

## ***Interactive comment on “Modelling microbiological water quality in the Seine river drainage network: past, present and future situations” by P. Servais et al.***

### **Anonymous Referee #2**

Received and published: 3 July 2007

#### General comments

This publication presents a model of microbiological water quality in the Seine River basin, together with its original and very challenging application for both past and future scenarios. The final discussion on social, political and economical issues related to microbiological water quality has been greatly appreciated.

All 15 quality aspects of HESSD manuscripts have been addressed correctly.

Besides specific and technical aspects listed below, my major concerns, when reading this manuscript, are:

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1. The absence of uncertainty assessment in the model results, taking into account the sensitivity analysis for daily specific load per inhabitant, rural specific loads per km<sup>2</sup>, FC settling and decay kinetic constants,
2. While modelling present situation, the absence of discussion of the respective variation of measurements around their annual averages, and of uncertainty of model results: are the differences significant?
3. The absence of comparison of Seine River microbiological contamination to other significant European and world rivers.

## Specific comments

§2.2 FC enumeration method: Authors should provide analytical data for the described method, e.g. precision, limit of detection and quantification... both for their own results and for those obtained by water authorities in section 5.3.

§3.1 Microbial pollution brought by wastewaters: Besides the daily specific loads per inhabitants in treated wastewater, values for raw wastewater could be beneficial to the reader (presently only shown on Fig.2a); both loads should be given together with their variability range or standard deviation.

§4 Model: Even if the microbiological quality model has been already published, the values of the key parameters (point and non-point sources, settling and decay kinetic constants...) should be given in this manuscript.

§5.1 Present situation: can you explain how the "averages for the summer 2003 situation" were obtained through model calculations?

## Technical corrections

p.1155 l.16: "DNA chips" instead of "DNA cheaps"?

p.1162 l.28: No reference for "Menon et al., 2003".

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p.1164 I.2 & 3: Place commas for number larger than 1,000.

p.1170 I.25 & p.1172 I.26: Should titles of documents in French be translated into English?

p.1174 Table 1: Introduce abbreviations when used in the text e.g. TC, FC... Would 'Restrictive' be more appropriate than 'Imperative'? Introduce commas when figures larger than 1,000.

p.1175 Table 2 footnote: Why note (a) is differently expressed than in Table 1?

p.1177 Fig.2a: Mean specific loads values should be presented with standard deviation or range values and the legend should indicate the number of values which have been collected and averaged.

p.1178 Fig.3: Why "Abundance of FC" has been preferred to usual "FC concentration"? Geometric mean values should be presented with standard deviation or range values, and the legend should indicate the number of values which have been collected.

p.1179 Fig.4: Either the legend or the figure could explicit the main features/processes of the FC module, e.g. sources, settling, decay...

p.1180 Fig.5 legend: It may be worth giving the usual precision of FC determinations when performed by Mangerel or by SIAAP, SEDIF-CGE and SNS authorities/institutions.

p.1181 Fig.6: Same comment as for Fig.3 for the use of "FC abundance". Standard deviation of field data should be presented in the graph and the number of samples given in the legend. For better understanding of the graph, vertical arrows should indicate major sites/cities on the Seine River.

p.1182 Fig.7: For better understanding of this map, major cities of the Seine River basin should be indicated. The selection of colours do not allow their easy discrimination when the document is printed in black!

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p.1183 Fig.8a: Legend of the Y axis: "Population and treatment capacity...".

p.1183 Fig.8 legend: Give, at least in the legend, the standard deviation of the annual averages, for both periods.

p.1184 Fig.9a: Legend of the Y axis: "Population and treatment capacity..." For better understanding of the graph, vertical arrows should indicate major sites/cities on the Seine River.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 4, 1153, 2007.

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