Hydrology and
Earth System
Sciences

Discussions

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comment

Interactive comment on "Contaminant source localization via Bayesian global optimization" *by* Guillaume Pirot et al.

Anonymous Referee #1

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The authors present a Bayesian global optimization approach to identify a contaminant source using concentration observations. Two synthetic aquifers with two different log K reference fields are used to demonstrate the efficiency of the approach for the contaminant source localization. Here are certain parts of the manuscript still need improvement for better understanding. Before I can recommend the paper for publication the following comments must be addressed

General comment:

1, In the introduction section, you have introduced some classification for groundwater pollution source identification. In terms of the Bayesian approach you used, you also need to introduce the state of art of contaminant source localization based on Bayesian approaches (eg., Cupola et al. [2015], Zeng et al. [2012] , Raziyeh Farmani et al.

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[Discussion paper]

[2009]), and detail the difference and merit of the approach you used by comparing with those Bayesian-based approaches.

2, Why do you choose source A (89, -36) and B (100, 10) as reference contaminant sources? Besides, it is better to show source A and B in Figure 1.

3,On page 10, can you explain why there is large departure between reference source location and minimum of the objective function location.

Specific comments:

1, On page 1, it is better to briefly explain how analytical solution and regression approaches works, just as you have done to the other three categories.

2, Please be careful to use "To the best of our knowledge" on page 2 and 3.

3, It is not appropriate to set longitudinal dispersivity as 1 m when your resolution of the aquifer is 1m*1m.

4, Please show both source A and B in Figure 3 and Figure 1.

5, The dots in Figure 5 are with three different colors, and you just explained the meaning of blue and white dots. Please explain the left one.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2017-377, 2017.