

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

Anonymous Referee #2

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General comments: The paper describes changes in the socioeconomic valuation of urban wastes and their impact on the development of waste water treatment in relation to changes in technology and institutional settings for the case of Paris and a 200 year time span. In doing so, the paper provides an excellent example for the changing quality and quantity of human impact on ecosystems and structural shifts in sustainability problems during industrialization. The concept of this study is novel and interdisciplinary as it combines quantitative data and methods from industrial ecology with a well grounded historical analysis of changes in regulations, attitudes and technology. It is based on solid and detailed historical research. I regard the paper of great value for the scientific community’s addressed by HESS and especially for the special issue on “man and river systems”, in particular, because the long term historical perspective

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and the interdisciplinary approach of the paper provide new insights into the changing interactions of humans with hydrological systems and the role of economic and institutional factors shaping these interactions. In general the paper is well written and referenced, although I would recommend a somewhat broader referencing in the introduction and conclusions (see specific comments). I would also recommend another language check by a native speaker. In parts, the paper reads somewhat “translated” and it would improve the paper if this could be smoothed out.

I recommend publication of the manuscript with minor revisions.

Specific comments:

Introduction: The referencing of the introduction is somewhat poor. The authors could make reference some of the literature that discusses the increasing human interference with natural systems during industrialization (e.g. Turner et al., 1990, McNeill, 2000) and on the term urban metabolism and attempts to analyse this metabolism (e.g. Wolman, 1965; Boyden et al., 1981); similarly there should be some reference to the methodological background (material balance sheets for cities) and the field of industrial ecology (e.g. Ayres and Simonis, 1994), urban history and history of technology (e.g. Melosi, 1980; Melosi, 1990) and other authors that have contributed to the environmental history of urban water systems (e.g. some of the numerous and seminal work of Joel Tarr: Tarr et al., 1980; Tarr, 1988; Tarr, 1996; Tarr and Ayres, 1990; Tarr, 2002).

Methods: As the paper has no specific section on data and methods (except for a short remark on methods in the Introduction 1847/5) it would strengthen the paper if it was mentioned, that the paper draws on detailed and systematic empirical studies on waste water/nutrient flows in Paris which have already been published by the author (and other researchers) and combines these empirical findings with an analysis of changes in technology and institutional settings etc..

Conclusions: The conclusions might benefit from some brief references to findings on

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the issues addressed in the paper for other cities - do the findings for the Parisian case support or contradict what has been found and discussed for other cities (see e.g. the works of Joel Tarr).

Technical corrections: 1846/6: tracing their evolution (maybe better “development”) 1846/13: notably domestic water supply: be more specific, in which respect? 1847/5: I assume the increase in pressures did not come to a halt in the 1970s 1847/20: better “exchange of materials”

1847/13: better something like “by a surprisingly low level of deterioration of the Seine by urban wastes” (I assume that deterioration is also “limited” in later period)

1850/7 and 8: This sentence is unclear: What do you mean by “water supply was not coupled to its collection”? Does this refer only to the application of water for street cleaning? Or was water omnipresent in public space because of lacking waste water systems resp. open waste water collection in the streets? I suggest reformulating the paragraph.

1850/17: “which, however, had only a modest impact since the network covered”

1850/23: What do you mean by “All the skills lay in choosing the optimal distance between fountain and drain?”

1851/5: rather “for the most part they did not end up in the sewage network”.

1853/2 and other paras (e.g. 1857/17) - is “mains drainage” a technical term? I suppose it refers to a centralized waste water collection system?

1853/8 - improvements that followed what? Maybe rather “Two types of improvements were accomplished during the first half of the 19th century”

1854/13 - what is meant by “doubly public service”?

1857/4 - to which point in time does the number of 45 depots refer.

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Fig.2: please mention which types of water consumption are included in these figures (household consumption and commercial/industrial consumption)? See also 1855/10;

Fig.3: maybe I missed it - but I have the impression that there is hardly any explicit reference to Fig. 3 (there is one for 3b on 1860/12) or discussion of its contents in the text; it's a pity, as the figure pretty well summarizes and illustrates some of the findings of this study

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