

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

S. Barles

Received and published: 5 October 2007

Answer to editor

Please see the detailed answers below, especially concerning the language and the sources.

Answer to anonymous referee #1

General comments - validity of the qualitative sources: as suggested by Referee #2, I complete the paragraph like this: "The study is based on a combination of methods derived from industrial ecology, in particular material balance sheets; urban history, which enables us to identify the major transformations of urban structures and the players involved in their different roles; and the history of technology, by which we

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

gain an understanding not only of the reasons behind the decisions made by people in charge but also of the functioning of one technique or another, and of repercussions in terms of quantities of matters. It draws on detailed and systematic empirical studies on water and nutrient flows in Paris (Barles, 2002; Barles, 2007) and combines them with an analysis of changes in policy, technology and institutional settings concerning urban excreta (Barles, 2005a et b; Barles, Lestel, 2007). It proceeds by the exploration of public archives (in particular Paris Archives series VO3), of public statistics, and of the technical literature. The origin and quality of the quantitative sources is discussed in Barles (2007), the other sources are fully presented in Barles (2005a)."

- About Fig. 6 and water consumption: data are not complete and what is sure is that there is a decrease during the war.

Specific comments - abstract, line 1, "interactions between Paris and the Seine" too broad: you are right, I change it into "metabolic interactions between Paris and the Seine" - p. 1847, l. 13: about "different impression": I add the phrase : "In other words, our main thesis is that the degradation of rivers was not as continuous, systematic and deliberate as it appears at first sight." - p. 1850, line 27: "these wastes did not exist either in reality or in thought". I mean that they did not exist as waste but as raw materials and fertiliser (the purpose of next section in the paper, and did not exist as liquid waste (what supposed to be sewage) because water consumption remained very low in households. I changed the sentence into "these liquid wastes did not exist either in reality or in thought" - p. 1865, line 18: the decline of quality is due to both industry and city. The better cleaning of domestic wastewater is only an achievement of the 1970' in this case, as you can see on Fig. 5. At the same time the industrial discharge to the river was also very important, but as far as I know, nobody has weighed it (it is very difficult and sources are not as reliable than urban ones). I add the sentence "This urban pollution added to the industrial one a known but not quantified problem at that time."

Technical corrections - language: - the paper has been translated by a professional,

and English native speaker. I checked a carefully, changed some inadequate expressions and "smoothed" the text. - "Rule" is ok (according to my dictionary, in the sense of custom, but I change to "standard"), and Rheims also. - p. 1849, line 12/13: OK for the change (besides I liked the first way to write it!) - "makers of fertilizers": I changed it into "fertilizer-makers" that is more adequate. - sources of figures: I completed.

Answer to anonymous referee #2

General comments - language: the paper has been translated by a professional, and English native speaker. I checked a carefully, changed some inadequate expressions and "smoothed" the text.

Specific comments

- Referencing in the introduction and conclusion: you are right. Added references: Ayres, R.U., and Simonis,U.E.: Industrial Metabolism: Restructuring for Sustainable Development. United Nations University Press, Tokyo, New York, Paris, pp., 1994. Barles, S.: L'invention des eaux usées : L'assainissement de Paris, de la fin de l'Ancien Régime à la seconde guerre mondiale, edited by Bernhardt, C., and Massard-Guilbaud, G., Presses de l'Université Blaise Pascal, Clermont-Ferrand, 129-156, 2002. Billen, G, Garnier, J, Deligne, C, and Billen C.: Estimates of early-industrial inputs of nutrients to river systems: Implication for coastal eutrophication. Sci. Total Environ., 243-244, 43-52, 1999. Douglas, I, Hodgson, R, Lawson, N.: Industry, environment and health through 200 years in Manchester. Ecol. Econ., 41, 235-255, 2002. Fierro, A.: Histoire et dictionnaire de Paris, Robert Laffont, Paris, 1580 pp., 1996. Goddard, N.: "A mine of wealth" ? The Victorians and agricultural value of sewage, Journal of Historical Geography, 22(3), 274-290, 1996. Hamlin, C.: Sewage : Waste or resource? A historical perspective, Environment, 22(8), 16-20, 38-42, 1980. Kennedy C., Cuddihy, J., and Engel-Yan, J.: The changing metabolism of cities, Journal of Industrial Ecology, 43-59, 2007. Mårald, E.: Everything circulates: agricultural chemistry and re-cycling theories in the second half of the nineteenth century, Environment and

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

History, 8, 65-84, 2002. Melosi, M.V.: Cities, technical systems and the environment, *Environmental History Review*, 14, 45-64, 1990. Melosi, M.V.: The sanitary city: urban infrastructure in America from colonial times to the present, The Johns Hopkins University Press, Baltimore and London, xii+578pp., 2000. Paris et ses réseaux: Naissance d'un mode de vie urbain. XIXe-XXe siècle, Bibliothèque historique de la ville de Paris and Agence culturelle de Paris, Paris, 425pp., 1990. Paris et ses réseaux: Naissance d'un mode de vie urbain. XIXe-XXe siècle, Bibliothèque historique de la ville de Paris and Agence culturelle de Paris, Paris, 425pp., 1990. Tarr, J.A.: From city to farm: urban wastes and the American farmer, *Agricultural History*, 49, 598-612, 1975. Tarr, J.A.: The metabolism of the industrial city: The case of Pittsburgh. *Journal of Urban History*, 28(5), 511-545, 2002. Tarr, J.A., and Ayres, R.U.: The Hudson-Raritan Basin. In *The Earth As Transformed by Human Action*, edited by Turner, B.L.I., Clark, W.C., Kates, R.W., Richards, J.F., Mathews, J.T., and Meyer, W.B, Cambridge University Press with Clark University, Cambridge, 623-639, 1990. Wolman, A.: The metabolism of cities. *Scientific American*, 213, 178-193, 1965.

- Methods: Yes, I complete the paragraph like this: "The study is based on a combination of methods derived from industrial ecology, in particular material balance sheets; urban history, which enables us to identify the major transformations of urban structures and the players involved in their different roles; and the history of technology, by which we gain an understanding not only of the reasons behind the decisions made by people in charge but also of the functioning of one technique or another, and of repercussions in terms of quantities of matters. It draws on detailed and systematic empirical studies on water and nutrient flows in Paris (Barles, 2002; Barles, 2007) and combines them with an analysis of changes in policy, technology and institutional settings concerning urban excreta (Barles, 2005a et b; Barles, Lestel, 2007). It proceeds by the exploration of public archives (in particular Paris Archives series VO3), of public statistics, and of the technical literature. The origin and quality of the quantitative sources is discussed in Barles (2007), the other sources are fully presented in Barles (2005a)."

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

- Conclusion: I add some references (see above) and a sentence: "Their engineers advocated the use of sewage for irrigation, which seemed to be the appropriate response to the many issues raised by the removal of human excreta: hygiene for Paris and for people living near the Seine, safeguard of river traffic, profits for the municipality, agricultural production... This point of view was not isolated, and the advantages of sewage farms were discussed in Europe and America at the same time (see for instance Melosi, 2000), but it seems that French engineers and chemists remained convinced of their superiority - as they remained convinced of the usefulness of garbage - longer than their counterparts in other countries - a fact that requires further investigation and reveals the need for comparative studies."

Technical corrections

Only those that need precisions are mentioned here (the others have been integrated following your suggestions). 1847/13: better something like "by a surprisingly low level of deterioration of the Seine by urban wastes": I think that the sentence I added on the Referee #1's suggestion better fits my point of view : "In other words, our main thesis is that the degradation of rivers was not as continuous, systematic and deliberate as it appears at first sight." 1850/7 and 8: This sentence is unclear: What do you mean by "water supply was not coupled to its collection"? I think that the following sentences clearly explain the situation. 1853/2 and other paras (e.g. 1857/17) - is "mains drainage" a technical term? Yes. I suppose it refers to a centralized waste water collection system? Yes 1853/8 - improvements that followed what? That followed the projects mentioned above. 1854/13 - what is meant by "doubly public service"? It is explained p. 1849, line 14-16, I add (see Sect. 2.1).

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

[Full Screen / Esc](#)[Printer-friendly Version](#)[Interactive Discussion](#)[Discussion Paper](#)