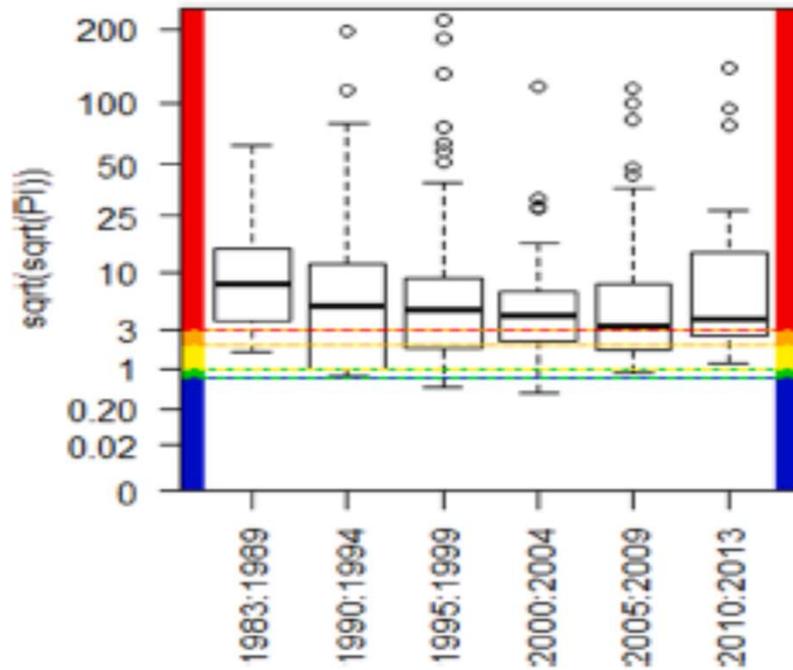


Economic
and Social
Research Council

Previous work: metals



J. Richir et al.



Dataset challenges

► EA repository

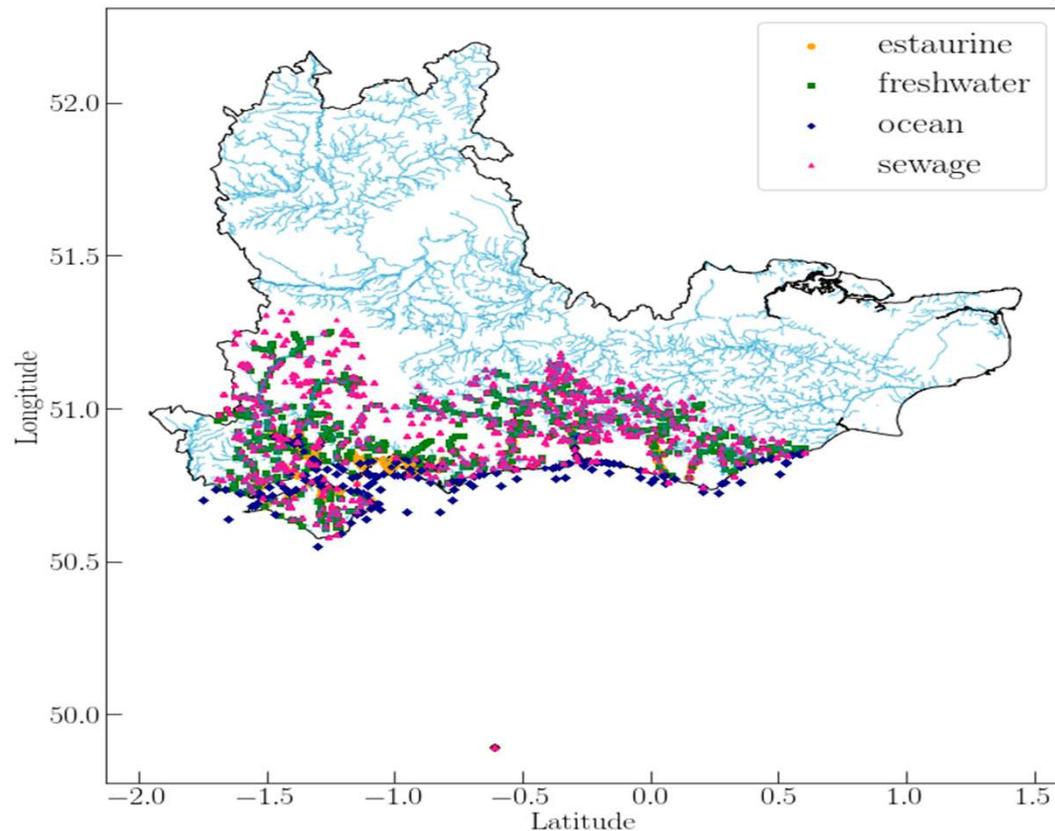
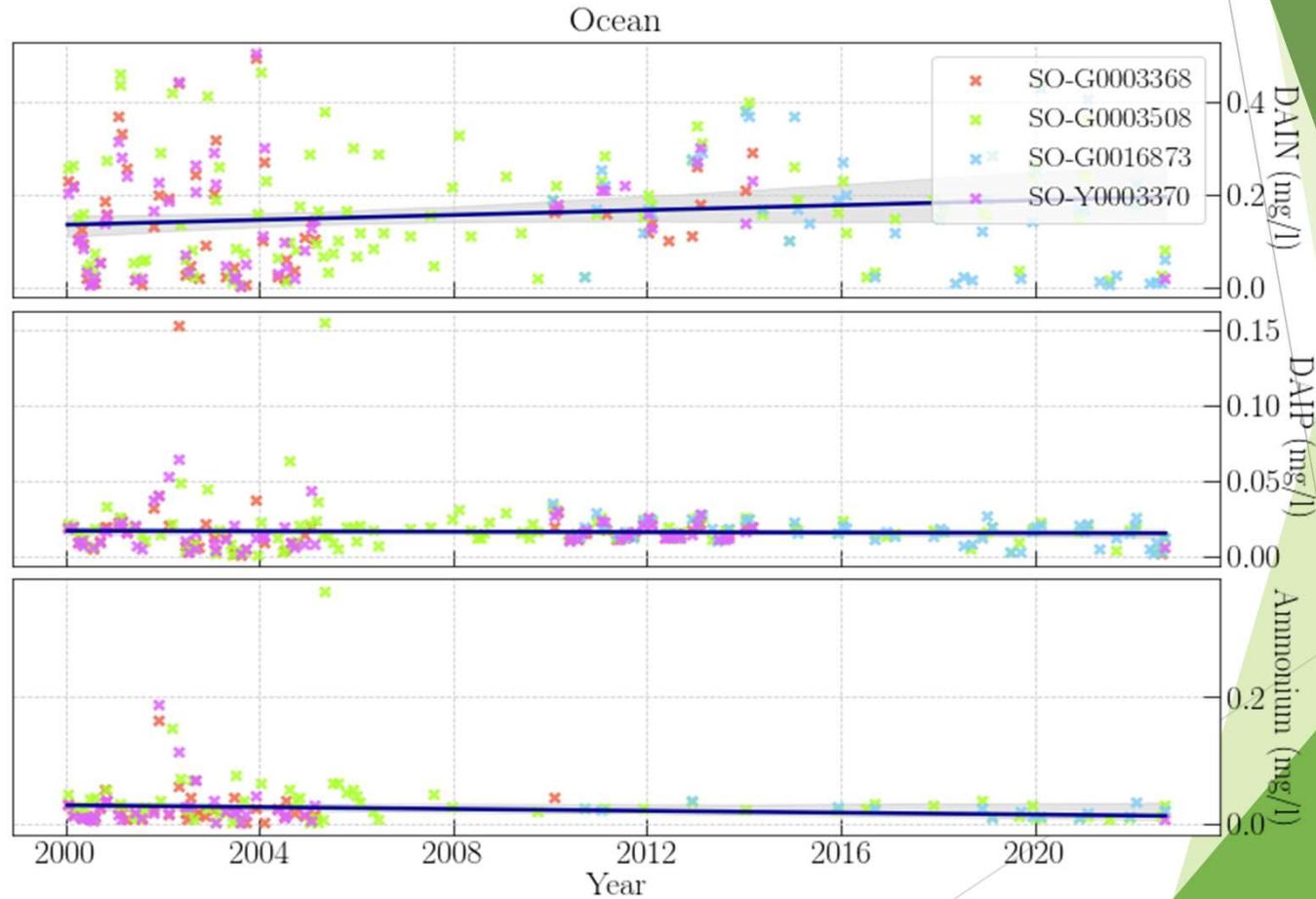


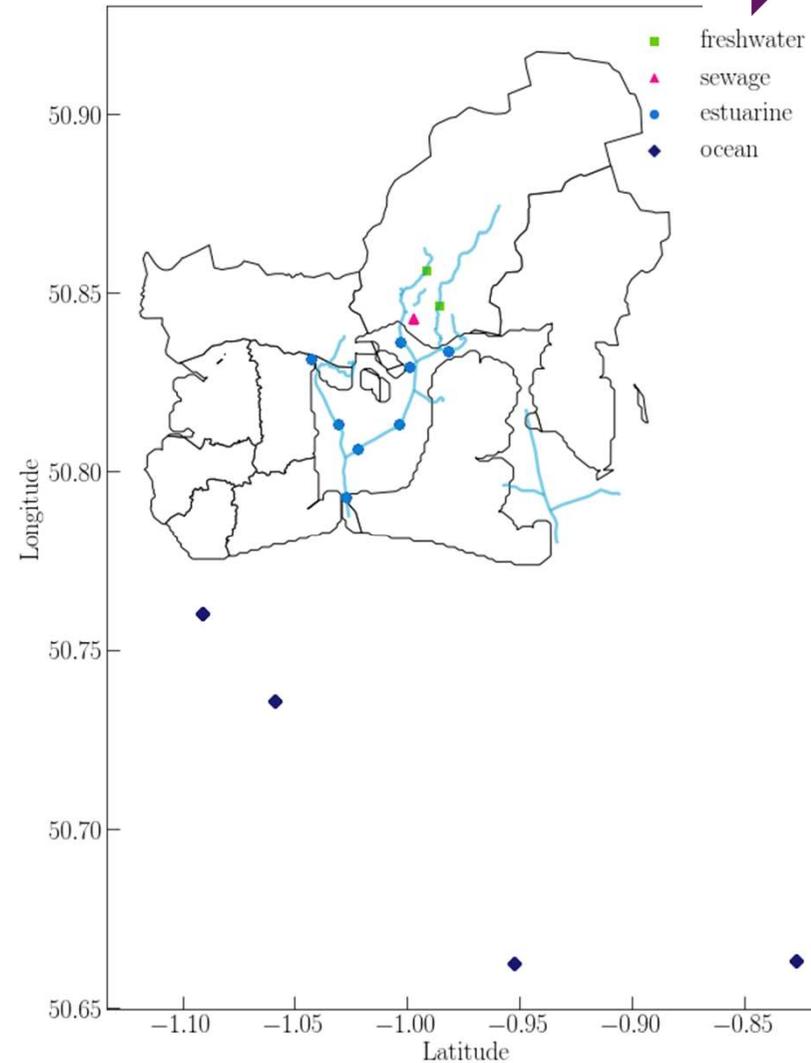
Fig. 4: A map of the south west and east of England, with riveres and the sampled locations in the dataset here used divided into the 4 different categories we are focusing in this study.

Dataset challenges



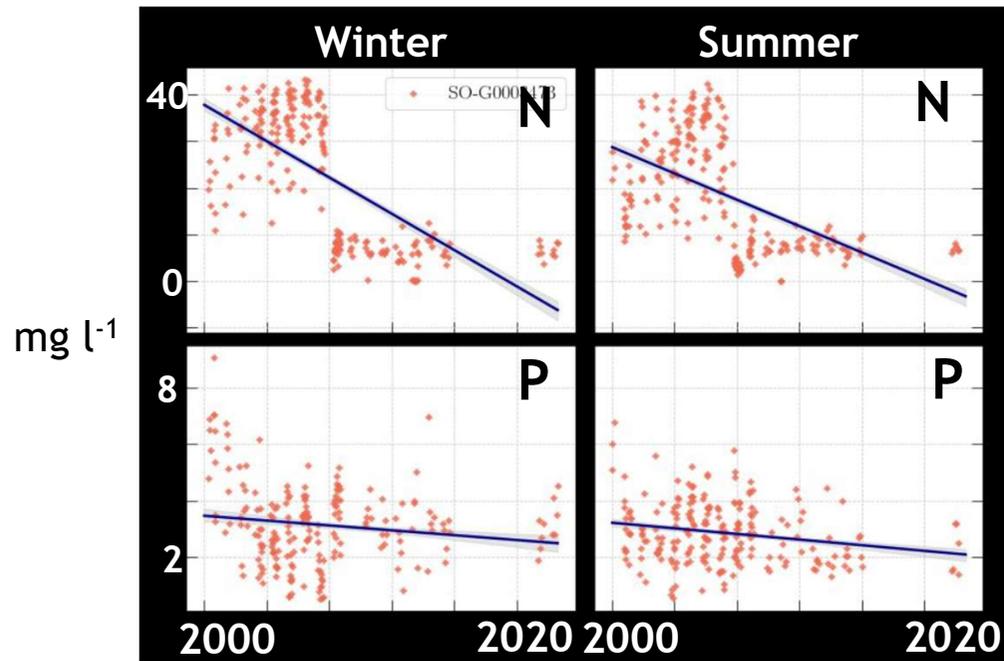
Our approach: Langstone Harbour

- ▶ Using R-coding, we quality controlled relevant data
- ▶ Categorised sites
- ▶ Extracted DAIN/NO₃ and DAIP/PO₄

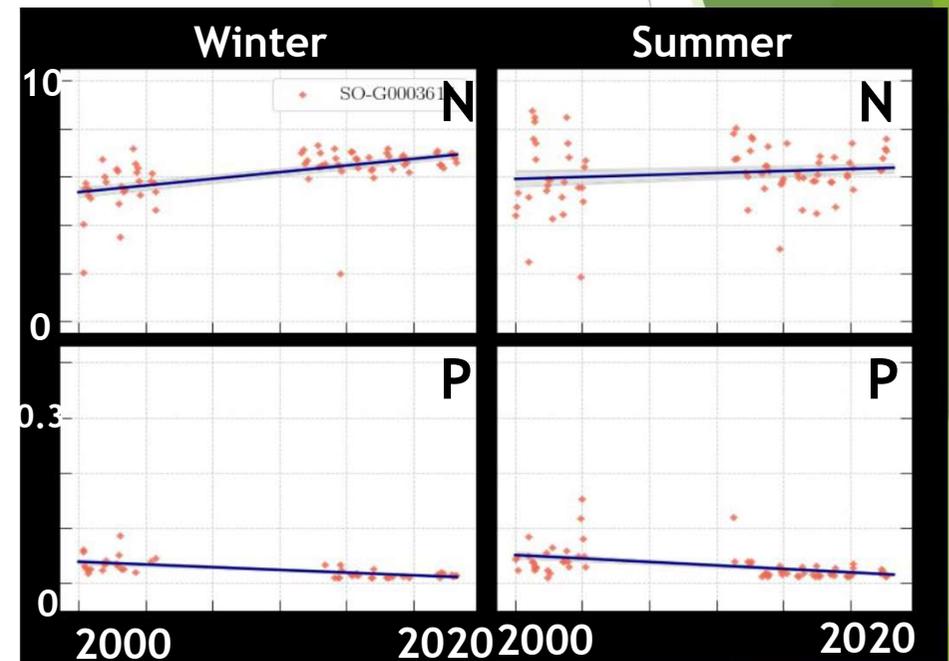


Preliminary results

▲ Sewage

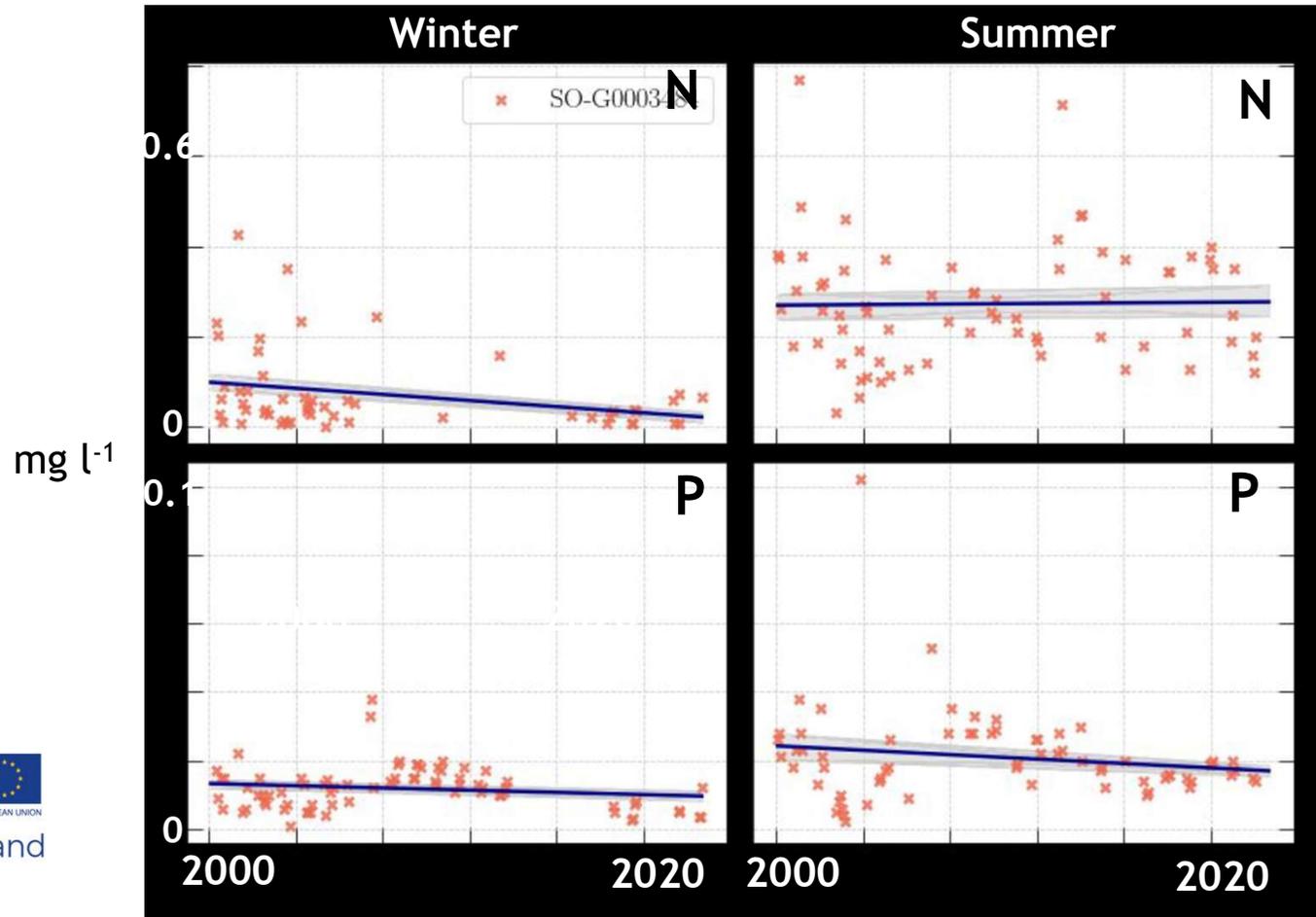


● Freshwater

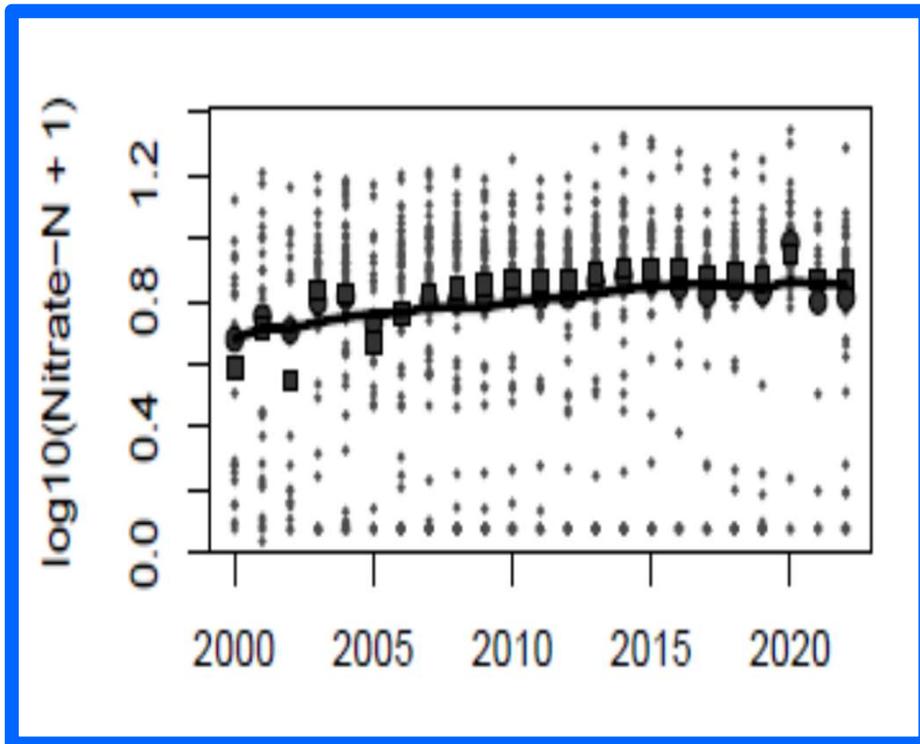


Preliminary results

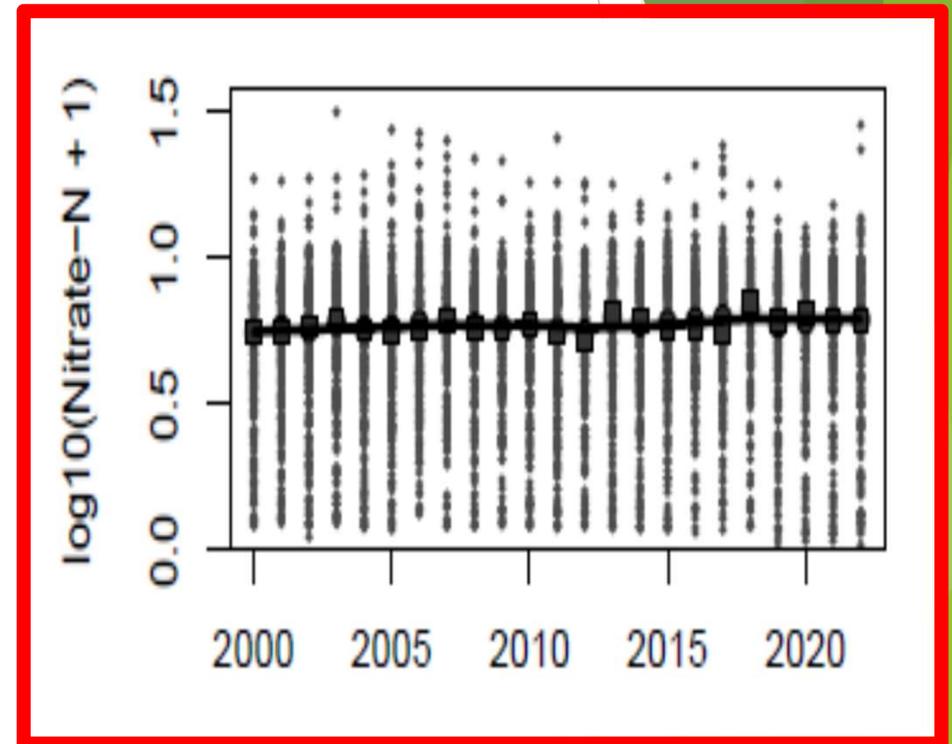
● Estuarine



Results updated: Solent

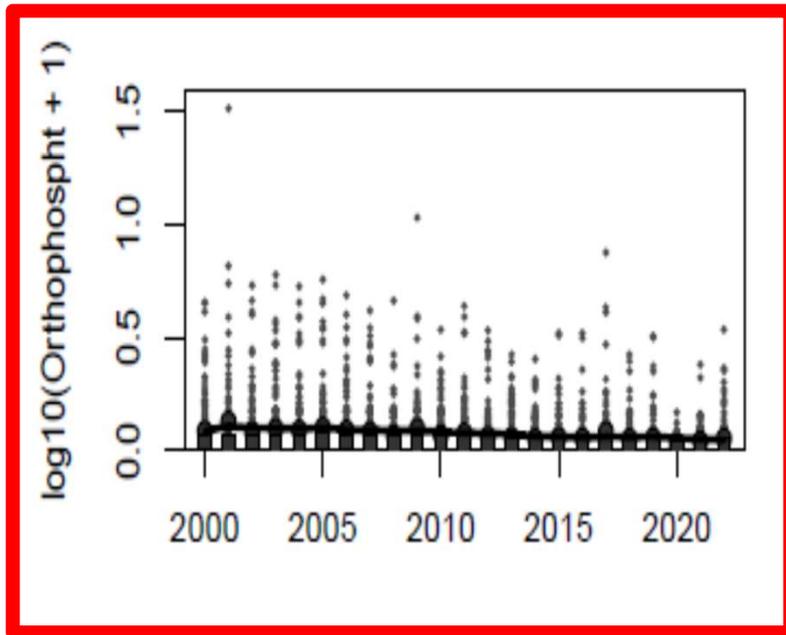


\log_{10} nitrate mg l^{-1} for ground water

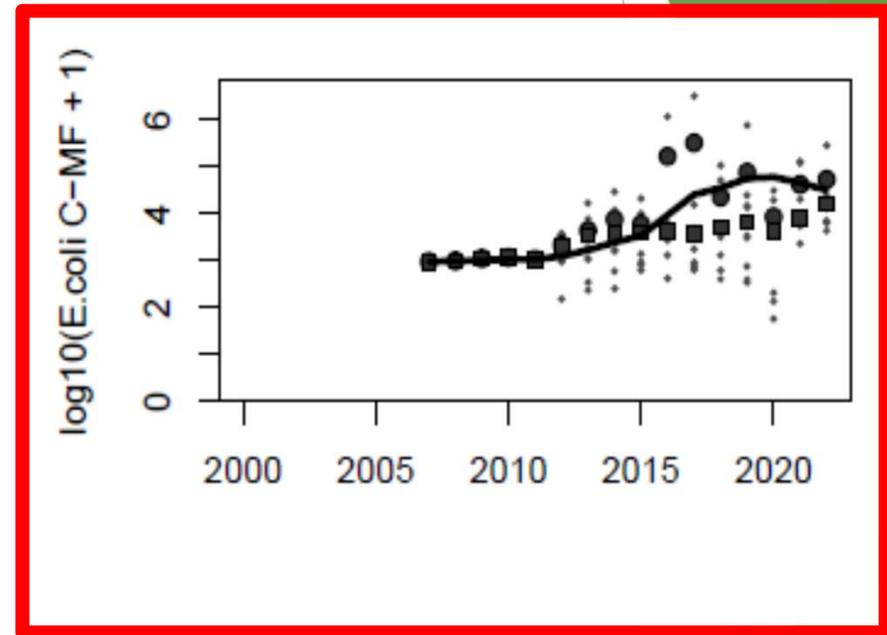


\log_{10} nitrate mg l^{-1} for river water

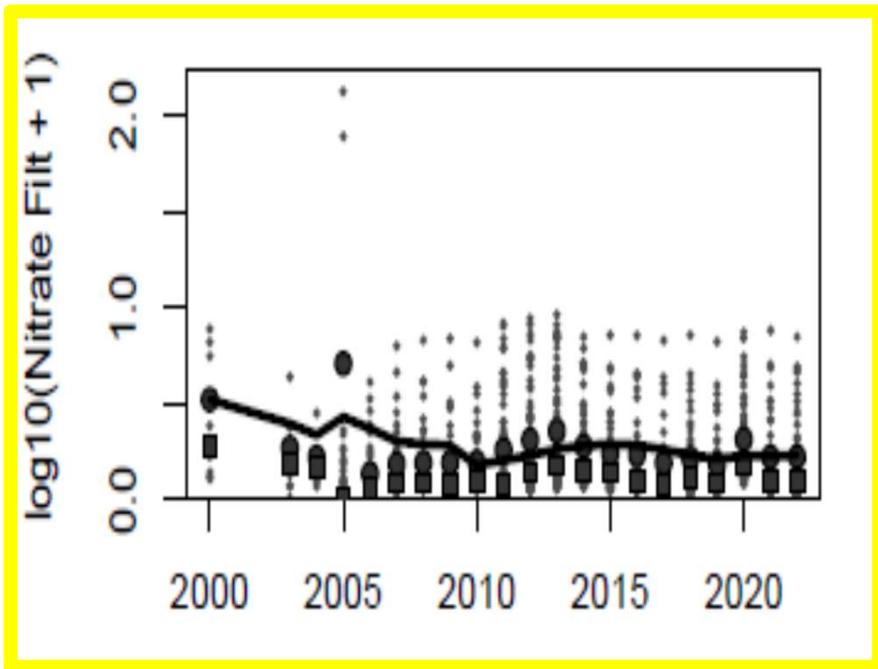
Results updated



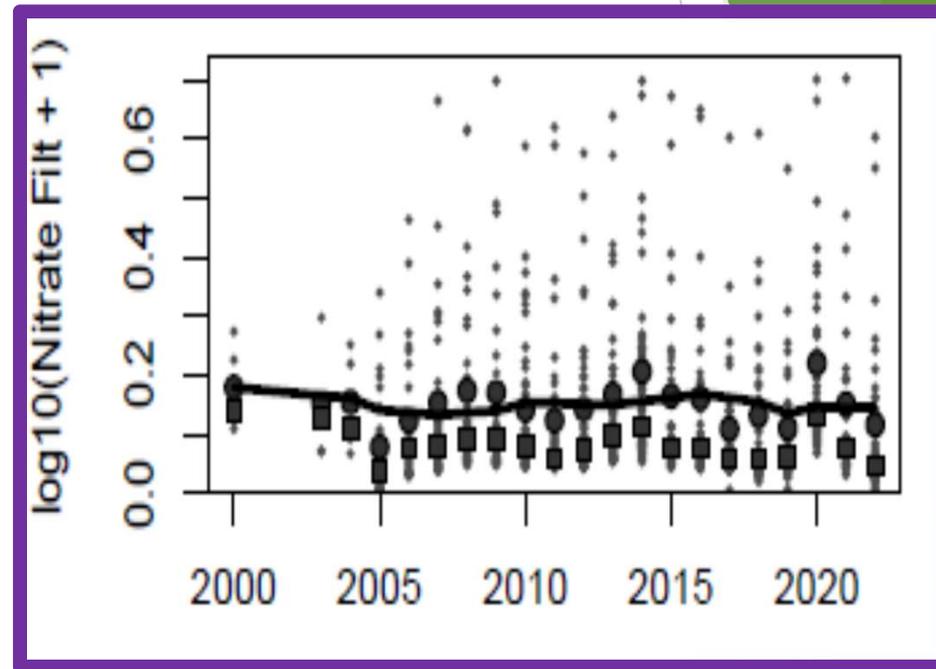
\log_{10} orthophosphate mg l^{-1} for river water



\log_{10} *E. coli* counts for river water

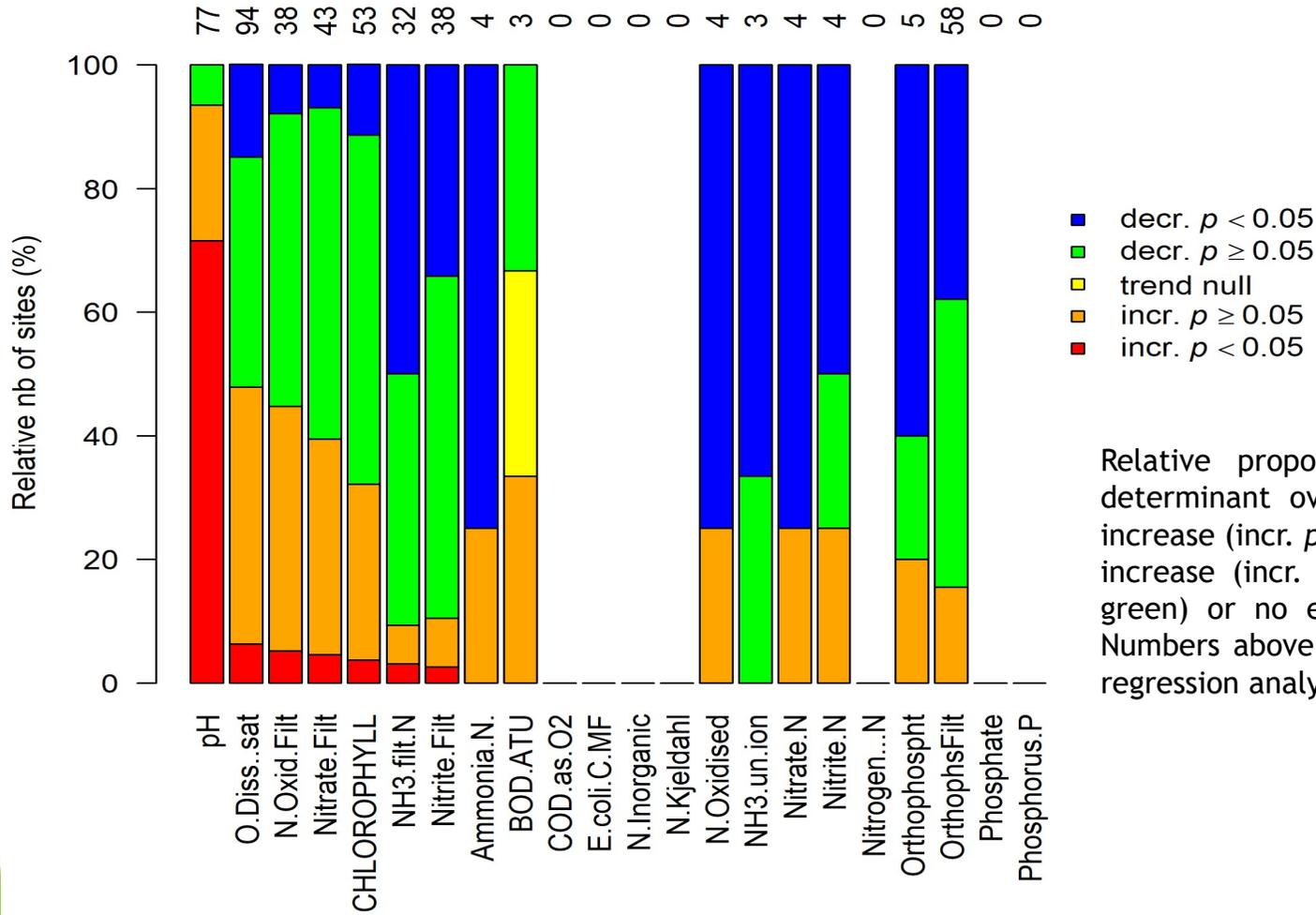


\log_{10} nitrate mg l^{-1} for estuarine water



\log_{10} nitrate mg l^{-1} for offshore water

Results updated



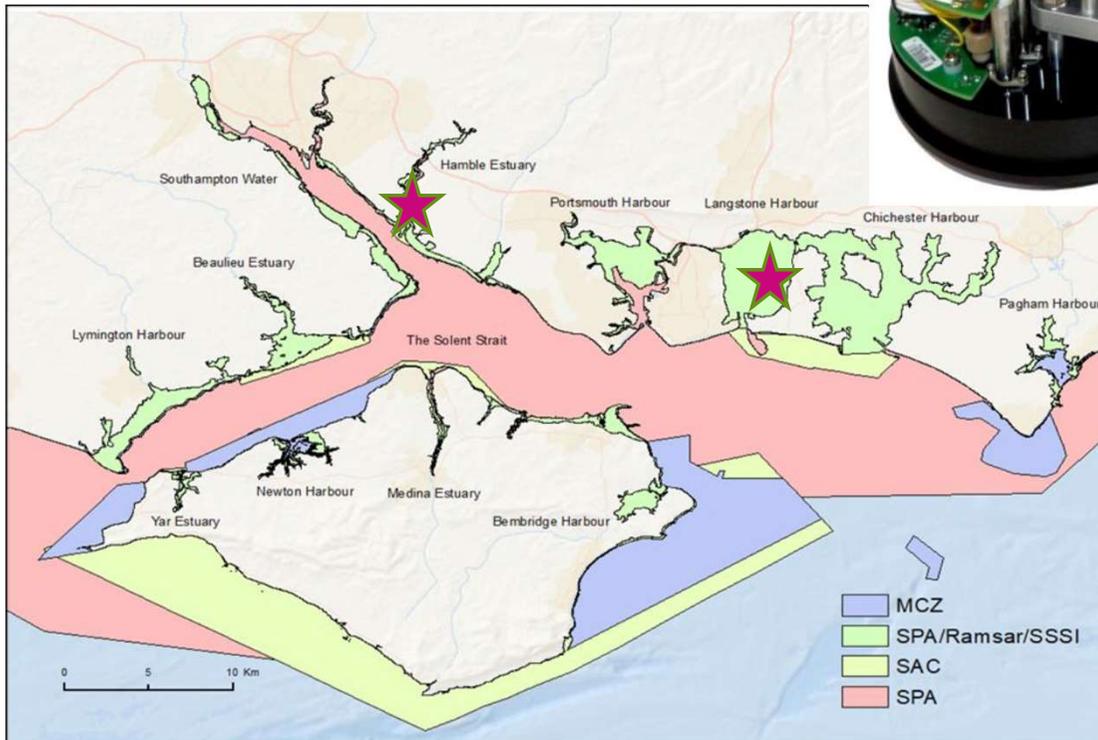
Relative proportions of Estuarine sites monitored for each determinant over a minimum of 10 years, which show a net increase (incr. $p < 0.05$, red) or decrease (decr. $p < 0.05$, blue), an increase (incr. $p \geq 0.05$, orange) or decrease (decr. $p \geq 0.05$, green) or no evolution (trend null, yellow) of concentrations. Numbers above bars are number of sites included in the median regression analysis.

Summary and next steps

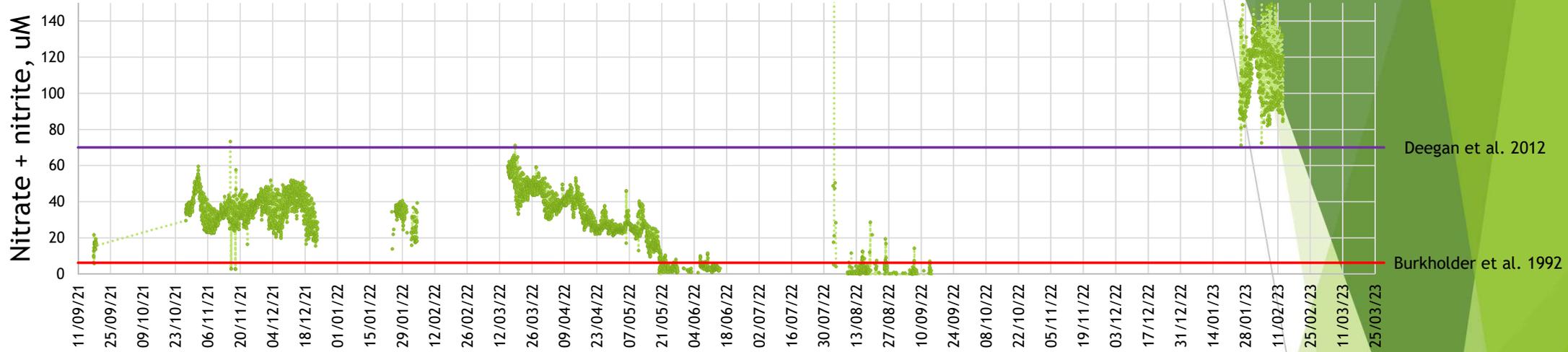
- ▶ Solent water quality has flatlined at best for N. Improvements for P
- ▶ We have the code to do all determinants (any spatial scale)
- ▶ Meeting with EA national team (next week)
- ▶ Source funding to
 - ▶ Detailed analysis of Solent
 - ▶ Inform restoration
 - ▶ Scale up for England

RaNTrans NO₃ sondes

- Four locations (Langstone, Hamble, Poole and Trieux)



Hamble estuary



Langstone Harbour

