

## ***Interactive comment on “Urban metabolism and river systems: an historical perspective – Paris and the Seine, 1790–1970” by S. Barles***

**Anonymous Referee #1**

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### General comments

The paper has a clear structure, discusses concisely the special challenges and dynamics in the interaction of the city and the river in the different periods and fields (water, sewers, fecies etc.) and is based on rich empirical sources and research. It gives a good idea on many crucial aspects of the subject, like the variety of factors (including animals) which played a role in the consumption of water in Paris (p. 1849), different elements of the sewage system (p. 1850) etc. Single steps and periods are described in their specific logic, like the changes in the deposition of fecies (p. 1853) the political, economical and social driving forces of the “sewage-problem” in the 1860s (p.1854), the role of the flood 1910 (p. 1862) etc.. The detailed analysis of quantities of food-related nitrogen, for example, reveals metabolic cycles between Paris and his

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surroundings, showing historical patterns of urban sustainability (p.1859). What is also impressing is the detailed reconstruction of the interaction of physical and economical factors in the historical process (p. 1860) As the paper represents one of the rare quantitative reconstructions of historical urban metabolic cycles in a very convincing way it would be good to make a short methodological remark on the origins and validity of the quantitative sources. I would appreciate it very much having the figures integrated in the text. This would possibly call for some more remarks on the figures (e.g. decline of water consumption in the 1930s, s. figure 6, p. 1878). All in all I am personally very glad that we have now such a clear analysis of the different forms of water pollution, types of waste water technology and the ways they were discussed and introduced in Paris!

#### Specific comments

Abstract, line 1: the term “interaction between Paris and the Seine” seems to me a little bit too broad, as in fact the paper discusses only “metabolic interactions”, while others, like shipping, harbours etc. are not included. p. 1847, line 13: Could one say that in contrast to the dominant positions in current research “the different impression” worked out in this paper means, that the development analysed here was not a linear process of continuously increasing degradation? If yes, saying this explicitly would more clearly announce the major thesis of the paper. I don’t really understand the phrase p. 1850, line 27: “did not exist either in reality”. The part on the development in the 20th century is of special interest (p.1861), as for this period we have little research up to now and the paper integrates the role of the suburbs. I would be interested in some remark if the decline of water quality in the Seine 1930-70 (see p. 1865, line 18) was primarily caused by domestic or by industrial waste waters, because actually the better cleaning of domestic waste waters is regarded as one of the environmental achievements of the late 19th and the 20th century.

#### Technical corrections

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Not being an English native speaker myself I nevertheless had the impression that some expressions could be improved, e.g. line 17 of the abstract: write “standard” instead of “rule”; p. 1849, line 12/13: instead of “the construction of which” write: “which was constructed from 1802 onwards”, p. 1866, line 15: is “makers of fertilizers” good English?, etc. etc. P. 1862, line 26: is “Rheims” correct? For some of the figures the sources are missing.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 4, 1845, 2007.

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