Water Resources Research

Supplementary material

Effects of episodic rainfall on a subterranean estuary

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Introduction

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Figures S2 and S3 show the regression results for Cases 3 and 6, respectively.

Figures S4-S6 show the results predicted by the regression model for Cases 2, 3 and 6, respectively.

Figures S7-S9 show comparison of the daily averaged results for Cases 5-8.

Figures S10-S12 show comparison of the regression results for Cases 5-8.

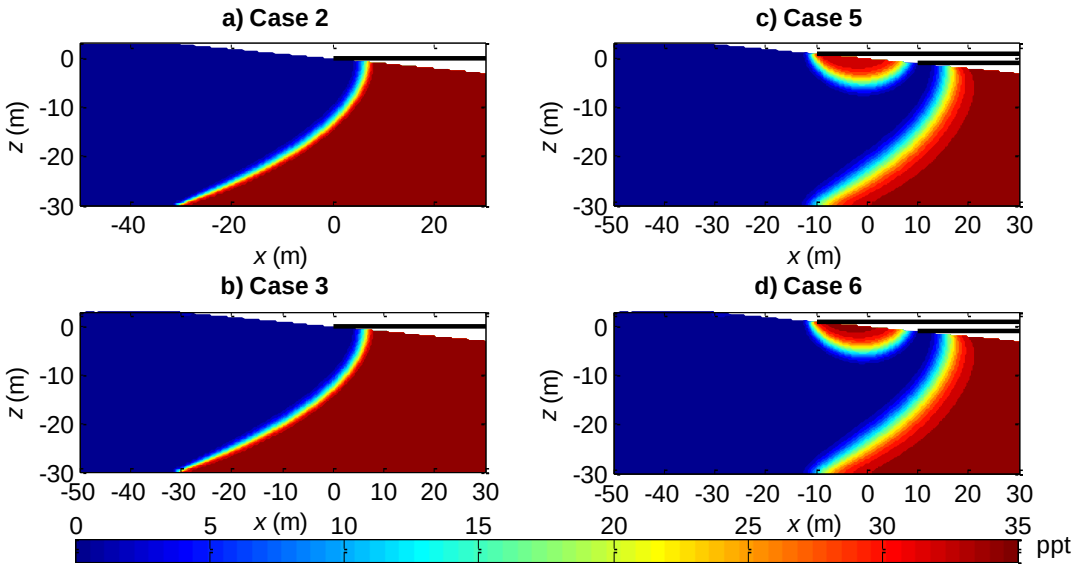
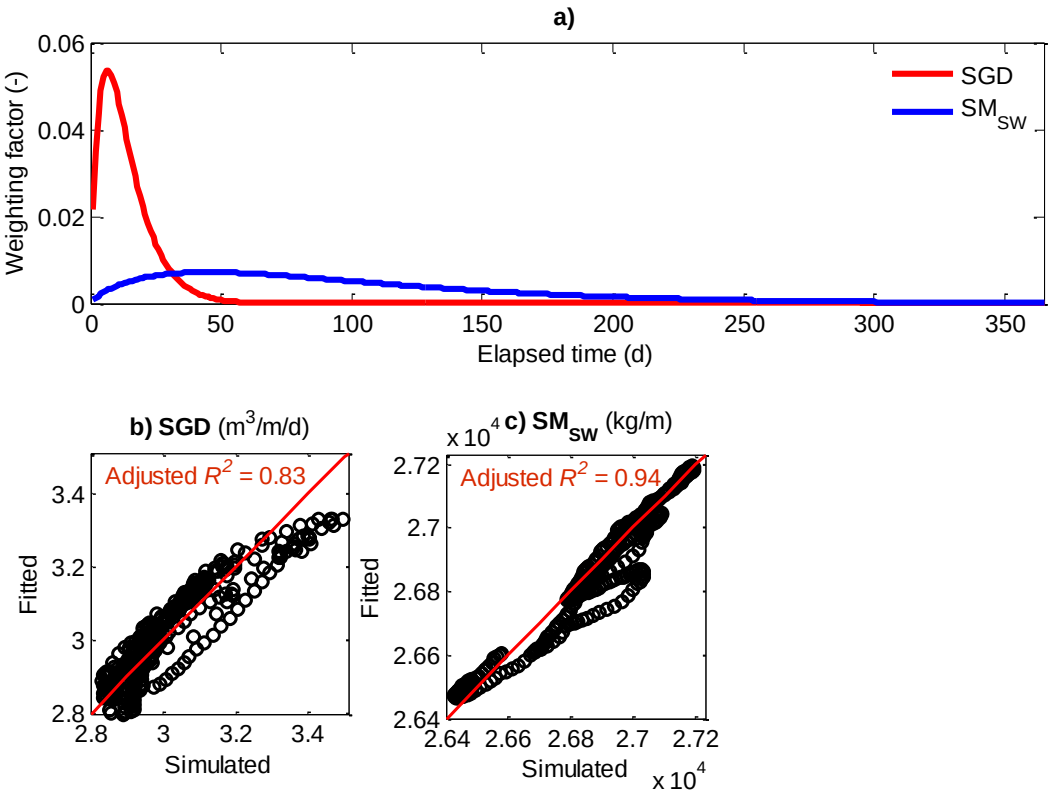


Fig. S1. Yearly averaged salinity distributions in the subterranean estuary. Cases are indicated in the figure titles. The left side panels are for cases with a static sea level (i.e., no tide) in which the black lines indicate the static sea level. The right side panels are for cases with tides in which the two black lines indicate the tidal range.



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38 Fig. S2. (a) Gamma distribution functions used for quantifying the effect of past rainfall

39 events on the subterranean estuary (Case 3). (b and c) Fitted results versus those simulated.

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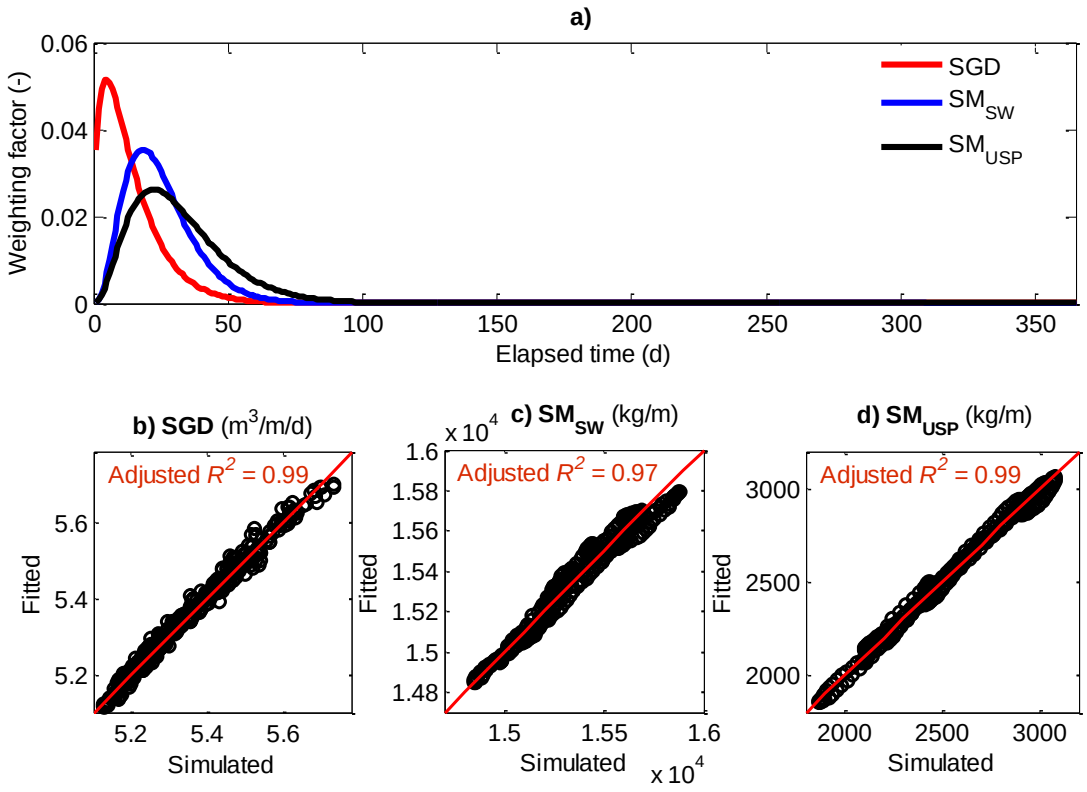

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42 Fig. S3. (a) Gamma distribution functions used for quantifying the effect of past rainfall

43 events on the subterranean estuary (Case 6); (b-d) Fitted results versus those simulated.

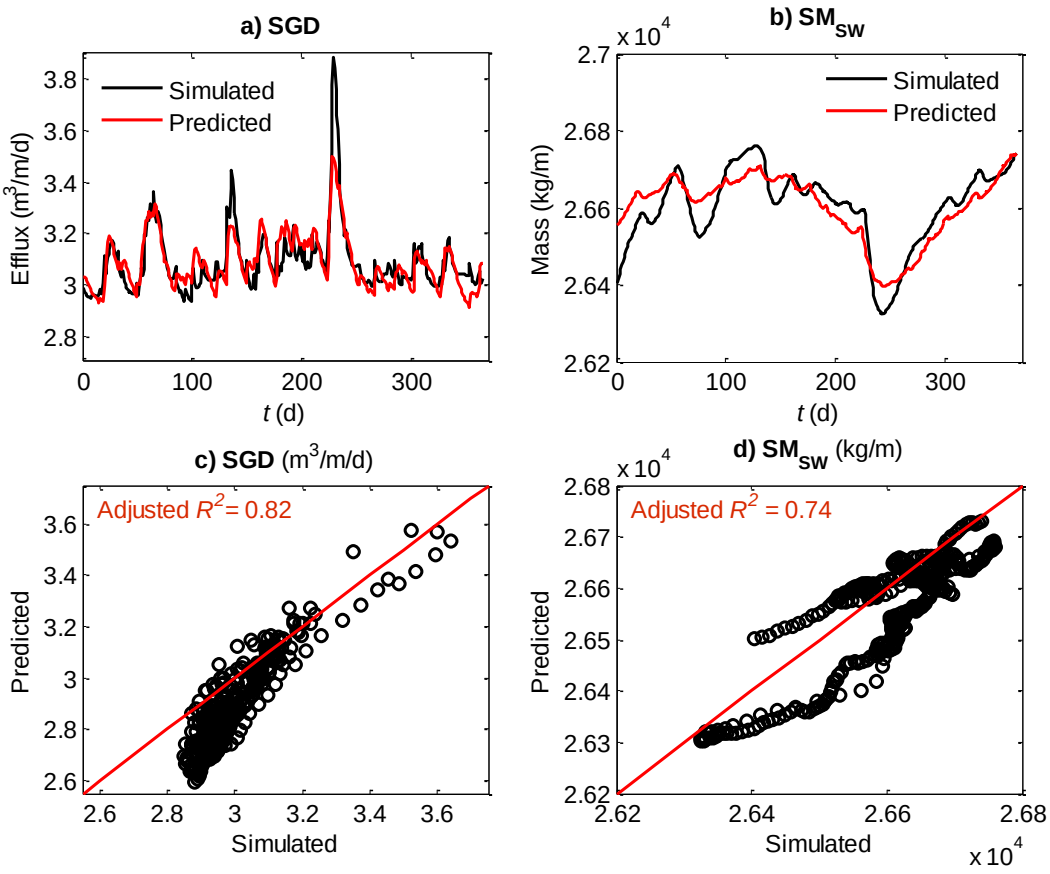


Fig. S4. (a and b) Temporal variations of daily averaged SGD and SM_{SW} predicted by the regression model in comparison with the simulated results (Case 2). (c and d) Predicted results versus those simulated.

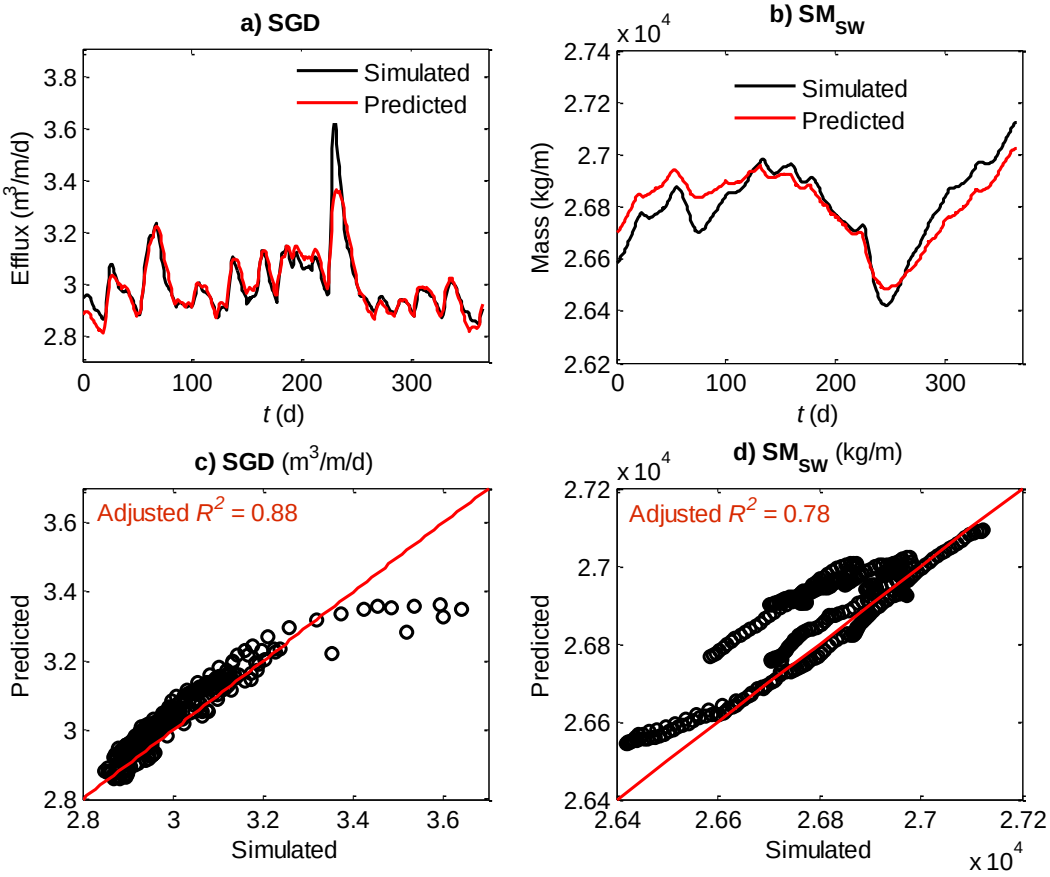


Fig. S5. (a and b) Temporal variations of daily averaged SGD and SM_{SW} predicted by the regression model in comparison with the simulated results (Case 3). (c and d) Predicted results versus those simulated.

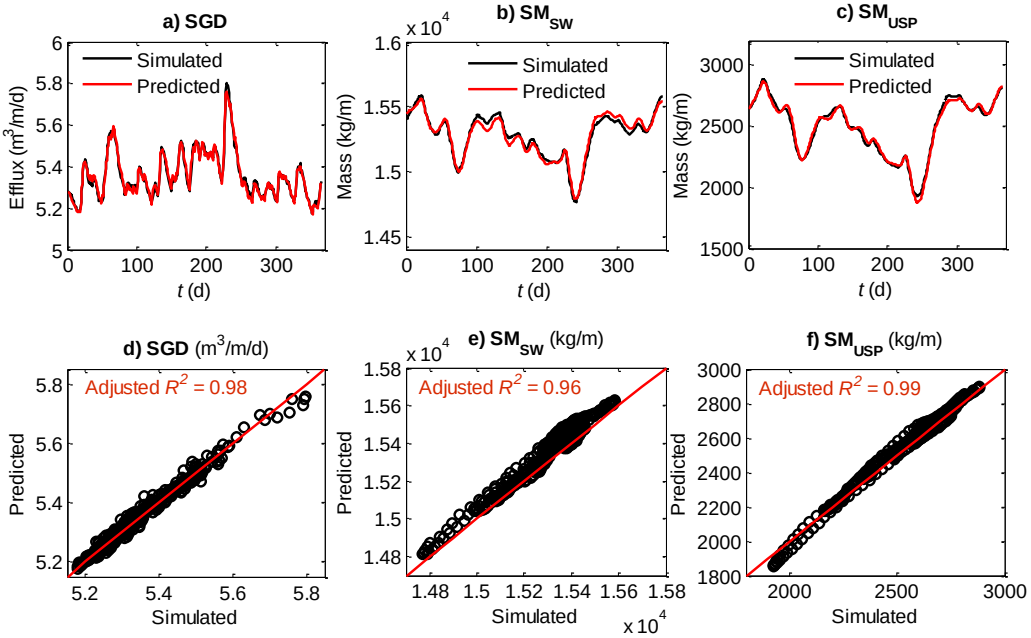


Fig. S6. (a-c) Temporal variations of daily averaged SGD, SM_{SW} and SM_{USP} predicted by the regression model in comparison with the simulated results (Case 6). (d-f) Predicted results versus those simulated.

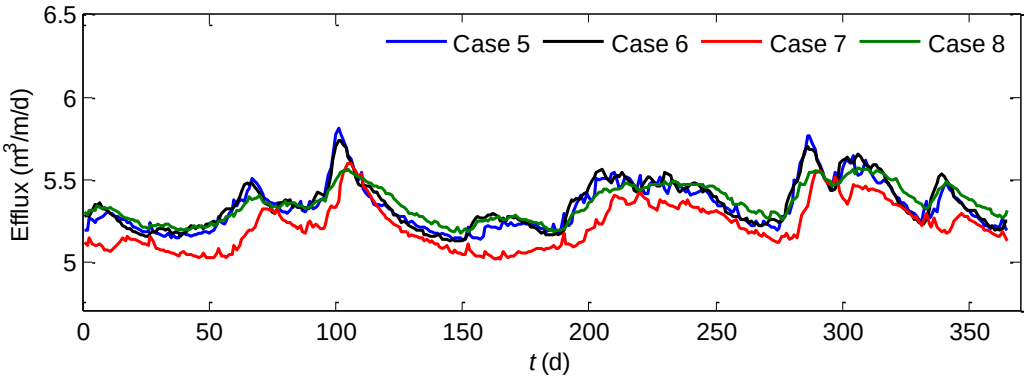


Fig. S7. Daily averaged water efflux per unit width (SGD) across the aquifer-ocean interface for the subterranean estuary subjected to tidal forcing.

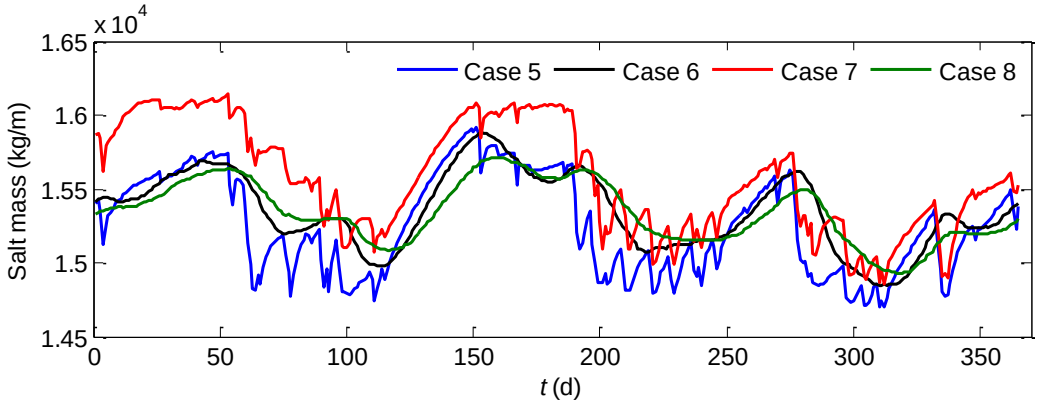


Fig. S8. Daily averaged salt mass (per unit width) stored in the saltwater wedge for the subterranean estuary subjected to tidal forcing.

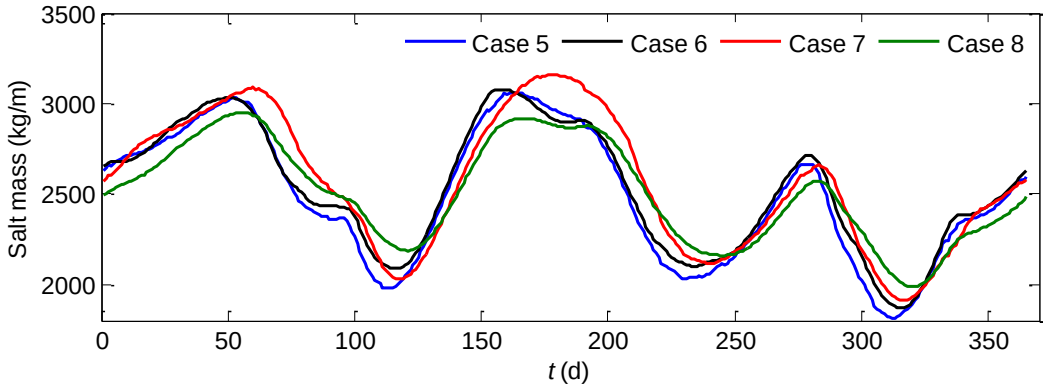


Fig. S9. Daily averaged salt mass per unit width stored in the upper saline plume for the subterranean estuary subjected to tidal forcing.

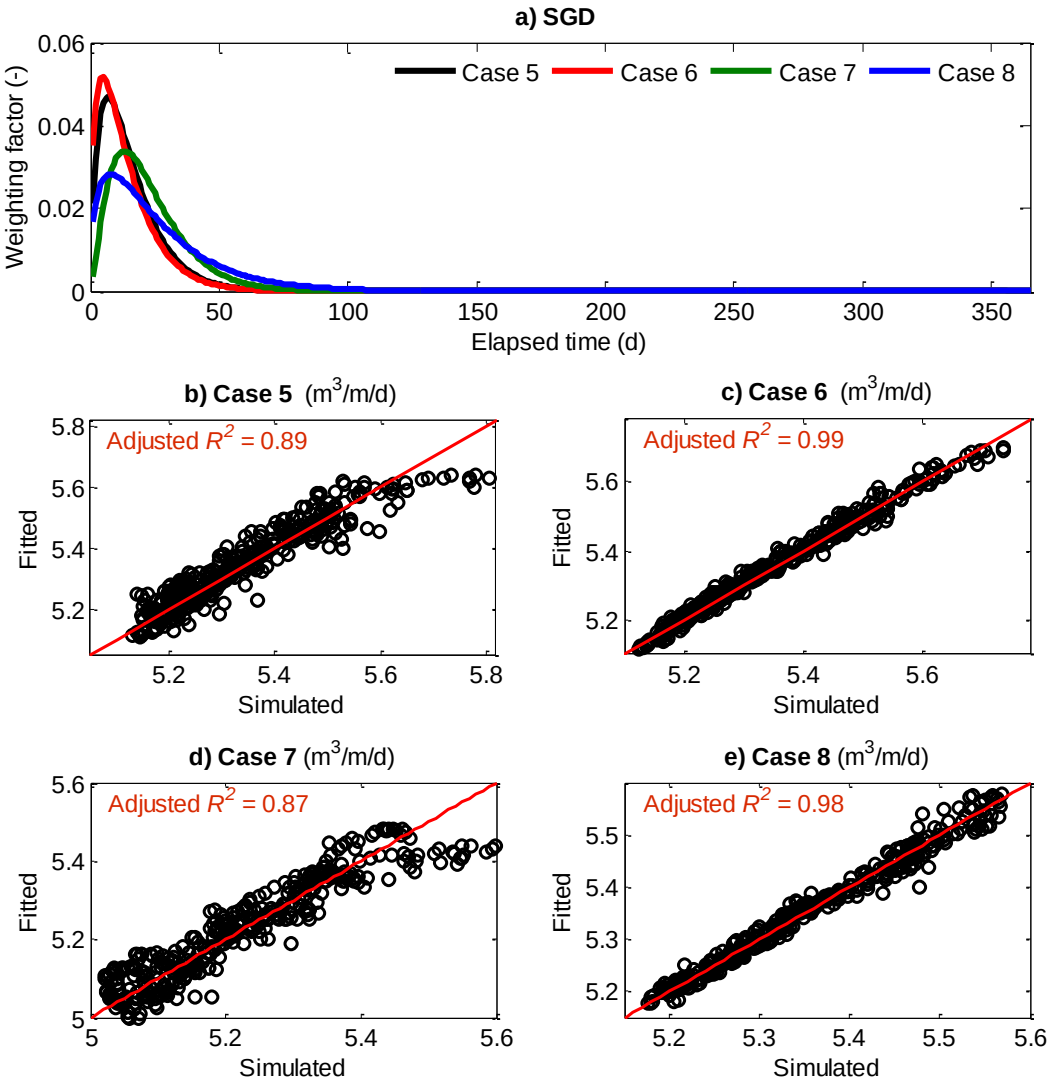
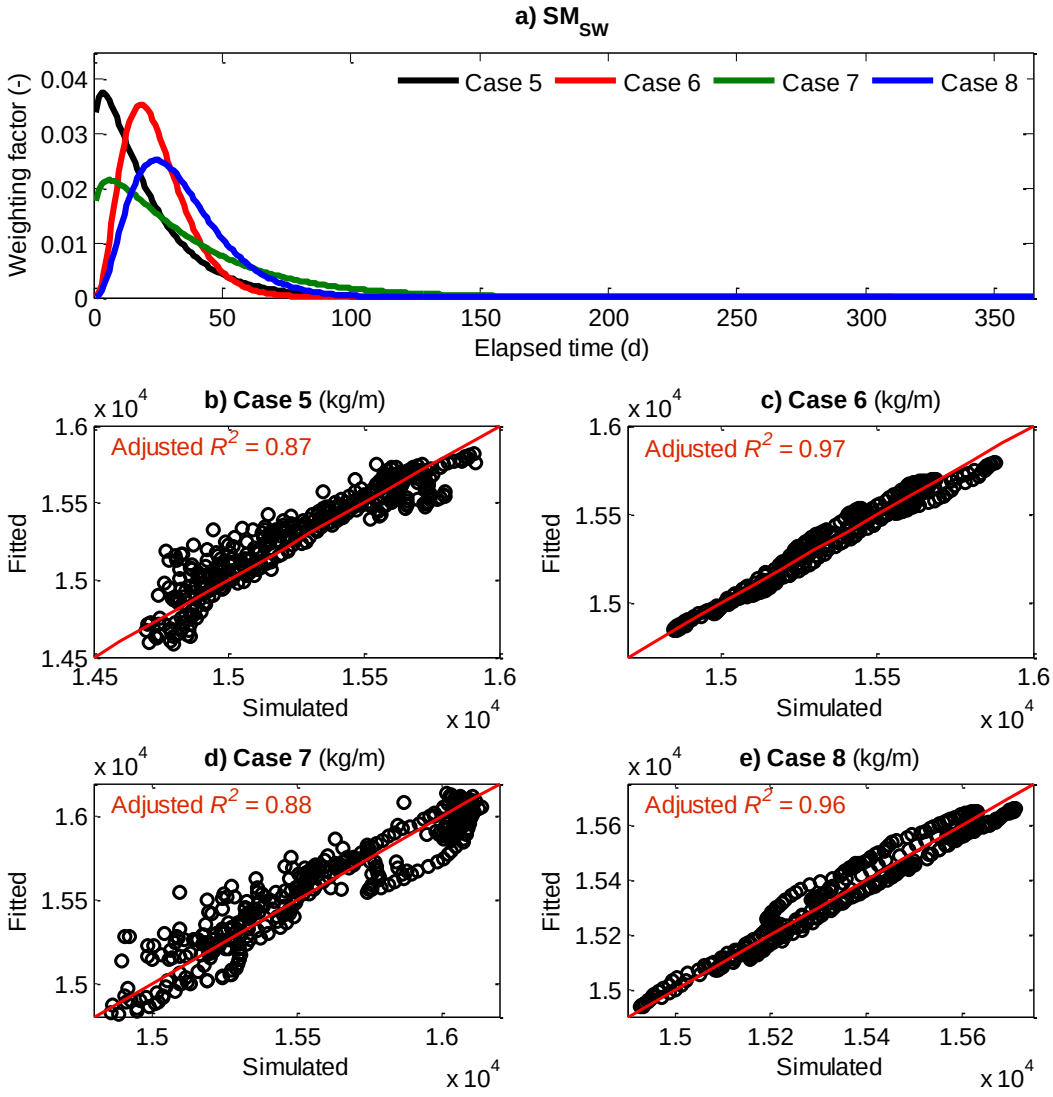


Fig. S10. (a) Comparison of Gamma distribution functions used for quantifying the effect of past rainfall events on SGD. (b-e) Fitted results versus those simulated.



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75 Fig. S11. (a) Comparison of Gamma distribution functions used for quantifying the effect of

76 past rainfall events on the salt mass stored in the saltwater wedge. (b-e) Fitted results versus

77 those simulated.

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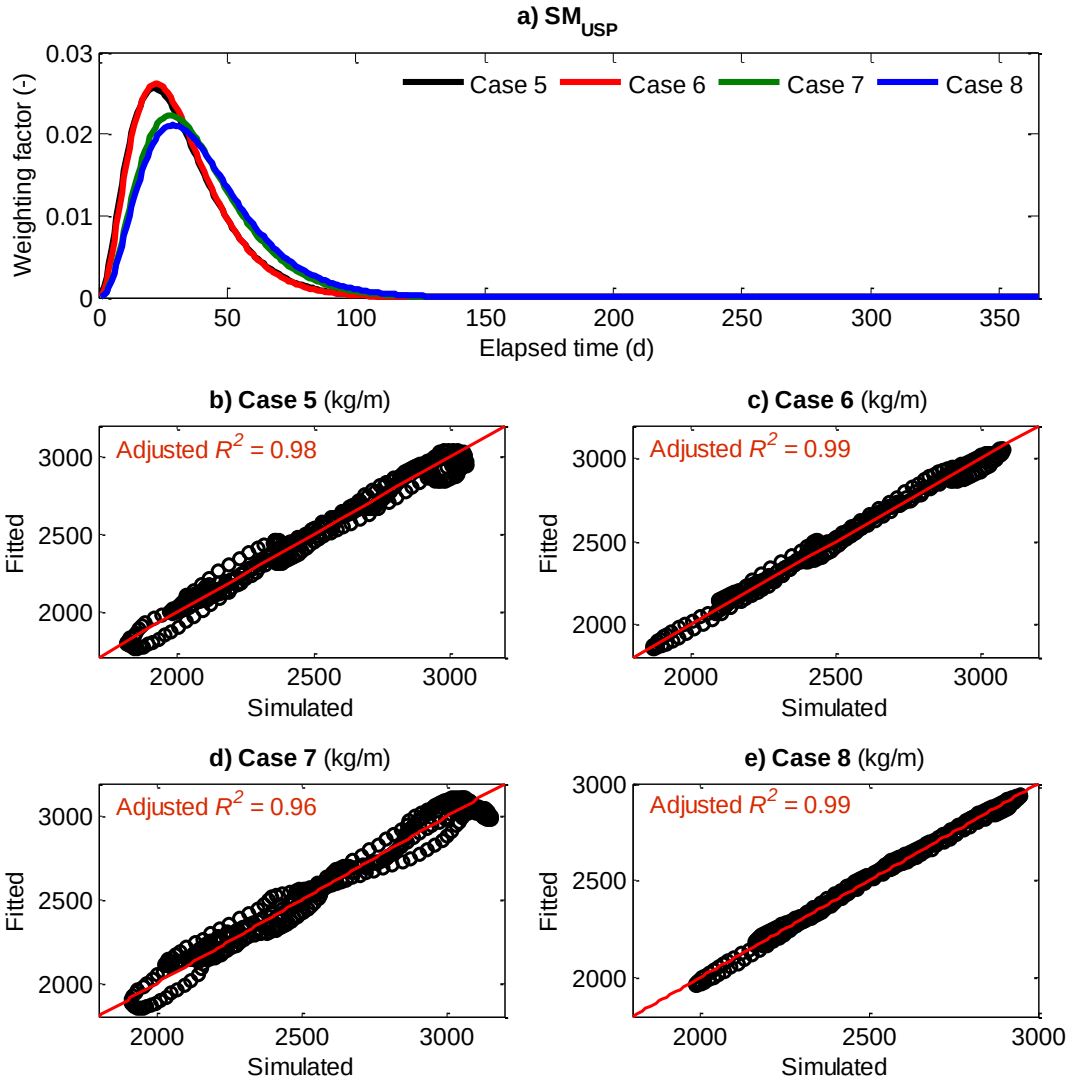

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80 Fig. S12. (a) Comparison of Gamma distribution functions used for quantifying the effect of

81 past rainfall events on the salt mass stored in the upper saline plume. (b-e) Fitted results

82 versus those simulated.