

Interactive comment on “Long-term record of pH in the Dutch coastal zone: a major role for eutrophication-induced changes” by P. Provoost et al.

Anonymous Referee #2

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This is a very nice analysis based on a large data-set of pH in Dutch coastal environments. It shows that biogeochemical processes in coastal environments can react differently than the open ocean, in this case in relation to ocean acidification due to the strong coupling with inputs from land (eutrophication). This is a very important piece of information since a very large fraction of biological activity takes place in coastal environments, hence, the evolution of carbonate chemistry in coastal environments is of particular relevance, regarding the effect of ocean acidification.

However, I feel that there is a wealth of information and data in the waterbase that could have been exploited to substantiate the discussion of the pH data (using the same

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data-base and the same statistical approaches). For instance Chlorophyll-a data could have been useful to indicate the changes of primary production in relation to eutrophication. This analysis would be interesting in the light of the analysis of Chlorophyll-a by McQuatters-Gollop et al. (2007) that actually suggest a recent increase of primary production in the Southern North Sea.

Also, while the authors acknowledge the possible role of atmospheric deposition in controlling pH in coastal waters (e.g. Doney et al. 2007), they could try to estimate even roughly what could have been the role of this process in the trends of pH in Dutch coastal environments.

Finally, I've checked the waterbase, and besides the data, no meta-data on the measurement techniques seem to be available from <http://www.waterbase.nl/>. The authors need to specify how and where they obtained the meta-data relative to the pH measurements.

McQuatters-Gollop A., Raitos, D. E., Edwards, M., Pradhan, Y., Mee, L. D., Lavender, S. J., and Attrill, M. J.: A long-term chlorophyll dataset reveals regime shift in North Sea phytoplankton biomass unconnected to nutrient levels, *Limnol. Oceanogr.*, 52, 635–648, 2007.

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