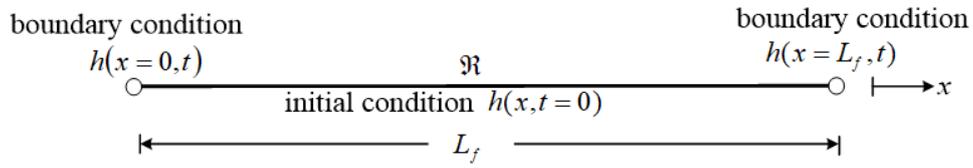


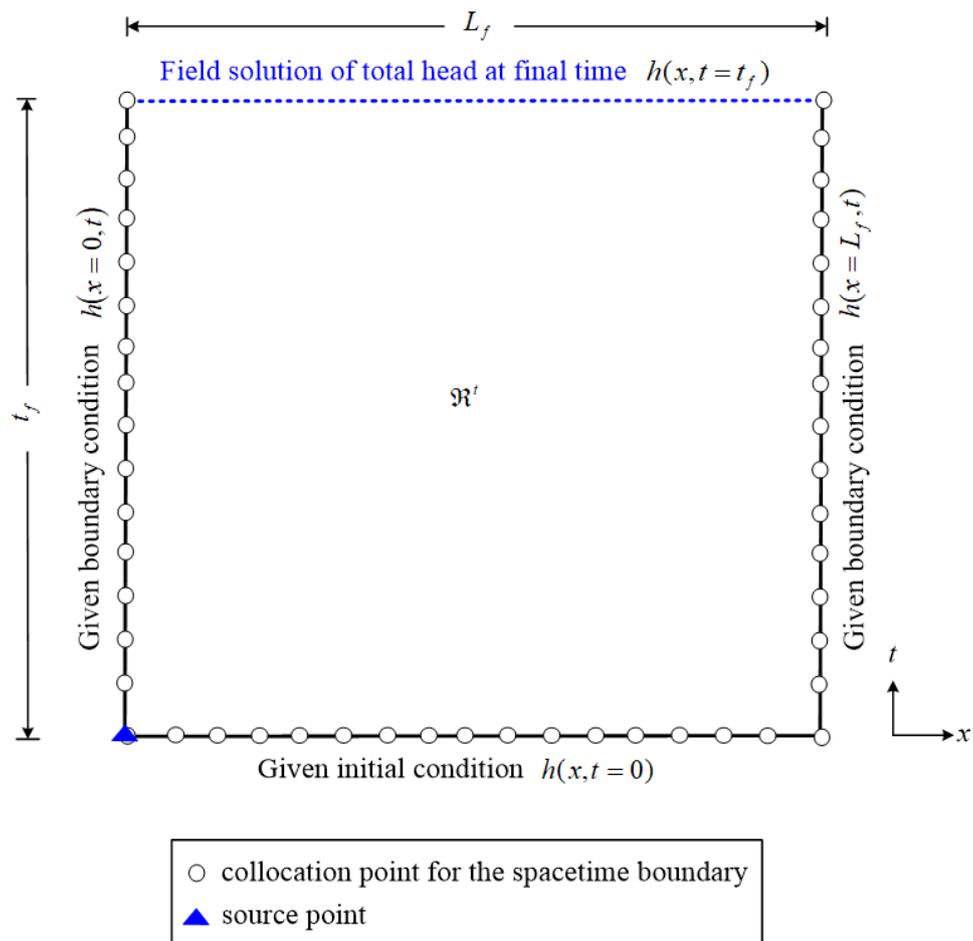
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FIGURE 1 The schematic diagram of this study

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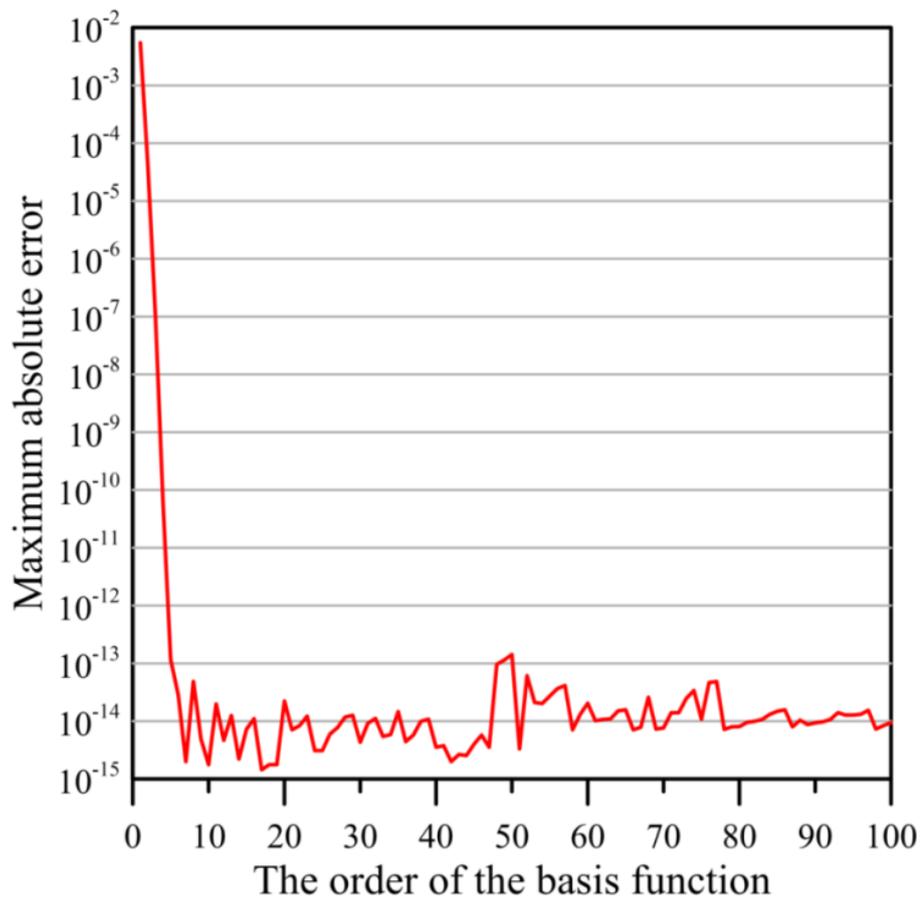
(a)



(b)

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FIGURE 2 Conventional one-dimensional domain and the spacetime domain: (a) conventional one-dimensional transient problem, and (b) boundary points of the problem in the spacetime domain



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FIGURE 3 The order of the basis function versus the MAE

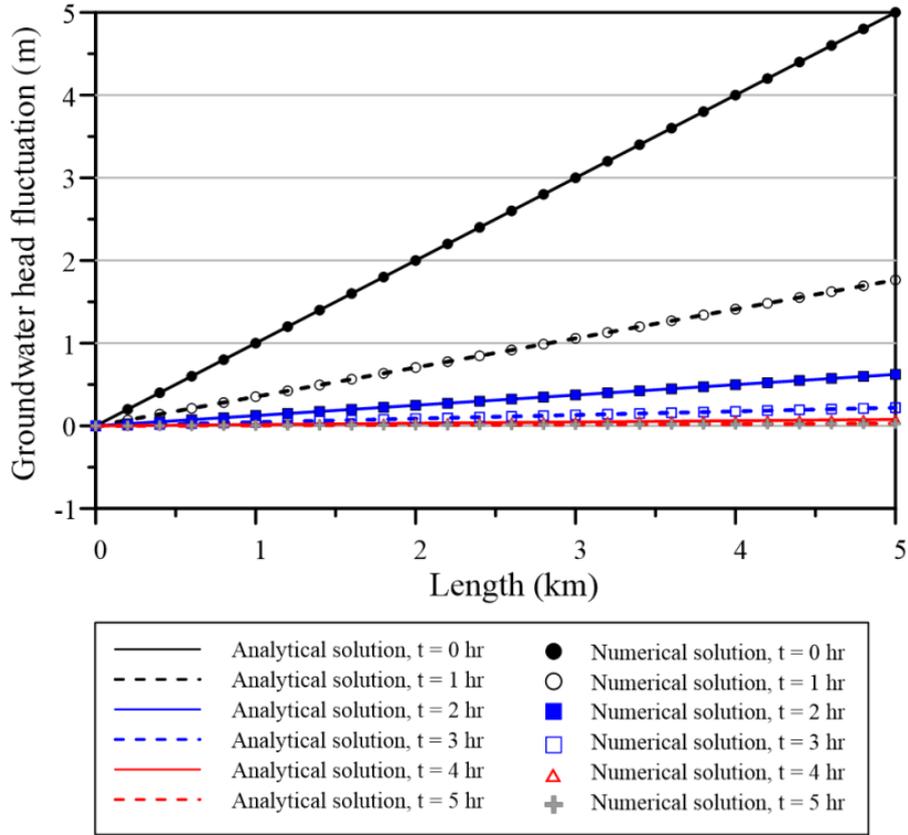
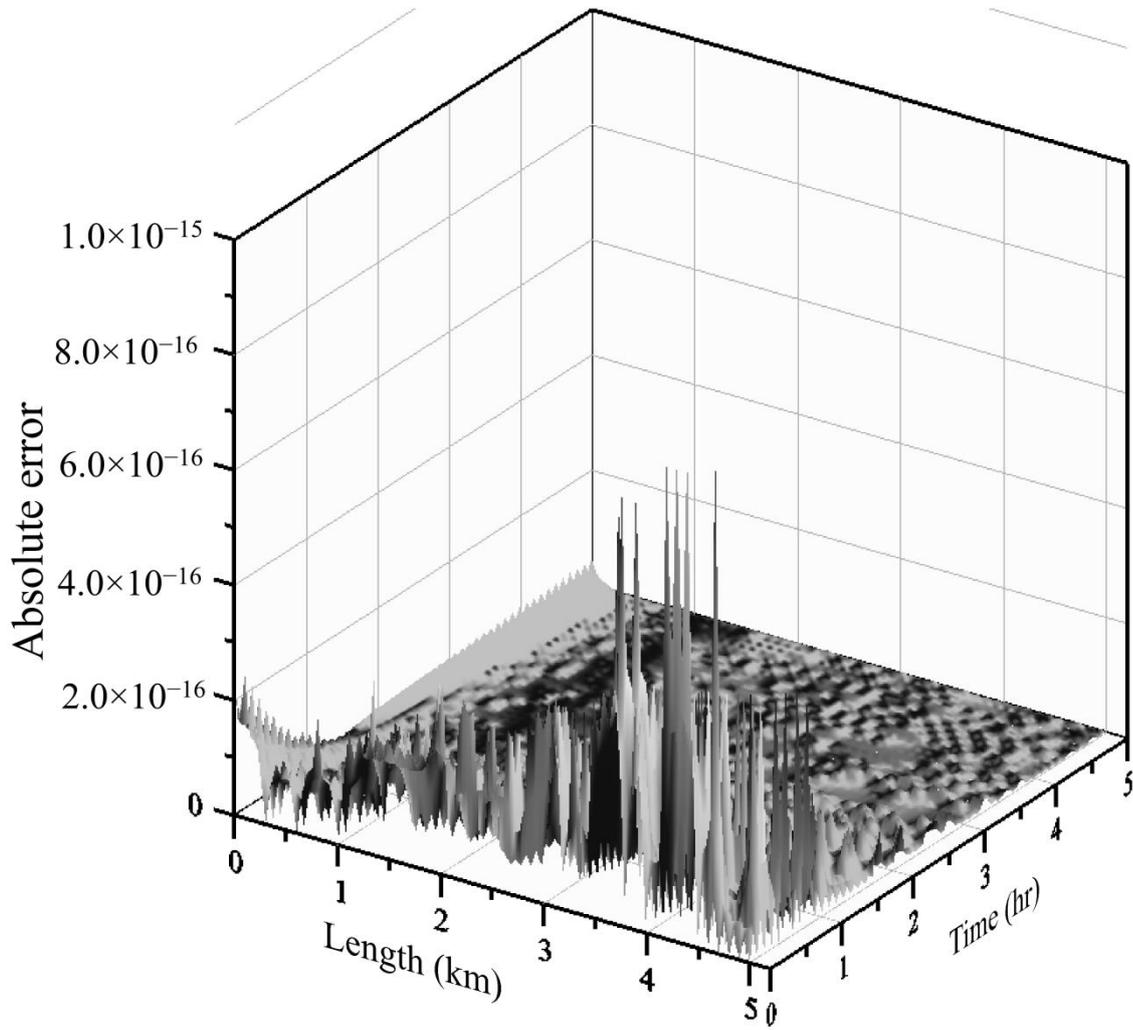


FIGURE 4 Result comparison of Example 1



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FIGURE 5 Absolute error of the results computed with the analytical solution at final time

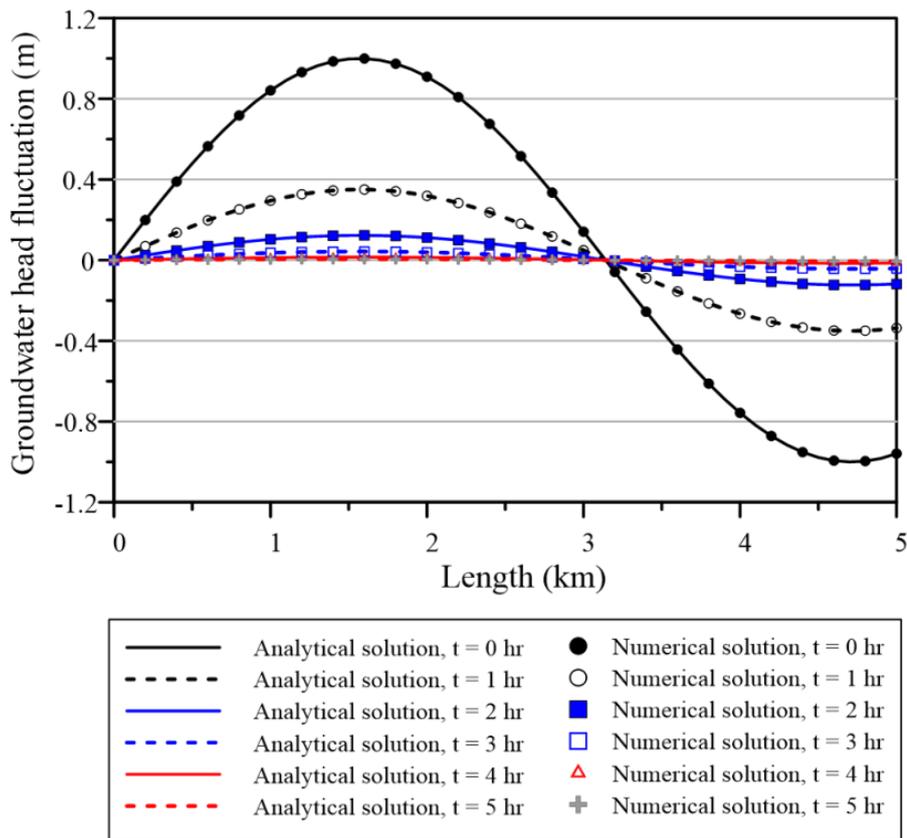


FIGURE 6 Result comparison of Example 2

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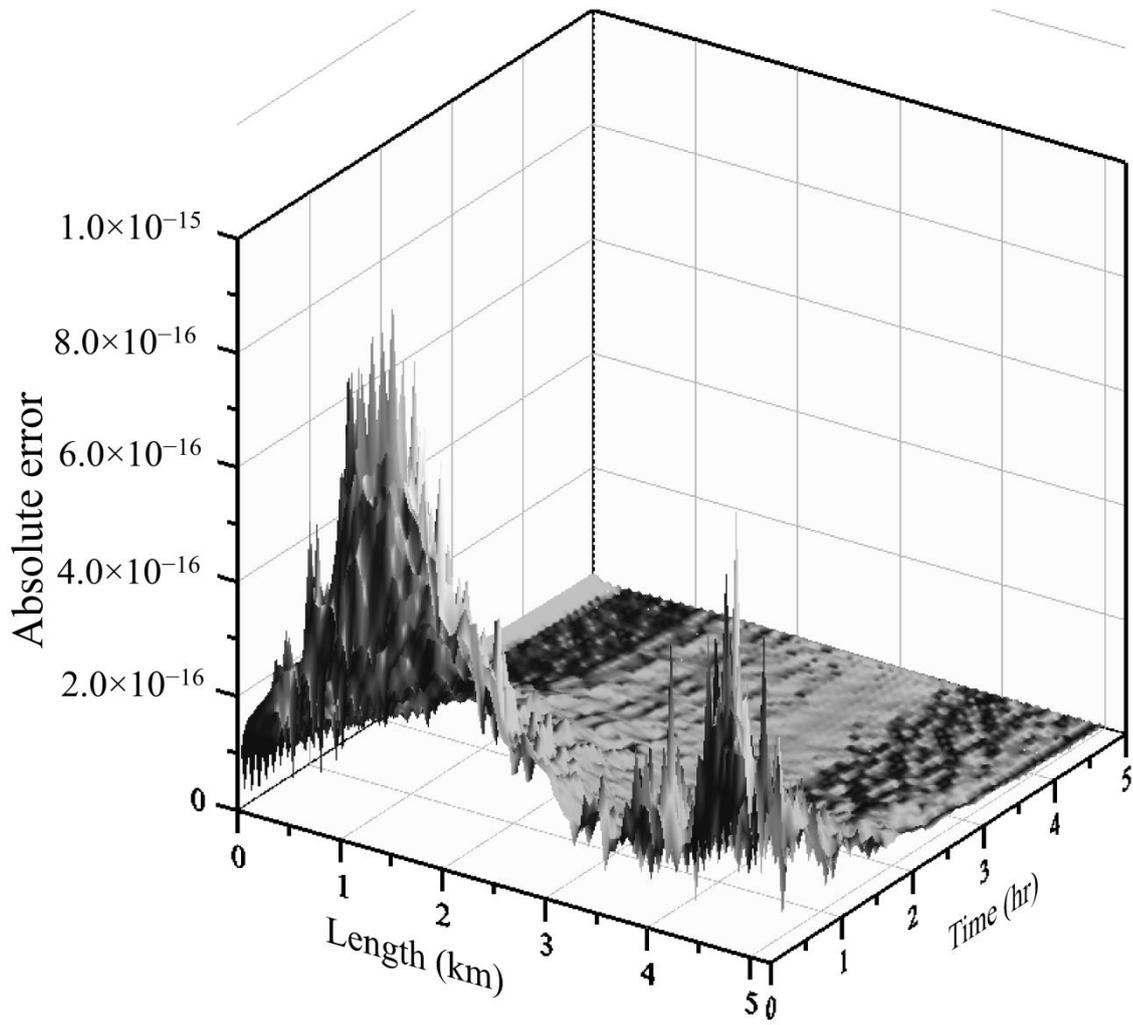
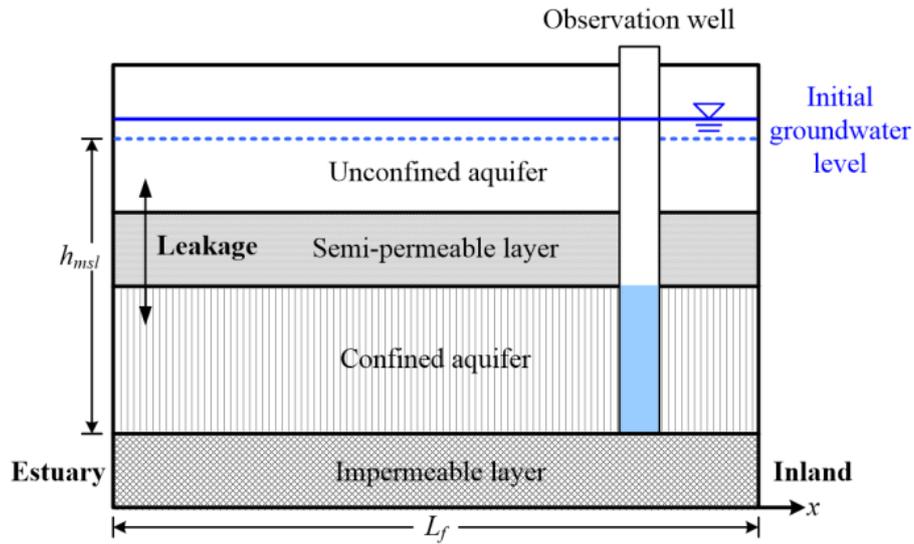
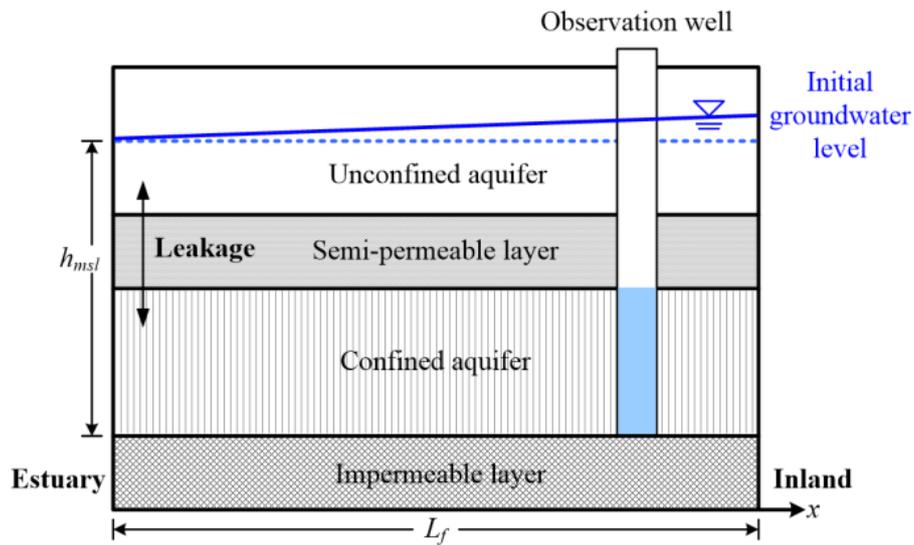
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FIGURE 7 Absolute error of the results computed with the analytical solution at final time



(a)



(b)

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 30 **FIGURE 8** Schematic of finite coastal confined aquifer: (a) Case A: constant initial hydraulic head,
 31 and (b) Case B: inclined initial hydraulic head
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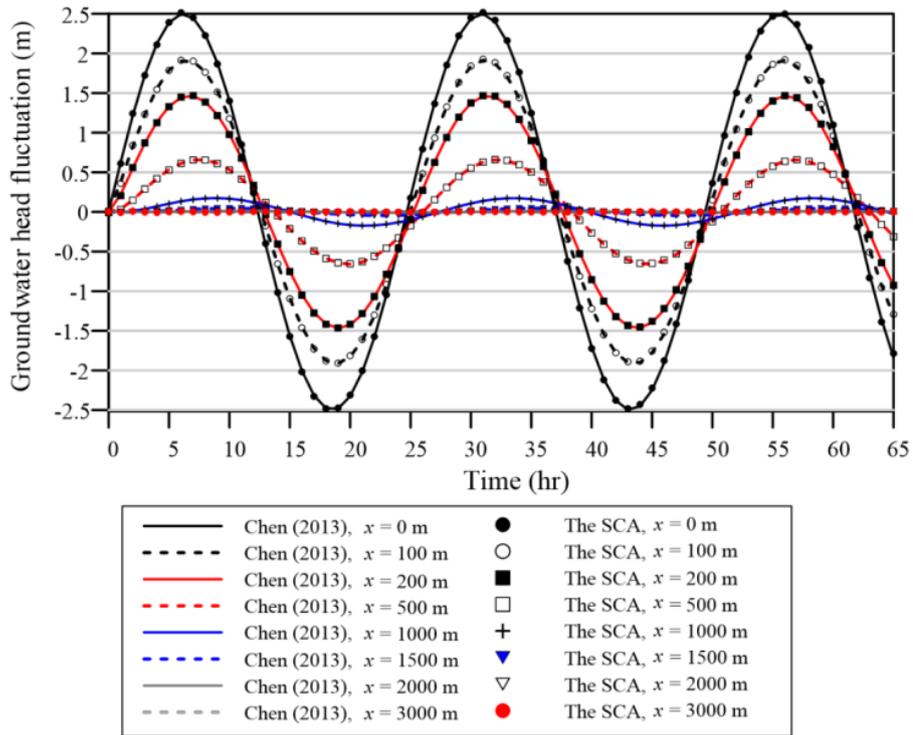


FIGURE 9 Result comparison of Example 3 (Case A)

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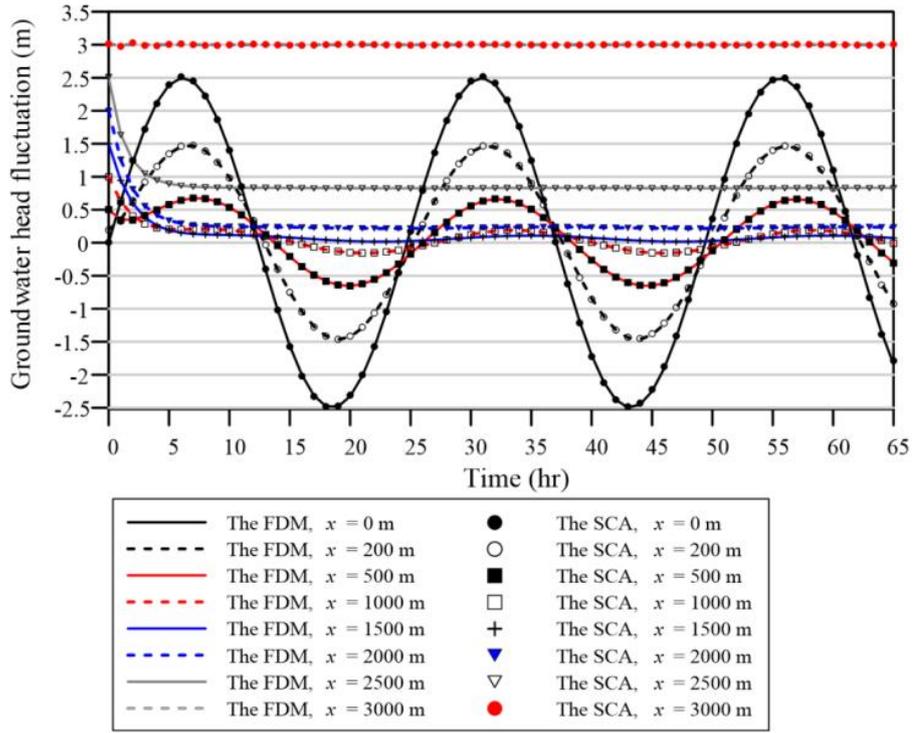
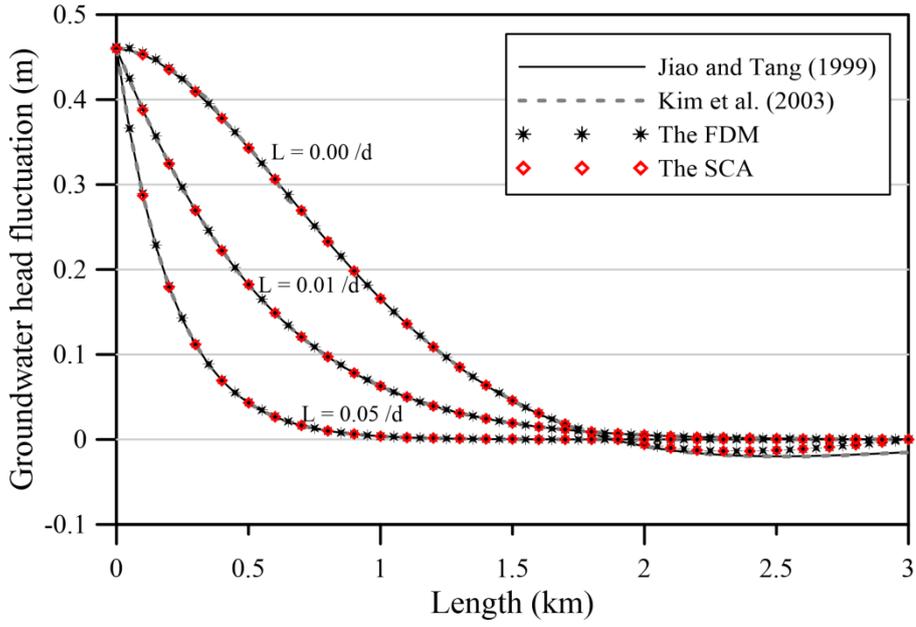
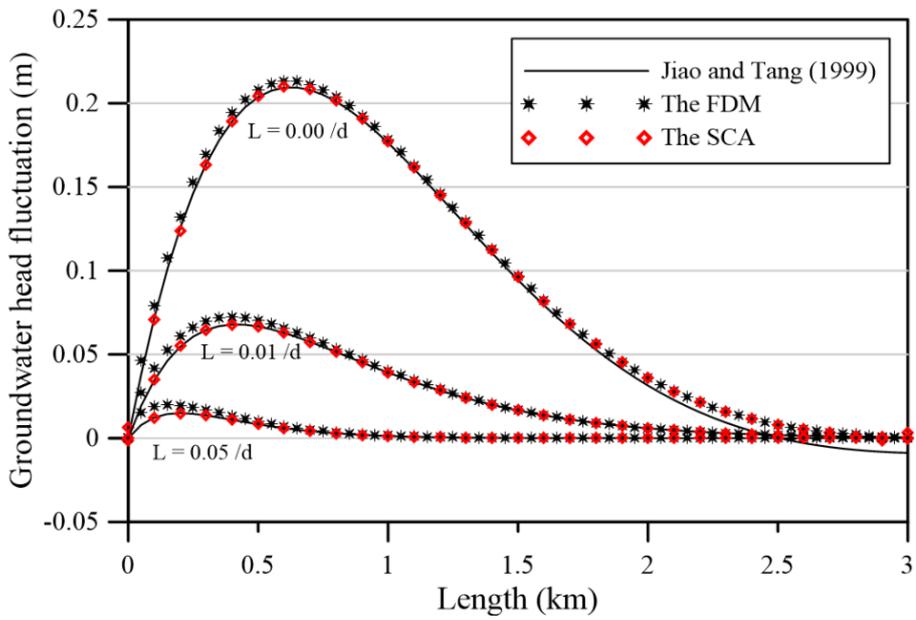


FIGURE 10 Result comparison of Example 3 (Case B)



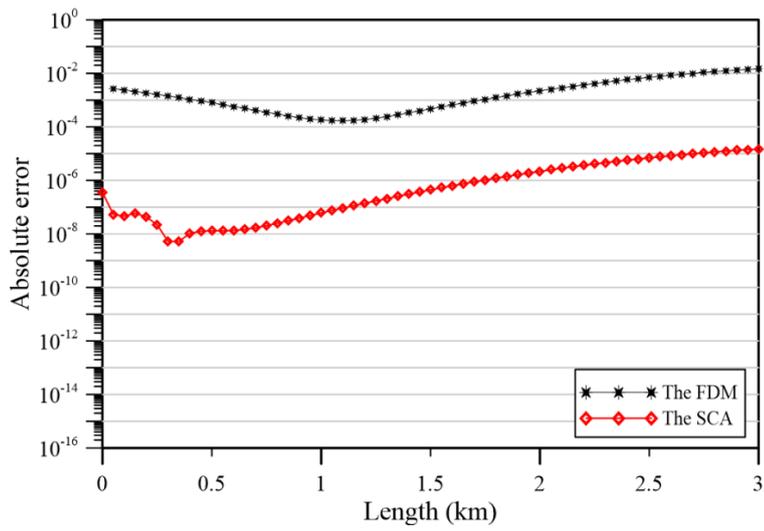
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FIGURE 11 Comparison of the results computed with previous studies ($t_f = 3$ hr)

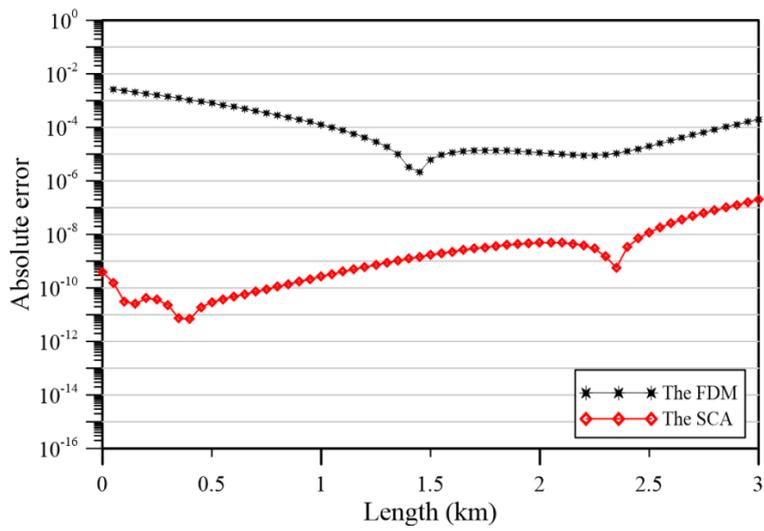


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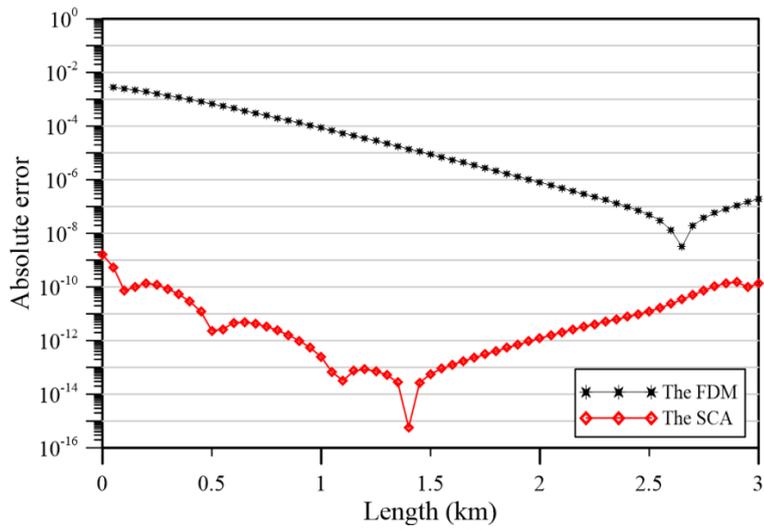
FIGURE 12 Comparison of the results computed with previous studies ($t_f = 6$ hr)



(a) $L = 0.00$ (1/d)



(b) $L = 0.01$ (1/d)



(c) $L = 0.05$ (1/d)

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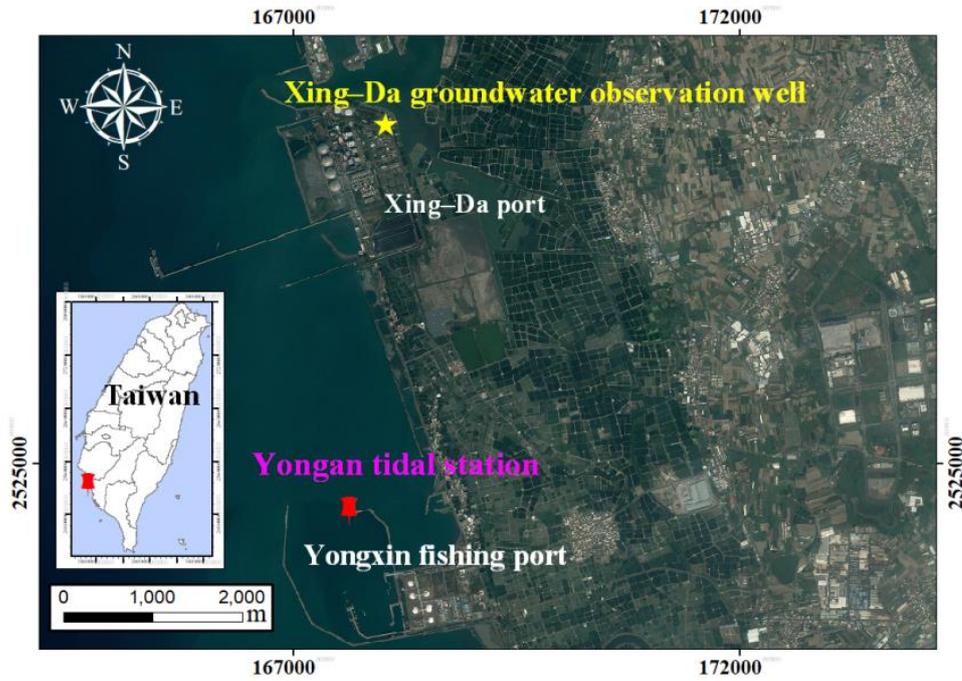
53 **FIGURE 13** Comparison of the accuracy with the FDM and the proposed method at $t_f = 3$ hr : (a)

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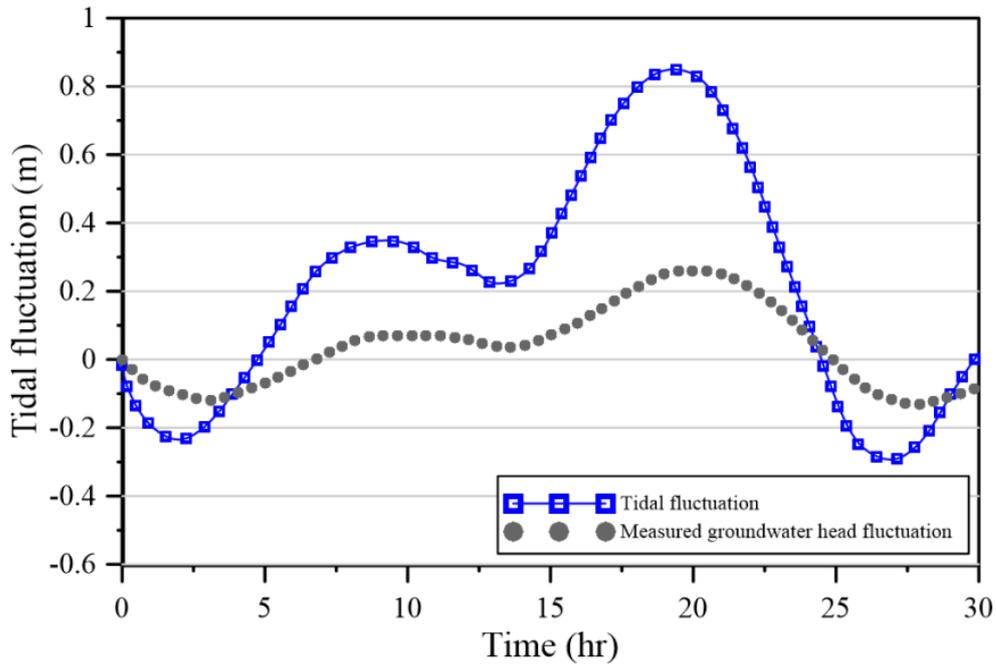
$L = 0.00$ (1/d) , (b) $L = 0.01$ (1/d) , and (c) $L = 0.05$ (1/d)

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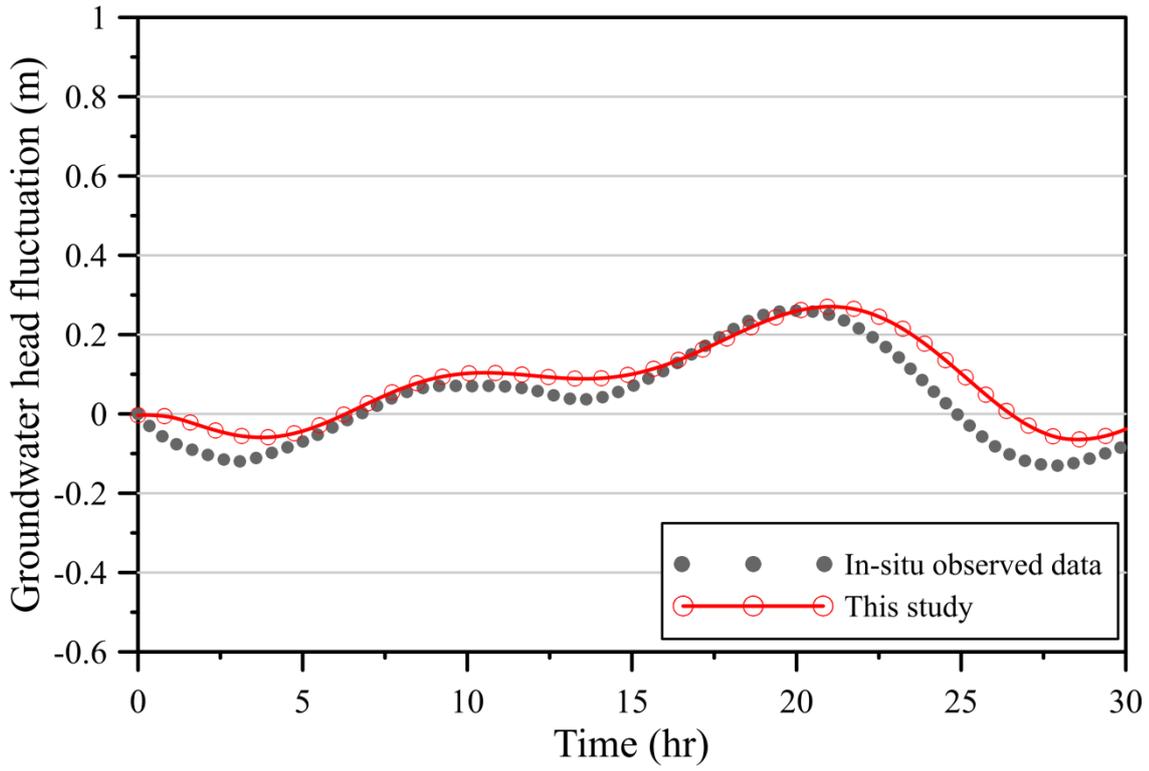
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 58 **FIGURE 14** The location of Xing-Da port in southwestern Taiwan
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61 **FIGURE 15** The tidal fluctuation and the measured groundwater response
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FIGURE 16 Comparison of the computed groundwater response with measured data