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5, S1419-S1421, 2008

Interactive Comment

Interactive comment on "Importance of long-term monitoring for detecting environmental change: lessons from a lowland river in south east England" by T. P. Burt et al.

T. P. Burt et al.

Received and published: 15 August 2008

Referee #1

Introduction: It seems as if the referee is asking for more references to previous work; we feel that these are sufficiently provided in the second paragraph. However, we have added sentences to explain specifically how this paper takes the analysis of moving window analysis and memory effect forward.

Methods: We have referenced Roberts and Marsh (1987) and said what we can about possible inhomogeneity in the nitrate series. We don't actually know how laboratory analysis has changed over the years, but can detect no signs of the series not being homogenous. The change to monthly sampling in 2001 is the only major change





we know about and that affects the series. Both the nitrate data and the rainfall data will have been quality assured by the agencies collecting the data; a comment has been added to this effect.

Choice of water year: This has been explained in the text – water years fit better with the annual hydrological cycle.

Moving averages: We don't actually use moving averages in the paper.

Moving Windows and Seasonal Trends: The moving windows are used to look at annually averaged data, so we aren't able to detect seasonal trends in the way we have used the data.

Figures (Size etc): This is due to the way Biogeosciences Discussion has formatted them. Figure 1 should be full A4 page portrait and Figure 2 a full A4 page landscape – then all the features can be discerned.

Correlation between wetter years-higher concentrations: These are already presented as row 2 of Figure 2. Just to clarify that these are also partial (i.e. the effect of year removed) correlations, thus a direct plot of rainfall-concentration would be misleading.

Providing a comment on a possible "reliable" period for prediction We feel this is already covered in Point 3 of the conclusion but we have added a clause to link to Figure 2, noting that long-term trends are generally beginning to emerge after a decade. We have also added a comment at the end about the need for further work.

Referee #2

Introduction: We have added a sentence to link to other analysis of long hydrological series, including the Dixon et al reference mentioned by the referee.

Dataset details: See above.

Catchment and Land Use Map We don't have access to the detailed data – but we have added a link into the NRFA's website where this infor-

5, S1419-S1421, 2008

Interactive Comment



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mation is available. Latitude and longitude added.

Correlation technique Comment added in methods section. Non-parametric test would be fine for looking at significant nitrate trends, but we are doing more than just that. Non-parametric tests don't allow the separation of driving variables (time, rainfall etc.) and, ultimately, we are exploring a different question – i.e. setting studies of change in a hydrological context, which has everything to do with driving variables. It could be interesting to look at the impact of window length on Mann-Kendall results but that would not be relevant here.

Use of precipitation data as driver instead of flow data: We have added a comment – the rainfall series is complete form 1937 unlike the flow record.

Conclusion: Given the referees' rather powerful arguments in favour of maintaining monitoring networks, we have added further comments at the end to echo these thoughts.

Interactive comment on Biogeosciences Discuss., 5, 2369, 2008.

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5, S1419-S1421, 2008

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