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Interactive comment

Interactive comment on "Modeling and Clustering Water Demand Patterns from Real-World Smart Meter Data" by Nicolas Cheifetz et al.

Anonymous Referee #3

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General comments: The authors presented a new approach to cluster water demand patterns. This is an interesting topic; however, I miss a critical discussion about the usability of the method.

The four pattern types identified, do not seem to demonstrate an added value to existing knowledge, the patterns are validated qualitative based on assumptions of people's behavior: wake-up time or working schema. I would expect a large range of patterns, commercial can be subdivided as well as residential. As Blokker et al, 2010 and Agudelo-Vera et al. 2013 have shown the demand patterns of a DINK (Dual income, no kids) differs from a family house with 4 members. Can we expect to define a more specific clusters using AMR? Can we do it with this approach? Please explain.

Specific comments:



Discussion paper



For billing a yearly reading is enough, for the desing of drinking water distribution networks the peak demand debits of the pumping stations are often used. For which type of needs is it better to have an AMR than a traditional water meter?

The authors mentioned in pag 1-line 23 that demand patterns classification have been performed for electricity network. What are their experiences? Are there learnt lessons that we can apply for drinking water networks? Are AMR reliable?

In which step is the implementation of water AMR? Which countries have implemented? Or what are the expectations?

Regarding the results: cluster 1 is identified as office or industrial use. I wonder what type of industrial activity has a similar pattern as an office.

Did the authors validate the results, for instance by comparing the found clusters with cadaster records? Or in thse way can the results be validated?

What about leakage? Is that part of the noise cluster?

Is an hour an adequate time step for this type of analysis? In this article there is a curent discussion about "Review of applications of SIMDEUM, a stochastic drinking water demand model with small temporal and spatial scale". The authors can check if their approach can complement this type of approach. http://www.drink-water-eng-sci-discuss.net/dwes-2017-4/dwes-2017-4.pdf

In page 2 line 28, the authors mentioned that the aim is to identify automatically the major water usage patterns. Do four categories (8 clusters) provide a better insight on water consumption? How similar or different are these results compared with reported residential and non-residential patterns? http://www.drink-water-eng-sci.net/6/99/2013/dwes-6-99-2013.pdf

Do the seasonal patterns only refer to the day of the week? I would expect also a relation with vacation periods and for instance the weather.

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I miss a discussion about the usability of this method by water companies. What will be the benefits or applications? Are there risks? How robust is this methodology.

The first sentence in the introduction refers to increasing population and climate change, how can the approach presented in this article help to make better demand forecasting?

Agudelo-Vera, C. M., K. J. Keesman, A. R. Mels and H. H. M. Rijnaarts (2013). "Evaluating the potential of improving residential water balance at building scale." Water Research 47(20): 7287-7299. Blokker, E. J. M., J. H. G. Vreeburg and J. C. van Dijk (2010). "Simulating residential water demand with a stochastic end-use model." Journal of Water Resources Planning and Management 136(1): 19-26. Pieterse-Quirijns, E. J., E. J. M. Blokker, E. Van Der Blom and J. H. G. Vreeburg (2013). "Non-residential water demand model validated with extensive measurements and surveys." Drinking Water Engineering and Science 6(2): 99-114.

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