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Hydrology and Earth System Sciences
Discussions
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Interactive comment on "Caffeine vs Carbamazepine as indicators for wastewater pollution in a karst aquifer" *by* Noam Zach Dvory et al.

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Answers to Reviewer #1 comments:

General:

Thank you for the feedback. Your recommendations were helpful and insightful. All of the comments have been addressed, and the paper was edited accordingly.

Specific comments:

1) I will start with most annoying discrepancy and then write the comment chronologically as they appear in the manuscript. Perhaps I am wrong, but the authors should

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check very carefully if typo mistakes in the legend of Figure 4 messed the sensitivity analysis of Kd and Lamda in section 3.3. To the best of my understanding a break-through curve (BTC) of a degrading contaminant down gradient of an instantaneous spill should show a higher peek and a larger width for smaller degradation rates not for higher ones as shown Fig 4a shows. Check if BTC 5 and 3 were switched as well as BTC 2 and 4. The same for distribution coef. and Figure 4b: a BTC of a degrading and adsorbing contaminant will be shorter and retarded for a larger distribution coefïňĄcient rather than a smaller one like it is in the ïňĄgure (e.g. BTC 3). Check.

Answer: Thank you for this important comment. The legend in this figure was wrong indeed. We corrected both the figure and the relevant text.

2) The graphics of ïňĄgure 4 must be improved by showing a smaller time span so the area below the BTCs will be larger and retardation (ïňĄg 4b) and different tales (Fig 4a) will be visualized better.

Answer: As suggested by the reviewer, the graphics have been revised.

3) P.1, L.14-add carbonate before Yarkon-Taninim

Answer: The correction has been made.

4) P.2L.30–add Fig. 1 after EK11 (or delete EK11)

Answer: The correction has been made.

5) P. 3 L 22 – replace “data logger” with: pressure and temperature probe with data logging capability

Answer: The correction has been made.

6) P. 3 L25 add upstream and downstream from the well head after “stations”

Answer: The correction has been made.

7) Figure 1 the aquifer boundary inset – make it clearer for the fast reader. Add Tel Aviv

location and or Mediterranean Sea, a north arrow etc., don't just send the international readership to lookup where is 35oE and 32oN.

Answer: As suggested by the reviewer, the graphics have been revised.

8) P. 5 L. 19 change "pharmaceuticals" to micro pollutants or organic compounds or similar, caffeine is not a pharmaceutical.

Answer: The correction has been made.

9) P. 5 L. 29 – It would be appropriate to mention also Gerke and van Genuchten 1993 for the formulation of the dual permeability model.

Answer: The correction has been made.

10) P. 6 L. 4 – for consistency deïňĄne qc (like you do for qzm) rather than qi

Answer: The correction has been made.

11) P. 6 L - I think the sentence in the beginning of the row would be better said as: Boundary conditions are of the type of transient head or transient ïňĆux.

Answer: The correction has been made.

12) P. 6 L 15 – Delete the sentence starting "Initial ..." Its redundant.

Answer: The correction has been made.

13) P. 7 L. 13 should be parameters were rather than "was".

Answer: The word "was" refers to a (single) set of parameters. Therefore the suggested change was not made.

14)P 9 L. 29 – Delete "a"

Answer: The correction has been made.

15) P. 10 L. 2 – Delete "around"

Answer: The correction has been made.

16) P. 10 L. 10 change “amongst other” to” in comparison to

Answer: The correction has been made.

17) P. 10 L. 17 or 0.07 – 0.14 or 0.014-0.07 but not as written

Answer: The correction has been made.

18) P. 14 L. 13 “downstream” or downgradient

Answer: " downgradient " - The correction has been made.

19) P. 14L. 15 “(2015, 2012b)” there is only 1 reference of Hillebrand et al. in the reference list

Answer: The correction has been made: Hilllebrand et al., 2012b was added in the reference list.

20) P. 14 L.18-21. Consider discarding, out of context and does contribute much.

Answer: The correction has been made.

Please also note the supplement to this comment:
https://www.hydrol-earth-syst-sci-discuss.net/hess-2018-426/hess-2018-426-AC1-supplement.pdf

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2018-426, 2018.

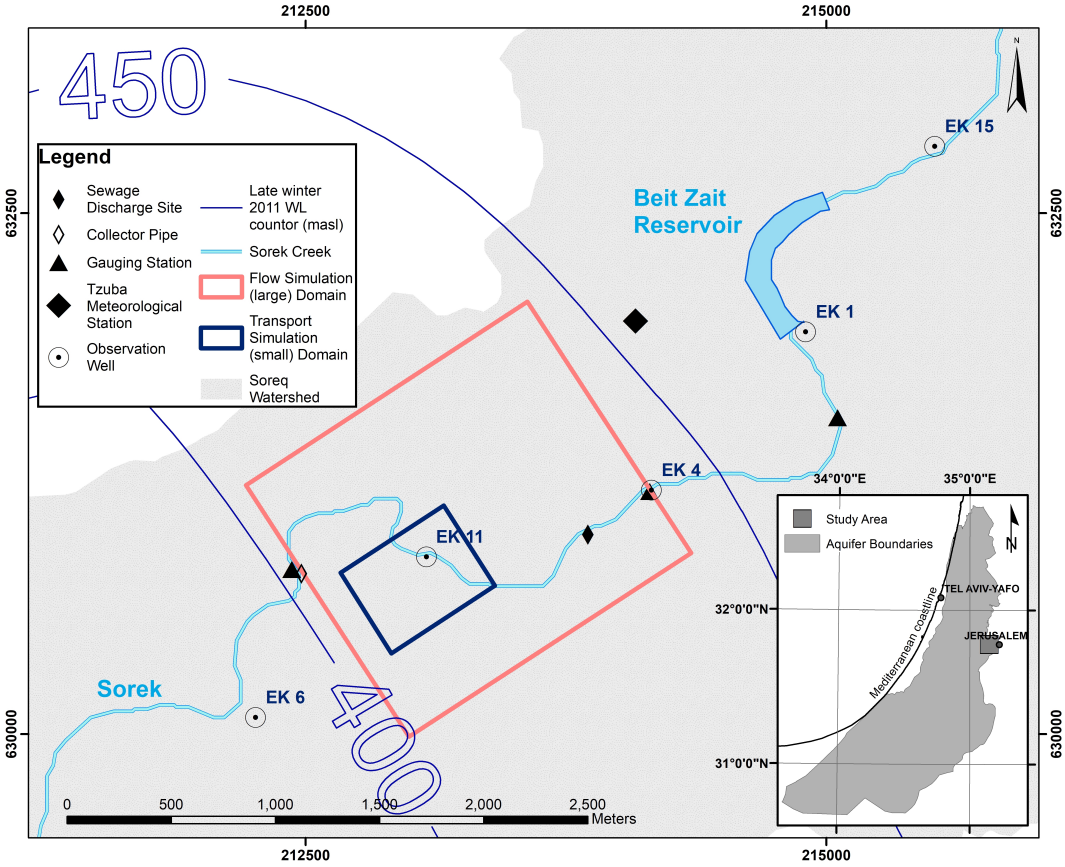

Fig. 1. The upper Sorek Basin monitoring sites and flow and transport simulation domains (after Dvory et al., 2018a; aquifer boundaries from Dafny, 2009)

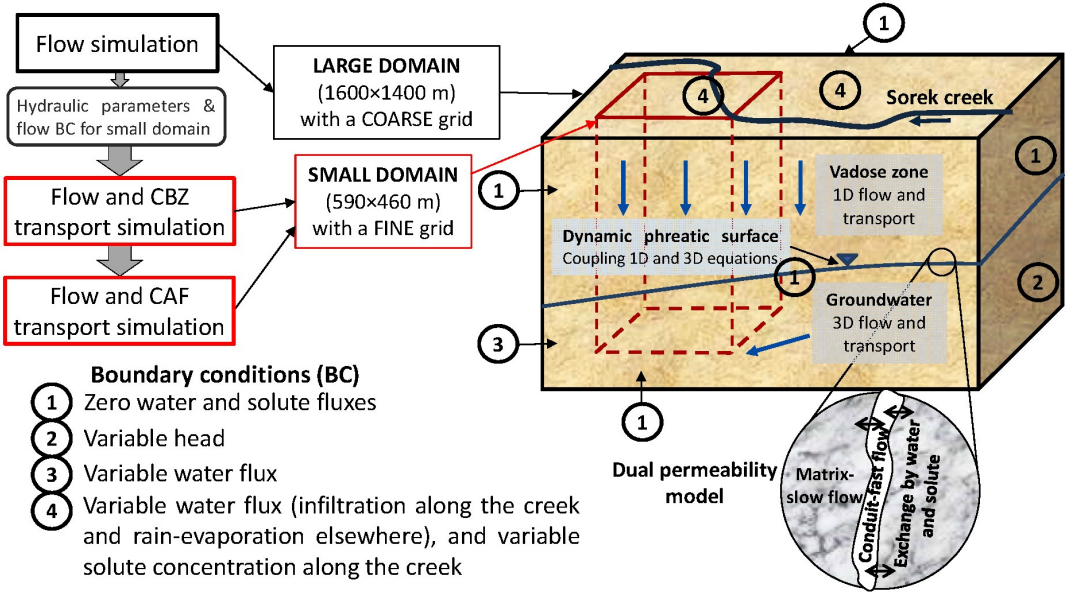

Fig. 2. Model conceptual sketch

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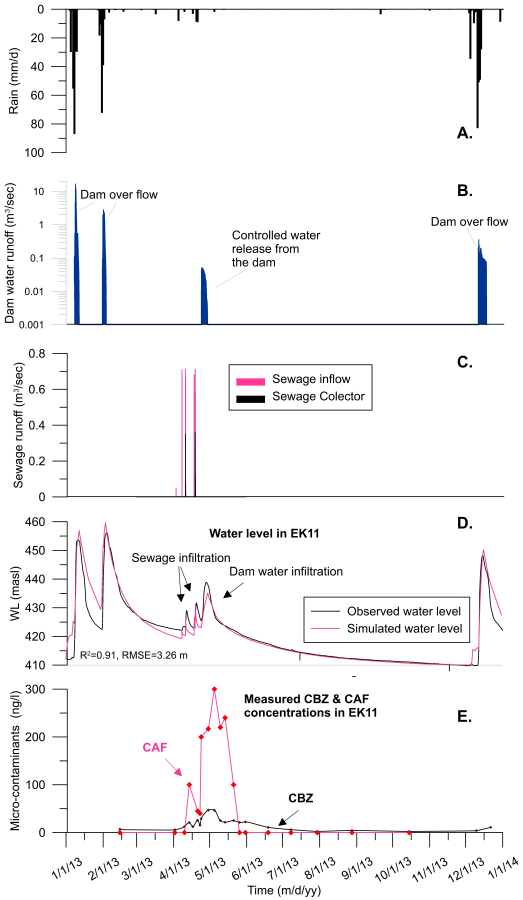

Fig. 3. Time series data observation and calculation (after Dvory et al., 2018a). (A) Tzuba Meteorological station daily precipitation rate; (B) Dam runoff flow; (C) Sewage surface flow; (D) Measured and simu

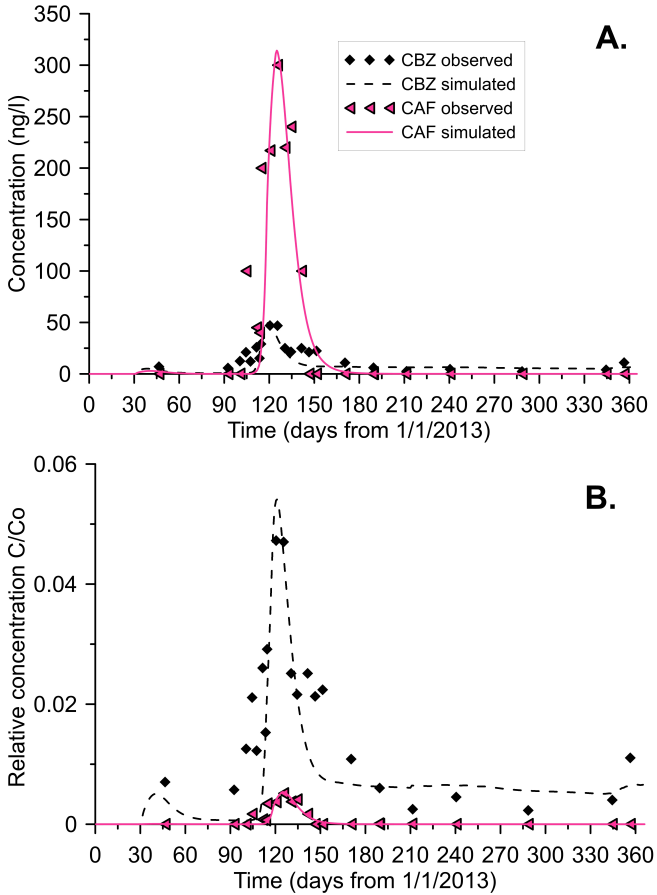

Fig. 4. (A) Observed and simulated BTCs of CBZ and CAF in EK11; (B) Relative concentration variations of CBZ and CAF in EK11 (CBZ data from Dvory et al., 2018a).

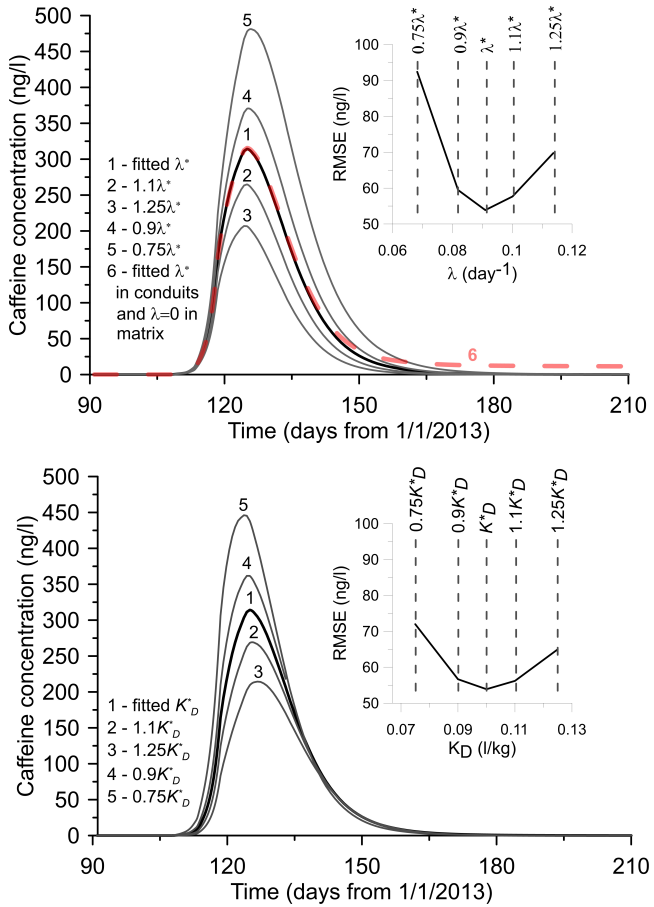

Fig. 5. Simulated CAF sensitivity to parameters changes (A) the degradation rate and (B) the distribution coefficient. The insets show the effect of parameters on RMSE.